

# BLÜCHER® DRAIN DOMESTIC - TRIANGULAR DRAINS



K E E P I N G   U P   T H E   F L O W

STAINLESS STEEL DRAINAGE SYSTEMS



## 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 little 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% recy-clable.

## 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.

**BLÜCHER® DRAIN DOMESTIC**

Presentation of shower drains. . . . .1

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## Triangular drains for housing and commercial applications



### Shower drains For tiled floors Triangular

#### Applications

For tiled floors in:

- Private housing bathrooms
- Toilets and showers in hotels, hospitals, fitness centres, etc.

#### Details

- Triangular frame
- Brushed grain finish
- Low frame height
- Grate with starlock screw-system
- Stainless steel AISI304/EN 1.4301 or AISI316L/EN 1.4404

#### Variants

- Side inlets Ø32/40 mm
- Vertical or horizontal outlet
- Flange for liquid or sheet membrane
- Adjustable height, rotation and tilt

#### Options

- Removable water trap
- Design gratings in 6 designs

#### Series

- Series 100 without flange for concrete and tiled floors
- Series 300 with liquid or sheet membrane flange for concrete and tiled floors

### Complete drains

#### Concrete and tiles without membrane



- Standard grating VIENNA included
- Optional design gratings available
- Optional filter basket
- Optional removable water trap
- Adjustable upper part
- Lower part with or without side inlets

#### Concrete and tiles with liquid membrane



- Standard grating VIENNA included
- Optional design gratings available
- Optional filter basket
- Optional removable water trap
- Adjustable upper part
- Flange
- Lower part with or without side inlets

#### Concrete and tiles with sheet membrane



- Standard grating VIENNA included
- Optional design gratings available
- Inlet deflector
- Optional filter basket
- Optional removable water trap
- Adjustable upper part
- Intermediate section
- Adjustable clamping flange
- Lower part with or without side inlets

#### Complete drains

##### Drain

Adjustable 2-part drains or non-adjustable 1-part drains

##### Grating

Standard VIENNA grating is included. Optional design gratings are not included - to be ordered separately

##### Water trap

Removable water trap not included - to be ordered separately.

##### Other accessories

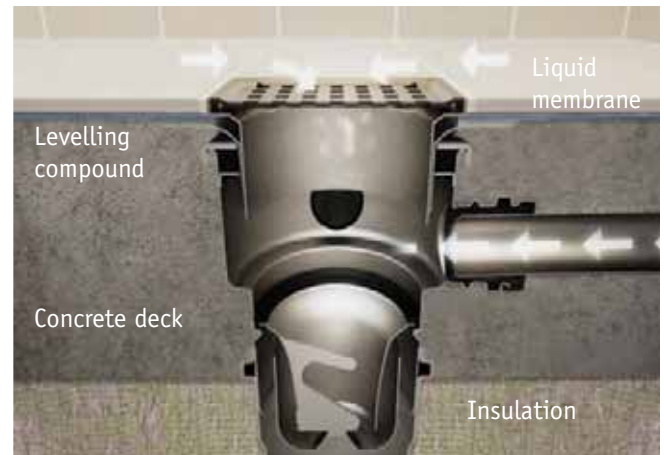
Other accessories such as filter basket not included - to be ordered separately. Most drains with side inlets come with inlet deflector.

