

A close-up, high-angle photograph of a metal grating product. The grating consists of a grid of rectangular openings formed by raised metal bars. The bars are arranged in a staggered pattern, creating a series of rectangular cells. The metal has a bright, reflective surface, likely galvanized steel or aluminum. The perspective is from above and to the side, showing the depth of the raised bars and the shadows cast between them. The background is a plain, light-colored surface.

GRATINGS
THE COMPLETE RANGE

GRATINGS FOR INDUSTRY, LOGISTICS AND ARCHITECTURE



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OUR CUSTOMER SEGMENTS

CUSTOMER-ORIENTED APPROACH.

The MEA Metal Applications division looks after customers from the logistics, online, commercial and industrial sectors through four different teams.

Thanks to the division of our customers into individual segments, we have created an internal structure that allows us to pool the know-how and expertise of our employees and use it in a targeted manner in the relevant area.

Thanks to this structure, we are able to respond flexibly to any requirements of our customers.





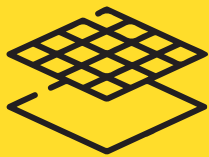
SERVICES

Fast response from the MEA team,
reliable deadlines



SHORT DELIVERY TIMES

Items in stock, products immediately
ready for delivery



CONSTRUCTION OF GRATING

For the whole project



CONSULTING

Qualified advice from our sales staff
during project planning



RESEARCH & DEVELOPMENT

Development and optimization of product portfolio,
development of customer specific solutions



ACADEMY (TRAINING)

Product training for employees and customers, at the MEA campus
in Pilsen (production plant) or directly at the customer's site



QUALITY MANAGEMENT

Black and white gate for continuous
product inspection



1886

HISTORY

Founded in 1886 as a locksmith's workshop, the MEA Group has developed into a leading supplier to the construction industry with its innovative products for rational construction. The MEA Group has been manufacturing grating since 1966. The MEA Metal Applications division, under which this area falls, has many years of experience in the manufacture of grating. It meets the high quality requirements for the planning, production and sale of grating and is one of the leading manufacturers in its field.

MEA GROUP IS AN INTERNATIONALLY OPERATING COMPANY WITH MORE THAN 130 YEARS OF EXPERIENCE.

SUSTAINABILITY & ENVIRONMENTAL PROTECTION

The MEA Group is mindful of its ecological footprint, developing processes that reduce the burden on the environment.





CORE VALUES OF THE MEA GROUP

Thanks to our products and solutions, the MEA Group has become one of the leading suppliers to the construction industry. Experience and continuity are among the most important factors behind our more than **130 years of successful history**.



OUR QUALITY

Our quality management meets the requirements of **DIN EN ISO 9001:2015** and is also certified according to this standard.

MEA gratings are manufactured from S 235 JR steel and then hot-dip galvanized in a bath according to **DIN EN ISO 1461**. Sizing and production are carried out in accordance with the **RAL-GZ 638** quality assurance directive.

Our production plant meets the current requirements for planning, control and process documentation and is certified according to **EN 1090-1+A1:2011**.

We have a standard certificate for all welding technologies and processes according to **EN 1090-2+A1:2011**.





GALVANIZING

OUR QUALITY

Of course, perfect corrosion protection is also part of the production of the grating.

Hot-dip galvanizing is the best protection against corrosion of steel structural elements. The MEA Group can draw on many years of experience in this area. The MEA Metal Applications division operates modern hot-dip galvanizing plants in the Pilsen facility, which are used for galvanizing its own products as well as for the goods of external customers. The range of services offered by our modern hot-dip galvanizing plants goes far beyond galvanizing alone. It all starts with a qualified consultation and continues with any additional work. We emphasize comprehensive solutions.

PROCESS

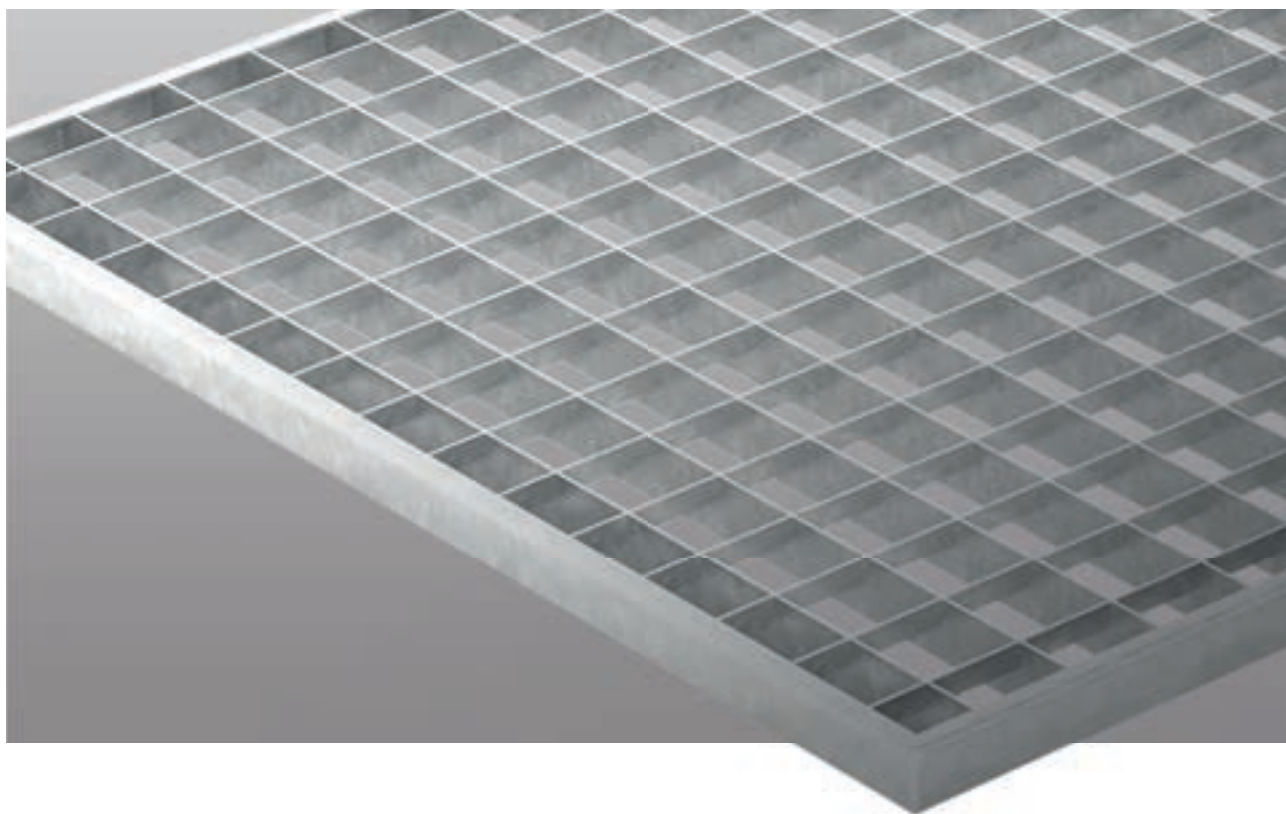
Hot-dip galvanizing of grating in zinc bath. 

In hot-dip galvanizing, the steel is immersed in a bath of liquid zinc after appropriate pretreatment, which includes degreasing and pickling. In the zinc bath, the steel is completely coated with zinc to form an alloy. This alloy is inseparably bonded to steel, so hot-dip galvanized grating can be used almost everywhere, both indoors and outdoors. The resistance of the zinc coating depends on the conditions to which it is exposed.

SUMMARY: Hot dip galvanizing is the most suitable anti-corrosion protection for steel. It offers diverse benefits that every customer should know because:

- > has a long service life
- > is reliable
- > is durable
- > is cost-effective
- > is maintenance-free
- > fast visual inspection
- > is optimal, even in cavities and on edges
- > cathodically protects
- > is time-saving
- > looks good and is environmentally friendly





GRATINGS

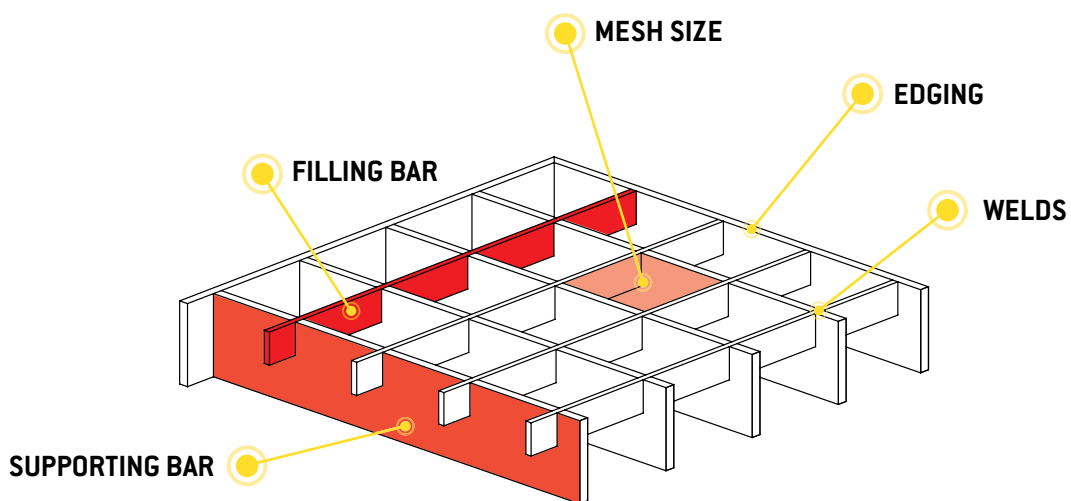
Gratings are load-bearing, planar elements with many through openings in a regular arrangement. They consist of vertically arranged parallel supporting bars which are crossed by filling bars. The external edge is called the surround.

Their transparent appearance gives the buildings an unmistakable character. Gratings offer countless creative possibilities, leave room for aesthetics and convince with their numerous possibilities of combination with other materials. Gratings can be used universally. They can be found in industrial buildings, public and private buildings, as well as in agricultural buildings. The classic areas of application in residential construction include covers for ventilation shafts, heating or air conditioning vents.





GRATINGS IN DETAIL



MESH SIZE

The mesh size is the clear dimension between the supporting and filling bars, e.g. 30/30, 30/10, 40/60, ...

FILLING BAR

The filling bar run transversely to the supporting bars and are pressed into them.

WELDS

The welds are subject to strict quality controls and are manufactured in accordance with current DIN standards to guarantee maximum stability.

EDGING (HEIGHT)

All gratings are hemmed all around. The edging is done with flat steel adapted to the requirements. The edging can also be done using a U-profile.

The height of the edging also determines the final height of the grating.

SUPPORTING BAR

The supporting bar are flat steel strips that run parallel from edge to edge of the grating. These profiles carry the load of the grating.





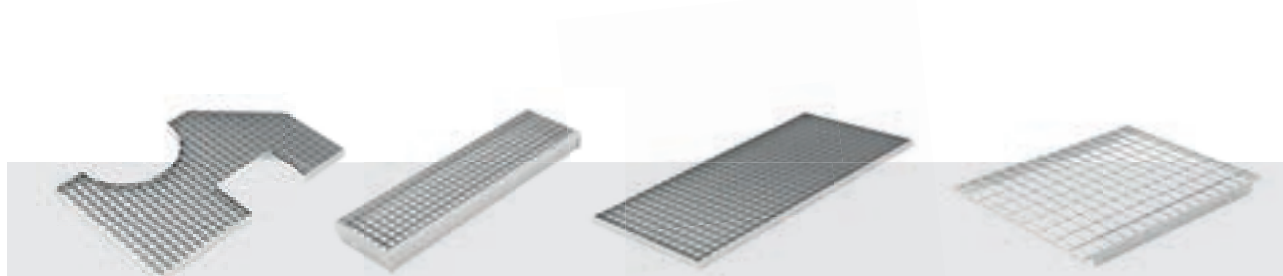
TAILOR-MADE PRODUCTS

MEA gratings are not only structural elements that impress with their simple and classic design and thus give buildings an unmistakable character. They also convince with regard to safety and variety of use. However, the diverse application possibilities also require special advice - **contact us so that we can support you optimally in your project.**



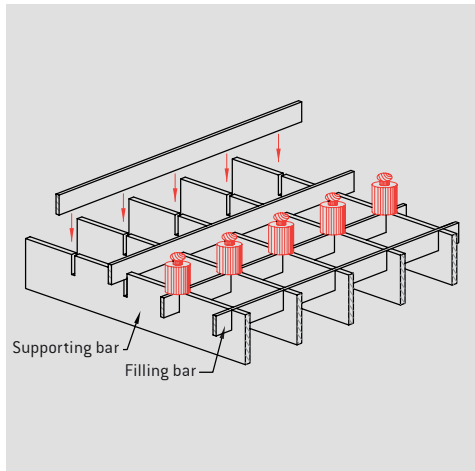
OUR ADVANTAGES

- > standard range of staircases, industrial, standardized grating and non-galvanized mats in stock
- > stair treads and grates also available in non-slip design
- > grates up to a supporting bar size of 120 x 5 mm, also suitable for high loads (for trucks and forklifts)
- > suitable frames for customized grating
- > can be combined with prefabricated parts such as skirting boards, safety edges, curtains, etc.



OUR PRODUCT PORTFOLIO

Standardized grating, expanded metal grating, shelf/rack grating, MEA modules, grating for gutters, welded pressed grating, boat grating, radial grating, industrial and special grating, stair treads, landings and grating for shafts. We also produce grating in stainless steel (V2A | V4A).

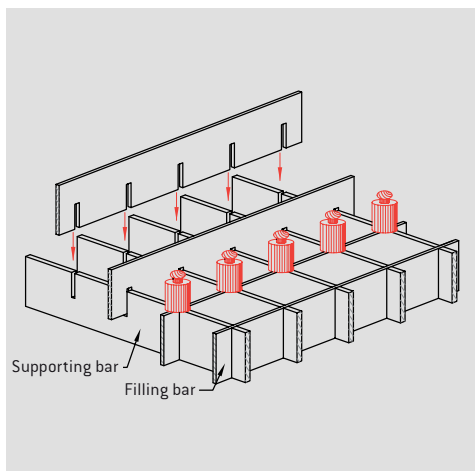


PRESSED GRATINGS

The filling bars are forced under high pressure into notches in the supporting bars. The high pressure and the notches in the supporting bars ensure the strength and torsion resistance of the grating. This production method guarantees a uniform and precise mesh size. The supporting bars distribute the load to the supports. The filling bars partially take over this load and ensure stability. The perimeter edge of the grating is spot welded to the supporting and filling bars. It is made of flat steel (e.g. industrial/stair grating) or U-profile (standard grating).



