HYDRO BG
Sustainable innovation.

Technology in harmony with nature.

FILCOTEN®

pro – g
extra heavy duty series

fiber reinforced
concrete trench drains

We always
do the same:
forge new paths.

HYDRO BG
Sustainable innovation.

What do you do when a manufacturing material holds you back from reaching your goals?

– You develop the technology to adapt it. –

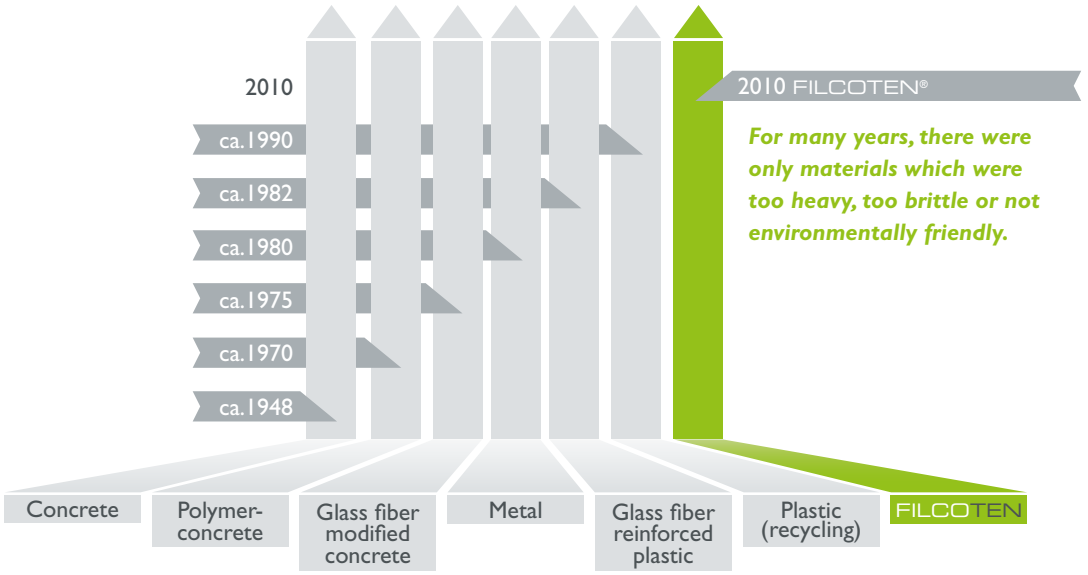
For decades, drainage systems have been manufactured from concrete, polymer concrete, steel or plastic, none of which were ever able to meet the market requirements for a high quality, strong and completely sustainable trench drain system. They were either too heavy, too brittle or not completely environmentally friendly.

After many years of research, product development, testing, all driven by an unrelenting passion, in 2002, Friedrich Graspointner announced:

"Our dream of both a light and stable concrete channel can become a reality!"

We were the only industry member to invest in research and development of a substance which would ultimately exceed the properties of cement and resin bonded cements (polymer concrete). Eight years and countless hours of hard work later, we had finally reached our goal: FILCOTEN® was born, and to this day continues to lead the industry.

The material history of channel manufacturing



Innovation without sustainability is not innovation.

Our products come in direct contact with the earth's water cycle.

HYDRO BG asks the question – how can we improve the existing methodology while creating an evironmentally friendly product? We therefore established one additional goal when developing FILCOTEN®:

"It should be completely environmentally friendly and 100% sustainable."

We are very proud of FILCOTEN®. The fact it is completely neutral for the environment, from "craddle to grave" and knowing FILCOTEN® has no negative effects on humans or nature, makes us confident we reached our goal of 100% sustainablity.

Our energy mix makes it clear that we are serious when it comes to sustainability. We avoid the use of fossil fuels whenever possible. Relying instead on other forms of renewable energies.

HYDRO BG
Sustainable innovation.

BG energy mix:

1,23 %	other eco-energy
2,59 %	oil and its by products
3,18 %	natural gas
3,53 %	solid or liquid biomass
4,23 %	wind energy
85,24 %	water power

It´s not just FILCOTEN® which is enviromentally friendly - our energy mix is too.

- Serious efforts are made to source raw materials locally and to ensure materials are harvested using environmentally friendly methods. Our goal is to decrease the product's total carbon footprint.

- No use of plastic resins, catalyst, hardening agents or solvents
- No chemical exposure for employees or the environment
- A controlled clean environment with low exposure to dust and noise

- A better carbon footprint for each channel is achieved because of a lower unit weight when compared with polymer concrete

- No VOC's or harmful side effects to humans or the environment
- A long product life cycle, thereby conserving resources and landfill space

- 100 % recyclable
  (tested by the soil and building materials testing facility in Linz)

Strong
but gentle to the environment:

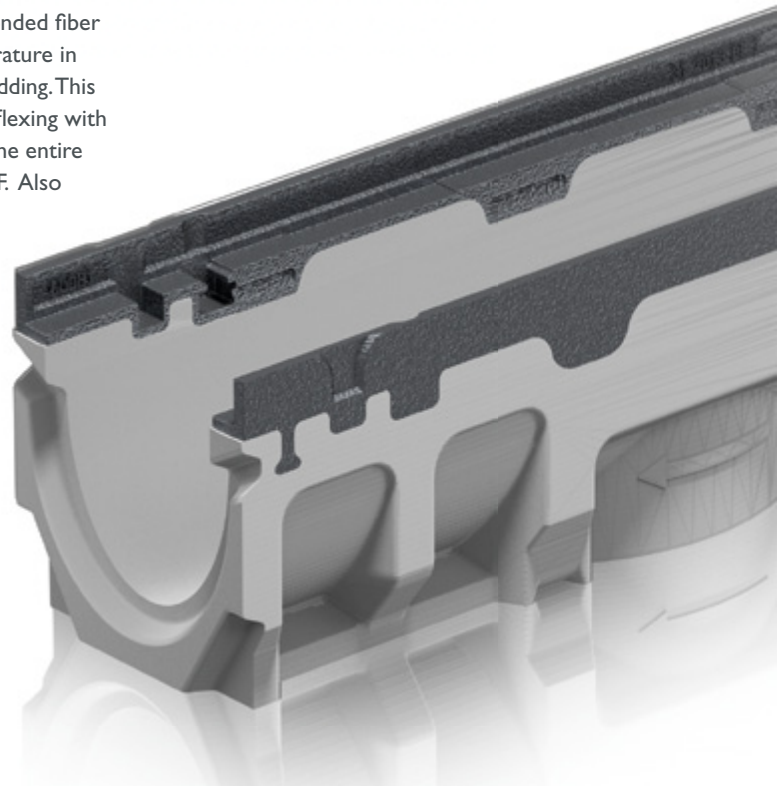
FILCOTEN®

Impact strength and environment-friendliness are just two of the many features which make FILCOTEN® unique.

The material combines the positive features of concrete channels with the benefits of resinbonded cements by using a patented fiber enriched fomula instead of the enviromentially harmful resins. FILCOTEN® is is still unrivaled in the market place, being admired for it's sustainibility and its unique channel strenght. FILCOTEN® complies with the EN 1433 standard and the ASTM A112.6.3.2001 floor and trench drain standard.

Temperature, Frost and UV-resistant

FILCOTEN® channels are made of cement-bonded fiber composites, which react to changes in temperature in the same way as the surrounding concrete bedding. This achieves a continuous integral unit reacting and flexing with the enviroment delvering a long service life for the entire channel system. Resistant to frost down to -40° F. Also resistant to de-icing salts.



Product impact stability

The high impact resistance and stability of FILCOTEN® ensures easy, quicker installation, and greater safety when installing the channels.

100 % recycable

Every ounce of a FILCOTEN® channel is completely recycable. Filcoten has been tested by the soil and building materials testing facility in Linz, Austria.

Lower transport costs, swifter installation

Depending on the type of channel, FILCOTEN® channels are up to 70 % lighter than conventional concrete channels. This is a huge savings in terms of fuel consumption. FILCOTEN® is committed to conserving resources and decreasing its-40° F proportional CO_2 emissions. The lower weight also facilitates easy installation on site.

HYDRO BG
Sustainable innovation.

World classs design and craftmanship

The flat inner surface of FILCOTEN® channels are highly crafted making the surface extremely smooth in order to minimize friction. This attention to detail achieves the best possible flow characteristics and a superior self-cleaning action. The textured outer surface ensures a perfect bond with the concrete bed.

Surface Properties: (µm)

- 36µm Polymer concrete
- Glass fiber modified concrete
- Concrete
- FILCOTEN®

High compressive strength

A high quality cement infused with a high proportion of fibers enables thin-walled channel design while yeilding a very high compression strength. FILCOTEN® channels are therefore lighter yet easily out preform most competitiors.

Compressive Strength: (N /mm²)

- Polymer concrete
- Glass fiber modified concrete
- Concrete
- FILCOTEN®

ÉMISSIONS DANS L'AIR INTÉRIEUR A+ A+ A B C

Geprüft und empfohlen IBR Institut für Baubiologie Rosenheim GmbH

Non-flammable

While plastics are both flammable and often emitt hazordous fumes when ignited, the complete absense of resins, catlyst and bonding agents make FILCOTEN® completely no flammable. FILCOTEN® has a Fire Rating of A1.

Fire protection classes:

- Polymer concrete: B1 difficult to ignite
- Plastic: B2 normal combustibility
- Glass fiber reinforced plastic: B2 normal combustibility
- FILCOTEN®: A1 non-combustible

o % Harmful substances, heavy metals or VOC's

FILCOTEN® is free from artificial resins and solvents. This means that it is harmless to the environment, our employees, or the installation team.