### Installation examples

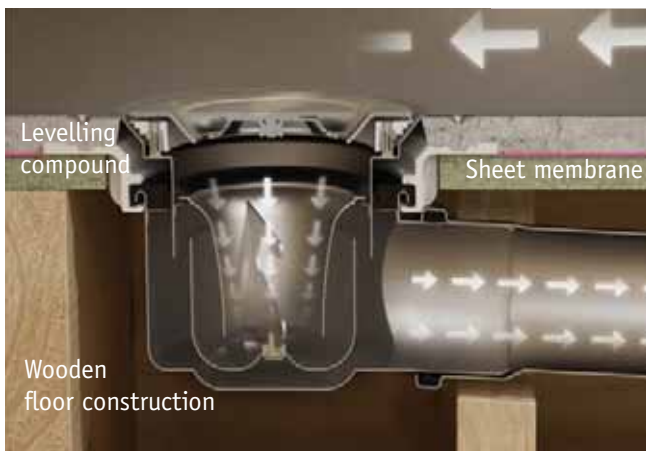
Concrete and tiles without membrane



Concrete and tiles with liquid membrane



Concrete and tiles with sheet membrane



Two-part removable water trap

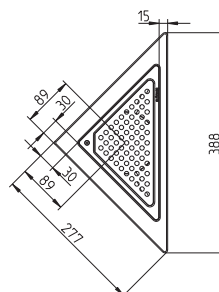
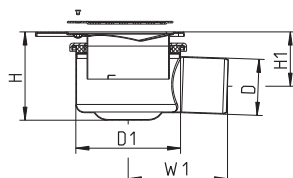


Due to its design the water trap has unique self-cleansing properties, and the slanted handle does not gather hair or dirt. Separable to facilitate cleaning. After cleaning, assemble the two parts by screwing them together tightly.

## without membrane

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 110**

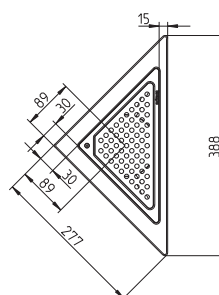
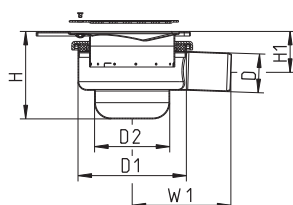
FOR CORNER INSTALLATION



Type no.	EAN no.	D	D1	H	H1	W1
110.360.075	5705499121117	75	140	116-149	71-104	133

**ADJUSTABLE SHOWER DRAIN TRIO, LOW MODEL TYPE 114**

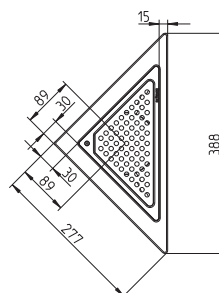
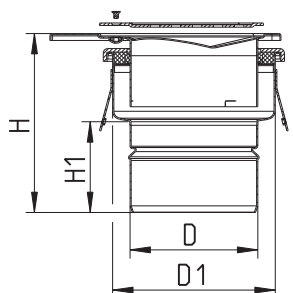
FOR CORNER INSTALLATION



Type no.	EAN no.	D	D1	H	H1	W1	D2
114.360.050	5705499124118	50	140	113-123	53-63	127	97

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 150**

FOR CORNER INSTALLATION



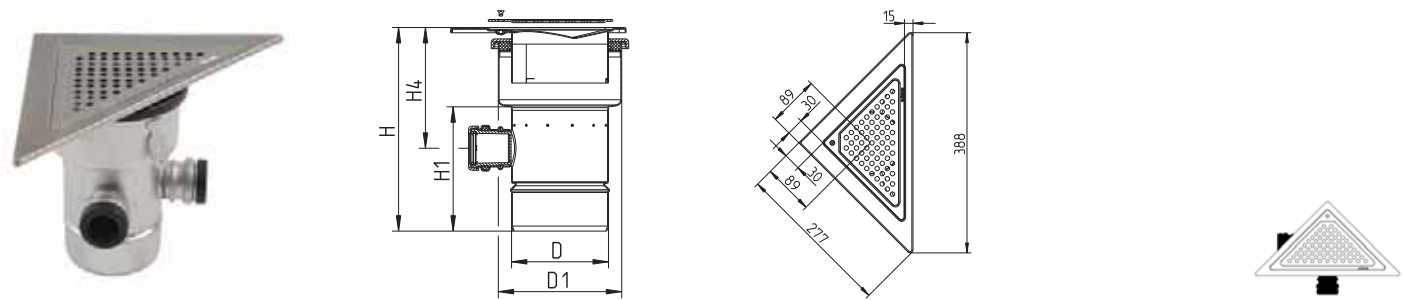
Type no.	EAN no.	D	D1	H	H1
150.360.110	5705499121131	110	140	154-187	79



