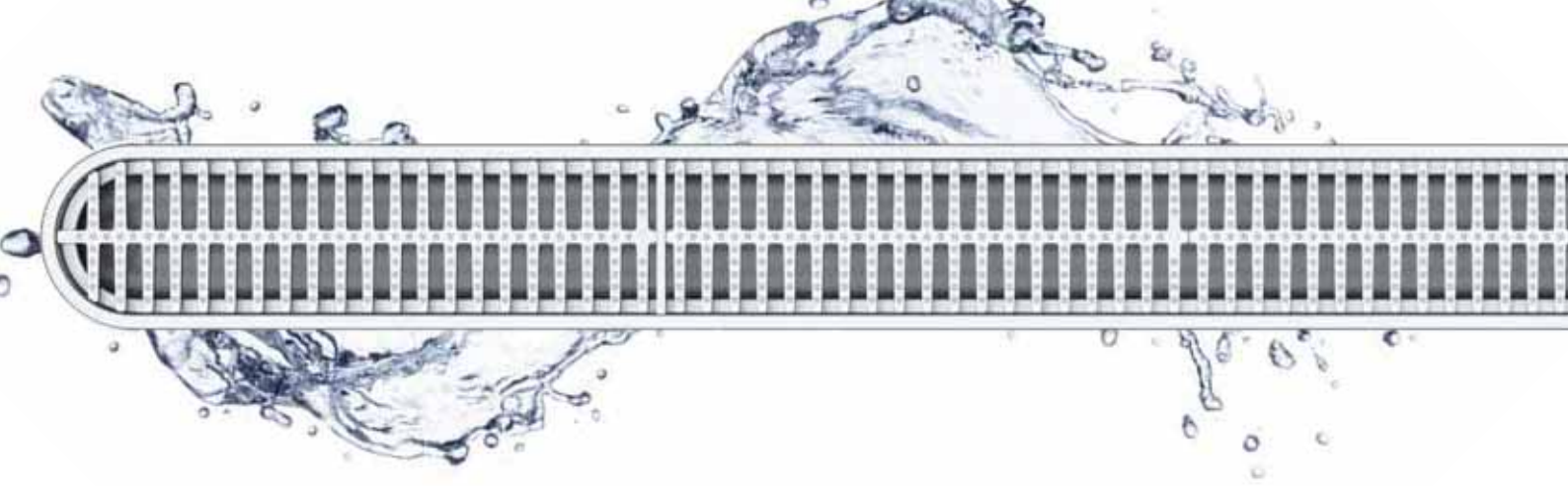
25065 March 2018

Product Catalogue for HygienicPro®

Stainless steel drains and channels for better food safety

BLÜCHER®

A WATTS Brand



Safe solutions

BLÜCHER® stainless steel drainage products are installed in almost any kind of construction project, from multi-storey apartments and food processing factories to hospitals and on board prestigious cruise liners. We have specialised our competencies within four main segments:

Housing

Commercial

Industrial

Marine

The BLÜCHER® drainage system is a modular system providing numerous possible product combinations.

BLÜCHER® Drain
Floor drains for light- to heavy-duty flow and load applications.

BLÜCHER® Channel
Standard, modular or customised channels and kitchen channels for all flow and load applications.

BLÜCHER® EuroPipe
Push-fit drainage pipe-work system for soil, waste and rainwater.

Customised solutions
To ensure that any drainage requirement can be fulfilled we are always ready to solve your special request.

Strong products

All BLÜCHER® drainage products are produced in stainless steel grade AISI 304 or optionally grade AISI 316L. This material is ideally suitable for high-quality drainage systems:

- Fire resistant
- High strength - low weight
- Environmentally friendly

Furthermore it is corrosion resistant, resistant to impacts and thermal stress and requires minimal maintenance.

In the BLÜCHER® drainage products the inherent qualities of stainless steel are enhanced by careful product design resulting in:

- Long product life expectancy
- Excellent hygienic properties
- Easy installation
- Whole-life cost advantages
- Excellent flow capacities

All BLÜCHER® products are chemically descaled and passivated in order to enhance the natural corrosion resistance and provide a uniform matt-silver surface finish.

All stainless steel components are manufactured from recycled materials and are 100% recyclable.

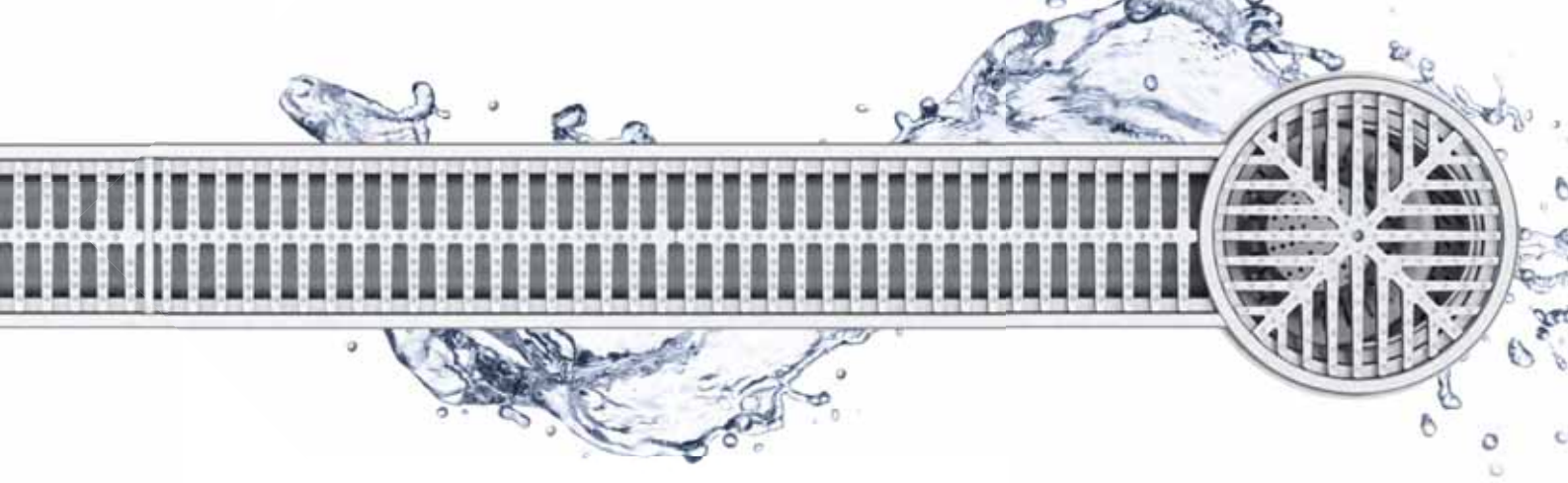
Danish quality

Founded in Denmark in 1965, BLÜCHER has developed into a leading manufacturer of stainless steel drainage systems. Today, BLÜCHER is an international company with subsidiaries and representations worldwide. The BLÜCHER Group employs more than 350 staff worldwide.