FILCOTEN® channel bodies have been bioconstructively tested and are recommended by the IBR (Institut für Baubiologie Rosenheim GmbH).

Made in AUSTRIA

Only **a heavyweight** when it comes to **features**:

FILCOTEN® pro

With our FILCOTEN® channel, you don't have to compromise on quality or durability. It's stable yet lightweight, and can be adapted to site conditions. FILCOTEN® is available in galvanized or stainless steel rails up to class E 600 (acc. to EN 1433). The cast-iron rail model is tested up to class F 900 (acc. to EN 1433). FILCOTEN® channels are also available in a shallow version with a lower overall height.

Applications

Because FILCOTEN® can handle a high load capacity, it is especially suitable for installation in industrial areas such as airports, factories, warehouses and garages. However, with its' sleek good looks it can easily be used in public places like railway stations, and pedestrian or residential areas.

Load class F 900

Appilcation specific rail choices

The FILCOTEN® channel system is also available with integral rails made of cast iron. Our standard 4mm thick rails are extra heavy duty.

Channel geometry / surfacing

The flat inner surface of FILCOTEN® channels are highly crafted making each channel smooth in order to minimize surface friction. This attention to detail achieves the best possible flow characteristics and a superior self-cleaning effect. The textured outer surface ensures perfect cohesion with the concrete bed.

Vertical outlet on every channel

Every channel body has a vertical outlet option.

Prefabricated sealant groove

Sealant groove for waterproof installations.

HYDRO BG
Sustainable innovation.

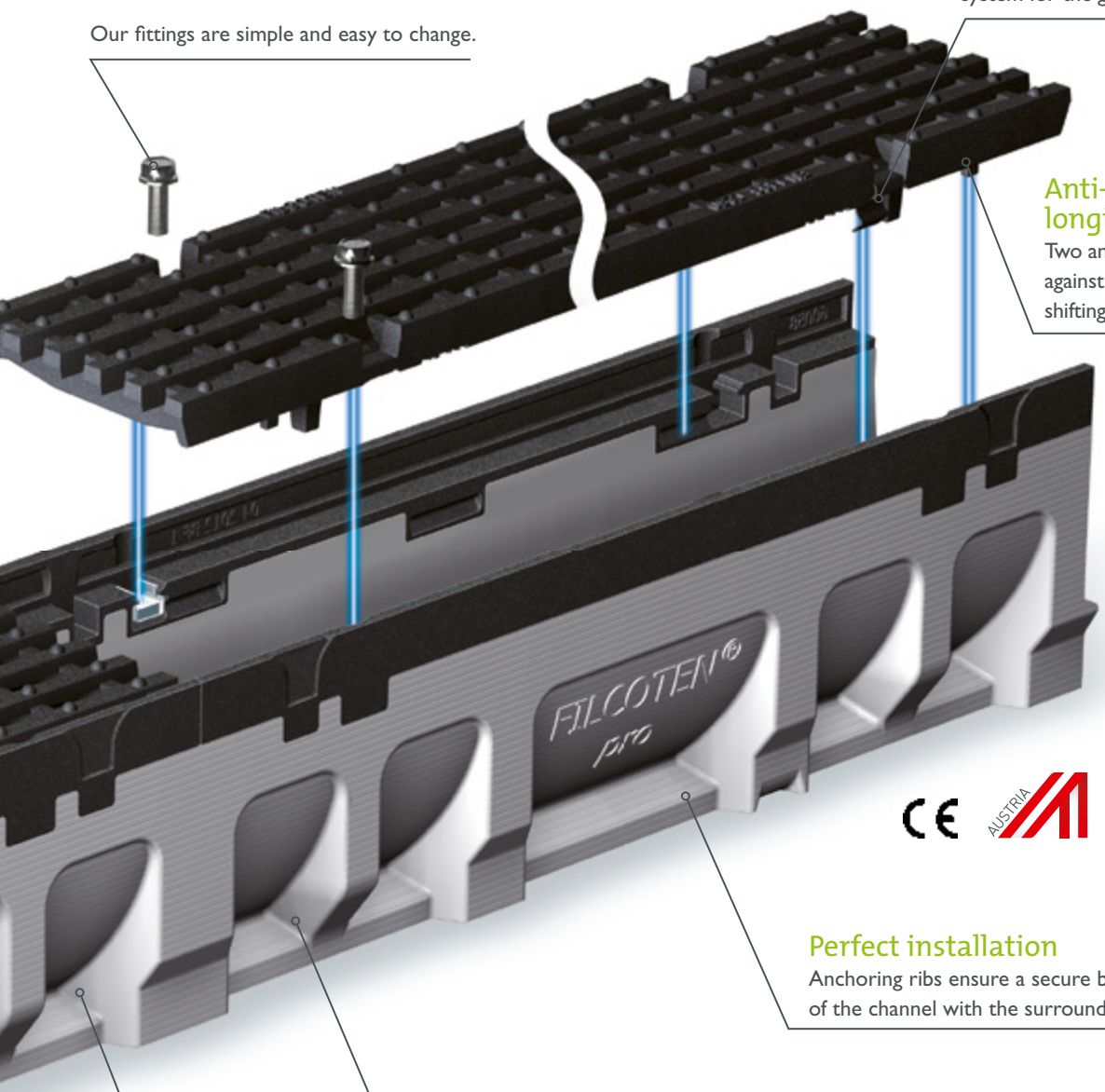
High traffic bolted iron grip

When an alternative to the fiX Snap-On closure is needed, a 4 point bolting system allows the grates to be secured directly into the cast iron rail. The bar grating is rated up to cl. E 600 kN, and the slotted grating is rated to cl. F 900 kN. Additional gratings may be available depending on the load requirements. All fittings are supplied as a kit.

Our fittings are simple and easy to change.

Unique “fiX“ snap-On locking system

The intelligent fiX connection enables a secure and stable four-point easy install, quickrelease locking system for the grate and channel.



Anti-slide lugs prevent longitudal grate shifting

Two anti-sliding lugs interlock the grating against the railing preventing any longitudinal shifting adding an additional layer of safety.

CE AUSTRIA

Perfect installation

Anchoring ribs ensure a secure bond and anchoring of the channel with the surrounding concrete bed.

Innovative production technology

The innovative FILCOTEN® production and molding technology allows for completely flat sides making flush installations against buildings easy and attractive. Our advanced molding technology allows for the design of support ribs and anchoring ribs, making both a secure bond and a sturcturely strong channel.

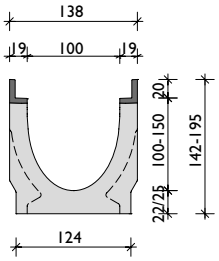
Stablility thanks to the FEM analysis

The FEM analysis is a computer-assisted process which simulates exactly how construction materials withstand load demands. The more accurate the effect of force is known, the easier it is to choose the optimal design solution.

FILCOTEN® pro – g

4" / 100 mm nominal width, 1 meter / 39.40" length - load class F 900

FILCOTEN® pro – g 100
with cast iron rails



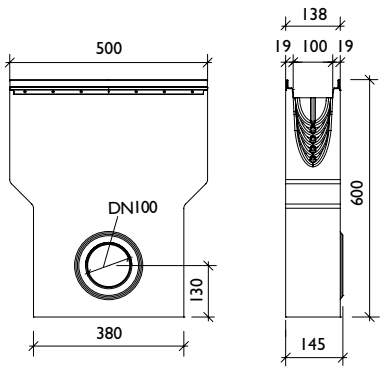
FILCOTEN® pro – g
(10610155) – dual slope body

Channel body FILCOTEN® pro – g 100 – extra heavy duty series

Body part number cast iron rails [1]	Channel type	Slope	Overall body depth E1 (Min.)	Overall body depth E2 (Max.)	Maximum flow rate GPM [*]	Maximum flow rate LPS [*]	Maximum flow rate CFS [*]	Weight (less grate) LBS	Weight (less grate) kg.
10610100	100/0	0 %	5.59" (142 mm)	5.59" (142 mm)	47.6	3.0	0.11	42.11	19.1
10610155	100/0 - RHP	0 %	5.71" (145 mm)	5.71" (145 mm)	47.6	3.0	0.11	42.11	19.1
10610161	100/5-0	0 %	6.69" (170 mm)	6.69" (170 mm)	69.7	4.4	0.16	49.82	22.6
10610162	100/10-0	0 %	7.68" (195 mm)	7.68" (195 mm)	95.1	6.0	0.21	57.54	26.1
10610164	100/20-0	0 %	9.65" (245 mm)	9.65" (245 mm)	152.2	9.6	0.34	68.78	31.2
10610101	100/1	0.5 %	5.71" (145 mm)	5.91" (150 mm)				42.99	19.5
10610102	100/2	0.5 %	5.91" (150 mm)	6.10" (155 mm)				44.53	20.2
10610103	100/3	0.5 %	6.10" (155 mm)	6.30" (160 mm)				46.08	20.9
10610104	100/4	0.5 %	6.30" (160 mm)	6.50" (165 mm)				47.62	21.6
10610105	100/5	0.5 %	6.50" (165 mm)	6.69" (170 mm)				49.16	22.3
10610106	100/6	0.5 %	6.69" (170 mm)	6.89" (175 mm)				50.71	23.0
10610107	100/7	0.5 %	6.89" (175 mm)	7.09" (180 mm)				51.37	23.3
10610108	100/8	0.5 %	7.09" (180 mm)	7.28" (185 mm)				52.91	24.0
10610109	100/9	0.5 %	7.28" (185 mm)	7.48" (190 mm)				54.45	24.7
10610110	100/10	0.5 %	7.48" (190 mm)	7.68" (195 mm)				56.00	25.4

[1] With cast-iron rail, tested up to cl. F 900 acc. to EN 1433. Installation according to the manufactures installation instructions.