> Production programme see pages 18 / 19



FULL GRATINGS

Full gratings are manufactured in the same way as pressed gratings. The supporting and filling bars are stamped together under high pressure, are of the same height and are notched up to the centre of the profile. Thanks to the same appearance on both sides, the full gratings are ideal especially for railings, facade linings, suspended ceilings, partitions, etc.

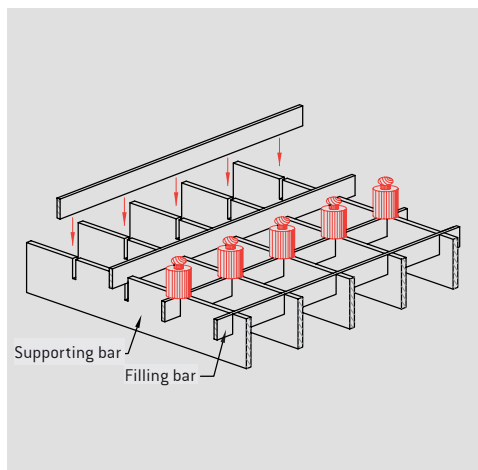


Especially important when placing loads on full gratings: The supporting (load-bearing) bars are considered to be those profiles that rest on the supporting structure at both ends and whose underside is without a notch. The perimeter edge of the grating is spot welded to the supporting and filling bars. It is made of flat steel.



> Fertigungsprogramm siehe Seite 20



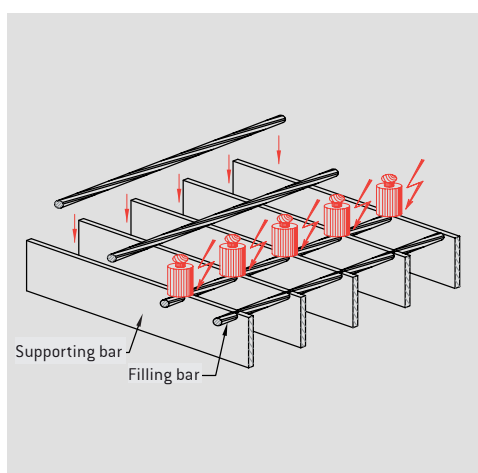


STAINLESS STEEL GRATINGS IN THREE GRADES

The MEA pressed gratings are also manufactured from V2A and V4A grade stainless steel. With these gratings, high functional, material and aesthetic requirements can be met. The extensive range is divided into three grades (Basic, Basic+ and Deluxe) and includes both standard and special gratings. Depending on the variant, the supporting and filling can also be manufactured in a non-slip version. On request, MEA stainless steel grates are available with rounded edges and a pickled or electro-polished surface. MEA stainless steel grating combines functionality with aesthetics.



> Production programme see page 21



WELDED PRESSED GRATING

Welded pressed gratings are made of S 235 JR steel and hot-dip galvanized in a bath. Filling bars made of twisted square steel are melted under high pressure into the non-weakened supporting bars in one working step and electrically welded at the same time. The welding of all the crossing points results in a strong and torsion-resistant grating structure that is flush with the surface and is characterised by high durability and optimal load distribution. Flat steel is used as the edging.



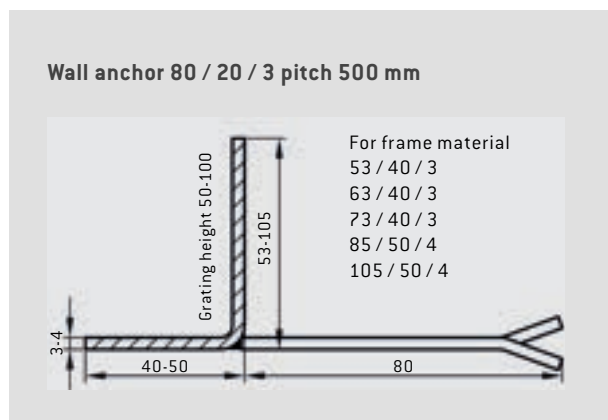
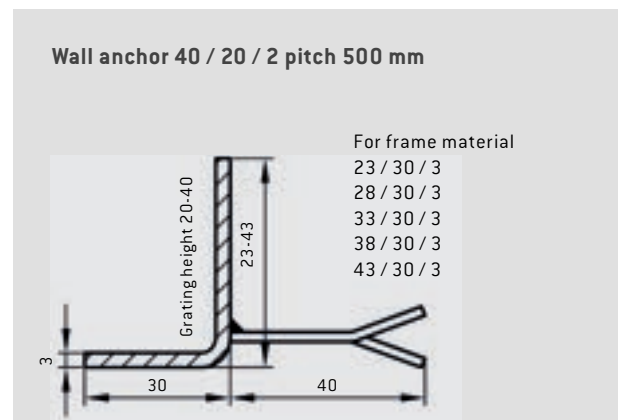
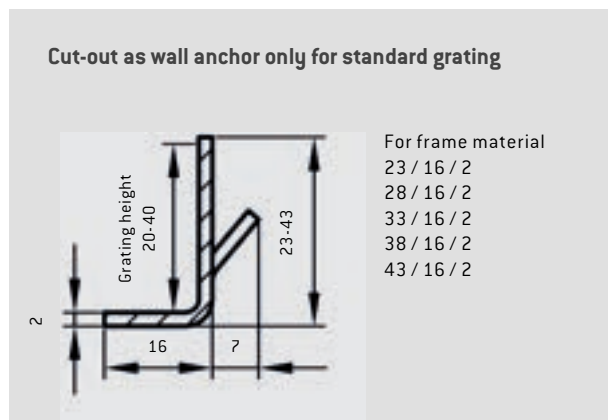
> Production programme see page 20



FRAMES FOR GRATINGS

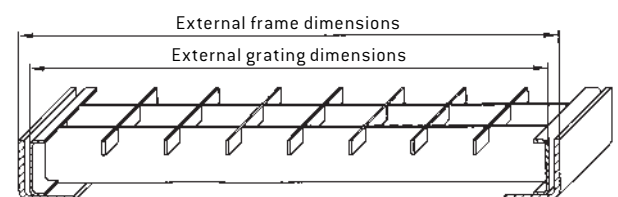
The frames for the grating are made of hot-dip galvanized steel angles. For standardized grating, the frames are factory fitted with wall anchors. **Frames for grating are available with or without wall anchors, or with drilled or countersunk holes.**

h/w/t = height/width/thickness of steel



EXTERNAL DIMENSIONS

The outer dimensions of the grating are always 10 mm smaller than the outer dimensions of the frame.





ANTI-SLIP FINISH



The design of the metal grates is sufficiently slip-resistant for normal use. However, where there is an increased risk of slipping (accidents) due to the handling of slippery substances such as dirt, oil, grease, water, ice or food, the slip-resistance of the floor covering is more demanding. Better anti-slip properties are achieved by cut-outs in the load-bearing and filling bars.



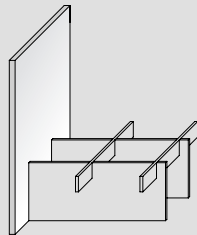
In order to guarantee these improved slip-resistant properties, the MEA grating is tested in accordance with the requirements of BGR 181 "Workplaces and areas with increased slip hazards" and DIN 51130 "Testing of floor coverings; determination of slip-resistant properties; workplaces and areas with increased slip hazards; method for determining the slip angle; inclined plane". These tests are carried out by the Technical and Testing Institute of Construction Prague, Plzeň branch. We will be happy to provide the relevant certificates upon request.



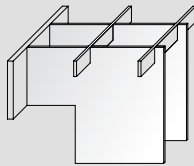


ASSEMBLED PARTS

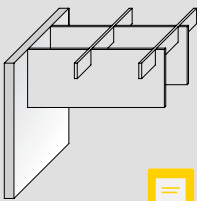
Complex buildings require individual solutions. Special customized grating designs are the order of the day here. Regardless of the variety of options, the customer's requirements always come first. For example, when it comes to the specific implementation with regard to the anti-slip treatment and the impact of light or the appearance of the mesh. Depending on the application, the gratings are combined with prefabricated parts such as toe plates, reinforcement profiles, angles, cut-outs, plates, feet, safety edges, holes or screw clips.


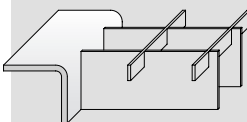
TOE PLATE
Reinforced and raised edging towards the top, prevents objects from falling off the running boards.




NOTCHING
Supporting bars cut-outs in the area of installation to achieve the required design height. The load capacity of the grating must be checked.

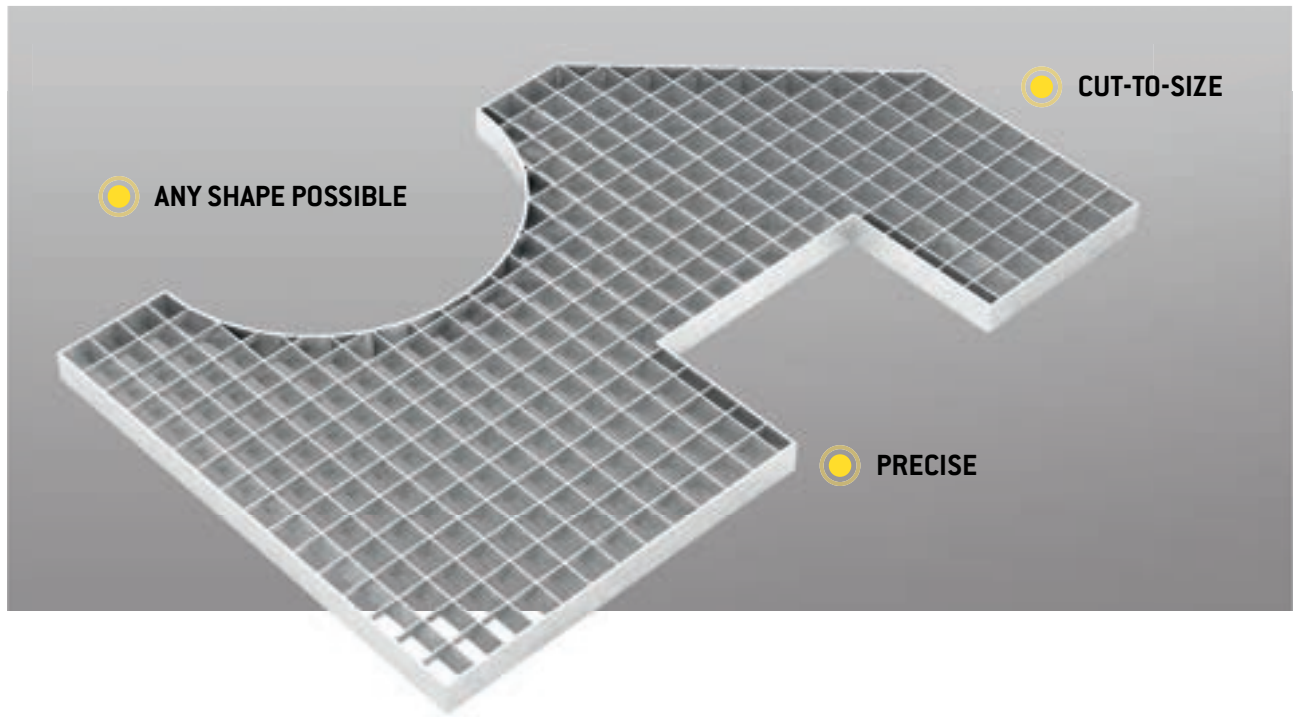


REINFORCEMENT/ STILTED
Reinforced and raised downward flashing to achieve the required structural height or to bridge missing supports (e.g. over light wells).

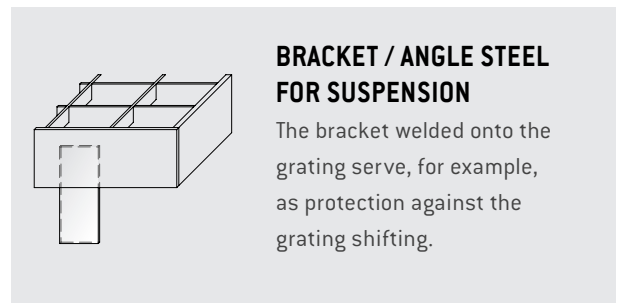
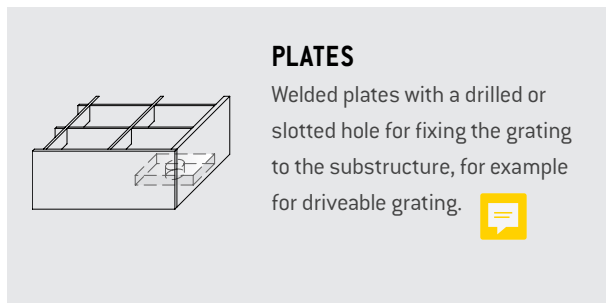



ANGLE/SUSPENSION ANGLE
Welded angles on one or more sides, which are used to accommodate the grating (e.g. rack grating).





PREFABRICATED PARTS FOR IMPROVED AND OPTIMAL FUNCTIONALITY OF THE GRATING

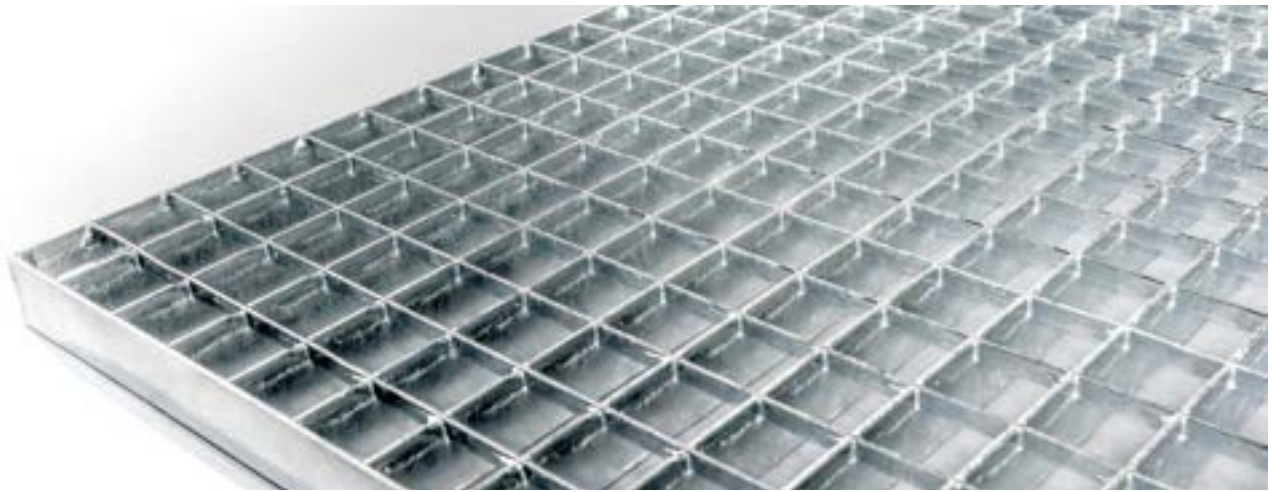


CUT-TO-SIZE

ME A manufactures grating with custom straight or circular sections and cut-outs. Very often the shape of the grating needs to be adapted to the nature of the structure or environment where the grating is used. In this way, passages for supports and pipes or other recesses can be realised. These are cut-to-size (tailor-made) surfaces that are made according to individual customer requirements. ME A has already demonstrated its competence in this area in a number of important projects.