Customers all over the World appreciate our know-how, dedicated service and common sense.

Through quality stainless steel products and drainage solutions that lead waste water away, BLÜCHER is committed to the promise of keeping up the flow.

The BLÜCHER® drainage products are manufactured in Denmark using the most modern production methods and in accordance with the internationally recognised quality standard ISO 9001. Furthermore, the most respected classification societies endorse the BLÜCHER® drainage products worldwide.



Selected references around the World

Hospitals, schools, commercial kitchens, the food and beverage industry and the pharmaceutical industry are among the customers that benefit from BLÜCHER stainless steel drainage systems.

Housing

BLÜCHER® stainless steel floor drains and pipe system are used all over the World in Scandinavian-style wet bathrooms in single and multi-storey buildings.

Commercial

Queen Mary Hospital, Hvidovre hospital, Princess Alexandra Hospital, Blackpool Victoria Hospital, Queen Elizabeth Hospital, St. James Hospital, University College London Hospital, Sportcentrum Fitness First, Czàszar Swimming Pool, Sports & Aquatic Centre, International Grammar School, Collège Bellevue, Elite University, Universitat Pompeu Fabra, Augustenborgskolan, Canadian International School, North Texas State University, Elderly Citizens Home Adelaide, Old Peoples Home Budapest, Maryland State Prison, Uppsala Polishus, Oslo Opera, Hilton Hotels, Hotel Marriot, Sofitel, Novotel, The Ritz Carlton Bahrain, McDonalds, Burger King, Pizza Hut, Le Louvre, Bahrain National Museum, Ministère de L´Industri, State Library of Victoria, Royal Danish Theatre, Copenhagen Zoo, Hong Kong Disneyland, Dubai Mall, IKEA, Tesco, Coop, Metro, Carrefour, Lidl, Woolworths, Gardamoen Oslo, Copenhagen Airport, Heathrow Airport, Barcelona Airport, New Athens Airport, Orly Airport, Arlanda Airport, Helsinki Airport.

Industrial

Pfizer, GSK, Astra Zeneca, Johnson & Johnson, Aventis, Kraft, Nestlé, Danish Crown, Daloon, Tulip, Knorr, Singapore Airport Catering, Ahlgreens, Estrella, Kelloggs, CocaCola, Pepsi, Heineken, Carlsberg, Whitbread Breweries, Budweiser, Tropicana Juice Processing, Absolut Vodka. Nestlé, Arla Food, Danone, Unilever, Almarai Dairy. Mercedes, Renault, L'Oreal, Sony, BASF, 3M, IBM World Headquarters, Honeywell, Colgate Palmolive, Royal Copenhagen, Hella.

Marine

Freedom of the Seas, Liberty of the Seas, Norwegian Star, Color Magic, Pride of Hawaii, Galaxy, AIDA Diva, Celebrity Solstice.
MY Platinum (Dubai Ports Authority), M/S Caravelle (Jade Yachts), Safari (Blohm & Voss) Lady Haya (Pesaro), Pelorus (Lürssen Kröger Werft), Oceanco Kusch Yachts Agentur.
3 vehicle carriers and 10 container ships (MHI Japan), 6 container vessels (AP Møller), 35 commercial vessels (Mawai China), 24 container vessels (Dalian Shipyards China).
Agbami Off Shore, Consafe-Aberdeen Oil Platform Bingo I & Bingo II Offshore Oil Rigs.Auxillary vessel (British Navy), 5 frigates (Norwegian Navy), 2 logistics vessels (Danish Navy), 2 survey vessels Dutch Navy.

BLÜCHER®

A WATTS Brand

TABLE OF CONTENTS

HygienicPro®

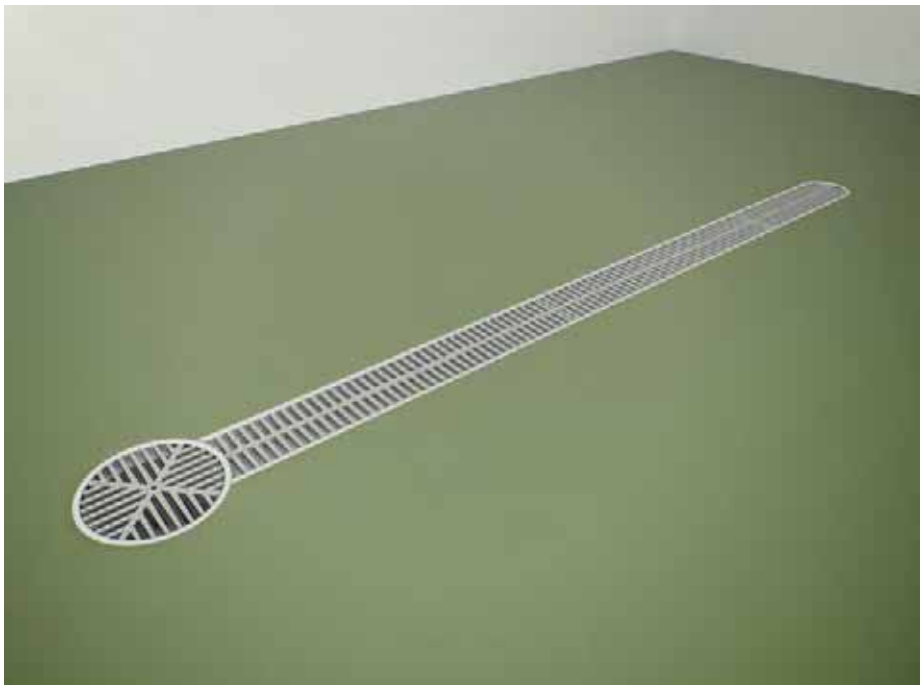
BLÜCHER® Drain Industrial

BLÜCHER® Channel

Technical Information

Channels and drains for hygienically demanding applications

PATENT PENDING



Hygienic design
Developed specifically for the food-processing industry

Applications
For resin and concrete/tiled flooring in:
- Production areas with strict hygiene requirements, mainly the food processing industry

Details
- Designed without corners or cavities inside
- Longitudinal and cross fall in channels
- New channel profile for efficient water flow
- 1,5 mm material thickness
- 15 mm frame width
- Anchor tangs
- Heavy-duty frame and secure bonding to floor
- Protective cover and frame protection/template for joint
- Stainless steel AISI304/EN 1.4301 or AISI316/EN 1.4404

NEW: HygienicClean™ channel washer - cleans channel and grating in one process, saving water, time and money

Variants
- Point drains
- Channels with end or center outlet
- Drain bowl/outlet box in three different heights

Options
- Removable water trap
- Filter basket in three different heights

Extras
- Tile adapter for installation in concrete/tiled floors
- Funnel, channel filter and other accessories for hygienic applications

Modular product components complemented by project-designed bespoke products provide hygienic drainage solutions to match any drainage project.