[*] GPM = Gallons per minute, LPS = Liters per second, CFS = Cubic feet per second



FILCOTEN® pro – g 100
catch basin with cast iron rails

Accessories FILCOTEN® pro – g 100 – extra heavy duty series

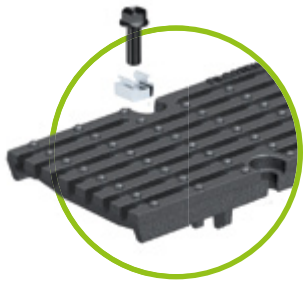
Item no.	Accessories	Material	Weight LBS	Weight kg.
10610190	Catch basin 6" with cast iron rails and 4" outlet with seal	FILCOTEN	72.53	32.9
22515	Sediment bucket for catch basin	plastic	0.44	0.2
19010230	Front/end cap galvanized steel	galvanized	0.66	0.3
19011204	4" No Hub bottom outlet	galvanized	0.66	0,3
19010216	4" No Hub end cap outlet	galvanized	0.11	0,5
19010915	Rebar support	fabricated steel	2.64	1.2
19010295	Step connector NW100 pro 0/10-0/20-0	galvanized	0.22	0.1

Accessory details including additional images = page 26 - 27

Gratings FILCOTEN® pro – g 100 4-point bolting.

Item no.	Gratings	Material	Dimensions in mm	Load class as per EN-standard	Slot-/meshwidth	Weight LBS	Weight kg.	Inlet cross-section sq. inches	Inlet cross-section cm^2/m
17010103	1. Ductile iron longitudinal grating	ductile iron	500/122/20	E 600 kN	Mesh .87“ by .51“ (22x13mm)	9.26	4.2	67.43	435
17010107	2. Ductile iron slotted grating	ductile iron	500/122/20	F 900 kN *	.55“ wide x 3.94“ slots (14x100mm)	10.58	4.8	72.08	465

) For class F 900 kN installation (e.g airport terminals), a final release of the installation details by the manufacturer must be followed!



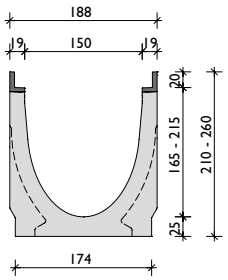
1. Ductile iron longitudinal grating
MW 22/13, cl. E

2. Ductile iron slotted grating
SW 14/100, cl. F *

FILCOTEN® pro – g

6" / 150 mm nominal width, 1 meter / 39.40" length - load class F 900

FILCOTEN® pro – g 150
with cast iron rails

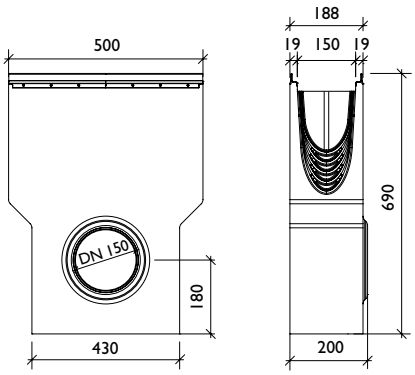


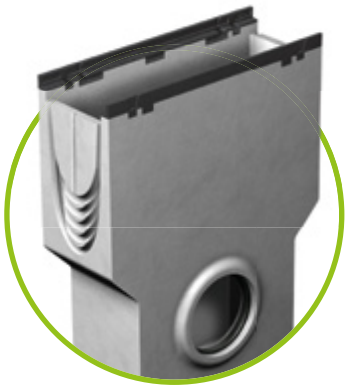
Channel body FILCOTEN® pro – g 150 – extra heavy duty series

Body part number cast iron rails [1]	Channel type	Slope	Overall body depth E1 (Min.)	Overall body depth E2 (Max.)	Maximum flow rate GPM [*]	Maximum flow rate LPS [*]	Maximum flow rate CFS [*]	Weight (less grate) LBS	Weight (less grate) kg.
10615100	150/0	0 %	8.27" (210 mm)	8.27" (210 mm)	172.8	10.9	0.38	69.67	31.6
10615161	150/5-0	0 %	6.69" (170 mm)	6.69" (170 mm)	217.2	13.7	0.48	77.60	35.2
10615162	150/10-0	0 %	7.68" (195 mm)	7.68" (195 mm)	266.3	16.8	0.59	85.54	38.8
10615164	150/20-0	0 %	12.20" (310 mm)	12.20" (310 mm)	372.5	23.5	0.83	105.38	47.8
10615101	150/1	0.5 %	8.27" (210 mm)	8.46" (215 mm)				69.45	31.5
10615102	150/2	0.5 %	8.46" (215 mm)	8.66" (220 mm)				71.21	32.3
10615103	150/3	0.5 %	8.66" (220 mm)	8.86" (225 mm)				72.97	33.1
10615104	150/4	0.5 %	8.86" (225 mm)	9.06" (230 mm)				74.74	33.9
10615105	150/5	0.5 %	9.06" (230 mm)	9.25" (235 mm)				76.50	34.7
10615106	150/6	0.5 %	9.25" (235 mm)	9.45" (240 mm)				78.48	35.6
10615107	150/7	0.5 %	9.45" (240 mm)	9.65" (245 mm)				80.25	36.4
10615108	150/8	0.5 %	9.65" (245 mm)	9.84" (250 mm)				82.01	37.2
10615109	150/9	0.5 %	9.84" (250 mm)	10.04" (255 mm)				83.78	38.0
10615110	150/10	0.5 %	10.04" (255 mm)	10.24" (260 mm)				85.54	38.8

[1] With cast-iron rail, tested up to cl. F 900 acc. to EN 1433. Installation according to the manufactures installation instructions.

[*] GPM = Gallons per minute, LPS = Liters per second, CFS = Cubic feet per second





FILCOTEN® pro – g 150
catch basin with cast iron rails

Accessories FILCOTEN® pro – g 150 – extra heavy duty series

Item no.	Accessories	Material	Weight LBS	Weight kg.
10615190	Catch basin 6" with cast iron rails and 4" outlet with seal	FILCOTEN	99.21	45.0
22516	Sediment bucket for catch basin	plastic	0.66	0.3
19015230	Front/end cap galvanized steel	galvanized	1.10	0.5
19016206	6" No Hub bottom outlet	galvanized	1.32	0.6
19015216	6" No Hub end cap outlet	galvanized	1.54	0.7
19010915	Rebar support	fabricated steel	2.64	1.2
19015295	Step connector plate NW150 pro 0/10-0/20-0	galvanized	0.44	0.2

Accessory details including additional images = page 26 - 27

Gratings FILCOTEN® pro – g 150 4-point bolting.

Item no.	Gratings	Material	Dimensions in mm	Load class as per EN-standard	Slot-/meshwidth	Weight LBS	Weight kg.	Inlet cross-section sq. inches	Inlet cross-section cm²/m
17015103	1. Ductile iron longitudinal grating	ductile iron	500/172/20	E 600 kN	Mesh .87“ by .51“ (22x13mm)	15.87	7.2	99,2	640
17015107	2. Ductile iron slotted grating	ductile iron	500/172/20	F 900 kN *	.55“ wide x 5,91“ slots (14x150mm)	16.09	7.3	110,05	710

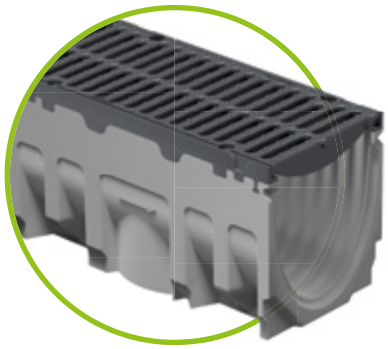
) For class F 900 kN installation (e.g airport terminals), a final release of the installation details by the manufacturer must be followed!