GRATING



PRESSED GRATINGS Table of possible combinations of supporting bars and meshes

STEEL MATS:
 in stock 3000 x 1200
 raw/non-galvanized,
 with edging

Supporting profile **Mesh**

25/2	30/30
25/2	30/10
30/2	30/30
30/2	30/10
30/3	30/30
30/3	30/10
40/3	30/30
40/3	30/10

On order:
3000 x 1200
 raw/non-galvanized,
 without edging

underlined dimension =
 dimension of the
 supporting bar

all data in mm

DESIGNATION	30/30	30/20	30/10	40/40	40/20	
AXIAL PITCH	33/33	33/20	33/12,5	40/40	40/20	
SUP. BAR**	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	
20/1.5	12.21	14.21	17.35	10.38	12.90	
25/1.5	14.38	16.37	19.51	12.21	14.73	
30/1.5	16.54	18.53	21.68	14.05	16.57	
40/1.5	20.86	22.86	26.00	17.72	20.24	
20/2	13.60	15.53	18.58	11.52	13.96	
25/2	15.68	17.61	20.66	13.29	15.73	
30/2	18.22	20.15	23.20	15.43	17.87	
35/2	21.17	23.20	26.24	17.91	20.45	
40/2	23.27	25.23	28.27	19.72	22.16	
45/2	25.86	27.89	30.93	21.89	24.42	
50/2	29.47	31.50	34.55	24.94	27.48	
25/3	25.55	26.92	31.80	19.88	24.09	
30/3	27.44	30.81	35.69	23.18	27.39	
35/3	32.11	35.48	40.36	27.15	31.35	
40/3	35.22	38.59	43.47	29.79	33.99	
50/3	43.78	47.15	52.03	37.05	41.26	
60/3	51.56	54.93	59.81	43.65	47.86	
70/3	58.56	61.93	66.81	49.59	53.80	
80/3	67.12	70.49	75.37	56.85	61.06	
30/4	39.71	-	-	-	-	
35/4	44.89	-	-	-	-	
40/4	50.07	-	-	-	-	
45/4	55.12	-	-	-	-	
50/4	60.43	-	-	-	-	
60/4	70.79	-	-	-	-	
70/4	81.15	-	-	-	-	
80/4	97.26	-	-	-	-	
100/4	116.95	-	-	-	-	
40/5	63.38	-	-	-	-	
50/5	75.69	-	-	-	-	
60/5	88.01	-	-	-	-	
70/5	100.32	-	-	-	-	
80/5	112.63	-	-	-	-	
90/5	124.95	-	-	-	-	
100/5	137.26	-	-	-	-	

** height x thickness

Possibility of anti-slip design on the filling profile

Possibility of anti-slip design on the filling and supporting profile

Possible mesh spacing [axis/axis] in the direction of the supporting bar 11, 20, 33 mm and multiples of these numbers.
 Possible mesh spacing [axis/axis] in the direction of the filling bar 11, 11, 20, 33 mm and multiples of these numbers.



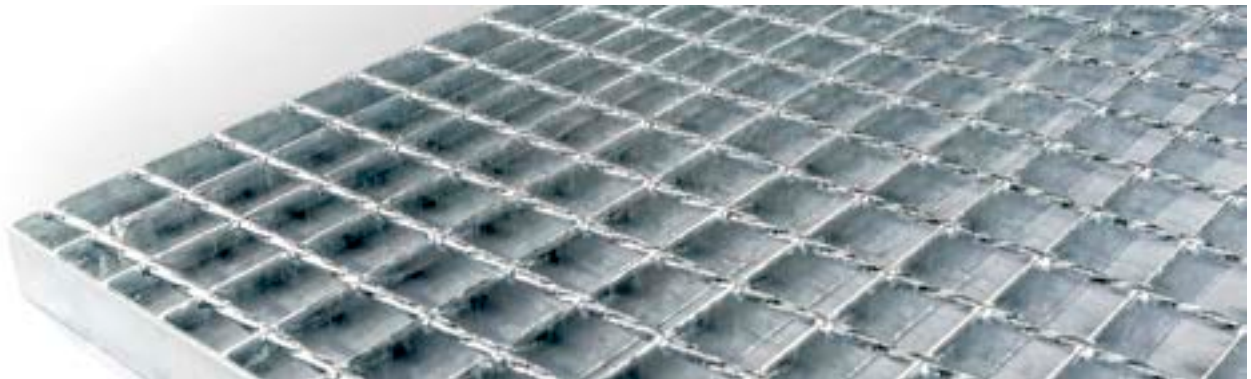


**OTHER COMBINATIONS OF
MESH AND SUPPORTING
BARS ON REQUEST**

	20/20	20/10	20/30	60,30	30/60	Filling bar mm	Grating edging details	Frame h / w / t mm
	20/20	20/12,5	20/33	66/33	33/66			
	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²			
	19.19	22.33	17.20	8.28	10.64	8/1.5	U profile*	23/30/3
	22.59	25.74	20.60	9.46	12.80	8/1.5	U profile*	28/30/3
	26.00	29.15	24.01	10.64	14.97	8/1.5	U profile*	33/30/3
	32.82	35.96	30.83	13.00	19.29	8/1.5	U profile*	43/30/3
	21.52	24.57	19.58	8.88	12.08	8/1.5	U profile*	23/30/3
	24.80	27.84	22.86	10.02	14.16	8/1.5	U profile*	28/30/3
	28.83	31.88	26.90	11.37	16.70	8/1.5	U profile*	33/30/3
	34.21	37.26	32.18	12.91	19.65	8/1.5	Flat steel 35/2	38/30/3
	36.89	39.94	34.96	14.08	21.77	8/1.5	U profile*	43/30/3
	41.73	44.78	39.70	15.47	24.33	8/1.5	Flat steel 45/2	48/30/3
	47.57	50.62	45.54	17.42	27.95	8/1.5	Flat steel 50/2	53/30/3
	38.23	43.11	34.86	15.07	21.03	10/2	Flat steel 25/3	38/30/3
	44.48	49.36	41.11	17.19	24.92	10/2	Flat steel 30/3	33/30/3
	51.98	56.86	48.61	19.74	29.59	10/2	Flat steel 35/3	38/30/3
	56.97	61.85	53.60	21.44	32.70	10/2	Flat steel 40/3	43/30/3
	70.71	75.60	67.35	26.11	41.26	10/2	Flat steel 50/3	53/40/3
	83.21	88.09	79.84	30.35	49.04	10/2	Flat steel 60.3	63/40/3
	94.45	99.33	91.08	34.17	56.04	10/2	Flat steel 70/3	73/40/3
	108.19	113.07	104.83	38.84	64.59	10/2	Flat steel 80/3	83/40/3
	–	–	58.54	25.58	35.25	12/3	Flat steel 30/4	33/30/3
	–	–	66.86	28.41	40.43	12/3	Flat steel 35/4	38/30/3
	–	–	75.18	31.24	45.61	12/3	Flat steel 40/4	43/30/3
	–	–	83.37	33.94	50.66	12/3	Flat steel 45/4	48/30/3
	–	–	91.82	36.89	55.97	12/3	Flat steel 50/4	53/40/3
	–	–	108.45	42.55	66.33	12/3	Flat steel 60/4	63/40/3
	–	–	125.09	48.20	76.69	12/3	Flat steel 70/4	73/40/3
	–	–	147.48	59.60	89.83	12/3	Flat steel 80/4	85/40/3
	–	–	179.09	70.35	109.52	12/3	Flat steel 100/4	105/50/4
	–	–	93.21	41.00	56.07	15/4	Flat steel 40/5	43/30/3
	–	–	112.98	47.72	68.39	15/4	Flat steel 50/5	53/40/3
	–	–	132.76	54.44	80.70	15/4	Flat steel 60/5	63/40/3
	–	–	152.53	61.16	93.02	15/4	Flat steel 70/5	73/40/3
	–	–	172.30	67.88	105.33	15/4	Flat steel 80/5	85/40/3
	–	–	192.08	74.60	117.65	15/4	Flat steel 90/5	–
	–	–	211.85	81.32	129.96	15/4	Flat steel 100/5	105/50/4

The maximum dimensions of the grating depend on the combination of the mesh and the supporting bar. If you have any questions, please contact us.

* The edging can also be made of flat steel.



FULL GRATINGS

Table of possible combinations of supporting bars and meshes

DESIGNATION	30/30	30/40	30/60	40/30	40/40	40/60	60/30	60/40	EDGING
AXIAL PITCH	33/33	33/44	33/66	44/33	44/44	44/66	66/33	66/44	
SUPPORTING/ FILLING PROFILE	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	
25/2	23.45	20.81	17.78	20.81	18.16	15.14	17.78	15.14	25/2
30/2	28.33	25.14	21.49	25.14	21.95	18.30	21.49	18.30	30/2
35/2	34.20	30.34	25.93	30.34	26.49	22.08	25.93	22.08	35/2
40/2	38.10	33.81	28.90	33.81	29.51	24.60	28.90	24.60	40/2
30/3	42.38	37.60	32.13	37.60	32.81	27.35	32.13	27.35	30/3
35/3	51.15	45.38	38.78	45.38	39.60	33.00	38.78	33.00	35/3
40/3	57.00	50.56	43.21	50.56	44.13	36.77	43.21	36.77	40/3
50/3	73.07	64.82	55.40	64.82	56.57	47.15	55.40	47.15	50/3
60/3	87.68	77.79	66.47	77.79	67.89	56.58	66.47	56.58	60/3

Maximum production dimensions:

Thickness 2 mm: direction of the supporting profile NP = 3000 | direction of the filling profile VP = 1200

Thickness 3 mm: direction of the supporting profile NP = 1500 | direction of the filling profile VP = 1200

The permissible load corresponds to 80 % of the load values for stamped grating > see pages 42 /43

For full grating loads, this must be absolutely observed:

The supporting (load-bearing) bars are considered to be those profiles that rest on the supporting structure at both ends and whose underside is without a notch. The permissible load corresponds to 80 % of the load values for stamped grating.



WELDED PRESSED GRATINGS

Table of possible combinations of supporting bars and meshes

DESIGNATION	34/38	34/76	Filling bar Ø mm	Flat steel edging mm	Frame h / w / t mm
AXIAL PITCH	34.3/38.2	34.3/76.4			
SUP. BAR	kg/m ²	kg/m ²			
25/2	15.5	13.7	4.7	25/2	28/30/3
25/3	21.5	19.7	4.7	25/3	28/30/3
30/2	18.0	16.2	4.7	30/2	33/30/3
30/3	25.2	23.4	4.7	30/3	33/30/3
30/4	34.3	32.0	5.8	30/4	33/30/3
35/2	21.0	19.2	4.7	35/2	38/30/3
35/3	29.8	28.0	4.7	35/3	38/30/3
35/4	39.3	37.0	5.8	35/4	38/30/3
40/2	23.0	21.2	4.7	40/2	43/30/3
40/3	32.8	31.0	4.7	40/3	43/30/3
40/4	44.3	42.1	5.8	40/4	43/30/3
50/2	29.1	27.3	4.7	50/2	53/40/3
50/3	41.1	39.3	4.7	50/3	53/40/3
50/4	54.3	52.1	5.8	50/4	53/40/3

Resistance welded mats:

in stock, raw/non-galvanized, w/o edging on shorter sides
6100 x 1000

Sup. bar	Mesh
25/2	34/38
25/3	34/38
30/2	34/38
30/3	34/38
40/2	34/38
40/3	34/38


also available as 3050 x 1000
underlined size = dimension of the supporting profile

Max. production dimensions:

Direction of supporting bar

TS = 3050 |

direction of filling bar FS = 1000

 Possibility of anti-slip finish on the filling bar.





FUNCTIONAL STAINLESS STEEL GRATINGS



Table of possible combinations of supporting bars and meshes

DESIGNATION	30/30	30/20	30/10	40/40	40/20	20/20	20/10	20/30	60,30	30/60	Filling bar	Grating edging details
AXIAL PITCH	33/33	33/20	33/12,5	40/40	40/20	20/20	20/12,5	20/33	66/33	33/66	bar	
TRAGSTAB**	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	mm	
20/2	12.32	14.20	17.01	10.40	12.75	20.00	22.81	18.13	7.97	10.92	8/1.5	Flat steel 20/2
25/2	14.25	16.12	18.93	12.04	14.38	23.09	25.90	21.21	9.02	12.84	8/1.5	Flat steel 25/2
30/2	16.65	18.52	21.33	14.07	16.42	26.94	29.75	25.07	10.33	15.24	8/1.5	Flat steel 30/2
35/2	19.53	21.40	24.21	16.52	18.86	31.56	34.37	29.69	11.91	18.13	8/1.5	Flat steel 35/2
40/2	21.45	23.33	26.13	18.15	20.49	34.65	37.46	32.77	12.96	20.05	8/1.5	Flat steel 40/2
20/3	18.92	22.04	26.55	15.96	19.86	30.76	35.28	27.65	12.38	16.58	10/2	Flat steel 20/3
25/3	21.80	24.92	29.44	18.40	22.30	35.39	39.91	32.27	13.95	19.46	10/2	Flat steel 25/3
30/3	25/40	28.52	33.04	21.46	25.35	41.17	45.69	38.05	15.91	23.06	10/2	Flat steel 30/3
35/3	29.72	32.84	37.36	25.13	29.02	48.11	52.63	44.99	18.27	27.38	10/2	Flat steel 35/3
40/3	32.60	35.72	40.24	27.57	31.46	52.73	57.25	49.62	19.84	30.26	10/2	Flat steel 40/3
50/3	40.52	43.64	48.16	34.29	38.19	65.45	69.97	62.34	24.16	38.19	10/2	Flat steel 50/3

Maximum production dimensions:

Direction of supporting bar NP = 2000 | direction of filling bar VP = 2000

Load values are the same as for stamped grating > see pages 42 /43


** height x thickness

Option of anti-slip finish on the filling bar



Option of anti-slip finish on the filling and supporting bar



RACK GRATING SYSTEMS

MEA gratings have proven themselves many times over as ideal racking decks. MEA rack gratings are made of S 235 JR steel and hot-dip galvanized. 

MEA OFFERS A SUITABLE SOLUTION FOR ANY REQUIREMENT!

 The dimensioning of rack grating with suspension angle or anti-shift locking depends on the depth of the shelf and the expected load. The supporting bars are thus dimensioned and optimised according to the relevant requirements with regard to dimensions and spacing. 