Product database at www.blucher.com

Complete channels and drains

HygienicPro® channel

HygienicPro® drain

Efficient flow towards outlet
New channel geometry provides efficient transportation to outlet area, keeping channels empty and clean even during minimal water flow

Production down-time reduced
High-capacity filter basket eliminates production slow-downs caused by the need to empty clogged filter baskets

Fast and easy drain cleaning
Removable water trap, separable for easy cleaning, with improved water flow as compared to other traps

Easy and efficient floor cleaning
Grating with open sides, rounded corners and no cavities prevents waste and residues from depositing on the grating surface

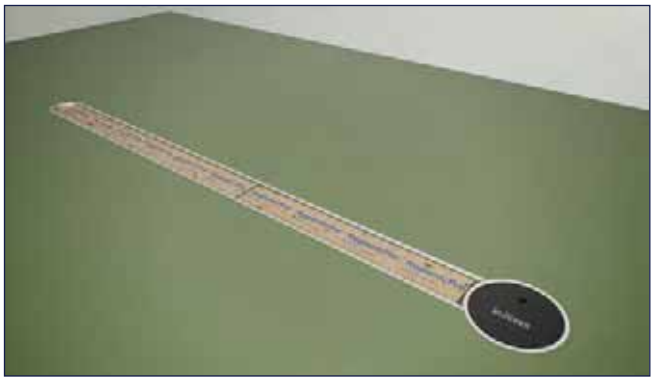
Hygienic floor concept
due to rounded corners reducing the risk of joint deterioration and flooring cracks in resin flooring

Neat and safe installation
Protective cover and template for uniform application of flexible sealant around channel/drain

Secure and durable bonding to floor
Improving hygiene and durability owing to edge infill of the frame and special anchor tangs, minimizing the risk of deformation to the frame and flooring cracks

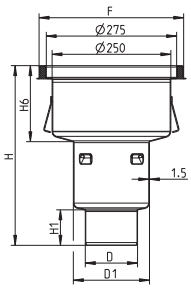
Installation examples

HygienicPro® channel



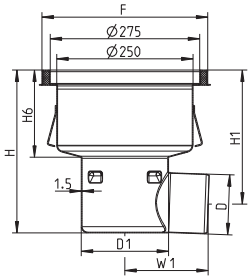
HygienicPro® drain

HYGIENICPRO INDUSTRIAL DRAIN TYPE 755



Type no.	EAN no.	D	D1	F	H	H1	H6	Holes for screws
755.513.110	5705499137804	110	160	Ø305	275	75	57	0
755.503.110	5705499137781	110	160	Ø305	378	75	160	0
755.573.110	5705499137828	110	160	Ø305	455	75	237	0

HYGIENICPRO INDUSTRIAL DRAIN TYPE 756

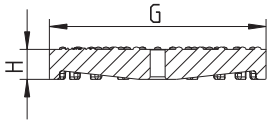


Type no.	EAN no.	D	D1	F	H	H1	H6	W1	Holes for screws
756.513.110	5705499137866	110	160	Ø305	196	143	57	153	0
756.503.110	5705499137842	110	160	Ø305	299	246	160	153	0
756.573.110	5705499137880	110	160	Ø305	376	323	237	153	0

All dimensions in mm - Stainless Steel grade AISI 316L specify type no. with suffix S

Gratings CIRCLE

HYGIENICPRO GRATING CIRCLE



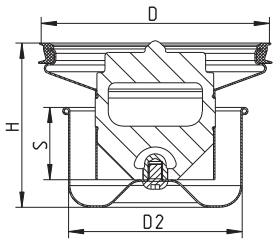
Type no.	EAN no.	G	H	EN1253 (kg)	Non slip	Screws
790.273.000.60	5705499128352	Ø273	24	R50 (5.000)	R10	0
790.273.000.60 S	5705499138672	Ø273	24	R50 (5.000)	R10	0

Only available in stainless steel grade AISI CF-8 corresponding to AISI 304C/EN1.4308

All dimensions in mm - Stainless Steel grade AISI 316L specify type no. with suffix S

Water traps

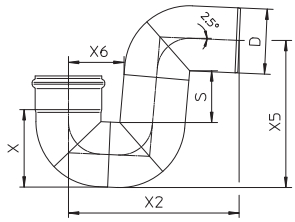
REMOVABLE TWO-PART WATER TRAP TYPE 562.10



Type no.	EAN no.	D	H	S	D2	Min Flow (l/s)	Max Flow (l/s)
562.102.000 S	5705499137903	157	113	50	120	3.4	6.0

Accurate flow rate depending on type of drain and grating.

P-TRAP 87.5° TYPE 525.090



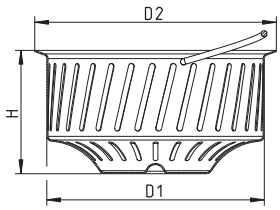
Type no.	EAN no.	D	S	X	X2	X5	X6	Min Flow (l/s)	Max Flow (l/s)
525.090.110 S	5705499101485	110	89	132	289	249	94	3.4	10.4

Accurate flow rate depending on installation.

All dimensions in mm - Stainless Steel grade AISI 316L specify type no. with suffix S

Others

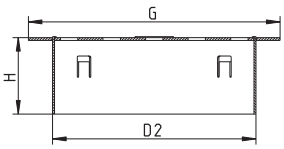
HYGIENICPRO FILTER BASKET TYPE 780



Type no.	EAN no.	D1	H	D2	Volume (l)
780.004.010.05	5705499137934	-	41	245	0.8
780.004.020.05	5705499137941	220	125	245	3.9
780.004.030.05	5705499137958	220	210	245	7.1

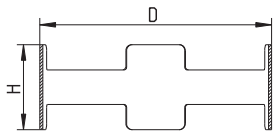
OUTLET FILTER

FOR DRAINS WITH VERTICAL OUTLET



Type no.	EAN no.	G	H	D2
780.400.110.05	5705499135251	Ø130	40	105

HYGIENICPRO SPACING RING FOR FILTER BASKET

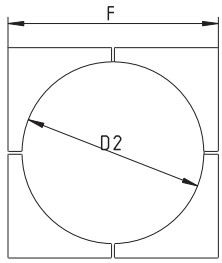


Type no.	EAN no.	D	H
670.000.010	5705499137972	155	57

For medium or high filter basket used together with a P-trap.

Others

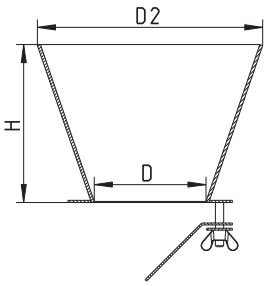
HYGIENICPRO TILE ADAPTOR FOR DRAIN



Type no.	EAN no.	F	D2	T
670.000.022	5705499138009	375x375	325	5

For drains mounted in the tiles.