1. Ductile iron longitudinal grating
MW 22/13, cl. E

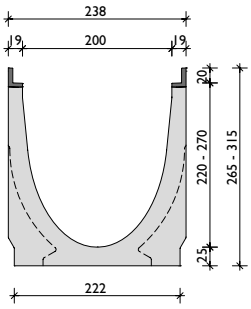
2. Ductile iron slotted grating
SW 14/150, cl. F *

FILCOTEN® pro – g

8" / 200 mm nominal width, 1 meter / 39.40" length - load class F 900



FILCOTEN® pro – g 200
with cast iron rails

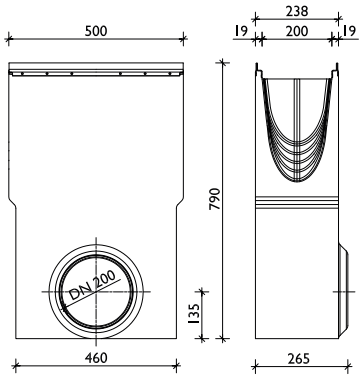


Channel body FILCOTEN® pro – g 200 – extra heavy duty series

Body part number cast iron rails [1]	Channel type	Slope	Overall body depth E1 (Min.)	Overall body depth E2 (Max.)	Maximum flow rate GPM [*]	Maximum flow rate LPS [*]	Maximum flow rate CFS [*]	Weight (less grate) LBS	Weight (less grate) kg.
10620100	200/0	0 %	10.43" (265 mm)	10.43" (265 mm)	369.3	23.3	0.82	98.77	44.8
10620161	200/5-0	0 %	11.42" (290 mm)	11.42" (290 mm)	439.1	27.7	0.98	109.79	49.8
10620162	200/10-0	0 %	12.40" (315 mm)	12.40" (315 mm)	515.1	32.5	1.15	120.81	54.8
10620164	200/20-0	0 %	14.37" (365 mm)	14.37" (365 mm)	678.4	42.8	1.51	140.21	63.6
10620101	200/1	0.5 %	10.43" (265 mm)	10.63" (270 mm)				99.87	45.3
10620102	200/2	0.5 %	10.63" (270 mm)	10.83" (275 mm)				102.07	46.3
10620103	200/3	0.5 %	10.83" (275 mm)	11.02" (280 mm)				104.28	47.3
10620104	200/4	0.5 %	11.02" (280 mm)	11.22" (285 mm)				106.48	48.3
10620105	200/5	0.5 %	11.22" (285 mm)	11.42" (290 mm)				108.69	49.3
10620106	200/6	0.5 %	11.42" (290 mm)	11.61" (295 mm)				110.89	50.3
10620107	200/7	0.5 %	11.61" (295 mm)	11.81" (300 mm)				113.10	51.3
10620108	200/8	0.5 %	11.81" (300 mm)	12.01" (305 mm)				115.30	52.3
10620109	200/9	0.5 %	12.01" (305 mm)	12.20" (310 mm)				117.51	53.3
10620110	200/10	0.5 %	12.20" (310 mm)	12.40" (315 mm)				119.71	54.3

[1] With cast-iron rail, tested up to cl. F 900 acc. to EN 1433. Installation according to the manufactures installation instructions.

[*] GPM = Gallons per minute, LPS = Liters per second, CFS = Cubic feet per second



FILCOTEN® pro – g 200
catch basin with cast iron rails

Accessories FILCOTEN® pro – g 200 – extra heavy duty series

Item no.	Accessories	Material	Weight LBS	Weight kg.
10620190	Catch basin 8" with cast iron rails and 8" outlet with seal	FILCOTEN	106.70	48.4
22512	Sediment bucket for catch basin	plastic	1.54	0.7
19020230	Front/end cap galvanized steel	galvanized	1.68	0.8
19020330	Front/end cap stainless steel	stainless steel	1.68	0.8
19021208	8" No Hub bottom outlet	galvanized	2.20	1.0
19020216	8" No Hub end cap outlet	galvanized	2.64	1.2
19020295	Step connector plate NW200 pro 0/10-0/20-0	galvanized	0.50	0.23

Accessory details including additional images = page 26 - 27

Gratings FILCOTEN® pro – g 200 4-point bolting.

Item no.	Gratings	Material	Dimensions in mm	Load class as per EN-standard	Slot-/meshwidth	Weight LBS	Weight kg.	Inlet cross-section sq. inches	Inlet cross-section cm²/m
17020103	1. Ductile iron longitudinal grating	ductile iron	500/222/20	E 600 kN	Mesh .87“ by .51“ (22x13mm)	19.40	8.8	120.9	780
17020107	2. Ductile iron slotted grating	ductile iron	500/122/20	F 900 kN *	55“ wide x 3.74“ slots (14x95mm)	27.12	12.3	133.3	860

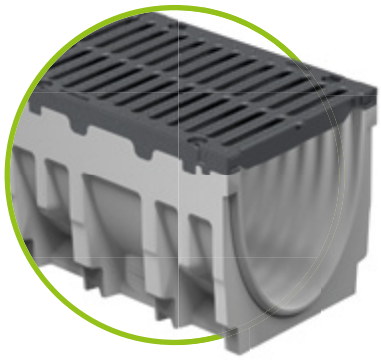
) For class F 900 kN installation (e.g airport terminals), a final release of the installation details by the manufacturer must be followed!

1. Ductile iron longitudinal grating
MW 22/13, cl. E

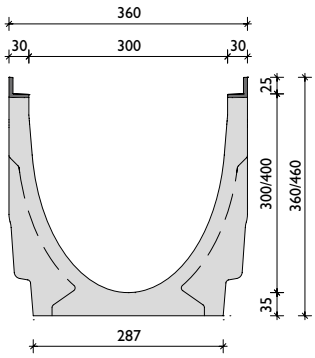
2. Ductile iron slotted grating
SW 14/95, cl. F *

FILCOTEN® pro – g

12" / 300 mm nominal width, 1 meter / 39.40" length - load class F 900



FILCOTEN® pro – g 300
with cast iron rails



Channel body FILCOTEN® pro – g 300 – extra heavy duty series

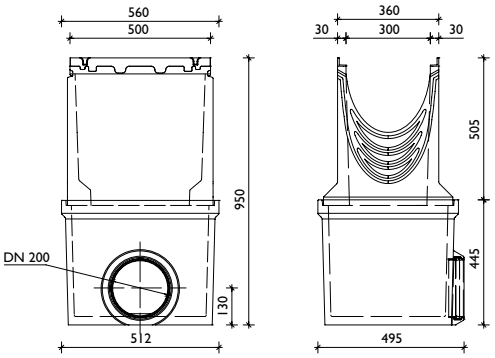
Body part number cast iron rails [1]	Channel type	Slope	Overall body depth E1 (Min.)	Overall body depth E2 (Max.)	Maximum flow rate GPM [*]	Maximum flow rate LPS [*]	Maximum flow rate CFS [*]	Weight (less grate) LBS	Weight (less grate) kg.
10630100	300/0	0 %	14.17" (360 mm)	14.17" (360 mm)	870.2	54.9	1.9	170.42	77.3
10630162	300/10-0	0 %	16.20" (410 mm)	16.20" (410 mm)	1,103.2	69.6	2.5	199.08	90.30
10630164	300/20-0	0 %	18.11" (460 mm)	18.11" (460 mm)	1,348.9	85.1	3.0	244.05	110.7

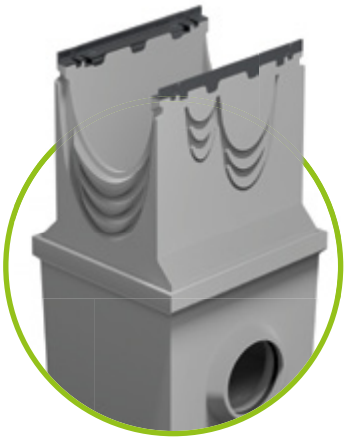
[1] With cast-iron rail, tested up to cl. F 900 acc. to EN 1433. Installation according to the manufactures installation instructions.
[*] GPM = Gallons per minute, LPS = Liters per second, CFS = Cubic feet per second

Gratings FILCOTEN® pro – g 300 with fiX self-locking system and additional 4-point bolting.

Item no.	Gratings	Material	Dimensions in mm	Load class as per EN-standard	Slot-/meshwidth	Weight LBS	Weight kg.	Inlet cross-section sq. inches	Inlet cross-section cm²/m
17030103	1. Ductile iron longitudinal grating	ductile iron	500/347/25	E 600 kN	Mesh 1.14" by .51" (MW29x13mm)	29.32	13.3	227.08	1.465

1. Ductile iron longitudinal grating
MW 29/13, cl. E





FILCOTEN® pro – g 300
catch basin with cast iron rails

Accessories FILCOTEN® pro – g 300 – extra heavy duty series

Item no.	Accessories	Material	Weight LBS	Weight kg.
10630190	Catch basin 12“ with cast iron rails and 8" outlet with seal	FILCOTEN	273.37	124.0
22213	Sediment bucket for catch basin	galvanized	7.05	3.2
19030213	Front/end cap stainless steel	galvanized	3.75	1.7
19030214	End cap with outlet DN200	galvanized	3.52	1.6
19030290	End cap for catch basin with connection cut-outs	galvanized	3.75	1.7
19060020	Catch basin extention unit	FILCOTEN	93.69	42.5
19021208	8" No Hub bottom outlet	galvanized	2.20	1.0
19030295	Step connector plate NW300 pro 0/10-0/20-0	galvanized	0.92	0.42

Accessory details including additional images = page 26 - 27

Gratings FILCOTEN® pro – g 300 4-point bolting.

Item no.	Gratings	Material	Dimensions in mm	Load class as per EN-standard	Slot-/meshwidth	Weight LBS	Weight kg.	Inlet cross-section sq. inches	Inlet cross-section cm²/m
17030107	2. Ductile iron slotted grating	ductile iron	500/347/25	F 900 kN *	.63“ wide x 5.51“ slots (SW16x140 mm)	49.16	22.3	176.7	1.140

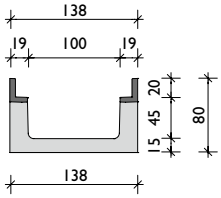
) For class F 900 kN installation (e.g airport terminals), a final release of the installation details by the manufacturer must be followed!

2. Ductile iron slotted grating
SW 16/140, cl. F *

FILCOTEN® pro – g

4" / 100 mm nominal width, 1 meter / 39.40" length - load class F 900

FILCOTEN® pro – g 100 mini
with cast iron rails



Channel body FILCOTEN® pro – g 100 mini shallow body

Body part number cast iron rails [1]	Channel type	Slope	Overall body depth E1 (Min.)	Overall body depth E2 (Max.)	Maximum flow rate GPM [*]	Maximum flow rate LPS [*]	Maximum flow rate CFS [*]	Weight (less grate) LBS	Weight (less grate) kg.
10510101	mini 80	0 %	3.15" (80 mm)	3.15" (80 mm)	12.7	0.80	0.03	24.47	11.1

[1] With cast-iron rail, tested up to cl. F 900 acc. to EN 1433. Installation according to the manufactures installation instructions.