ADVANTAGES:



- > high load capacity, suitable for both area and point loads
- > permanent corrosion protection thanks to hot-dip galvanizing
- > simple, quick assembly, anti-shift locking, no additional fixing required
- > goods on the shelves can be checked from below
- > suitable for use with sprinkler systems
- > high surface throughput of up to 90%

MEA MODULES

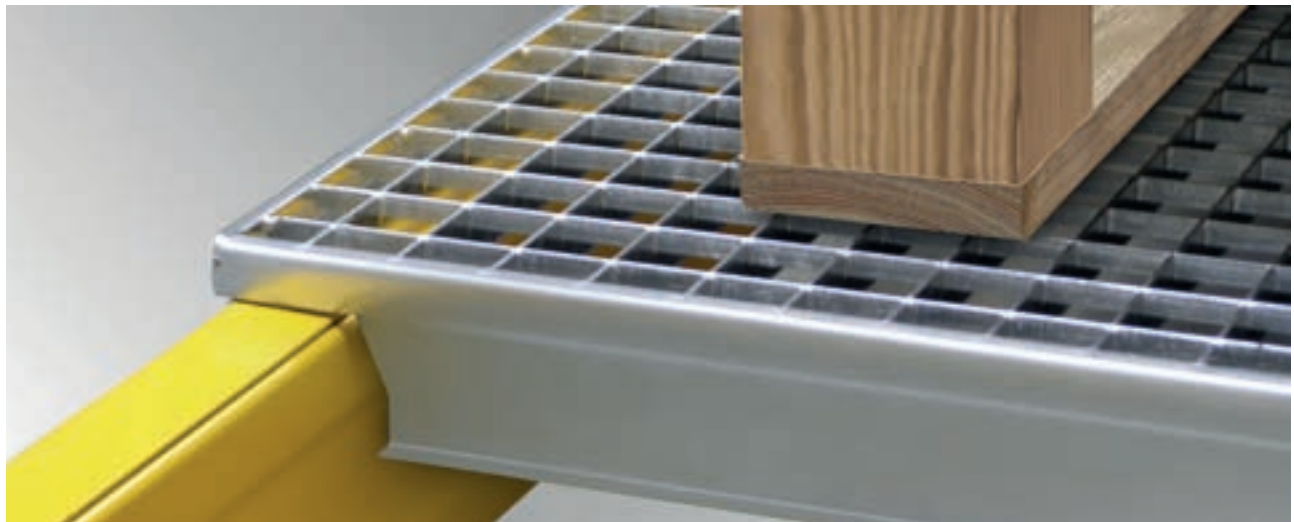
MEA modules are a safe and simple solution to cover a wide variety of load cases. No matter what pallets are to be used, MEA modules can withstand the load without losing stability. This is ensured by integrated reinforcement profiles, which also serve as an anti-shift device.

Whether as standard or special gratings, MEA modules are a safe and multifunctional choice!

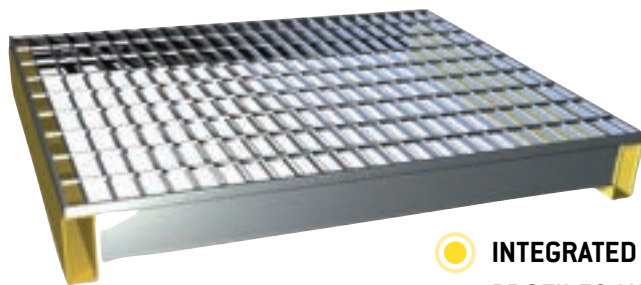
LOAD CAPACITY

 The load-bearing capacity of our MEA rack gratings and modules is continuously tested through an extensive series of tests. In addition to evenly distributed loads, we also check the load on the non-returnable pallet in order to cover as many load cases as possible with our racking decks. 



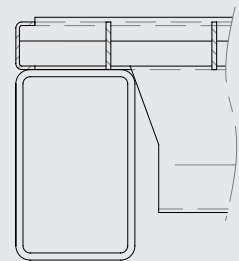


MEA MODULE Supporting bar parallel to cross-beams



● **INTEGRATED REINFORCEMENT PROFILES AND ANTI-SHIFT LOCKING**

MEA module with filling bars extending in the push direction

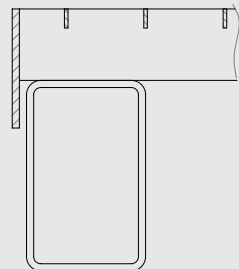


MEA RACK GRATING laid over the beams with welded steel strip as an dislocation stop



● **MIT VERSCHIEBESICHERUNG**

MEA rack grating with anti-shift locking welded steel strip as dislocation stop

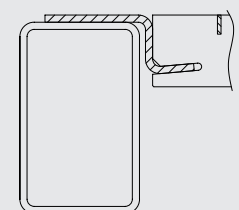


MEA RACK GRATING inserted between beams with suspension angle for hanging between beams



● **WITH SUSPENSION ANGLE**

MEA rack grating with suspension angle





MEASTEP XSL STAIR GRATINGS

MEASTEP STAIR GRATINGS - EXACTLY THE ONE YOU NEED

The MEASTEP XSL stair gratings combines light weight with safety and stability. Thanks to the special concept and arrangement of the supporting profiles, the staircase is not only highly stable, but also has a uniformly facing mesh pattern that gives it an attractive appearance. Another advantage is the arrangement of the filling profiles transversely to the direction of walking. Filling profiles are arranged transversely to the direction of travel for all mesh sizes. These advantages are available in the entire range of sizes from 500 mm to 1600 mm.

Benefits that will convince you:

X = safe (anti-slip class R11)

S = strong

L = lightweight

(same supporting profile for all dimensions)

Suitable for access routes to plant and machinery according to DIN 24531-1 or DIN EN ISO 14122-3 with a load of 1.5 kN on a 10 x 10 cm area, or 5.0 kN/m².

Suitable for all other applications, especially for staircases according to DIN 1055-3 (categories T1 and T2) and DIN EN 1991-1-1 Eurocode 1: Loads on structures with a load of 2.0 kN on a 5 x 5 cm area, or 5.0 kN/m².



Thanks to the load-bearing structure and the reinforced safety tread edge, the vertical dimension between two stair treads is in most cases ≤ 12 cm

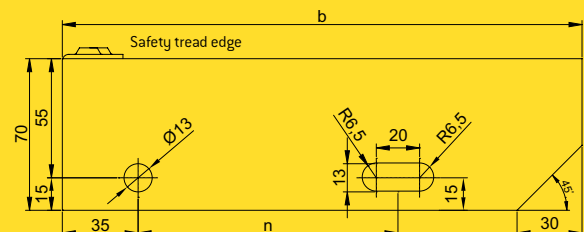
- > corresponds to the recommendations of the Advisory Board for Injury Prevention (BFU Bern), professional brochure Staircases
- > complies with ÖNORM B 5371 standard: Staircases, railings and parapets in buildings and outdoor facilities.

TECHNICAL CHARACTERISTICS

- > Design according to DIN 24531-1
- > Corrosion protection according to DIN EN ISO 1461
- > Anti-slip class R11
- > Permissible load according to DIN EN ISO 14122-3

PERMISSIBLE LOAD ACCORDING TO THE STANDARD

For each area (100 x 100 mm² – 50 x 50 mm²)



Staircase depth b	Dimension n	The height h
up to 205	90	is determined
up to 240	120	by the static
up to 294	150	requirement.
from 295	180	





MEASTEP XXL STAIR GRATINGS

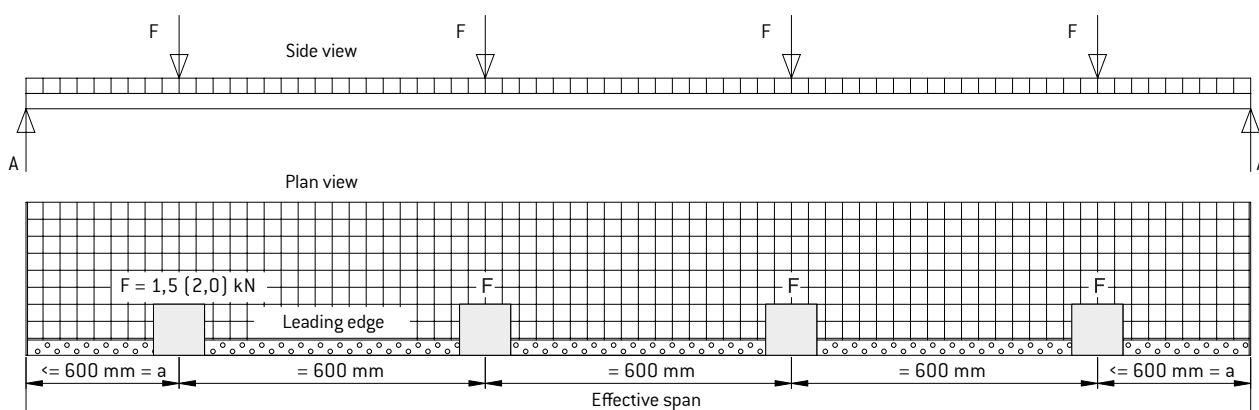
with a span of up to 4200 mm

LOAD VALUES

MEASTEP XXL stair gratings have to carry the following loads on their tread edge according to the quality assurance guideline RAL-GZ 638: for stair widths up to a maximum of 1200 mm, a concentrated load of 1.5 kN (2.0 kN for public buildings), distributed over a contact area of 100 x 100 mm. For stair widths exceeding 1200 mm, several point loads of 1.5 kN (or 2.0 kN) are specified, distributed over contact surfaces of 100 x 100 mm, acting simultaneously along the tread edge at 600 mm intervals.

In order to cope with high loads, the MEASTEP XXL stair gratings suitable for large spans integrate a highly stable steel U-profile supporting structure. The MEASTEP XXL stair gratings have, of course, a double-punched safety tread and flat steel side edges with the appropriate holes for attachment to the staircase structure, in accordance with DIN 24531.

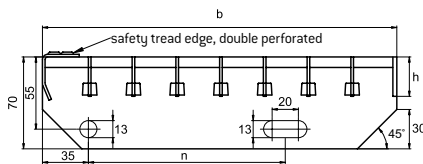
On request, the supporting and filling bars can be made in anti-slip design.





MEASTEP STANDARD STAIR GRATING

Standard stair gratings are used wherever functional and robust staircases are required. Thanks to the hot-dip galvanized surface, they offer maximum protection against corrosion. The standard double perforated safety edges prevent slipping.



PRODUCT FEATURES

- > The product can be adapted to the building conditions at any time!
- > There are two versions to choose from: stamped grating or welded pressed grating
- > Corrosion protection according to DIN EN ISO 1461
- > Permissible load according to DIN EN ISO 14122-3

MEASTEP MADE-TO-MEASURE STAIR GRATING

They are manufactured in the same way as stamped grating.

Atypical MEASTEP stair gratings are manufactured individually according to the customer's requirements in various shapes and sizes, always taking into account the area of application. In order to meet the requirements for slip resistance, MEASTEP atypical stair gratings are equipped with a double perforated tread edge as standard. In addition, all staircases are fitted with a side fixing profile and flat steel side edging including holes for attachment to the staircase structure. In addition to increased safety, the stairs will also gain greater stability.

Production possibilities of lattice gratings for staircases:

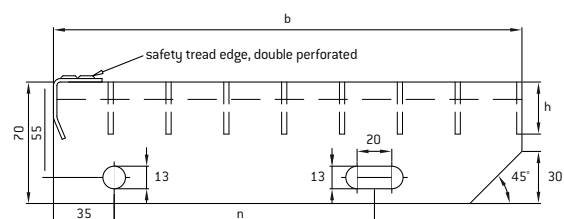
Mesh spacing: 30/10; 30/30; 20/20

Supporting bars: up to 50/3

Staircase width: up to 1.60 m

On request, the supporting and filling bars can be made in anti-slip design.

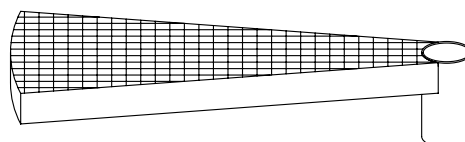
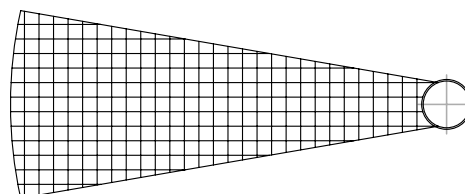
Staircase depth b	Dimension n	The height h
up to 205	90	is determined by the static requirement.
up to 240	120	
up to 294	150	
from 295	180	



MEASTEP SPIRAL STAIRCASE STEP

Spiral staircases are usually used where the space conditions for stairs are challenging and where high mobility requirements are also required. Stair gratings are manufactured in the same way as pressed gratings.

Trapezoidal gratings can be supplied with different mesh sizes according to customer requirements.



MEASTEP XSL STAIR LANDINGS

MEASTEP XSL stair landings complement MEASTEP XSL staircases and form a harmonious whole.



Like staircases, landings and mezzanines are characterised by their lightness and yet excellent stability. There are no limits to the spectrum of application areas. A special feature of these staircases and landings is the direction of the filling bars. These profiles are mounted transversely to the direction of walking, which creates a uniformly facing mesh pattern. The staircase is thus not only functional and safe, but also attractive to look at.



In addition to standard sizes such as 600 x 1000, 800 x 1000, 1000 x 1000 and 1200 x 1000, the MEASTEP XSL system is available in almost any shape and size - with or without a safety edge.





MEASTEP STAIRCASE CONSTRUCTION KIT



Declaration of performance:

- Load effects according to DIN EN 1991-1
- General measurement rules according to DIN EN 1993-1
- In accordance with DIN 18065 (type 3 with mezzanine only)
- Load category T1 - including escape staircases

The MEASTEP staircase construction kit is an innovation that will make your life easier in many ways.



The stable staircase with split side traverses allows for trouble-free transport by truck and quick on-site assembly without the need for drilling or additional modifications. The staircase is weather-resistant, robust and stable, making it suitable for a wide range of indoor and outdoor applications. Each staircase mounting set is supplied with the proven MEASTEP XSL stair treads. Depending on the variant, heights of up to 5.98 m can be achieved, with a variable inclination angle of 35° to 55°.



ADVANTAGES:

- > trouble-free transport by truck, as the side beams and rails are separated
- > assembly without drilling, as all holes are already available
- > all types can be fitted with one or two-sided railings
- > the width of the stairs is freely selectable from 500 to 1600 mm
- > self-supporting
- > corrosion resistant

MEASTEP type 1



MEASTEP type 2



MEASTEP type 3





ONE, TWO, THREE - DONE.

Quick and easy: select the MEASTEP staircase construction kit.