FUNNEL FOR GRATING



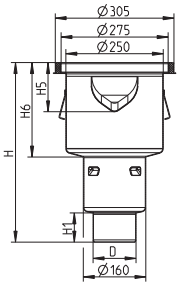
Type no.	EAN no.	D	H	D2
670.005.000	5705499137965	109	153	219

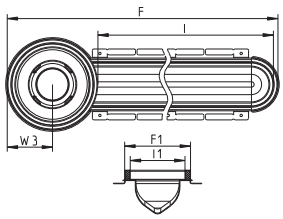
All dimensions in mm - Stainless Steel grade AISI 316L specify type no. with suffix S

without membrane

HYGIENICPRO CHANNEL TYPE 676

END OUTLET

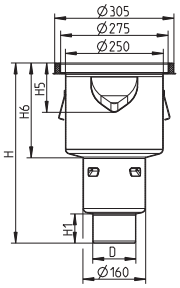


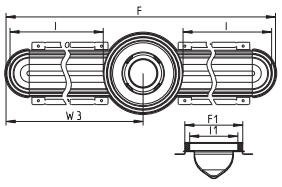


Type no.	EAN no.	D	F	F1	H	H1	H5	H6	I	I1	W3
676CC010-00CF	5705499135497	110	1393	177	378	75	126	160	1074	147	152
676CC010-00DF	5705499135510	110	1393	177	460	75	126	242	1074	147	152
676CC010-00EF	5705499135534	110	1393	177	545	75	126	327	1074	147	152
676CC015-00CF	5705499135619	110	1893	177	378	75	126	160	1574	147	152
676CC015-00DF	5705499135633	110	1893	177	460	75	126	242	1574	147	152
676CC015-00EF	5705499135657	110	1893	177	545	75	126	327	1574	147	152
676CC020-00CF	5705499135732	110	2393	177	378	75	126	160	2074	147	152
676CC020-00DF	5705499135756	110	2393	177	460	75	126	242	2074	147	152
676CC020-00EF	5705499135770	110	2393	177	545	75	126	327	2074	147	152
676CC030-00CF	5705499135978	110	3409	177	398	75	146	180	3090	147	152
676CC030-00DF	5705499135992	110	3409	177	480	75	146	262	3090	147	152
676CC030-00EF	5705499136012	110	3409	177	565	75	146	347	3090	147	152
676CC040-00CF	5705499136210	110	4417	177	398	75	146	180	4098	147	152
676CC040-00DF	5705499136234	110	4417	177	480	75	146	262	4098	147	152
676CC040-00EF	5705499136258	110	4417	177	565	75	146	347	4098	147	152
676CC050-00CF	5705499136456	110	5425	177	398	75	146	180	5106	147	152
676CC050-00DF	5705499136470	110	5425	177	480	75	146	262	5106	147	152
676CC050-00EF	5705499136494	110	5425	177	565	75	146	347	5106	147	152

HYGIENICPRO CHANNEL TYPE 676

CENTER OUTLET





Type no.	EAN no.	D	F	F1	H	H1	H5	H6	I	I1	W3
676CC010-05CF	5705499136579	110	1482	177	378	75	126	160	574	147	741
676CC010-05DF	5705499136593	110	1482	177	460	75	126	242	574	147	741
676CC010-05EF	5705499136616	110	1482	177	545	75	126	327	574	147	741
676CC020-10CF	5705499136692	110	2482	177	378	75	126	160	1074	147	1241
676CC020-10DF	5705499136715	110	2482	177	460	75	126	242	1074	147	1241
676CC020-10EF	5705499136739	110	2482	177	545	75	126	327	1074	147	1241
676CC030-15CF	5705499136814	110	3482	177	378	75	126	160	1574	147	1741
676CC030-15DF	5705499136838	110	3482	177	460	75	126	242	1574	147	1741
676CC030-15EF	5705499136852	110	3482	177	545	75	126	327	1574	147	1741
676CC040-20CF	5705499136937	110	4482	177	378	75	126	160	2074	147	2241
676CC040-20DF	5705499136951	110	4482	177	460	75	126	242	2074	147	2241
676CC040-20EF	5705499136975	110	4482	177	545	75	126	327	2074	147	2241
676CC050-25CF	5705499137057	110	5514	177	378	75	126	160	2590	147	2757
676CC050-25DF	5705499137071	110	5514	177	460	75	126	242	2590	147	2757
676CC050-25EF	5705499137095	110	5514	177	545	75	126	327	2590	147	2757
676CC060-30CF	5705499137170	110	6516	177	398	75	146	180	3091	147	3258

Continues on next page

All dimensions in mm - Stainless Steel grade AISI 316L specify type no. with suffix S

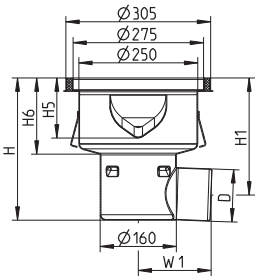
without membrane

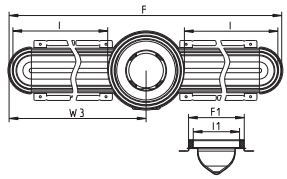
HYGIENICPRO CHANNEL TYPE 676

Type no.	EAN no.	D	F	F1	H	H1	H5	H6	I	I1	W3
Continued from previous page											
676CC060-30DF	5705499137194	110	6516	177	480	75	146	262	3091	147	3258
676CC060-30EF	5705499137217	110	6516	177	565	75	146	347	3091	147	3258
676CC070-35CF	5705499137293	110	7532	177	398	75	146	180	3599	147	3766
676CC070-35DF	5705499137316	110	7532	177	480	75	146	262	3599	147	3766
676CC070-35EF	5705499137330	110	7532	177	565	75	146	347	3599	147	3766
676CC080-40CF	5705499137415	110	8532	177	398	75	146	180	4099	147	4266
676CC080-40DF	5705499137439	110	8532	177	480	75	146	262	4099	147	4266
676CC080-40EF	5705499137453	110	8532	177	565	75	146	347	4099	147	4266
676CC090-45CF	5705499137545	110	9548	177	398	75	146	180	4607	147	4774
676CC090-45DF	5705499137569	110	9548	177	480	75	146	262	4607	147	4774
676CC090-45EF	5705499137583	110	9548	177	565	75	146	347	4607	147	4774
676CC100-50CF	5705499137668	110	10548	177	398	75	146	180	5107	147	5274
676CC100-50DF	5705499137682	110	10548	177	480	75	146	262	5107	147	5274
676CC100-50EF	5705499137705	110	10548	177	565	75	146	347	5107	147	5274