[*] GPM = Gallons per minute, LPS = Liters per second, CFS = Cubic feet per second

Projects

Accessories FILCOTEN® pro – g 100 mini shallow body

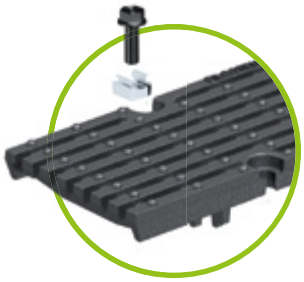
Item no.	Accessories	Material	Weight LBS	Weight kg.
19010200	Front/end cap mini galvanized steel	galvanized	0.22	0.1
19011204	4" No Hub bottom outlet	galvanized	0.66	0.3
19010915	Rebar support	fabricated steel	2.64	1.2

Accessory details including additional images = page 26 - 27

Gratings FILCOTEN® pro – g 100 mini shallow body 4-point bolting.

Item no.	Gratings	Material	Dimensions in mm	Load class as per EN-standard	Slot-/meshwidth	Weight LBS	Weight kg.	Inlet cross-section sq. inches	Inlet cross-section cm^2/m
17010103	1. Ductile iron longitudinal grating	ductile iron	500/122/20	E 600 kN	Mesh .87“ by .51“ (22x13mm)	9.26	4.2	67.43	435
17010107	2. Ductile iron slotted grating	ductile iron	500/122/20	F 900 kN *	.55“ wide x 3.94“ slots (14x100mm)	10.58	4.8	72.08	465

) For class F 900 kN installation (e.g airport terminals), a final release of the installation details by the manufacturer must be followed!

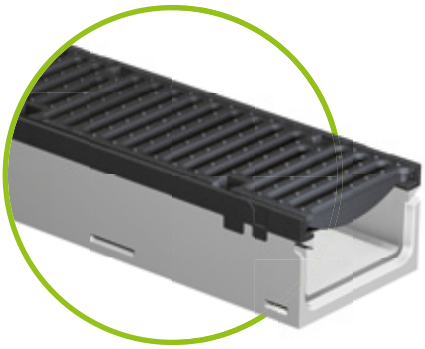


1. Ductile iron longitudinal grating
MW 22/13, cl. E

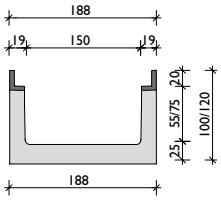
2. Ductile iron slotted grating
SW 14/100, cl. F *

FILCOTEN® pro – g

6" / 150 mm nominal width, 1 meter / 39.40" length - load class F 900



FILCOTEN® pro – g 150 mini
with cast iron rails



Channel body FILCOTEN® pro – g 150 mini shallow body

Body part number cast iron rails [1]	Channel type	Slope	Overall body depth E1 (Min.)	Overall body depth E2 (Max.)	Maximum flow rate GPM [*]	Maximum flow rate LPS [*]	Maximum flow rate CFS [*]	Weight (less grate) LBS	Weight (less grate) kg.
10515102	mini 100	0 %	3.94" (100 mm)	3.94" (100 mm)	34.87	2.20	0.0777	41.45	18.8
10515100	mini 120	0 %	4.72" (120 mm)	4.72" (120 mm)	57.06	3.60	0.1271	46.3	21
10515101	mini 170	0 %	6.69" (170 mm)	6.69" (170 mm)	106.20	6.70	0.2366	54.67	24.8

[1] With cast-iron rail, tested up to cl. F 900 acc. to EN 1433. Installation according to the manufactures installation instructions.
[*] GPM = Gallons per minute, LPS = Liters per second, CFS = Cubic feet per second

Projects

Accessories FILCOTEN® pro – g 150 mini shallow body

Item no.	Accessories	Material	Weight LBS	Weight kg.
19015200	Front/end cap mini galvanized steel (BH 100/120)	galvanized	0.66	0.3
19015230	Front/End cap mini (BH170)	galvanized	1.10	0.5
19015231	End cap mini with outlet DN150 (BH170)	galvanized	1.32	0,6
19016206	6" No Hub bottom outlet	galvanized	1.32	0.6
19010915	Rebar support	fabricated steel	2.64	1.2

Accessory details including additional images = page 26 - 27

Gratings FILCOTEN® pro – g 150 mini shallow body 4-point bolting.

Item no.	Gratings	Material	Dimensions in mm	Load class as per EN-standard	Slot-/meshwidth	Weight LBS	Weight kg.	Inlet cross-section sq. inches	Inlet cross-section cm^2/m
17015103	1. Ductile iron longitudinal grating	ductile iron	500/172/20	E 600 kN	Mesh .87“ by .51“ (22x13mm)	15.87	7.2	99,2	640
17015107	2. Ductile iron slotted grating	ductile iron	500/172/20	F 900 kN *	.55“ wide x 5,91“ slots (14x150mm)	16.09	7.3	110,05	710

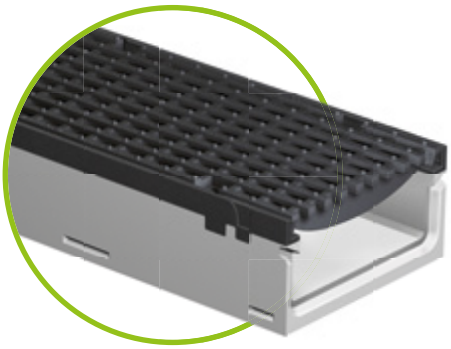
) For class F 900 kN installation (e.g airport terminals), a final release of the installation details by the manufacturer must be followed!

1. Ductile iron longitudinal grating
MW 22/13, cl. E

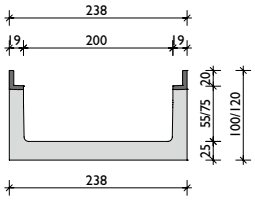
2. Ductile iron slotted grating
SW 14/150, cl. F *

FILCOTEN® pro – g

8" / 200 mm nominal width, 1 meter / 39.40" length - load class F 900



FILCOTEN® pro – g 200 mini
with cast iron rails



Channel body FILCOTEN® pro – g 200 mini shallow body

Body part number cast iron rails [1]	Channel type	Slope	Overall body depth E1 (Min.)	Overall body depth E2 (Max.)	Maximum flow rate GPM [*]	Maximum flow rate LPS [*]	Maximum flow rate CFS [*]	Weight (less grate) LBS	Weight (less grate) kg.
15020102	mini 100	0 %	3.94" (100 mm)	3.94" (100 mm)	47.6	3.00	0.11	47.62	21.6
10520100	mini 120	0 %	4.72" (120 mm)	4.72" (120 mm)	79.3	5.00	0.18	52.91	24
10520101	mini 200	0 %	7.87" (200 mm)	7.87" (200 mm)	79.3	5.00	0.18	68.78	31.2

[1] With cast-iron rail, tested up to cl. F 900 acc. to EN 1433. Installation according to the manufactures installation instructions.
[*] GPM = Gallons per minute, LPS = Liters per second, CFS = Cubic feet per second

Projects

Accessories FILCOTEN® pro – g 200 mini shallow body

Item no.	Accessories	Material	Weight LBS	Weight kg.
19015200	Front/end cap mini galvanized steel (BH 100/120)	galvanized	0.66	0.3
19020230	Front/End cap mini (BH200)	galvanized	1.76	0.8
19020232	End cap mini with outlet DN150 (BH200)	galvanized	1.10	0.5
19021208	8" No Hub bottom outlet	galvanized	2.20	1.0

Accessory details including additional images = page 26 - 27

Gratings FILCOTEN® pro – g 200 mini shallow body 4-point bolting.

Item no.	Gratings	Material	Dimensions in mm	Load class as per EN-standard	Slot-/meshwidth	Weight LBS	Weight kg.	Inlet cross-section sq. inches	Inlet cross-section cm^2/m
17020103	1. Ductile iron longitudinal grating	ductile iron	500/222/20	E 600 kN	Mesh .87" by .51" (22x13mm)	19.40	8.8	120.9	780
17020107	2. Ductile iron slotted grating	ductile iron	500/122/20	F 900 kN *	55" wide x 3.74" slots (14x95mm)	27.12	12.3	133.3	860

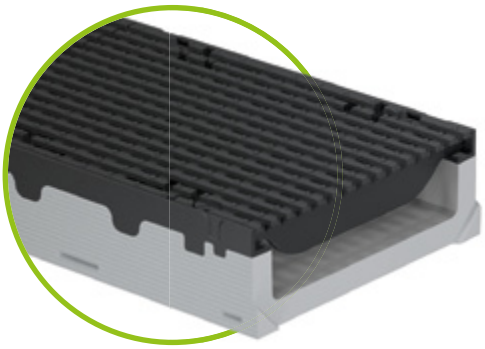
) For class F 900 kN installation (e.g airport terminals), a final release of the installation details by the manufacturer must be followed!