STEP 01

Select the height of the side traverse for

- 1 element (8 staircases)
- 2 elements (14 staircases)
- 3 elements (24 staircases)



STEP 02

Choose the width of the stairs

- from 500 to 1600 mm
- with or without non-slip finish
- with or without trailing edge

STEP 03

Select the railing

- one-sided
- two-sided



SCHACHTANLAGEN

EVERYTHING FROM ONE HAND

Functional and comprehensive solution

Whether square or round shafts, we provide a complete package of solutions with gratings and support constructions for a wide variety of requirements.

Gratings are designed and manufactured according to individual requirements. Hatches, cut-outs, etc. can be integrated seamlessly, making the manhole cover as functional as possible.

SPECIAL GRATING

Depending on the possibilities or requirements we realize:

- > frames and supports in any shape and size
- > installation of hinges and suspended or bolted hinges
- > cut-outs with and without lid
- > holes and openings
- > lockable hatches and hatches for opening
- > working platforms for deep shafts
- > convenient cut-outs for easy handling
- > material: steel S 235 JR hot-dip galvanized, stainless steel [V2A | V4A]

Contact us for more information!





RADIAL GRATING

EACH GRATING IS HANDMADE

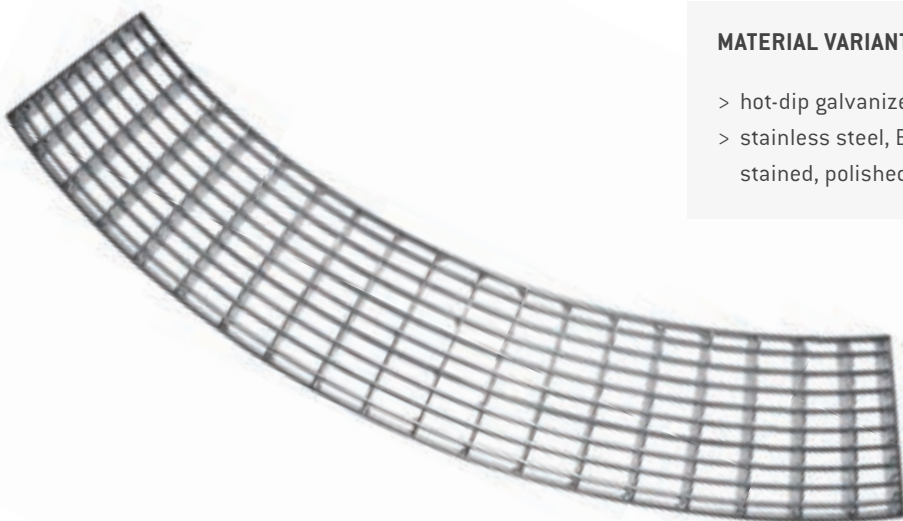
Radial grating is a pressed grating the uniqueness and peculiarity of which lies in the arrangement of the supporting and filling bars in the shape of an arc, which makes it eye-catching. Radial grating is used not only in entrance areas or at fountains in public spaces, but also, for example, in production facilities in the food industry, where it is used to cover gutters.

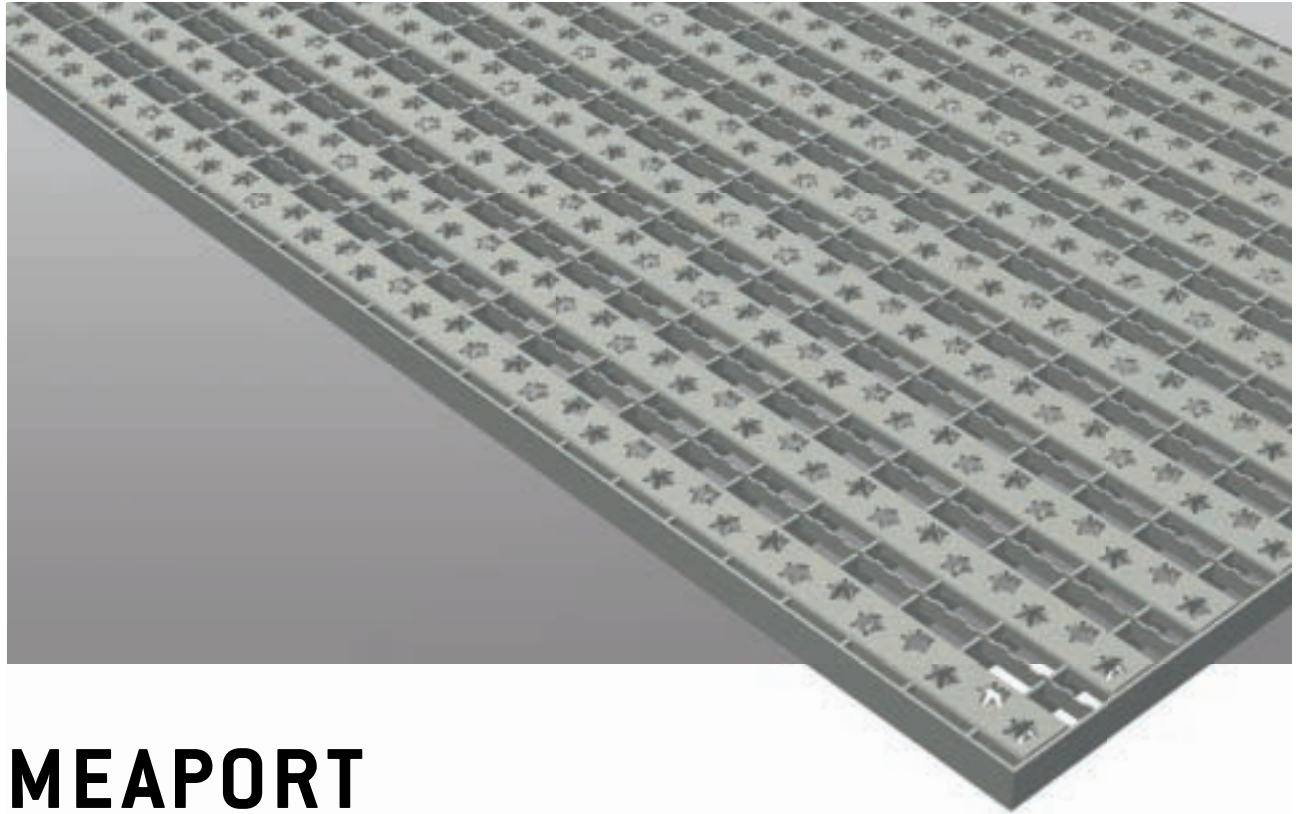
- > Dimensions: supporting bars 120-500 mm, filling bars 300-1100 mm
- > Production in radii 750-5000 mm
- > Optional: underwelding of fixing plates



MATERIAL VARIANTS

- > hot-dip galvanized, according to DIN EN ISO 1461
- > stainless steel, Basic+ (V2A) and Deluxe (V4A), stained, polished





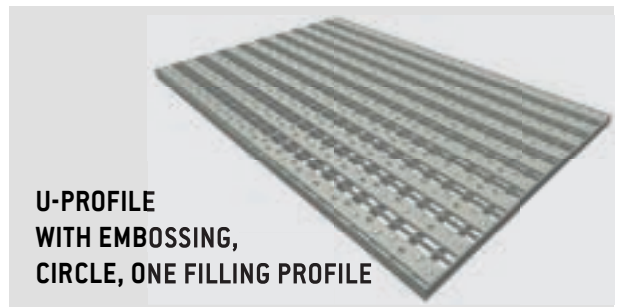
MEAPORT

MEAPORT GRATING COMBINES SAFETY AND AESTHETICS

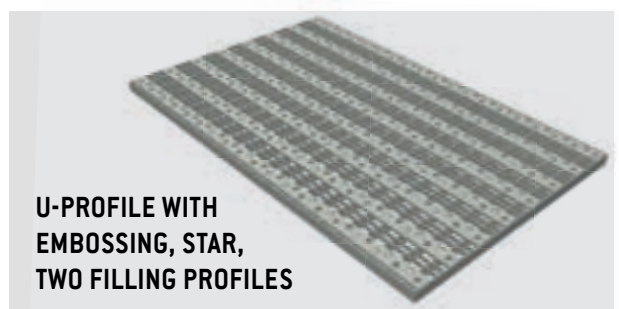
These new grating guarantees that the risk of slipping is significantly reduced thanks to the various possibilities of combining U-profiles and filling profiles.

Whether MEAPORT gratings are used around the house, in public places such as hotel entrances or as staircases - they contribute to increased safety everywhere.

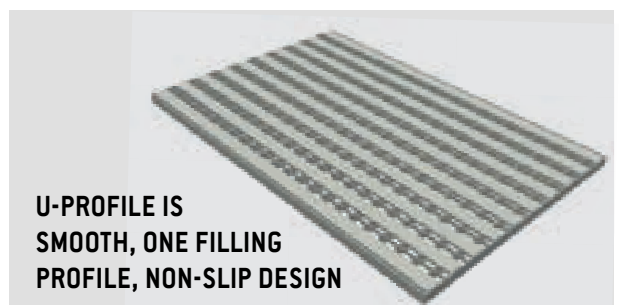
The gratings are stamped with various embossments (star or circle shapes) that make them eye-catching everywhere.



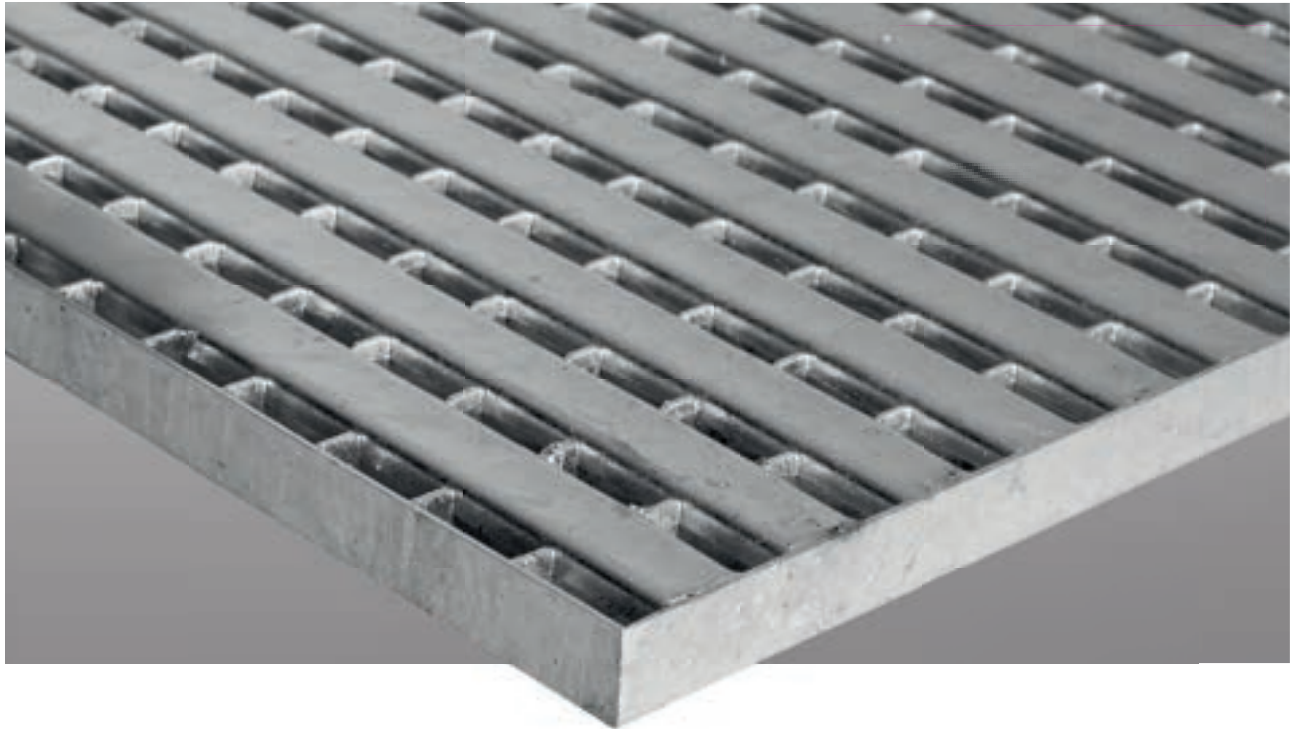
U-PROFILE WITH EMBOSSING, CIRCLE, ONE FILLING PROFILE



U-PROFILE WITH EMBOSSING, STAR, TWO FILLING PROFILES



U-PROFILE IS SMOOTH, ONE FILLING PROFILE, NON-SLIP DESIGN



BOAT GRATING

In contrast to conventional grating, where the filling and supporting profile are pressed into each other, the U profile is used instead of the filling profile for the boat grating.

This will reduce the clearance between the profiles, creating a visual barrier.

Thanks to these features and their attractive appearance, boat gratings are increasingly used both around houses and in public spaces and in areas where the view through the grating is to be restricted.

Boat gratings are made of S 235 JR steel and stainless steel (V2A / V4A).





GRAITINGS FOR DRAINAGE SYSTEMS

SOLUTION FOR COVERING DRAINAGE SYSTEMS

MEA gratings for drainage systems are made of galvanized steel. They can be used as insertion and covering grating for drainage gutters.

These gratings are ideal for basements and underground garages where protection from damp and the increasingly frequent flood damage is a priority. MEA has unique know-how in this area and offers the right solution for any building conditions.

Whether it is special dimensions, different shapes, special combinations of supporting profiles and meshes or anti-slip designs, MEA offers a suitable solution for any requirement!

Suitable for MEA drainage systems



PRODUCT DETAIL

- > high quality hot-dip galvanized steel
- > protection against moisture and water
- > use in cellars, outbuildings, underground garages, etc.
- > driveable design for passenger cars






GRATINGS FOR LIGHT WELLS

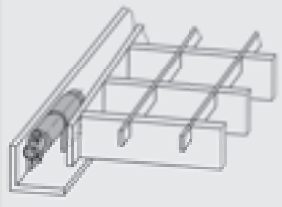
MEA light well gratings, are not only suitable for covering skylights, but also serve as protection against dirt and leaves.

Made of weatherproof materials, hot-dip galvanized steel or V2A stainless steel, these gratings are long-lasting and easy to handle. With regard to the statics, the gratings can be dimensioned so that they can be both walkable for people and driveable for cars.

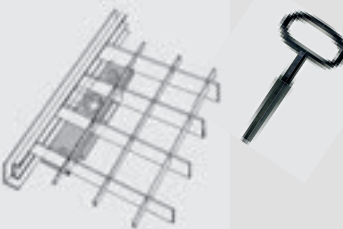


ACCESSORIES

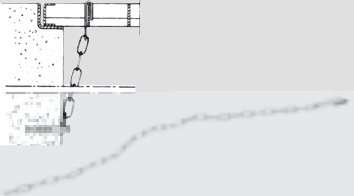
MEA offers fasteners for all types of gratings. The fastening material is made of hot-dip galvanized steel. The fasteners shown are suitable for inclined grating. For driveable gratings, perforated plates or screw clips should be welded to the grid. 