HYGIENICPRO CHANNEL TYPE 676

CENTER OUTLET



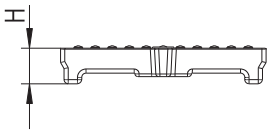


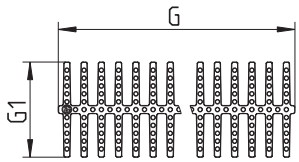
Type no.	EAN no.	D	F	F1	H	H1	H5	H6	I	I1	W1	W3
676CT010-05CF	5705499136630	110	1482	177	299	246	126	160	574	147	153	741
676CT020-10CF	5705499136753	110	2482	177	299	246	126	160	1074	147	153	1241
676CT030-15CF	5705499136876	110	3482	177	299	246	126	160	1574	147	153	1741
676CT040-20CF	5705499136999	110	4482	177	299	246	126	160	2074	147	153	2241
676CT050-25CF	5705499137118	110	5514	177	299	246	126	160	2590	147	153	2757
676CT060-30CF	5705499137231	110	6516	177	319	266	146	180	3091	147	153	3258
676CT070-35CF	5705499137354	110	7392	177	319	266	146	180	3529	147	153	3696
676CT080-40CF	5705499137484	110	8532	177	319	266	146	180	4099	147	153	4266
676CT090-45CF	5705499137606	110	9548	177	319	266	146	180	4607	147	153	4774
676CT100-50CF	5705499137729	110	10548	177	319	266	146	180	5107	147	153	5274

All dimensions in mm - Stainless Steel grade AISI 316L specify type no. with suffix S

Gratings

HYGIENICPRO GRATING CHANNEL



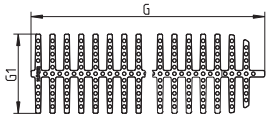


Type no.	EAN no.	Name	G	H	EN1253 (kg)	EN1433 (kg)	Non slip
697.250.150.50	5705499117868	150x500	499	25	M125 (10.000)	A15 (6.000)	R10
697.250.150.50 S	5705499138580	150x500	499	25	M125 (10.000)	A15 (6.000)	R10

Only available in stainless steel grade AISI CF-8 corresponding to AISI 304C/EN1.4308

HYGIENICPRO GRATING CHANNEL

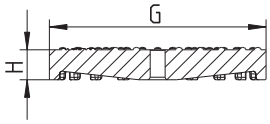
ROUNDED IN ONE END



Type no.	EAN no.	Name	G	H	EN1253 (kg)	EN1433 (kg)	Non slip
697.250.150.57	5705499137910	150x500	Ø572	25	M125 (10.000)	A15 (6.000)	R10
697.250.150.57 S	5705499138696	150x500	Ø572	25	M125 (10.000)	A15 (6.000)	R10

Only available in stainless steel grade AISI CF-8 corresponding to AISI 304C/EN1.4308

HYGIENICPRO GRATING CIRCLE

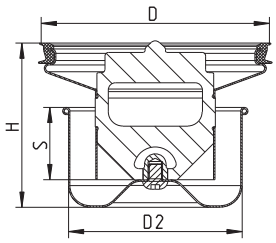


Type no.	EAN no.	Name	G	H	EN1253 (kg)	Non slip	Screws
790.273.000.60	5705499128352	Ø295	Ø273	24	R50 (5.000)	R10	0
790.273.000.60 S	5705499138672	Ø295	Ø273	24	R50 (5.000)	R10	0

All dimensions in mm - Stainless Steel grade AISI 316L specify type no. with suffix S

Water traps

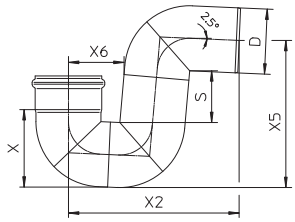
REMOVABLE TWO-PART WATER TRAP TYPE 562.10



Type no.	EAN no.	D	H	S	D2	Min Flow (l/s)	Max Flow (l/s)
562.102.000 S	5705499137903	157	113	50	120	3.4	6.0

Accurate flow rate depending on type of channel and grating.

P-TRAP 87.5° TYPE 525.090

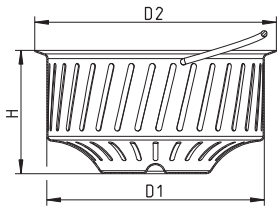


Type no.	EAN no.	D	S	X	X2	X5	X6	Min Flow (l/s)	Max Flow (l/s)
525.090.110 S	5705499101485	110	89	132	289	249	94	3.4	10.4

Accurate flow rate depending on type of channel and grating.

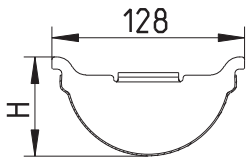
Others

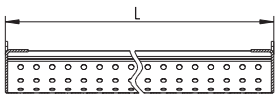
HYGIENICPRO FILTER BASKET TYPE 780



Type no.	EAN no.	D1	H	D2	Volume (l)
780.004.010.05	5705499137934	-	41	245	0.8
780.004.020.05	5705499137941	220	125	245	3.9
780.004.030.05	5705499137958	220	210	245	7.1

HYGIENICPRO FILTER FOR CHANNEL TYPE 780

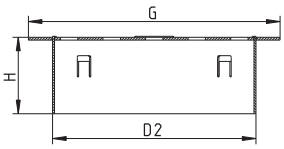




Type no.	EAN no.	H	L
780.005.150.05	5705499137927	66	499

OUTLET FILTER

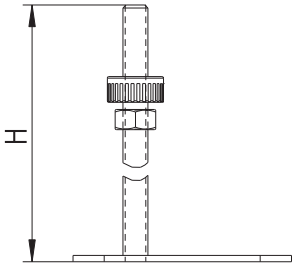
FOR CHANNELS WITH VERTICAL OUTLET



Type no.	EAN no.	G	H	D2
780.400.110.05	5705499135251	Ø130	40	105

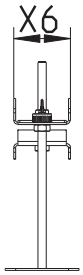
Others

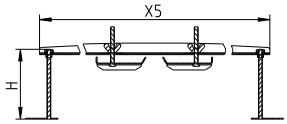
ADJUSTABLE LEGS



Type no.	EAN no.	H
670.000.001	5705499116243	150

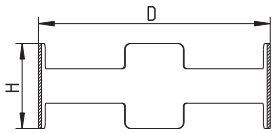
MOUNTING BRACKET FOR CHANNELS





Type no.	EAN no.	H	X5	X6
670.000.000	5705499129342	150	680	54

HYGIENICPRO SPACING RING FOR FILTER BASKET



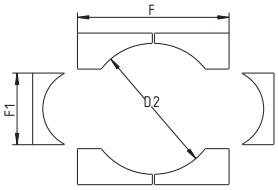
Type no.	EAN no.	D	H
670.000.010	5705499137972	155	57

For medium or high filter basket used together with a P-trap.