1. Ductile iron longitudinal grating
MW 22/13, cl. E

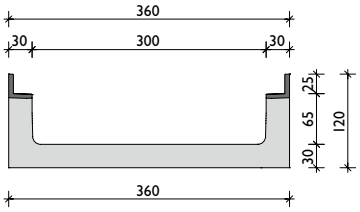
2. Ductile iron slotted grating
SW 14/95, cl. F *

FILCOTEN® pro – g

12" / 300 mm nominal width, 1 meter / 39.40" length - load class F 900



FILCOTEN® pro – g 300 mini
with cast iron rails



Channel body FILCOTEN® pro – g 300 mini shallow body

Body part number cast iron rails [1)]	Channel type	Slope	Overall body depth E1 (Min.)	Overall body depth E2 (Max.)	Maximum flow rate GPM [*)]	Maximum flow rate LPS [*)]	Maximum flow rate CFS [*)]	Weight (less grate) LBS	Weight (less grate) kg.
10530100	mini 120	0 %	4.72" (120 mm)	4.72" (120 mm)	120.46	7.60	0.2684	83.56	37.9

[1)] With cast-iron rail, tested up to cl. F 900 acc. to EN 1433. Installation according to the manufactures installation instructions.

[*)] GPM = Gallons per minute, LPS = Liters per second, CFS = Cubic feet per second

Projects

Accessories FILCOTEN® pro – g 300 mini shallow body

Item no.	Accessories	Material	Weight LBS	Weight kg.
19030210	Front/end cap mini galvanized steel	galvanized	1.10	0.5
19021208	8" No Hub bottom outlet	galvanized	2.20	1.0

Accessory details including additional images = page 26 - 27

Gratings FILCOTEN® pro – g 300 mini shallow body 4-point bolting.

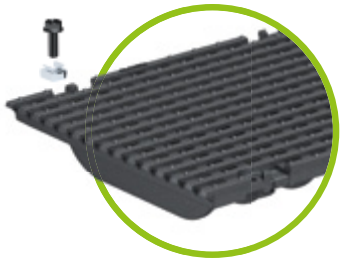
Item no.	Gratings	Material	Dimensions in mm	Load class as per EN-standard	Slot-/meshwidth	Weight LBS	Weight kg.	Inlet cross-section sq. inches	Inlet cross-section cm²/m
17030107	1. Ductile iron slotted grating	ductile iron	500/347/25	F 900 kN *	.63“ wide x 5.51“ slots (SW16x140 mm)	49.16	22.3	176.7	1.140

) For class F 900 kN installation (e.g airport terminals), a final release of the installation details by the manufacturer must be followed!

Gratings FILCOTEN® pro – g 300 mini shallow body with fiX self-locking system and additional 4-point bolting.

Item no.	Gratings	Material	Dimensions in mm	Load class as per EN-standard	Slot-/meshwidth	Weight LBS	Weight kg.	Inlet cross-section sq. inches	Inlet cross-section cm²/m
17030103	2. Ductile iron longitudinal grating	ductile iron	500/347/25	E 600 kN	Mesh 1.14“ by .51“ (MW29x13mm)	29.32	13.3	227.08	1.465

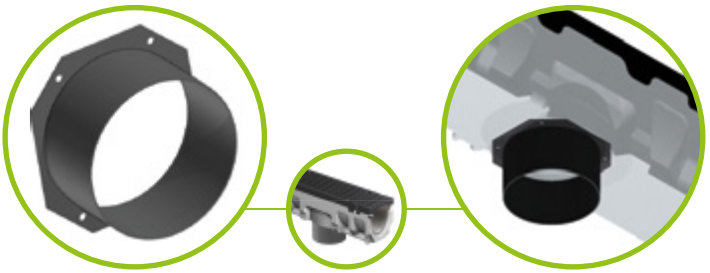
1. Ductile iron slotted grating
SW 16/140, cl. F *



2. Ductile iron longitudinal grating
MW 29/13, cl. E

FILCOTEN® pro – g

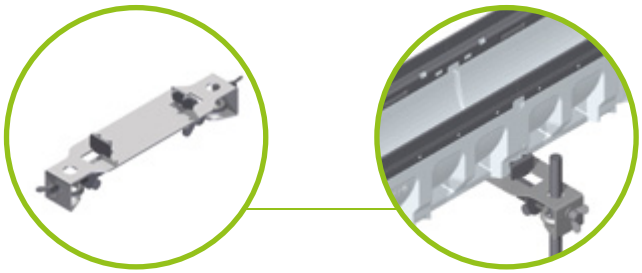
Accessories



Bottom outlet
galvanized steel 4/6/8"

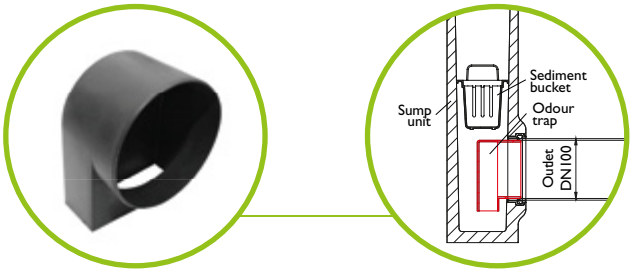
Prefabricated DN 100
outlet opening

Positioning of outlet opening: channel end to outlet centre = 250 mm



Rebar support clip:
designed to tighter around the rear at two different points.
The channels are held level & secure during the concrete pour.

Sediment bucket in plastic
for sump unit to fit NW -
acts as a dirt trap

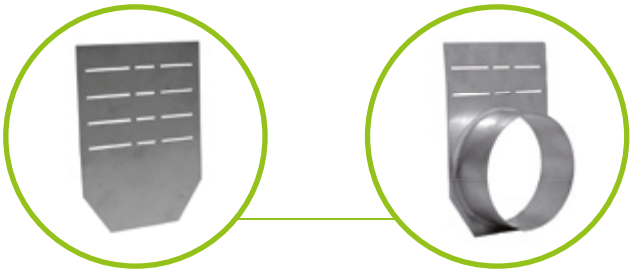


Retrofittable odor trap for sump unit DN 100 or 150
Installation: Insert the odour trap from the inside and connect with the sewage pipe.

Bolts/nuts
galvanized or stainless steel V2A

for ductile iron bar gratings
cl. E (only available in cast iron
edge) for all NW and for mesh
gratings cl. C (FCT pro – g 300)

Front- /end cap
FILCOTEN pro mini



Front- /end cap for all NW

End cap with outlet for all NW

Accessories FILCOTEN® pro – g 100 and pro – g 100 mini shallow body

Item no.	Accessories	Material	Weight
30056	Drain trap for catch basin unit DN 100 for backfitting	plastic	0.1 kg
30019	Drain trap for bottom outlet DN 100	plastic	0.2 kg
32103	Bolts/nuts for class E ductile iron bar grating (8 pcs. required per m)		0.2 kg
32109	Bolts/nuts (stainless steel) for class E ductile iron bar grating (8 pcs. required per m)		0.2 kg

Accessories FILCOTEN® pro – g 150 and pro – g 150 mini shallow body

Item no.	Accessories	Material	Weight
30030	Odor trap made of PVC bends DN 150/87°	plastic	3.9 kg
30057	Drain trap for sump unit DN 150 for backfitting	plastic	0.2 kg
32103	Bolts/nuts for class E ductile iron bar grating (8 pcs. required per m)		0.2 kg
32109	Bolts/nuts (stainless steel) for class E ductile iron bar grating (8 pcs. required per m)		0.2 kg

Accessories FILCOTEN® pro – g 200 and pro – g 200 mini shallow body

Item no.	Accessories	Material	Weight
30040	Odor trap made of PVC bends DN 200/87°	plastic	7.4 kg
32103	Bolts/nuts for class E ductile iron bar grating (8 pcs. required per m)		0.2 kg
32109	Bolts/nuts (stainless steel) for class E ductile iron bar grating (8 pcs. required per m)		0.2 kg

Accessories FILCOTEN® pro – g 300 and pro – g 300 mini shallow body

Item no.	Accessories	Material	Weight
30040	Odor trap made of PVC bends DN 200/87°	plastic	7.4 kg
32112	Bolts/nuts (galvanized steel) for class C mesh grating (8 pcs. required per m)		0.3 kg
32110	Bolts/nuts (galvanized steel) for class E ductile iron longitudinal grating (8 pcs. required per m)		0.3 kg
32122	Bolts/nuts (stainless steel) for class E ductile iron longitudinal grating (8 pcs. required per m)		0.3 kg

FILCOTEN®

Neutral trench drain flow rates vs. sloped trench drain flow rates

It has been engineering pactice in the US and Canada to design and specifiy trench drain systems with a prefabricated slope. This has been done under the assumption that presloped trench drains would provide a greater flow rate. Pershap a prefabricated slope would of been of help years ago by helping to compenstating for a less than smooth internal channel design: however, today any quality concrete trench manufacture has over come these finishing challenges. Like many things in this world, the custom of specifing presloped trench drian has simply become accepted design. Today this thought is no longer an, in fact a neutral trench drian system will work just as well, if not better than a sloped trench system. In fact there are important project benefits which are only found with a neutral channel design.

The specific project advantages received by the specifier, building owner, contractor, and wholesaler when using a neutral trench drain system :

1. Faster delivery to the jobsite as fewer sizes of trench drain bodies are needed.
2. No chance of installing the incorrect trench drain body in the proper numerical sloped order of the system.
3. Faster installation preparation because one size trench drain body does not require complicated site organization.
4. Faster installation due to same height of the trench drain body. Often, sloped trench drain bodies are mixed on a pallet – requiring time to sort and identify them. This is not the case with neutral bodies.
5. Increased flexibility, becuase the contractor can easily increase the number of neutral trench drain bodies in order to have extensions or replacements. This is not possible with sloped trench drain bodies.
6. Lower overall cost to the building owner.