HINGES
Designed alternatively for light and heavy grating, projecting or embedded, for tilting the grating.



SOCKET WRENCH CAP
It consists of a cap with a welded-on flange and reed and a socket wrench. It is used to lock the tilt grating.




SAFETY CHAIN
With 800 mm clamp for securing skylight gratings.



GALVANIZED CLAMP WITH PROFILE INSERT AND BOLT
For mesh sizes 30/30, 30/10 or 20/20 mm. Securing against slipping and sagging. Bolt length 60-100 mm. Please specify the height of the grating in your order.



GALVANIZED CLAMP WITH PROFILE INSERT AND BOLT
Only for mesh size 30/30 mm. Securing against slipping and sagging. Bolt length 60 mm (grating height up to 30 mm), bolt length 80 mm (grating height up to 50 mm).



DOUBLE CLAMP WITH PLATE COUPLING AND BOLTS
Only for mesh size 30/30 mm. Anti-slip and anti-sag locking, for connecting two gratings. Bolt length 60 mm (grating height up to 30 mm).



for mesh size 30/10 for mesh size 30/30

STAINLESS STEEL CLAMP
For mesh sizes 30/10 or 30/30 mm. For fixing and securing grating against slipping and sagging. With flange and bolt.



HILTI X-MGR M60 CLAMP
For mesh sizes 30/25-100 and grating height of 25-40 mm. Fastening from above by only 1 person!





MEAFLOOR GRATING MATS

You'll feel comfortable and safe every step of the way. These plastic mats are compatible with all common 30/10 and 30/30 mesh gratings.

Thanks to the different surface textures (rough or napped), the grating mats are a real multi-talent that increases both safety and comfort. The standard colour is RAL 7015 slate grey.

PRACTICAL AND VARIED

On stairways, in recreational areas, at public events or around the house - these are just some examples of applications where grating mats increase safety. Thanks to MEAFLOOR mats, you can comfortably walk on the grating even in heeled or barefoot shoes. They are comfortable to ride on even with a baby carriage and pets feel comfortable on them. In ski areas, mats provide a safe, non-slip surface. The rough version offers greater comfort and safety for almost every use on grids. In addition, grating mats reduce noise, for example in warehouses where trolleys are used, and prevent dizziness when walking on grated surfaces or stairs.

NOISE PROTECTION: QUIET RUNNING OF WHEELS OF ALL KINDS



EASY ASSEMBLY

DROP PROTECTION FOR SMALL OBJECTS

MEAFLOOR ADVANTAGES

- > fixed locking in the grating lugs
- > visual barrier from above and below (if persons are working above each other)
- > no view from above - no dizziness on staircases and landings
- > quiet running of the wheels (trolleys on bridges)
- > safe walking on heels even with mesh size 30/30
- > easy cleaning

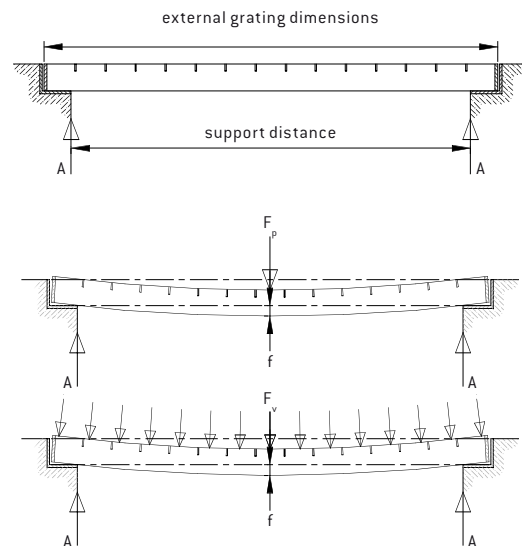




STATICS / SIZING

SUPPORT DISTANCE:

A grating is generally considered to be a single-span beam. The clearance of the supports is relevant for dimensioning. Minimum support length = height of the grating, but 30 mm at minimum.



BELASTUNG / LASTAUFSTANDSFLÄCHE:

A = support F_p = point load
 F_v = surface load [kN/m²] f = deflection [mm]

LOAD AREA:

It describes the area to which a defined load is applied, e.g.: for drivable grating, the contact area of one wheel.



CONVERSION TABLE:

1 kg	≈ 1 daN	= 10 N	= 1 kp
100 kg	≈ 1 kN	= 100 daN	= 1000 N
1 tN	≈ 10 kN	= 1000 daN	= 10000 N

kg = kilogram
 t = ton
 kp = kilopound (obsolete)
 N = newton
 daN = decanewton
 kN = kilonewton

STATICS / SIZING

The load capacity depends on several factors:

- > material (MEA uses steel grade S 235 JR)
- > supporting bars (filling bars are not relevant for dimensioning, they are used for load distribution)
- > pitch (mesh spacing)
- > support distance
- > load
- > load area

The dimensioning of our grating is carried out in accordance with the RAL-GZ 638:09/2008 quality assurance directive.

LOAD TABLE FOR PRESSED GRATINGS

Supporting bar height x thickness [mm]

LOAD TABLE FOR PRESSED GRATING

Pitch 33.3/33.3 mm
 Material S 235 JR (ST 37-2)
 Allowable stress = 23.50 kN/cm²

F_p: maximum load [kN] with concentrically applied side load and a loaded area of 200 x 200 mm

f: deflection [cm] at existing full load

F_v: maximum load [kN/m²] with uniformly distributed surface load

f_v: deflection [cm] at existing full load

Characteristic values (actual useful load) are given. According to RAL-GZ 638:09/08, the following partial safety factors are included:

effect $\gamma_Q = 1.5$
 material properties $\gamma_M = 1.0$

non-walkable
 walkable, with a load of 1.5 kN.
 Deflection $f = 1/200$ of the support distance, but not exceeding 0.4 cm.

Support distance [mm]		Supporting bar height x thickness [mm]									
		20/2	25/2	25/3	30/2	30/3	30/4	35/3	40/2	40/3	
200	F _p	7.02	10.88	16.32	15.53	23.30	31.07	31.40	27.10	40.65	
	f	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
	F _v	112.9	176.4	264.6	254.1	381.1	508.1	518.7	451.7	677.5	
300	f _v	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
	F _p	3.51	5.44	8.16	7.77	11.65	15.53	15.70	13.55	20.33	
	F _v	50.18	78.41	117.6	112.9	169.4	225.8	230.5	200.7	301.1	
400	f _v	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.03	0.03	
	F _p	2.34	3.63	5.44	5.18	7.77	10.36	10.47	9.03	13.55	
	F _v	28.23	44.11	66.16	63.52	95.28	127.0	129.7	112.9	169.4	
500	f _v	0.12	0.09	0.09	0.08	0.08	0.08	0.07	0.06	0.06	
	F _p	1.76	2.72	4.08	3.88	5.82	7.77	7.85	6.78	10.16	
	F _v	18.07	28.23	42.34	40.65	60.97	81.30	82.99	72.26	108.4	
600	f _v	0.19	0.16	0.16	0.13	0.13	0.13	0.11	0.1	0.1	
	F _p	1.40	2.18	3.26	3.11	4.66	6.21	6.28	5.42	8.13	
	F _v	12.55	19.60	29.40	28.23	42.34	56.46	57.63	50.18	75.28	
700	f _v	0.25	0.20	0.20	0.17	0.17	0.17	0.15	0.13	0.13	
	F _p	1.17	1.81	2.72	2.59	3.88	5.18	5.23	4.52	6.78	
	F _v	9.22	14.40	21.60	20.74	31.11	41.48	42.34	36.87	55.30	
800	f _v	0.34	0.27	0.27	0.23	0.23	0.23	0.20	0.17	0.17	
	F _p	1.00	1.55	2.33	2.22	3.33	4.44	4.49	3.87	5.81	
	F _v	7.06	11.03	16.54	15.88	23.82	31.76	32.42	28.23	42.35	
900	f _v	0.44	0.35	0.35	0.29	0.29	0.29	0.25	0.22	0.22	
	F _p	0.88	1.36	2.04	1.94	2.91	3.88	3.93	3.39	5.08	
	F _v	5.58	8.71	13.07	12.55	18.82	25.09	25.62	22.31	33.46	
1000	f _v	0.55	0.44	0.44	0.37	0.37	0.37	0.32	0.28	0.28	
	F _p	0.78	1.21	1.81	1.73	2.59	3.45	3.49	3.01	4.52	
	F _v	4.52	7.06	10.59	10.16	15.24	20.32	20.75	18.07	27.10	
1100	f _v	0.78	0.62	0.62	0.52	0.52	0.52	0.44	0.39	0.39	
	F _p	0.70	1.09	1.63	1.55	2.33	3.11	3.14	2.71	4.07	
	F _v	3.73	5.83	8.75	8.40	12.60	16.80	17.15	14.93	22.40	
1200	f _v	0.81	0.65	0.65	0.54	0.54	0.54	0.47	0.41	0.41	
	F _p	0.64	0.99	1.48	1.41	2.12	2.82	2.85	2.46	3.70	
	F _v	3.14	4.90	7.35	7.06	10.59	14.12	14.41	12.55	18.82	
1300	f _v	0.96	0.77	0.77	0.64	0.64	0.64	0.55	0.48	0.48	
	F _p	0.59	0.91	1.36	1.29	1.94	2.59	2.62	2.26	3.39	
	F _v	2.67	4.18	6.26	6.01	9.02	12.03	12.28	10.69	16.03	
1400	f _v	1.12	0.90	0.90	0.75	0.75	0.75	0.64	0.56	0.56	
	F _p	0.54	0.84	1.26	1.19	1.79	2.39	2.42	2.08	3.13	
	F _v	2.30	3.60	5.40	5.18	7.78	10.37	10.59	9.22	13.83	
1500	f _v	1.30	1.04	1.04	0.87	0.87	0.87	0.74	0.65	0.65	
	F _p	0.50	0.78	1.17	1.11	1.66	2.22	2.24	1.94	2.90	
	F _v	1.52	2.22	3.33	3.11	4.66	6.21	6.28	5.42	8.13	
1600	f _v	1.49	1.19	1.19	0.99	0.99	0.99	0.85	0.74	0.74	
	F _p	0.47	0.73	1.09	1.04	1.55	2.07	2.09	1.81	2.71	
	F _v	2.01	3.14	4.70	4.52	6.77	9.03	9.22	8.03	12.04	
1700	f _v	1.75	1.40	1.40	1.17	1.17	1.17	1.00	0.87	0.87	
	F _p	0.44	0.68	1.02	0.97	1.46	1.94	1.96	1.69	2.54	
	F _v	1.76	2.76	4.14	3.97	5.95	7.94	8.11	7.06	10.59	
1800	f _v	1.99	1.59	1.59	1.33	1.33	1.33	1.14	0.99	0.99	
	F _p	0.44	0.68	1.02	0.97	1.46	1.94	1.96	1.69	2.54	
	F _v	1.56	2.44	3.66	3.52	5.27	7.03	7.18	6.25	9.37	
1900	f _v	2.25	1.80	1.80	1.50	1.50	1.50	1.28	1.12	1.12	
	F _p	0.41	0.64	0.96	0.91	1.37	1.83	1.85	1.59	2.39	
	F _v	1.39	2.18	3.27	3.14	4.70	6.27	6.40	5.57	8.36	
2000	f _v	2.52	2.01	2.01	1.68	1.68	1.68	1.44	1.26	1.26	
	F _p	0.39	0.60	0.91	0.86	1.29	1.73	1.74	1.51	2.26	
	F _v	1.13	1.76	2.65	2.54	3.81	5.08	5.19	4.52	6.78	
	f _v	3.11	2.49	2.49	2.07	2.07	2.07	1.78	1.55	1.55	



Supporting bar height x thickness [mm]