All dimensions in mm - Stainless Steel grade AISI 316L specify type no. with suffix S

Others

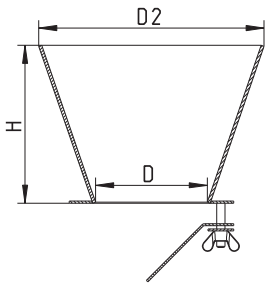
HYGIENICPRO TILE ADAPTOR FOR CHANNEL



Type no.	EAN no.	Designation	F	F1	D2	T
670.000.020	5705499137989	End outlet	375	192	325	5
670.000.021	5705499137996	Center outlet	375	192	325	5

For channels mounted in the tiles.

FUNNEL FOR GRATING



Type no.	EAN no.	D	H	D2
670.005.000	5705499137965	109	153	219

HYGIENIC CLEAN

Type no.	EAN no.
800.000.150	5705499138863

For cleaning of HygienicPro channels.

HygienicPro® channel solutions

In addition to the range of HygienicPro® channels shown on the previous pages, channels can be configured individually from modular product components.

Configure your individual HygienicPro® channel

Profile	A	B	C	D	
					
Length	**LA**	**LB**	**LC**	**LD**	
	0,5m	0,5m	0,5m	0,5m	
	1m	1m	1m	1m	
	1,5m	1,5m	1,5m	1,5m	
	2m	2m	2m	2m	
	2,5m	2,5m	2,5m	2,5m	
	3m	3m	3m	3m	
	3,5m	3,5m	3,5m	3,5m	
	4m	4m	4m	4m	
	4,5m	4,5m	4,5m	4,5m	
	5m	5m	5m	5m	
Outlet	**Vertical**	**Horizontal**			
					
Horizontal outlet angle	**0°**	**90°**	**180°**	**270°**	**Other**
	Below channel 				
Grating	**Drain**	**Channel**	**Channel**		
	790.273.000.60 	697.250.150.57 	697.250.150.50 		
Water trap	**Water trap**				
	562.102.000 				
Filter basket	**Low**	**Medium**	**High**		
	780.004.010.05 	780.004.020.05 	780.004.030.05 		
Accessories	**Filter 500mm**	**Tile adapters**	**Funnel**	**Filter spacer**	
	780.005.150.05 	670.000.020 Tile adaptor end  670.000.021 Tile adaptor center 	670.005.000 	670.000.010 	

Stainless steel






Long product life
Fire resistant
Lightweight
Hygienic

Long product life
- Corrosion resistant
- Resistant to impact damages
- Resistant to temperature variations

Fire resistant
- Non combustible
- No need for special fire insulation
- No toxic fumes are released in case of fire

Light-weight
- Low weight - high strength
- Weight only one third of cast iron
- Large pipes are easily handled by one man

Hygienic
- Low surface roughness
- High flow capacity
- Smooth surface prevents bacterial growth
- Smooth surface prevents blockages

Available in stainless steel AISI304/EN 1.4301 or AISI316L/EN 1.4404

Material properties of stainless steel

What is stainless steel?
The designation stainless steel covers a wide range of alloys with different properties. One property common to all stainless steels is that they contain at least 12% chromium.

The stainless steels can be divided into three main groups and a few mixed types according to the structure of the steel:
– Austenitic stainless steel
– Ferritic stainless steel
– Martensitic stainless steel

Austenitic stainless steel is the most important, representing approx. 90% of total stainless steel consumption. Austenitic steel is also the only stainless steel suitable for drainage installations, and it is, of course, the type used by BLÜCHER.

Importance of alloying elements
Austenitic stainless steel contains at least 18% chromium and 8% nickel – thus the well-known designation »18/8« steel. Corrosion resistance generally increases with increasing content of chromium. In alloys with 12-13% chromium, the passive layer is strong enough to prevent the steel from corroding in normal or mildly aggressive media. The main effect of the alloying element nickel is on the structure of the steel and its mechanical properties. The steel's structure is austenitic with an adequate content of nickel. In contrast to the pure chromium steels (ferritic stainless steel), this results in significant changes in the mechanical properties, such as increased workability and ductility, better resistance to thermal stress and improved weldability. The austenitic structure also results in a change in the physical properties of the steel. For example, the steel is not magnetic and has higher thermal conductivity.

Nickel also increases resistance to corrosion caused by certain media. Molybdenum has the same effect on the structure as chromium, but it also has a strongly positive influence on corrosion resistance. Molybdenum-containing steel is normally designated »acid-resistant« because of the resistance of these steels to certain types of acids. But acid-resistant stainless steel will also have limited resistance to some media such as chlorine-containing media (see table of resistance).

Why is steel »stainless«?
The addition of chromium to the steel results in the formation of a passivating oxide film with a high content of chromium oxides.
This oxide film protects the surface of the steel against oxygen in air and water. An outstanding property of stainless steel is that the chromium oxide film automatically regenerates if the surface of the steel is exposed.
This restitution of the oxide film can only occur if the surface of the steel is completely clean and free of tempering agents and slag from welding processes and residues from tools made from ordinary carbon steel.
If this surface contamination is not removed, the steel may ultimately corrode. To prevent this, the steel surfaces should be cleaned after welding and processing, e.g. by means of so-called acid pickling of the stainless steel.
The pickling effectively removes all impurities from the surface of the steel and permits the reestablishment of a strong, uniform chromium oxide film. The pickling bath normally consists of 0.5-5% v/v HF (hydrofluoric acid) and 8-20% v/v HNO_3 (nitric acid) at a temperature of 25-60°C. This acid bath removes residues, the existing chromium oxide film and traces of iron, leaving the clean steel surface. The restitution of a strong chromium oxide film starts in the subsequent rinsing in water.

Material Specification

Material	AISI 316 L 1.4404	AISI 304 1.4301
Analysis		
Carbon (C %)	Max. 0,03	Max. 0,07
Chromium (Cr %)	16,5 - 18,5	17,0 - 19,0
Nickel (Ni %)	11,0 - 14,0	8,5 - 10,5
Molybdenum (Mo %)	2,0 - 2,5	-
Manganese (Mn %)	Max. 2,0	Max. 2,0
Silicium (Si %)	Max. 1,0	Max. 1,0
Sulphur (S %)	Max. 0,030	Max. 0,030

Physical Properties

Structure	Austenitic (nonmagnetic)	Austenitic (nonmagnetic)
State	Non-annealed	
Specific gravity (g/cm³)	7,98	7,9
Melting point (°C)	Ca. 1400	Ca. 1400
Decortication temperature in air (°C)	800 - 860	800 - 860
Expansion coefficient 20 - 100 °C (m/m · °C)	$16,5 \times 10^{-6}$	$16,5 \times 10^{-6}$
Specific resistance (20° C) (Ohm · mm²/m)	0,75	0,73
Heat conductivity (20°C) (W/°C-m)	15	15
Specific heat (J/g · k)	0,5	0,5

Mechanical Properties

Ultimate tensile strength (Rm) (N/mm²)	490 - 690	500 - 700
Yield point (Rpo2) (N/mm²)	190	195
Modulus of elasticity (E) (20° C) (N/mm²)	$2,0 \times 10^5$	$2,0 \times 10^5$
Hardness Brinell (HB) (N/mm²)	120 - 180	130 - 180

CHEMICAL RESISTANCE TABLE

The table is based on laboratory experiments with chemically pure sub-stances. The values should therefore be regarded as for guidance only.