The flow rate of a trench drain is affected by three main factors: (1) height of the bodies, (2) width of the bodies and (3) length of the run. Trench drain bodies with a greater height (assuming the width is the same) have more volume capacity and therefore a greater flow rate because the head pressure is greater when the water height is higher. Trench drain bodies that are wider than others have more volume capacity (assuming that the height of the water is the same) and as a result, a higher flow rate. The shorter the trench drain run, the greater the flow rate beucase of the build up of head pressure and greater velocity of water draining to the closer outlet.

A typical sloped trench drain system (see Figures 1-A and 1-B in the adjacent page) starts off with a shallow sloped body section and ends with a deeper sloped body section. This means that the body height is not consistent and the volume capacity of the sloped system is less than the volume capacity of a neutral system that has the same body height throughout the run (see Figures 2-A and 2-B in the adjacent page).

Figures 1-A and 1-B illustrate a typical sloped trench drain system with flow rates of 98.27 GPM in the 10 meter run and 142.60 GPM in the 20 meter run. Figures 2-A and 2-B illustrate the FILCOTEN® T1520N meter run. Note that the ending body height in a typical sloped 10 meter trench drain system (195 mm) is the same as all of the body heights in the FILCOTEN® T1510N system (195 mm) and the ending body height in a typical sloped trench drain (245 mm) is the same as all of the body heights in the FILCOTEN® T1520N system (245 mm).

Therefore, take advantage of the greater flow rates and easier installation of the FILCOTEN® netural trench drain systems instead of the industry standard sloped trench drain systems.

4" Wide Sloped vs. Neutral Flow Rate Comparison

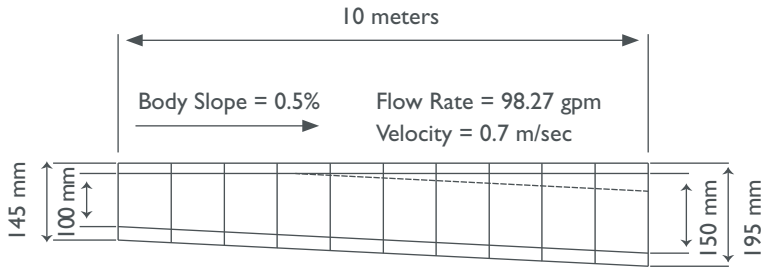


Figure 1-A Typical Sloped Trench Drain from Others

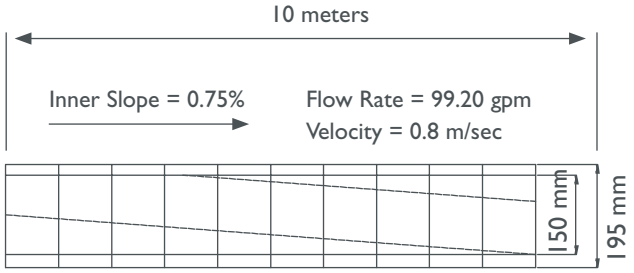


Figure 2-A FILCOTEN® pro – g 10-0

This line refers to the open water level, which will start lowering after 1/3 of the run towards the outlet.

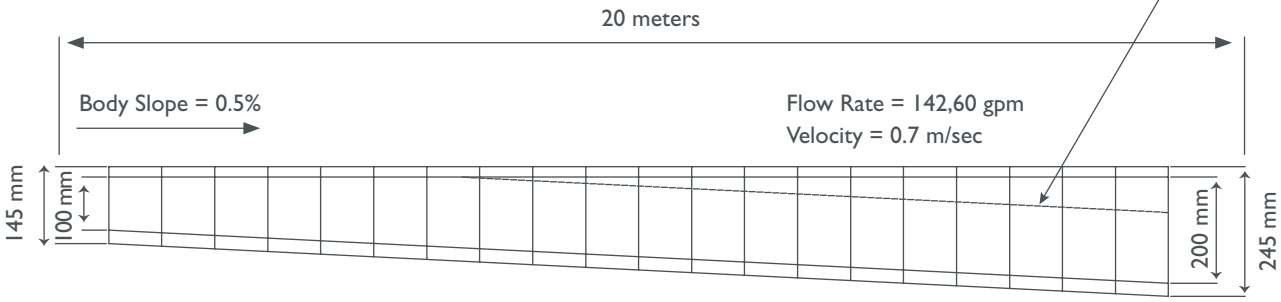


Figure 1-B Typical Sloped Trench Drain from Others

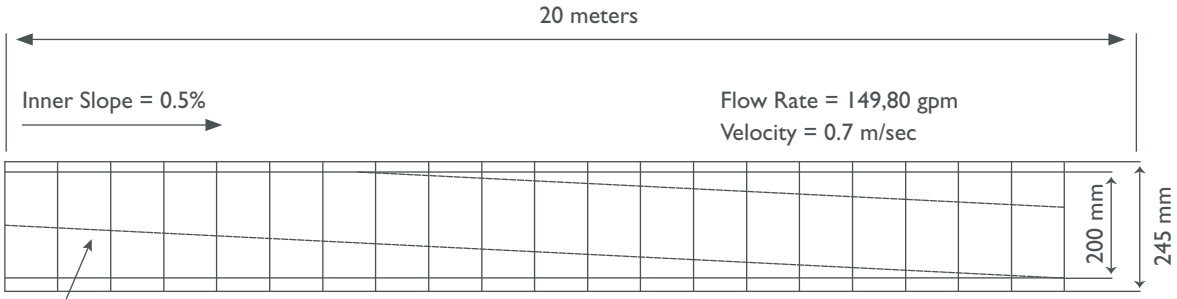


Figure 2-B FILCOTEN® pro – g 20-0

This line refers to the "inner slope", which is created by the height of the body and the length of the run. This is based on the principle of the Gauckler Manning Strickler formula.

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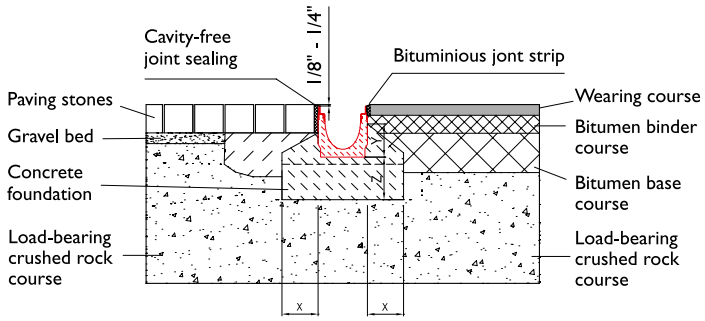
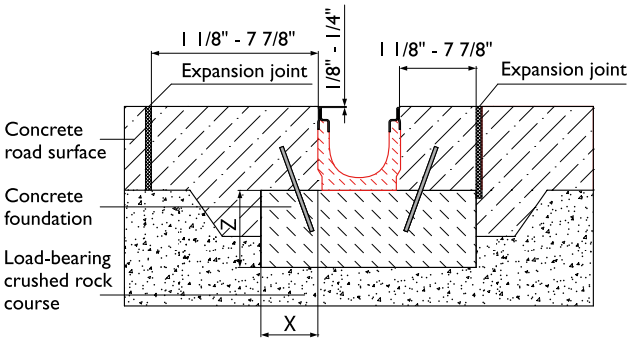
Installation guidelines





Load Class EN 1433	A15 kN	B12 kN	C250 kN	D400 kN	E600 kN	F900 kN
PSI for NW 100/150/200	70	580	1160	1856	2784	4176
PSI for NW 300	58	483	971	1547	2320	3480
Concrete	Minimum grade 4000 PSI compessive strength concrete					
X	≥ 3" (8cm)	≥ 4" (10cm)	≥ 6" (15cm)	≥ 6" (15cm)	≥ 8" (20cm)	Requires Engineer designed system, please call for addtional information
Y	Body height minus 3.1" (8cm)			Body height minus 2" (5cm)		
Z	≥ 3" (8cm)	≥ 4" (10cm)	≥ 6" (15cm)	≥ 8" (20cm)	≥ 8" (20cm)	
Reinforcement Bar	Not required			Consult Engineer		

ATTENTION: Acceleration, braking and torque forces must be taken in consideration for product selection and installation. Installation must be performed according to the installation instruction. Technical specifications are subject to change without further notice.

For further information visit us at www.bg-company.com or contact our technical support team.

The following installation guidelines and installation examples are intended for conventional applications. The load class and installation site, as specified in DIN19580, must be adapted to local conditions by the respective architectural office. The codes and regulations generally familiar to the trade must be heeded during installation.

1. Hydro BG concrete bodies are to be laid on a concrete foundation, or in a drain concrete, paying attention to the desired fall during excavation. Depending on static requirements, a lateral support wedge may be necessary – for details see table and cross- sections. Body sections should, in principle, be placed into position using the appropriate tools.

2. For sloped bodies, observe the different heights. The body run should be placed into position starting at the discharge transition point. The direction of flow on each body is indicated by an arrow.

3. The connecting area between individual bodies may be sealed or bonded using suitable sealants - refer to the Hydro BG Sealing System for material descriptions and quantity determination information.

4. Insert the grates into the bodies, and secure where applicable, or sufficiently brace the body against compression prior to laying the adjoining surface covering. Take care not to damage bodies during compaction of the surfacing and the surface covering (asphalt, paving stones, concrete, etc.).