	40/4	40/5	50/3	50/4	50/5	60/3	60/4	60/5	70/3	70/4	70/5	80/5	90/5	100/5		Support distance [mm]
	54.20	67.76	62.32	83.10	103.87	88.12	117.49	146.87	117.59	156.79	195.99	250.87	311.41	376.47	F _p	
	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	f	
	903.3	1129	1059	1411	1764	1524	2032	2541	2075	2766	3458	4517	5716	7057	F _v	300
	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	f	
	27.10	33.88	31.16	41.55	51.94	44.06	58.75	73.43	58.80	78.39	97.99	125.43	155.71	188.24	F _p	400
	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	f	
	401.5	501.8	470.5	627.3	784.1	677.5	903.3	1129	922.1	1229	1537	2007	2541	3136	F _v	500
	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	f	
	18.07	22.59	20.77	27.70	34.62	29.37	39.16	48.96	39.20	52.26	65.33	83.62	103.80	125.49	F _p	600
	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.02	f	
	225.8	282.3	264.7	352.9	441.1	381.1	508.1	635.2	518.7	691.6	864.5	1129	1429	1764	F _v	700
	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.02	f	
	13.55	16.94	15.58	20.77	25.97	22.03	29.37	36.72	29.40	39.20	49.00	62.72	77.85	94.12	F _p	800
	0.09	0.09	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	f	
	144.5	180.7	169.4	225.8	282.3	243.9	325.2	406.5	332.0	442.6	553.3	722.6	914.6	1129	F _v	900
	0.10	0.10	0.08	0.08	0.08	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.04	0.04	f	
	10.84	13.55	12.46	16.62	20.77	17.62	23.50	29.37	23.52	31.36	39.20	50.17	62.28	75.29	F _p	1000
	0.13	0.13	0.10	0.10	0.10	0.08	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.05	f	
	100.4	125.5	117.6	156.8	196.0	169.4	225.8	282.3	230.5	307.4	384.2	501.8	635.1	784.1	F _v	1100
	0.14	0.14	0.11	0.11	0.11	0.09	0.09	0.09	0.08	0.08	0.08	0.07	0.06	0.06	f	
	9.03	11.29	10.39	13.85	17.31	14.69	19.58	24.48	19.60	26.13	32.66	41.81	51.90	62.75	F _p	1200
	0.17	0.17	0.14	0.14	0.14	0.11	0.11	0.11	0.10	0.10	0.09	0.09	0.08	0.07	f	
	73.74	92.17	86.41	115.2	144.0	124.4	165.9	207.4	169.4	225.8	282.3	368.7	466.6	576.1	F _v	1300
	0.19	0.19	0.15	0.15	0.15	0.13	0.13	0.13	0.11	0.11	0.11	0.10	0.08	0.08	f	
	7.74	9.68	8.90	11.87	14.84	12.59	16.78	20.98	16.80	22.40	28.00	35.84	44.49	53.78	F _p	1400
	0.22	0.22	0.18	0.18	0.18	0.15	0.15	0.15	0.13	0.13	0.13	0.11	0.10	0.09	f	
	56.46	70.58	66.16	88.22	110.3	95.28	127.0	158.8	129.7	172.9	216.1	282.3	357.3	441.1	F _v	1500
	0.25	0.25	0.20	0.20	0.20	0.17	0.17	0.17	0.14	0.14	0.14	0.12	0.11	0.10	f	
	6.78	8.47	7.79	10.39	12.98	11.01	14.69	18.36	14.70	19.60	24.50	31.36	38.93	47.06	F _p	1600
	0.28	0.28	0.22	0.22	0.22	0.18	0.18	0.18	0.16	0.16	0.16	0.14	0.12	0.11	f	
	44.61	55.76	52.28	69.71	87.13	75.28	100.4	125.5	102.5	136.6	170.8	223.1	282.3	348.5	F _v	1700
	0.31	0.31	0.25	0.25	0.25	0.21	0.21	0.21	0.18	0.18	0.18	0.16	0.14	0.13	f	
	6.02	7.53	6.92	9.23	11.54	9.79	13.05	16.32	13.07	17.42	21.78	27.87	34.60	41.83	F _p	1800
	0.34	0.34	0.27	0.27	0.27	0.23	0.23	0.23	0.19	0.19	0.19	0.17	0.15	0.14	f	
	36.13	45.17	42.34	56.46	70.57	60.97	81.30	101.62	82.99	110.7	138.3	180.7	228.6	282.3	F _v	1900
	0.39	0.39	0.31	0.31	0.31	0.26	0.26	0.26	0.22	0.22	0.22	0.19	0.17	0.16	f	
	5.42	6.78	6.23	8.31	10.39	8.81	11.75	14.69	11.76	15.68	19.60	25.09	31.14	37.65	F _p	2000
	0.41	0.41	0.33	0.33	0.33	0.27	0.27	0.27	0.23	0.23	0.23	0.20	0.18	0.16	f	
	29.86	37.33	34.99	46.66	58.32	50.39	67.19	83.98	68.59	91.45	114.3	149.3	189.0	233.3	F _v	2100
	0.47	0.47	0.38	0.38	0.38	0.31	0.31	0.31	0.27	0.27	0.27	0.24	0.21	0.19	f	
	4.93	6.16	5.67	7.55	9.44	8.01	10.68	13.35	10.69	14.25	17.82	22.81	28.31	34.22	F _p	2200
	0.48	0.48	0.39	0.39	0.39	0.32	0.32	0.32	0.28	0.28	0.28	0.24	0.21	0.19	f	
	25.10	31.37	29.41	39.21	49.02	42.35	56.47	70.58	57.64	76.86	96.07	125.5	158.8	196.1	F _v	2300
	0.56	0.56	0.45	0.45	0.45	0.37	0.37	0.37	0.32	0.32	0.32	0.28	0.25	0.22	f	
	4.52	5.65	5.19	6.92	8.66	7.34	9.79	12.24	9.80	13.07	16.33	20.91	25.95	31.37	F _p	2400
	0.56	0.56	0.45	0.45	0.45	0.38	0.38	0.38	0.32	0.32	0.32	0.28	0.25	0.23	f	
	21.38	26.72	25.05	33.41	41.76	36.08	48.10	60.13	49.11	65.48	81.85	106.9	135.3	167.0	F _v	2500
	0.66	0.66	0.53	0.53	0.53	0.44	0.44	0.44	0.38	0.38	0.38	0.33	0.29	0.26	f	
	4.17	5.21	4.79	6.39	7.99	6.78	9.04	11.30	9.05	12.06	15.08	19.30	23.95	28.96	F _p	2600
	0.65	0.65	0.52	0.52	0.52	0.43	0.43	0.43	0.37	0.37	0.37	0.32	0.29	0.26	f	
	18.43	23.04	21.60	28.80	36.01	31.11	41.48	51.85	42.34	56.46	70.57	92.17	116.7	144.0	F _v	2700
	0.76	0.76	0.61	0.61	0.61	0.51	0.51	0.51	0.44	0.44	0.44	0.38	0.34	0.30	f	
	3.87	4.84	4.45	5.94	7.42	6.29	8.39	10.49	8.40	11.20	14.00	17.92	22.24	26.89	F _p	2800
	0.74	0.74	0.59	0.59	0.59	0.50	0.50	0.50	0.42	0.42	0.42	0.37	0.33	0.30	f	
	16.06	20.07	18.82	25.09	31.36	27.10	36.13	45.17	36.88	49.18	61.47	80.29	101.6	125.5	F _v	2900
	0.87	0.87	0.70	0.70	0.70	0.58	0.58	0.58	0.50	0.50	0.50	0.44	0.39	0.35	f	
	3.61	4.52	4.15	5.54	6.92	5.87	7.83	9.79	7.84	10.45	13.07	16.72	20.76	25.10	F _p	3000
	0.84	0.84	0.67	0.67	0.67	0.56	0.56	0.56	0.48	0.48	0.48	0.42	0.37	0.34	f	
	14.12	17.64	16.54	22.05	27.57	23.82	31.76	39.70	32.42	43.23	54.03	70.58	89.32	110.3	F _v	3100
	0.99	0.99	0.80	0.80	0.80	0.66	0.66	0.66	0.57	0.57	0.57	0.50	0.44	0.40	f	
	3.39	4.23														

LOAD TABLE FOR PRESSED GRATING FOR CARS AND TRUCKS

Load	Passenger car		Van		Truck		Truck		Truck		SLW 30		SLW 60		
Total permitted weight	18 kN		30 kN		60 kN		90 kN		120 kN		300 kN		600 kN		
Wheel pressure Q_k	4,5 kN		10 kN		20 kN		30 kN		40 kN		50 kN		100 kN		
Loaded area	200 x 200 mm		200 x 200 mm		200 x 200 mm		200 x 260 mm		200 x 300 mm		200 x 400 mm		200 x 600 mm		
Pitch	33,3	20	33,3	20	33,3	20	33,3	20	33,3	20	33,3	20	33,3	20	
	Supporting bar		Supporting bar		Supporting bar		Supporting bar		Supporting bar		Supporting bar		Supporting bar		
Support distance [mm]	200	20/2	20/2	25/2	20/2	40/2	30/2	40/2	30/2	35/2	30/2				
						30/3	25/3	30/3	25/3	30/3	25/3				
	300	25/2	20/2	40/2	30/2	40/3	35/3	50/3	40/3	50/3	50/3	50/3	40/3		
				30/3	25/3		30/4	40/4		40/5	40/4	40/4			
	400	30/2	25/2	35/3	40/2	50/3	50/3	60/3	50/3	60/4	60/3	60/4	60/3	60/4	60/3
		25/3		30/4	30/3	40/5	40/4	50/4	40/5	50/5	50/4	50/5	50/4	50/5	50/4
	500	40/2	30/2	40/3	35/3	60/3	50/3	70/3	60/3	70/4	60/4	70/4	60/4	80/5	70/4
		30/3			30/4	50/4	40/5	60/4	50/4		50/5		50/5		60/5
	600	40/2	30/2	50/3	40/3	60/4	60/3	70/4	60/4	70/5	70/4	80/5	70/4	100/5	80/5
		30/3		40/4		50/5	50/4	60/5	50/5		60/5		60/5		
	700	40/2	40/2	50/3	50/3	60/4	60/3	70/5	70/3	80/5	70/4	80/5	70/5		90/5
		35/3	30/3	40/5	40/4		50/4		60/4						
	800	35/3	40/2	60/3	50/3	70/4	60/4	80/5	70/4	90/5	70/5	90/5	80/5		100/5
			30/3	50/4	40/4	60/5	50/5		60/5						
	900	40/3	35/3	60/3	50/3	70/4	70/3	80/5	70/5	90/5	80/5	100/5	80/5		
			30/4	50/4	40/5		60/4								
	1000	40/3	35/3	60/3	50/3	70/5	70/4	90/5	70/5	100/5	80/5		90/5		
			30/4	50/5	40/5		60/5								
	1100	50/3	35/3	60/4	60/3	70/5	70/4	90/5	80/5		90/5		90/5		
		40/4	30/4	50/5	50/4		60/5								
1200	50/3	40/3	70/3	60/3	80/5	70/4	100/5	80/5		90/5		100/5			
	40/4		60/4	50/4											
1300	50/3	40/3	70/3	60/3	80/5	70/5	100/5	80/5		90/5		100/5			
	40/4		60/4	50/4											
1400	50/3	40/3	70/4	60/3	90/5	70/5		90/5		100/5					
	40/5		60/5	50/5											
1500	50/3	50/3	70/4	60/4	90/5	70/5		90/5		100/5					
	40/5	40/4	60/5	50/5											
1600	60/3	50/3	70/4	60/4	90/5	80/5		90/5							
	50/4	40/4	60/5	50/5											
1700	60/3	50/3	70/4	70/3	100/5	80/5		100/5							
	50/4	40/5		60/4											
1800	60/3	50/3	70/5	70/3	100/5	80/5		100/5							
	50/4	40/5		60/4											
1900	60/3	50/3	70/5	70/4	100/5	80/5		100/5							
	50/4			60/5											
2000	60/3	50/3	70/5	70/4	100/5	90/5		100/5							
	50/5			60/5											



The choice of the supporting bars depends on the distance between the supports, the load and the selected pitch (mesh spacing).

Load table for cars and trucks

Bridge load classes according to DIN 1072 without dynamic coefficient. A maximum deflection of 1/200 of the support distance is taken into account.



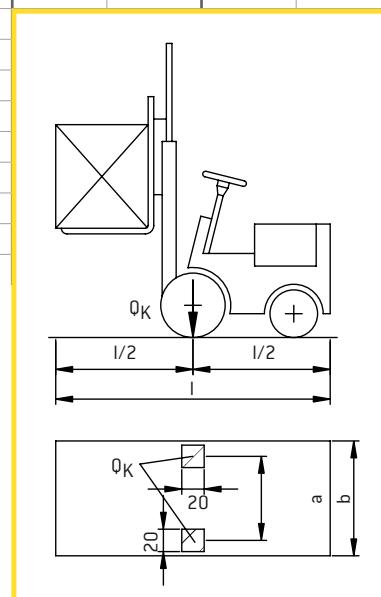
PRESSED GRATINGS LOAD TABLE FOR FORKLIFT TRUCKS

Load	FL1		FL2		FL3		FL4		FL5		FL6		
Total permitted weight	31 kN		46 kN		69 kN		100 kN		150 kN		190 kN		
Wheel pressure Q_k	13 kN		20 kN		32 kN		45 kN		70 kN		85 kN		
Loaded area	200 x 200 mm		200 x 200 mm		200 x 200 mm		200 x 200 mm		200 x 200 mm		200 x 200 mm		
Pitch	33,3	20	33,3	20	33,3	20	33,3	20	33,3	20	33,3	20	
	Supporting bar		Supporting bar		Supporting bar		Supporting bar		Supporting bar		Supporting bar		
Support distance [mm]	200	30/2	25/2	30/3	30/2	35/3	30/3	50/3	35/3	60/3	50/3	60/4	50/3
		25/3			25/3			40/4	30/4	50/4	40/4	50/5	40/5
	300	35/3	40/2	40/3	35/3	50/4	50/3	60/3	50/3	70/4	60/4	70/5	70/3
		30/4	30/3		30/4	40/5	40/4	50/5	40/5	60/5	50/5		60/4
	400	40/3	35/3	50/3	50/3	60/4	50/4	70/4	60/4	80/5	70/4	80/5	70/5
			30/4	40/5	40/4	50/5	40/5	60/5	50/5		60/5		
	500	50/3	40/3	60/3	50/3	70/4	60/3	70/5	70/4	90/5	70/5	100/5	80/5
		40/4		50/4	40/5	60/5	50/5		60/5				
	600	50/4	50/3	60/4	60/3	70/4	70/3	80/5	70/4	100/5	80/5		90/5
		40/5	40/4	50/5	50/4		60/4						
	700	60/3	50/3	70/3	60/3	70/5	70/4	90/5	70/5		90/5		100/5
		50/4	40/4	60/4	50/4		60/5						
	800	60/4	50/3	70/4	60/4	80/5	70/4	90/5	80/5		100/5		
		50/5	40/5	60/5	50/5								
	900	70/3	60/3	70/4	70/3	80/5	70/5	100/5	80/5		100/5		
		60/4	50/4		60/4								
	1000	70/3	60/3	70/5	70/4	90/5	70/5		90/5				
		60/4	50/4		60/5								
	1100	70/4	60/3	70/5	70/4	100/5	80/5		90/5				
		60/5	50/5		60/5								
1200	70/4	60/4	80/5	70/4	100/5	80/5		100/5					
	60/5	50/5											
1300	70/4	70/3	80/5	70/5	100/5	90/5		100/5					
		60/4											
1400	70/5	70/3	90/5	70/5		90/5							
		60/4											
1500	70/5	70/4	90/5	70/5		90/5							
		60/5											
1600	70/5	70/4	90/5	80/5		100/5							
		60/5											
1700	80/5	70/4	100/5	80/5		100/5							
		60/5											
1800	80/5	70/4	100/5	80/5		100/5							
1900	80/5	70/4	100/5	80/5		100/5							
2000	80/5	70/5	100/5	90/5									

Load table for forklift trucks according to DIN EN 1991-1-1 without dynamic coefficient.

A maximum deflection of 1/200 of the support distance is taken into account.

The choice of the supporting bars depends on the distance between the supports, the load and the selected pitch (mesh spacing).



LOAD TABLE FOR WELDED PRESSED GRATINGS

LOAD TABLE FOR WELDED PRESSED GRATING

Pitch 34.3 x 38.2 mm
 Material S 235 JR (ST 37-2)
 Allowable stress = 23.50 kN/cm²

F_p: maximum load [kN] with concentrically applied side load and a loaded area of 200 x 200 mm
f: deflection [cm] at existing full load
F_v: maximum load [kN/m²] with uniformly distributed surface load
f_v: deflection [cm] at existing full load

Characteristic values (actual useful load) are given. According to RAL-GZ 638:09/08, the following partial safety factors are included:

effect $\gamma_Q = 1.5$
 material propert. $\gamma_M = 1.0$

non-walkable
 walkable, with a load of 1.5 kN. Deflection $f = 1/200$ of the support distance, but not exceeding 0.4 cm.

Despite the sufficient load capacity, the walkability in the limit area (thick line) is limited by the permissible deflection.