A = Very good service to operating limit of material B = Moderate service C = Limited or variable service D = Unsatisfactory	AISI 316 L Stainless	AISI 304 Stainless	EPDM	NBR	FPM
Acetone	A	A	A	D	D
Acetic acid (dilute.) 30% or 50%	A	A	A	B	B
Acetic acid 100%	A	A	A	C	C
Acetic anhydride	A	A	B	C	D
Aluminium chloride	D	D	A	A	A
Aluminium sulfate	A	D	A	A	A
Ammonium carbonate	A	A	A	D	-
Ammonium chloride/salmiac	B	C	A	A	-
Ammonium hydroxide	A	A	A	D	B
Amyl chloride	A	A	-	-	-
Aniline	A	A	B	D	C
Anilin hydrochloride	D	D	B	B	B
Barium chloride	B	B	A	A	A
Barium hydroxide	A	A	A	A	A
Benzaldehyde	A	A	A	D	D
Benzene	A	A	D	D	A
Benzoic acid	A	A	-	-	A
Borax/sodium borat	A	A	A	B	A
Boric acid	A	A	A	A	A
Bromine	D	D	-	-	A
Bromine chloride	D	D	A	B	A
Bromoethylene/vinyl bromide	A	A	-	-	-
Butanol	A	A	D	A	A
Butyl acetat	A	A	B	-	D
Butyric acid	A	A	-	-	-
Calcium bisulfate	A	A	D	A	A
Calcium chloride	B	B	A	A	A
Calcium hydroxide	A	A	A	A	A
Calcium hypochlorite	B	C	A	C	A
Carbon disulfide	A	A	-	-	-
Carbon tetrachloride	A	A	D	C	A
Chloroacetic acid (Mono)	D	D	B	-	-
Chlorine (dry)	A	A	-	-	A
Chlorobenzene	A	A	D	D	A
Chlorosulfonic acid	B	C	D	D	C
Copper chloride	B	B	A	A	A
Copper nitrate	A	A	-	-	-
Copper sulfate	A	A	A	A	A
Ether	A	A	-	-	-
Ethyl chloride	A	A	A	A	A
Fatty acid	A	A	D	B	A
Fluorine (dry)	A	A	-	-	-
Hydrofluoric acid	D	D	B	D	A
Formaldehyde	A	A	A	B	A
Formic acid	A	A	A	B	C
Furfural	A	A	B	D	D
Gallic acid	A	A	B	B	A
Hydrobromic acid	D	D	A	D	A
Hydrochloric acid	D	D	A	D	A
Hydrogen peroxide	A	A	C	D	B
Iodine (wet)	D	D	-	-	-
Kloroform	B	B	D	D	A
Lead acetate	A	A	A	B	-
Magnesium chloride	B	B	A	A	A
VALUES TO BE REGARDED AS FOR GUIDANCE ONLY					

A = Very good service to operating limit of material B = Moderate service C = Limited or variable service D = Unsatisfactory	AISI 316 L Stainless	AISI 304 Stainless	EPDM	NBR	FPM
Magnesium sulfate	A	A	A	A	A
Mercury	A	A	A	A	A
Methanol	A	A	A	A	C
Methyl chloride	A	A	C	D	A
Methylene chloride	B	B	D	D	B
Natphalene	A	A	D	D	A
Nickel chloride	B	B	A	A	A
Nickel sulfate	A	A	A	A	A
Nitric acid	C	C	C	D	A
Oxalic acid	C	C	A	B	A
Perchloric acid	D	D	B	-	A
Phorsphoric acid	A	A	B	D	A
Picric acid	A	A	B	B	A
Potassium bromide	A	A	-	-	-
Potassium carbonate	A	A	-	-	-
Potassium chlorate	A	A	-	-	-
Potassium cyanide	A	A	A	A	A
Potassium hydroxide	A	A	A	B	B
Potassium nitrate	A	A	A	A	A
Potassium permanganate	A	A	-	-	-
Potassium sulfate	A	A	A	A	A
Potassium sulfide	A	A	-	-	-
Potassium chloride	B	B	A	A	A
Prophylene dichloride	A	A	-	-	-
Silver nitrate	A	A	A	B	A
Soda (ash)/sodium	A	A	-	-	-
Sodium acetate	A	A	A	B	D
Sodium bicarbonate	A	A	A	A	A
Sodium bisulfate	A	C	-	-	-
Sodium bisulfite	A	A	A	A	A
Sodium bromide	B	B	-	-	-
Sodium chlorate	A	A	-	-	-
Sodium chloride	D	D	-	-	-
Sodium cyanide	A	A	A	A	A
Sodium fluoride	A	A	-	-	-
Sodium hydroxide	A	A	A	B	B
Sodium hypoklorite	D	D	B	B	A
Sodium nitrate	A	A	A	B	-
Sodium sulfate	A	A	A	A	A
Sodium sulfide	A	A	-	-	-
Sodium sulfite	A	A	-	-	-
Stannous chloride/tin chloride	B	C	B	A	A
Sulfur	A	A	A	D	A
Sulfur chloride	A	A	D	C	A
Sulfur dioxide	A	B	A	D	A
Sulfuric acid	D	D	B	D	A
Sulfurous acid	A	C	B	B	A
Thionyl chloride	A	A	D	-	A
Toluene/toluol	A	A	D	D	A
Trichloroethylene	A	A	D	C	A
Turpentine	A	A	D	A	A
Xylene/xylol	A	A	-	-	-
Zinc sulfate	A	A	-	-	-
VALUES TO BE REGARDED AS FOR GUIDANCE ONLY					

Assumptions: 20°C room temperature

References

Corrosion Data Survey, 1969 Edition, Nace
Corrosion Tables, Stainless Steels, 1979, Jernkontoret
Chemical Resistance of Plastic Piping Materials, Cabot Corporation, 1979

PLEASE NOTE!

Concentration level, length of exposure, temperature and in particular the combination of several chemicals have a direct influence on the resistance of stainless steel to certain chemicals.
Each application should therefore be carefully reviewed to determine the suitability of stainless steel.

In particular, be careful with the use of hydrous cleaning agents containing compounds of chlorine.