5. A sufficiently large expansion joint, positioned 1" – 78" from the body, must be provided at the junction to the carriageway where horizontal forces are anticipated (e.g. for concrete surfaces, inclines, etc.). Expansion joints passing across the body run are to be positioned in the adjoining concrete surfaces so that they pass through a body joint.

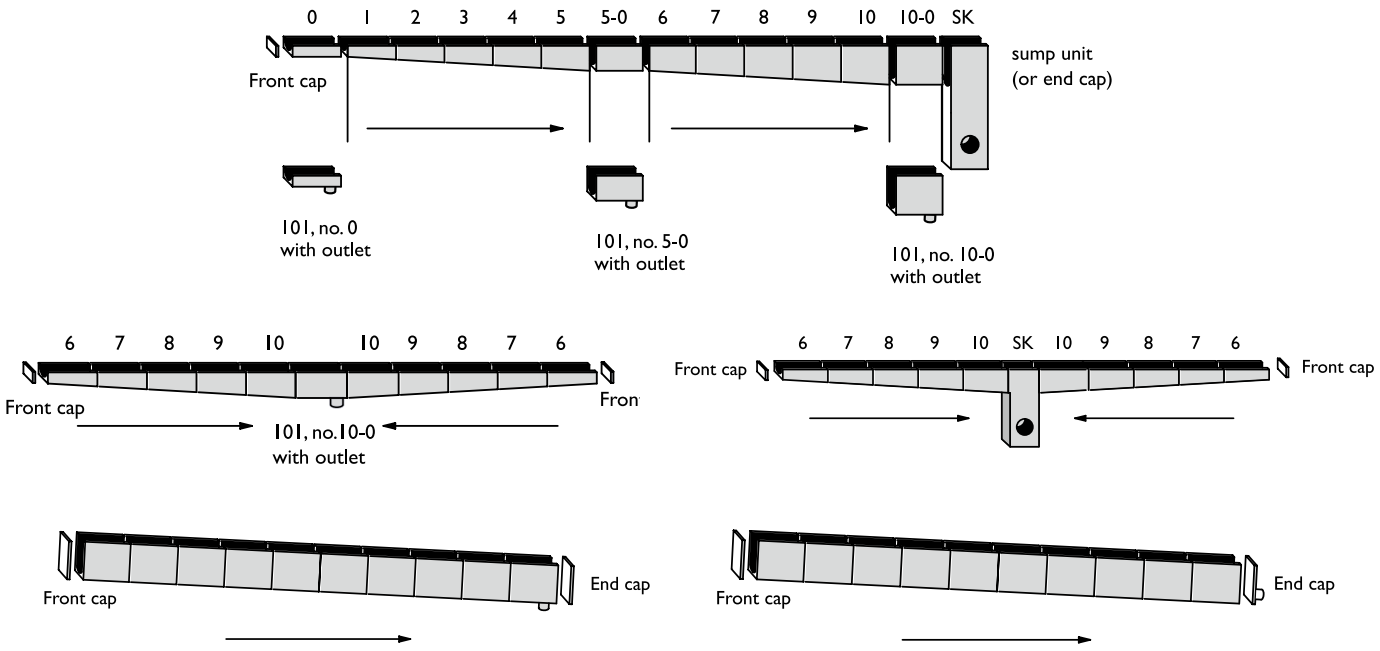
6. Depending on the application, the frequency and speed with which bodies are crossed, in highly trafficked areas we recommend that covers are secured in position with the anti-vandalism locking device.

7. All adjacent surface coverings should be laid to be 1/8" - 1/4" permanently higher than the body surface in order to avoid mechanical damage (e.g. during snow clearance) and to ensure proper water runoff.

8. We recommend the installation of drainage bodies with stainless steel side edges and stainless steel covers in areas where the possibility of chemical influences (e.g. de-icing agents, acids, alkalis, etc.) is high.

The installation instructions also apply to sump units.

INSTALLATION EXAMPLES

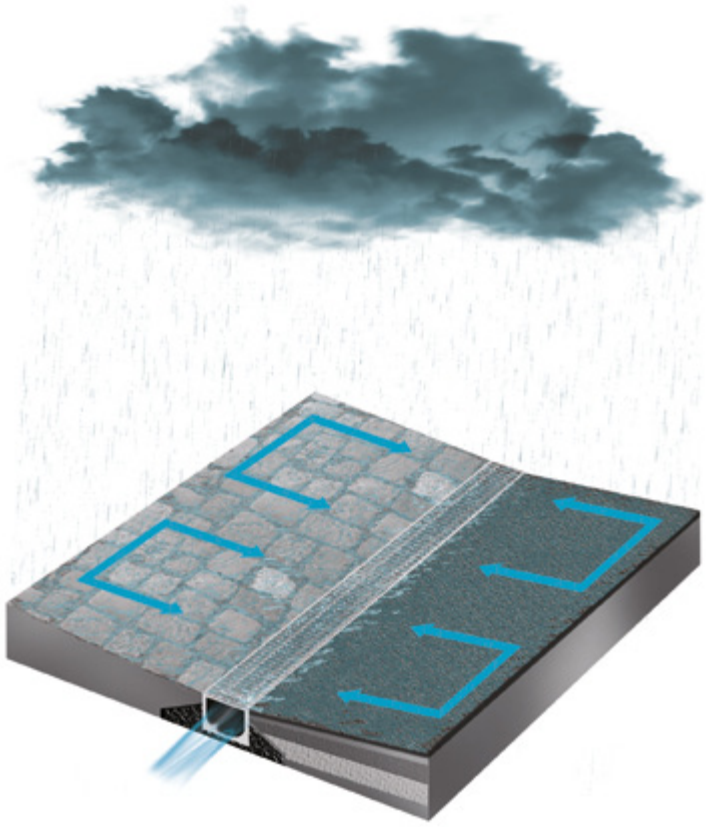


Typical trench drain sizing considerations

In order to size a trench drain system (lenght and width), the following information is needed:

1. Total lenght of the trench drain (feet or meters).
2. Lenght and width of the surface area draining into the trench (feet or meters).
3. Surface area type - concrete, pavement, asphalt, etc.
4. Rainfall intensity (inches per hour or mm per hour) of the area where the trench drain will be installed.
5. Slope or ground along the trench drain (%).
6. Perpendicular slopes to trench drain (%).
7. Location of and number of outlets along the trench drain run.
8. Any slab depth height restrictions.

Please contact FILCOTEN sales of engineering for any help you may require.



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Grate load class definitations

There are two main grate definitions in the trench drain industry to help specifiers select the appropriate grate:

ANSI A112.21.1M	Grates and top rims shall be designed to meet the following loading classifications in a static condition.
Light Duty	All grates having safe live load (as calculated in paragraph 6.1.6 of the ANSI Standard) under 2,000 lbs. (900 kg.) For pedestrian foot traffic only.
Medium Duty	All grates having safe live load (as calculated in paragraph 6.1.6 of the ANSI Standard)between 2,000 lbs. (900 kg.) and 4,999 lbs. (2,250 kg.) For light pneumatic tire traffic only. Sidewalks and residential parking.
Heavy Duty	All grates having safe live load (as calculated in paragraph 6.1.6 of the ANSI Standard) between 5,000 lbs. (2,250 kg.) and 7,499 lbs. (3,375 kg.) For Commercial Pneumatic tire traffic patterns and tractor trailors.
Extra Heavy Duty	All grates having safe live load (as calculated in paragraph 6.1.6 of the ANSI Standard)between 7,500 lbs. (3,375 kg.) and 10,000 lbs. (4,500 kg.) For forklift traffic. Roads and Highways. H-20 Load Rated.
Special Duty	All grates having safe live load (as calculated in paragraph 6.1.6 of the ANSI Standard)over 10,000 lbs. (4,500 kg.) For airport traffic.

DIN 19580/ EN1433	Grates and top rims shall be designed to meet the following loading classifications in a static condition.
Load Class A	Light Duty Grate design load up to or exceeding 3,372 lbs per foot. (15 kn). For pedestrian foot traffic only.
Load Class B	Medium Duty Grate design load of at least 28,100 lbs per foot. (125 kn). For light pneumatic tire traffic only. Sidewalks and residential parking.
Load Class C	Heavy Duty Grate design load of at least 56,200 lbs per foot. (250 kn). Commercial Applications.
Load Class D	Grate design load of at least 89,920 lbs per foot. (400 kn). For pneumatic forklift traffic. Extra Heavy Duty. Roads and Highways. H-20 Load Rated.
Load Class E	Grate design load of at least 134,800 lbs per foot. (600 kn). For Commercial Solid tire traffic patterns, and impacts from steel struts or metal wheels (forklifts).
Load Class F	Grate design load of at least 202,320 lbs per foot. (900 kn). For airport traffic. Requires Engineer designed system, please call for addtional information.

Transportation Classifications

The American Association of State Highway and Transportation Officials' (AASHTO) "Standard Specification for Highway Bridges" defines H-20 loading as a two-axle truck with a maximum dual-wheel load of 16,000 lbs. HS-20 loading is defined as a tractor truck with a tandem axle semi-trailer with a dual- wheel load of 16,000 lbs.

The FAA (Federal Aviation Administration) Advisory Circular AC 150/5320-6D describes aircraft loading as 100,000 lbs. placed over a 9" x 9" area. The Americans with Disabilities Act (ADA) stipulates that the slot width be limited on gratings in walkways and elongated slots must be placed longitudinally so that they are perpendicular to the dominant direction of travel.

Heel Proof is defined as slots or perforations that are less than ¼" in width or diameter.

Projects

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Space for your notes

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