without membrane

## ADJUSTABLE SHOWER DRAIN TRIO TYPE 155

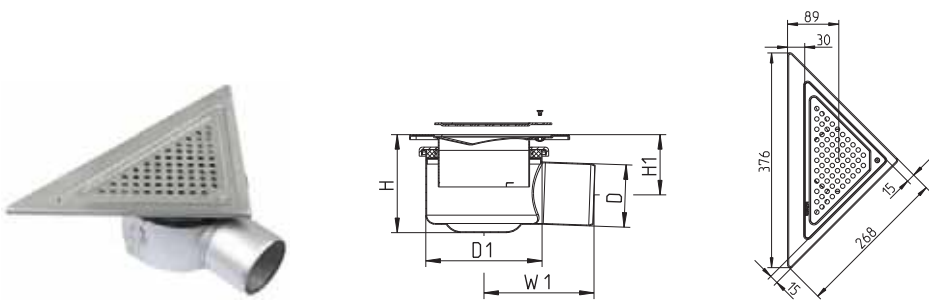
FOR CORNER INSTALLATION, WITH SIDE INLETS



Type no.	EAN no.	D	D1	H	H1	H4
155.360.110	5705499121155	110	140	231-264	140	137-170

## ADJUSTABLE SHOWER DRAIN TRIO TYPE 110

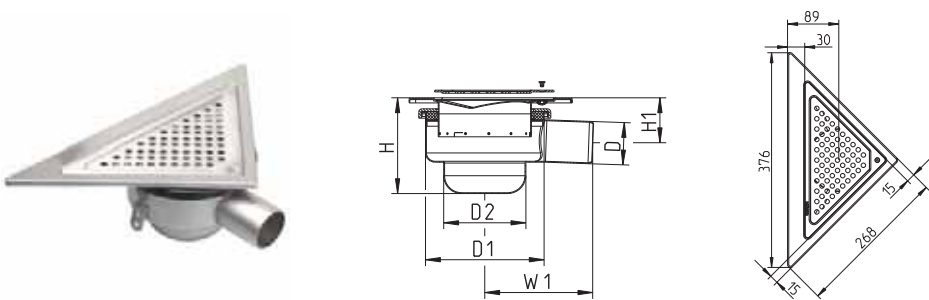
FOR INSTALLATION ALONG WALL



Type no.	EAN no.	D	D1	H	H1	W1
110.370.075	5705499121124	75	140	116-149	71-104	133

## ADJUSTABLE SHOWER DRAIN TRIO, LOW MODEL TYPE 114

FOR INSTALLATION ALONG WALL

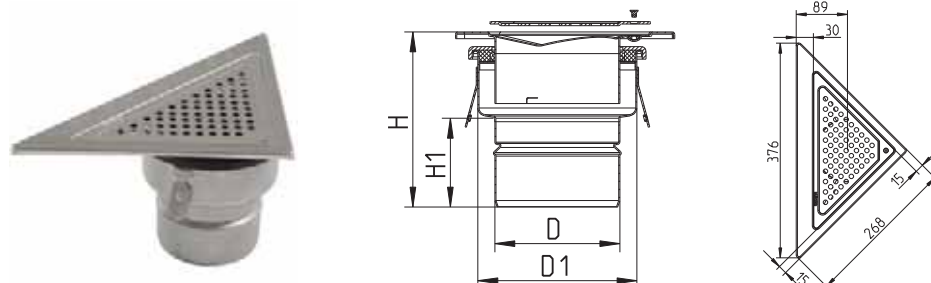


Type no.	EAN no.	D	D1	H	H1	W1	D2
114.370.050	5705499124125	50	140	113-123	53-63	127	97