Material properties of rubber seals

Rubber types

International designation	EPDM	NBR	FPM	SI	CR
Rubber type	Ethylene propylene	Nitrile	Fluorine (Viton®)	Silicone	Chloroprene
Nominal hardness IRHD	60 (+/-5)	60 (+/-5)	60(+/-5)	57(+/-5)	55 (+/-5)
Colour	Black	Black/yellow dot	Purple (new: green)	Red	Black
Tensile strength MPa	≥ 10 N/mm²	≥ 10 N/mm²	≥ 8 N/mm²	≥ 5,5 N/mm²	≥ 10 N/mm²
Elongation at rupture %	≥ 300%	≥ 300%	≥ 230%	≥ 250%	≥ 250%
Max. temperatur range	-40/+100° C -40/+212° F	-30/+80° C -22/+176° F	-25/+200° C -13/+392° F	-50/+230° C	-30/+110° C

Resistance

Wearability	2	2	2	2	3
Resistance to mineral oil	5	1	1	3	2
Resistance to vegetable oil	2	1	1	1	2
Resistance to gasoline	5	1	1	5	2
Resistance to aromatic compounds and hydrocarbons	5	2	1	3	3
Resistance to ketones	1	5	4	3	5
Resistance to ordinary diluted acids and alkalines	1	1	1	2	2
Resistance to ozone and weather stresses	1	3	1	1	1
Resistance to air diffusion	4	3	1	2	2

1 = Very good **2** = Good 3 = Moderate 4 = Limited service 5 = Low

BLÜCHER sealing rings are available in five different rubber qualities.

EPDM This sealing ring is black and made of ethylene propylene rubber. This is BLÜCHER's standard sealing ring and it is suitable for all rainwater and waste water installations where there is no oil or no petrol residues in the waste water.
The EPDM lip seal is a good all-round rubber quality suitable for a wide range of applications.

NBR This sealing ring is black with a yellow spot and made from nitrile rubber and is the sealing ring to be used where there are petrol or oil residues on the waste water (e.g. in association with oil and petrol separators at service stations, garages etc.).
The NBR lip sealing ring should not be used where there is a risk of temperatures above 80°C. NBR is not resistant to solvents.

FPM This sealing ring is purple (new: green) and made from fluorine rubber (Viton®).
This is BLÜCHER's sealing ring for special applications. The material is particularly heat-resistant and resistant to oil, solvents and strong acids. However, the FPM seal has only limited resistance to e.g. butyl acetate, acetone and methyl alcohol.

For advice regarding the suitability of the different rubber qualities, consult BLÜCHER.

SI This sealing ring is red and made from silicone rubber (VMQ). This is the BLÜCHER sealing ring used for fire safety. The SI sealing ring is only used in BLÜCHER´s special fire resistant pipe penetrations.

CR This sealing ring is black and made from chloroprene rubber. This is the BLÜCHER standard sealing for Marine drains. The material is flame retardant and has good heat resistance, mechanical and abrasion properties. It is resistant to most inorganic chemicals, except for oxidizing acids and halogens. Moderate resistance to oil residues.

Load classes

Gratings

BLÜCHER gratings for **INDOOR** use are tested and classified according to EN 1253.

	K 3 (3 kN)	300 kg	Barefoot areas
	L 15 (15 kN)	1.500 kg	Light vehicular traffic in commercial premises, excl. fork-lift trucks
	M 125 (125 kN)	12.500 kg	Car parks, factories and workshops

BLÜCHER gratings for **OUTDOOR** use are tested and classified according to EN 1433.

	A 15 (15 kN)	1.500 kg	Pedestrian and pedal cyclists
	B 125 (125 kN)	12.500 kg	Footways, pedestrian areas, private car parks, car parking decks

Access covers

BLÜCHER access covers for **INDOOR** and **OUTDOOR** use are tested and classified according to EN 124.

	A 15 (15 kN)	1.500 kg	Pedestrian and pedal cyclists
	B 125 (125 kN)	12.500 kg	Footways, pedestrian areas, private car parks, car parking decks

Non-slip gratings

Gratings are non-slip tested according to DIN 51130

Approvals

BLÜCHER has own testing facilities and coorporates with internationally recognized independent institutes. At BLÜCHER we also play an active part in setting international standards.

The functionality of our products has been documented by test reports and approvals from international institutes such as Sitac (SE), LGA (DE), BBA (UK), VTT (FI), ETA (DK) etc.

All pipes and channels are CE marked.

For a complete list of all current product approvals we refer to www.blucher.com.

Furhermore, we use approved institutes for fire and sound testing, for instance DTI (DK) and Fraunhofer Institut (DE)

All production is carried out in Denmark in accordance with ISO 9001.

Maintenance

BLÜCHER stainless steel drainage products require only a minimum of maintenance.

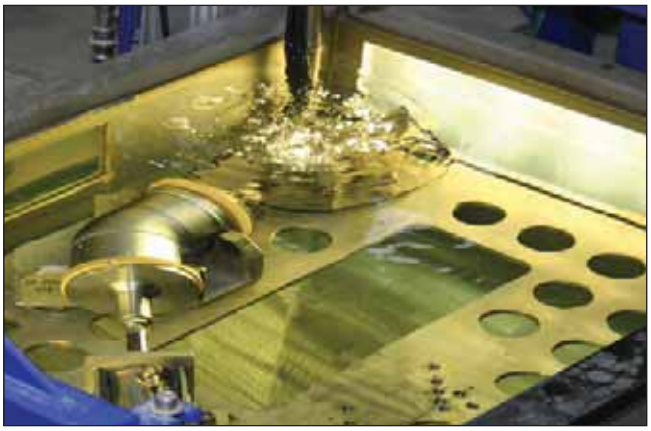
The smooth, acid-pickled surface retains its uniform matt silver finish in most environments such as wet rooms, bathrooms and kitchens. However, in particularly demanding environments such as the food industry, laboratories, the chemical industry and agriculture, it may be necessary to clean the installation to avoid formation of coatings which can cause subsequent corrosion.

Cleaning can for instance be done by means of high pressure flushing. In some cases it may be necessary to use diluted citric acid. After use take care to rinse with plenty of water.

Please also notice that particularly aggressive and hazardous substances should be collected in containers and disposed of in another way and not through the drainage system.

Production

Excellent workmanship, common sense and the most sophisticated production technology are combined to ensure the highest quality in our products.



All BLÜCHER® products are tested for leakages before leaving the factory

The most modern piping machinery in Europe

Installation videos at www.blucher.com

As a supplement to the printed installation instructions for the BLÜCHER® products, installation videos are available at www.blucher.com (select the tab "Installation"). These comprise, among others:

BLÜCHER® EuroPipe

Introduction to use and applications

BLÜCHER® Drain Domestic

Light-duty shower drains

BLÜCHER® Drain Industrial

Heavy-duty floor drains

BLÜCHER® Channel

Linear drainage

BLÜCHER® Roof Drainage System

Introduction to use and installation instructions

BLÜCHER® EuroPipe

BLÜCHER® Channel

BLÜCHER® Drain

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T: +45 99 92 08 00 • export@blucher.com • blucher.com