		Support bar height x thickness [mm]							
		25/2	25/3	30/2	30/3	30/4	35/2	35/3	
200	F _p	10.47	15.71	14.96	22.45	29.93	20.19	30.28	
	f	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
	F _v	190.3	285.5	274.0	411.1	548.1	373.0	559.5	
300	f _v	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
	F _p	5.24	7.85	7.48	11.22	14.96	10.09	15.14	
	f	0.05	0.05	0.05	0.05	0.05	0.04	0.04	
400	F _v	84.58	126.9	121.8	182.7	243.6	165.8	248.7	
	f _v	0.06	0.06	0.05	0.05	0.05	0.04	0.04	
	F _p	3.49	5.24	4.99	7.48	9.98	6.73	10.09	
500	f	0.09	0.09	0.08	0.08	0.08	0.07	0.07	
	F _v	47.58	71.37	68.52	102.8	137.0	93.3	139.9	
	f _v	0.10	0.10	0.08	0.08	0.08	0.07	0.07	
600	F _p	2.62	3.93	3.74	5.61	7.48	5.05	7.57	
	f	0.14	0.14	0.12	0.12	0.12	0.10	0.10	
	F _v	30.45	45.68	43.85	65.77	87.7	59.7	89.5	
700	f _v	0.16	0.16	0.13	0.13	0.13	0.11	0.11	
	F _p	2.09	3.14	2.99	4.49	5.99	4.04	6.06	
	f	0.20	0.20	0.17	0.17	0.17	0.15	0.15	
800	F _v	21.15	31.72	30.45	45.67	60.90	41.4	62.2	
	f _v	0.22	0.22	0.19	0.19	0.19	0.16	0.16	
	F _p	1.75	2.62	2.49	3.74	4.99	3.36	5.05	
900	f	0.27	0.27	0.23	0.23	0.23	0.20	0.20	
	F _v	15.54	23.30	22.37	33.56	44.74	30.45	45.68	
	f _v	0.30	0.30	0.25	0.25	0.25	0.22	0.22	
1000	F _p	1.50	2.24	2.14	3.21	4.28	2.88	4.33	
	f	0.35	0.35	0.29	0.29	0.29	0.25	0.25	
	F _v	11.89	17.84	17.13	25.69	34.25	23.31	34.97	
1100	f _v	0.40	0.40	0.33	0.33	0.33	0.28	0.28	
	F _p	1.31	1.96	1.87	2.81	3.74	2.52	3.79	
	f	0.44	0.44	0.37	0.37	0.37	0.32	0.32	
1200	F _v	9.40	14.10	13.53	20.30	27.06	18.42	27.63	
	f _v	0.50	0.50	0.42	0.42	0.42	0.36	0.36	
	F _p	1.16	1.75	1.66	2.49	3.33	2.24	3.36	
1300	f	0.54	0.54	0.45	0.45	0.45	0.39	0.39	
	F _v	7.61	11.42	10.96	16.44	21.92	14.92	22.38	
	f _v	0.62	0.62	0.52	0.52	0.52	0.44	0.44	
1400	F _p	1.05	1.57	1.50	2.24	2.99	2.02	3.03	
	f	0.65	0.65	0.54	0.54	0.54	0.47	0.47	
	F _v	6.29	9.44	9.06	13.59	18.12	12.33	18.49	
1500	f _v	0.75	0.75	0.63	0.63	0.63	0.54	0.54	
	F _p	0.95	1.43	1.36	2.04	2.72	1.84	2.75	
	f	0.77	0.77	0.64	0.64	0.64	0.55	0.55	
1600	F _v	5.29	7.93	7.61	11.42	15.23	10.36	15.55	
	f _v	0.90	0.90	0.75	0.75	0.75	0.64	0.64	
	F _p	0.87	1.31	1.25	1.87	2.49	1.68	2.52	
1700	f	0.90	0.90	0.75	0.75	0.75	0.64	0.64	
	F _v	4.51	6.76	6.49	9.73	12.97	8.83	13.25	
	f _v	1.05	1.05	0.88	0.88	0.88	0.75	0.75	
1800	F _p	0.81	1.21	1.15	1.73	2.30	1.55	2.33	
	f	1.04	1.04	0.87	0.87	0.87	0.74	0.74	
	F _v	3.88	5.82	5.59	8.39	11.18	7.61	11.42	
1900	f _v	1.22	1.22	1.02	1.02	1.02	0.87	0.87	
	F _p	0.75	1.12	1.07	1.60	2.14	1.44	2.16	
	f	1.19	1.19	0.99	0.99	0.99	0.85	0.85	
2000	F _v	3.38	5.08	4.87	7.31	9.75	6.63	9.95	
	f _v	1.40	1.40	1.17	1.17	1.17	1.00	1.00	
	F _p	0.70	1.05	1.00	1.50	2.00	1.35	2.02	
2100	f	1.35	1.35	1.12	1.12	1.12	0.96	0.96	
	F _v	2.97	4.46	4.28	6.42	8.56	5.83	8.74	
	f _v	1.59	1.59	1.33	1.33	1.33	1.14	1.14	
2200	F _p	0.65	0.98	0.94	1.40	1.87	1.26	1.89	
	f	1.52	1.52	1.26	1.26	1.26	1.08	1.08	
	F _v	2.63	3.95	3.79	5.69	7.59	5.16	7.74	
2300	f _v	1.80	1.80	1.50	1.50	1.50	1.28	1.28	
	F _p	0.62	0.92	0.88	1.32	1.76	1.19	1.78	
	f	1.70	1.70	1.41	1.41	1.41	1.21	1.21	
2400	F _v	2.35	3.53	3.38	5.08	6.77	4.61	6.91	
	f _v	2.01	2.01	1.68	1.68	1.68	1.44	1.44	
	F _p	0.58	0.87	0.83	1.25	1.66	1.12	1.68	
2500	f	1.88	1.88	1.57	1.57	1.57	1.35	1.35	
	F _v	2.11	3.16	3.04	4.55	6.07	4.13	6.20	
	f _v	2.24	2.24	1.87	1.87	1.87	1.60	1.60	
2600	F _p	0.55	0.83	0.79	1.18	1.58	1.06	1.59	
	f	2.08	2.08	1.74	1.74	1.74	1.49	1.49	
	F _v	1.90	2.86	2.74	4.11	5.48	3.73	5.60	
2700	f _v	2.49	2.49	2.07	2.07	2.07	1.78	1.78	



Support bar height x thickness [mm]

35/4		40/2		40/3		40/4		50/2		50/3		50/4		Support distance [mm]
40.38	26.17	39.25	52.34	40.26	60.40	80.53	F _p	200	0.02	0.02	0.02	0.02	0.01	
746.0	487.2	730.8	974.4	761.2	1142	1522	F _v	0.02	0.02	0.02	0.02	0.01	f	
20.19	13.08	19.63	26.17	20.13	30.20	40.26	F _p	0.04	0.03	0.03	0.03	0.03	f	
331.6	216.5	324.8	433.1	338.3	507.5	676.7	F _v	0.04	0.03	0.03	0.03	0.03	f	
13.46	8.72	13.08	17.45	13.42	20.13	26.84	F _p	0.07	0.06	0.06	0.06	0.05	f	
186.5	121.8	182.7	243.6	190.3	285.5	380.6	F _v	0.07	0.06	0.06	0.06	0.05	f	
10.09	6.54	9.81	13.08	10.07	15.10	20.13	F _p	0.10	0.09	0.09	0.09	0.07	f	
119.4	78.0	116.9	155.9	121.8	182.7	243.6	F _v	0.11	0.10	0.10	0.10	0.08	f	
8.08	5.23	7.85	10.47	8.05	12.08	16.11	F _p	0.15	0.13	0.13	0.13	0.10	f	
82.9	54.1	81.2	108.3	84.6	126.9	169.2	F _v	0.16	0.14	0.14	0.14	0.11	f	
6.73	4.36	6.54	8.72	6.71	10.07	13.42	F _p	0.20	0.17	0.17	0.17	0.14	f	
60.90	39.77	59.66	79.54	62.14	93.2	124.3	F _v	0.22	0.19	0.19	0.19	0.15	f	
5.77	3.74	5.61	7.48	5.75	8.63	11.50	F _p	0.25	0.22	0.22	0.22	0.18	f	
46.62	30.45	45.67	60.90	47.57	71.36	95.1	F _v	0.28	0.25	0.25	0.25	0.20	f	
5.05	3.27	4.91	6.54	5.03	7.55	10.07	F _p	0.32	0.28	0.28	0.28	0.22	f	
36.84	24.06	36.08	48.11	37.59	56.38	75.2	F _v	0.36	0.31	0.31	0.31	0.25	f	
4.49	2.91	4.36	5.82	4.47	6.71	8.95	F _p	0.39	0.34	0.34	0.34	0.27	f	
29.84	19.49	29.23	38.97	30.45	45.67	60.89	F _v	0.44	0.39	0.39	0.39	0.31	f	
4.04	2.62	3.93	5.23	4.03	6.04	8.05	F _p	0.47	0.41	0.41	0.41	0.33	f	
24.66	16.10	24.16	32.21	25.16	37.74	50.32	F _v	0.54	0.47	0.47	0.47	0.38	f	
3.67	2.38	3.57	4.76	3.66	5.49	7.32	F _p	0.55	0.48	0.48	0.48	0.39	f	
20.73	13.54	20.30	27.07	21.15	31.73	42.30	F _v	0.64	0.56	0.56	0.56	0.45	f	
3.36	2.18	3.27	4.36	3.36	5.03	6.71	F _p	0.64	0.56	0.56	0.56	0.45	f	
17.66	11.53	17.30	23.07	18.02	27.03	36.04	F _v	0.75	0.66	0.66	0.66	0.53	f	
3.11	2.01	3.02	4.03	3.10	4.65	6.19	F _p	0.74	0.65	0.65	0.65	0.52	f	
15.22	9.94	14.91	19.88	15.53	23.30	31.06	F _v	0.82	0.76	0.76	0.76	0.61	f	
2.88	1.87	2.80	3.74	2.88	4.31	5.75	F _p	0.85	0.74	0.74	0.74	0.59	f	
13.27	8.66	12.99	17.33	13.54	20.30	27.07	F _v	1.00	0.87	0.87	0.87	0.70	f	
2.69	1.74	2.62	3.49	2.68	4.03	5.37	F _p	0.96	0.84	0.84	0.84	0.67	f	
11.66	7.61	11.42	15.22	11.89	17.84	23.79	F _v	1.14	0.99	0.99	0.99	0.80	f	
2.52	1.64	2.45	3.27	2.52	3.77	5.03	F _p	1.08	0.95	0.95	0.95	0.76	f	
10.33	6.74	10.12	13.49	10.54	15.80	21.07	F _v	1.28	1.12	1.12	1.12	0.90	f	
2.38	1.54	2.31	3.08	2.37	3.55	4.74	F _p	1.21	1.06	1.06	1.06	0.85	f	
9.21	6.02	9.02	12.03	9.40	14.10	18.80	F _v	1.44	1.26	1.26	1.26	1.01	f	
2.24	1.45	2.18	2.91	2.24	3.36	4.47	F _p	1.35	1.18	1.18	1.18	0.94	f	
8.26	5.40	8.10	10.79	8.43	12.65	16.87	F _v	1.60	1.40	1.40	1.40	1.12	f	
2.13	1.38	2.07	2.75	2.12	3.18	4.24	F _p	1.49	1.30	1.30	1.30	1.04	f	
7.46	4.87	7.31	9.75	7.61	11.42	15.23	F _v	1.78	1.55	1.55	1.55	1.24	f	

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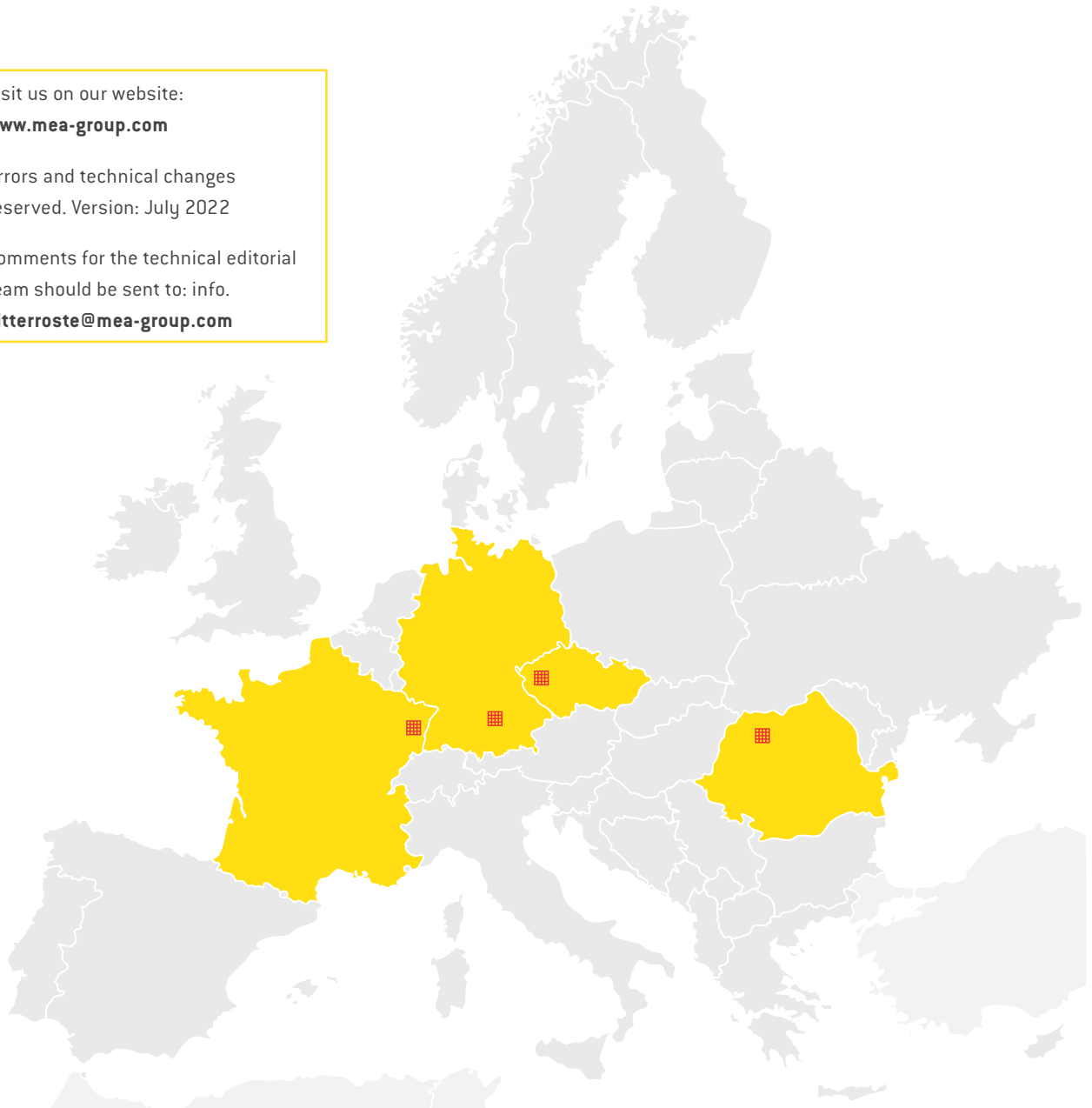
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