## without membrane

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 150**

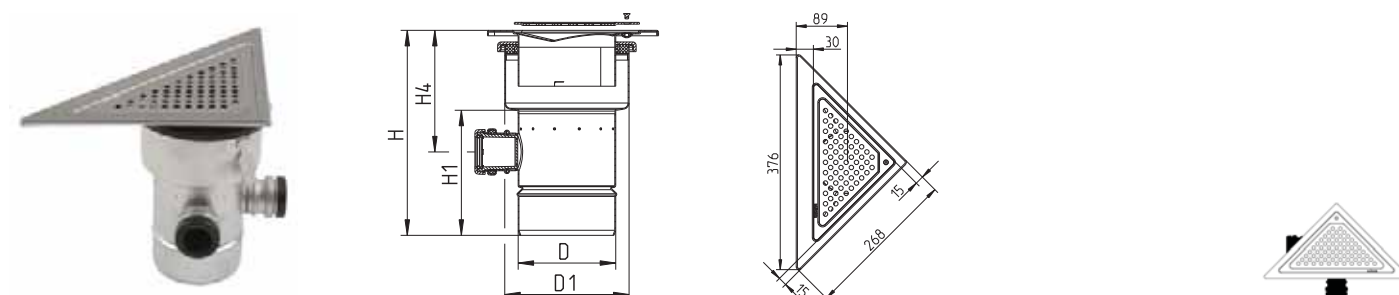
FOR INSTALLATION ALONG WALL



Type no.	EAN no.	D	D1	H	H1
150.370.110	5705499121148	110	140	154-187	79

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 155**

FOR INSTALLATION ALONG WALL, WITH SIDE INLETS

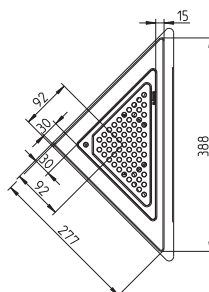
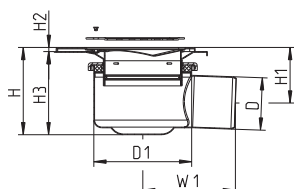


Type no.	EAN no.	D	D1	H	H1	H4
155.370.110	5705499121162	110	140	231-264	140	137-170

## with liquid membrane

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 310**

FOR CORNER INSTALLATION

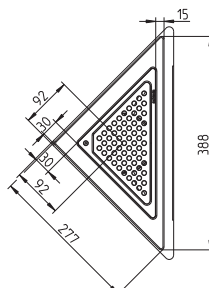
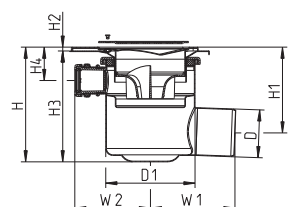


Type no.	EAN no.	D	D1	H	H1	H2	H3	W1
310.360.075	5705499120066	75	140	119-149	74-104	6-21	113-128	133

Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 311**

FOR CORNER INSTALLATION, WITH SIDE INLETS

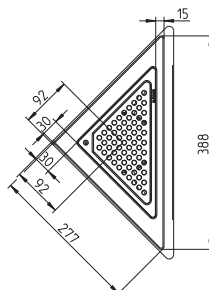
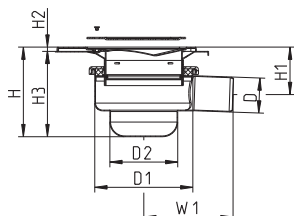


Type no.	EAN no.	D	D1	H	H1	H2	H3	H4	W1	W2
311.360.075	5705499120080	75	140	180-210	135-165	6-21	174-189	52-82	133	119

Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

**ADJUSTABLE SHOWER DRAIN TRIO, LOW MODEL TYPE 314**

FOR CORNER INSTALLATION



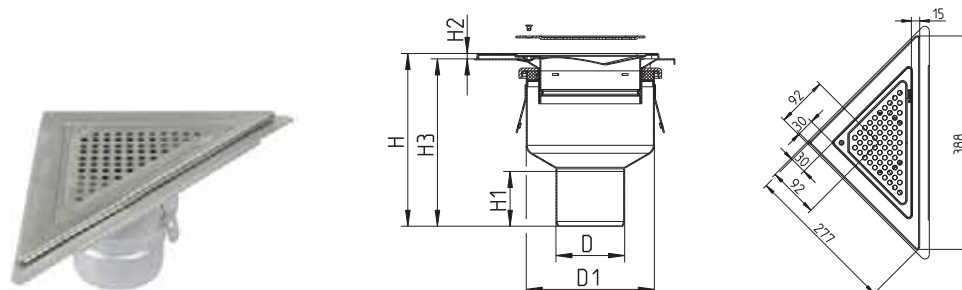
Type no.	EAN no.	D	D1	H	H1	H2	H3	W1	D2
314.360.050	5705499120103	50	140	116-146	56-86	6-21	110-125	127	97

Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

## with liquid membrane

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 350**

FOR CORNER INSTALLATION

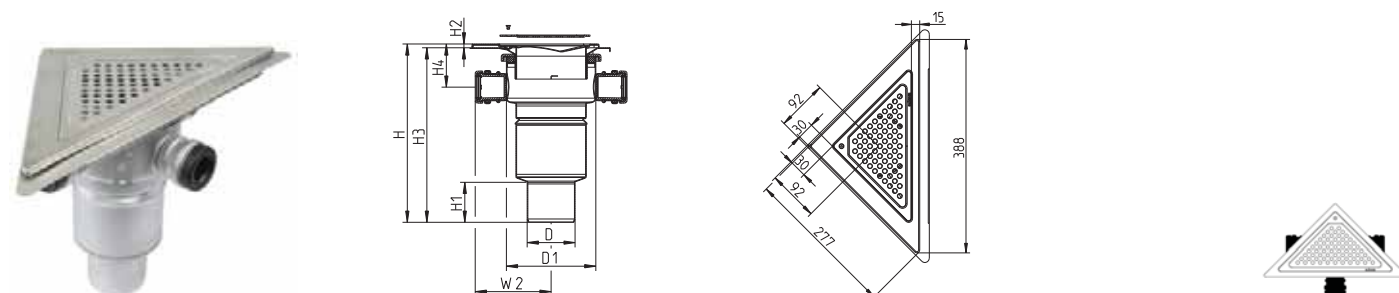


Type no.	EAN no.	D	D1	H	H1	H2	H3
350.360.075	5705499127744	75	140	190-220	63	6-21	184-199
350.360.110	5705499120127	110	140	157-187	79	6-21	151-166

Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 351**

FOR CORNER INSTALLATION, WITH SIDE INLETS



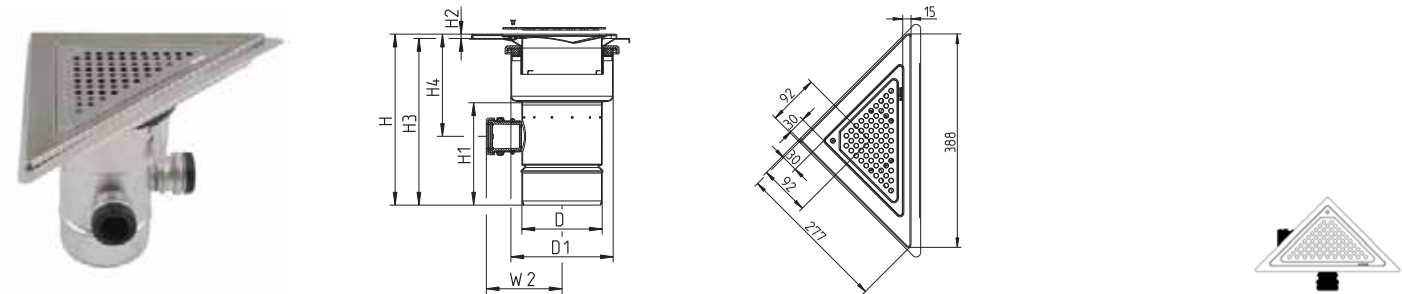
Type no.	EAN no.	D	D1	H	H1	H2	H3	H4	W2
351.360.075	5705499127751	75	140	279-309	63	6-21	273-288	68-98	119
351.360.110	5705499120141	110	140	172-202	79	6-21	166-181	68-98	119

Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

with liquid membrane

## ADJUSTABLE SHOWER DRAIN TRIO TYPE 355

FOR CORNER INSTALLATION, WITH SIDE INLETS

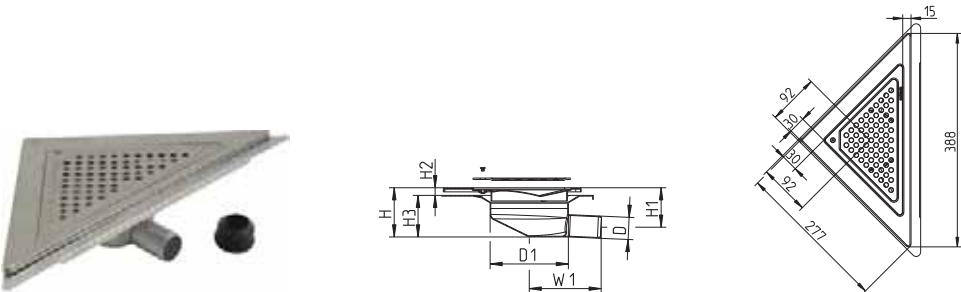


Type no.	EAN no.	D	D1	H	H1	H2	H3	H4	W2
355.360.110	5705499120165	110	140	234-264	140	6-21	228-243	140-170	104

Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

## MINI DRAIN TRIO TYPE 381

FOR CORNER INSTALLATION



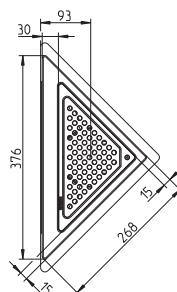
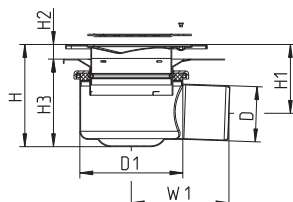
Type no.	EAN no.	D	D1	H	H1	H2	H3	W1
381.360.032	5705499120189	32	113	66-76	52-62	6-16	60	104

Not for removable water trap. Adaptor for D=40mm included.  
Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

## with liquid membrane

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 310**

FOR INSTALLATION ALONG WALL

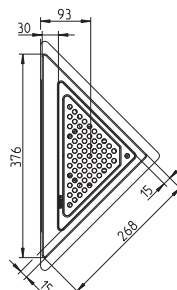
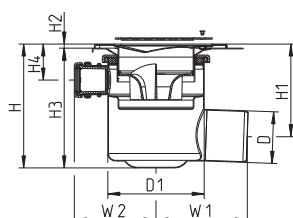


Type no.	EAN no.	D	D1	H	H1	H2	H3	W1
310.370.075	5705499120073	75	140	119-149	74-104	6-21	113-128	133

Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 311**

FOR INSTALLATION ALONG WALL, WITH SIDE INLETS

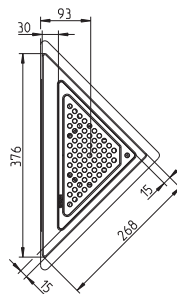
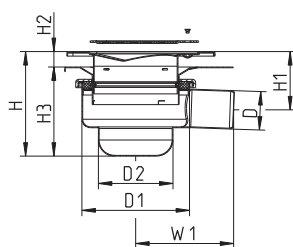


Type no.	EAN no.	D	D1	H	H1	H2	H3	H4	W1	W2
311.370.075	5705499120097	75	140	180-210	135-165	6-21	174-189	52-82	133	119

Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

**ADJUSTABLE SHOWER DRAIN TRIO, LOW MODEL TYPE 314**

FOR INSTALLATION ALONG WALL



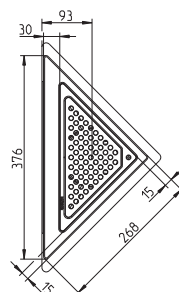
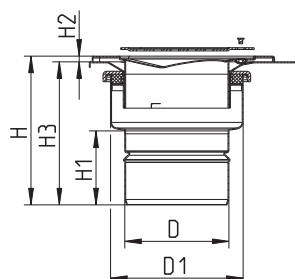
Type no.	EAN no.	D	D1	H	H1	H2	H3	W1	D2
314.370.050	5705499120110	50	140	116-146	56-86	6-21	110-125	127	97

Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

## with liquid membrane

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 350**

FOR INSTALLATION ALONG WALL

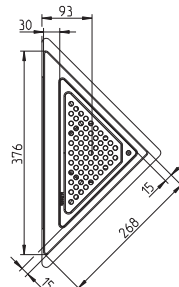
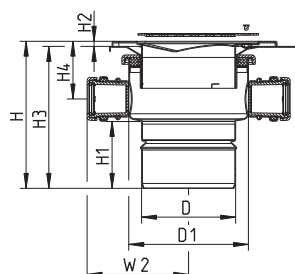


Type no.	EAN no.	D	D1	H	H1	H2	H3
350.370.110	5705499120134	110	140	157-187	79	6-21	151-166

Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 351**

FOR INSTALLATION ALONG WALL, WITH SIDE INLETS

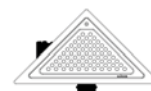
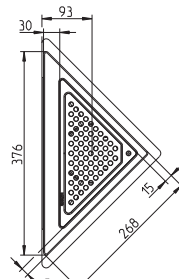
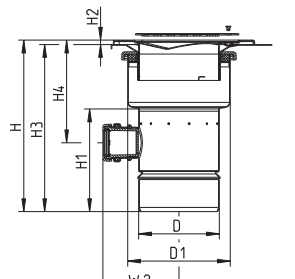


Type no.	EAN no.	D	D1	H	H1	H2	H3	H4	W2
351.370.110	5705499120158	110	140	172-202	79	6-21	166-181	68-98	119

Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

**ADJUSTABLE SHOWER DRAIN TRIO TYPE 355**

FOR INSTALLATION ALONG WALL, WITH SIDE INLETS

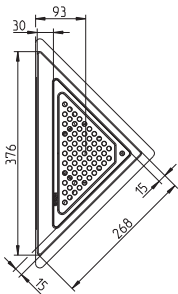
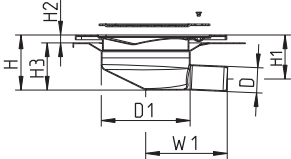


Type no.	EAN no.	D	D1	H	H1	H2	H3	H4	W2
355.370.110	5705499120172	110	140	234-264	140	6-21	228-243	140-170	104

Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.

with liquid membrane

MINI DRAIN TRIO TYPE 381  
FOR INSTALLATION ALONG WALL



Type no.	EAN no.	D	D1	H	H1	H2	H3	W1
381.370.032	5705499120196	32	113	66-76	52-62	6-16	60	104

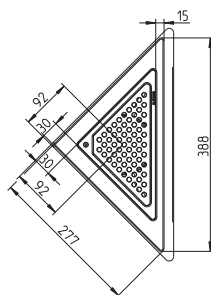
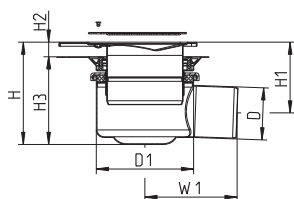
Not for removable water trap. Adaptor for D=40mm included.  
Mounting brackets included for easy and safe installation. Mounting brackets to be removed after installation to allow wall and floor to move independently.



with sheet membrane

### ADJUSTABLE SHOWER DRAIN TRIO TYPE 312

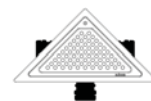
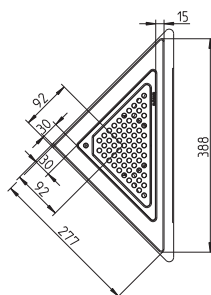
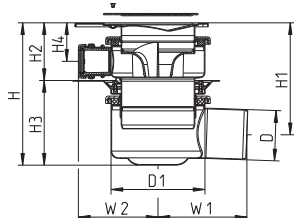
FOR CORNER INSTALLATION



Type no.	EAN no.	D	D1	H	H1	H2	H3	W1
312.360.075	5705499121360	75	140	133-188	88-143	10-50	123-138	133

### ADJUSTABLE SHOWER DRAIN TRIO TYPE 313

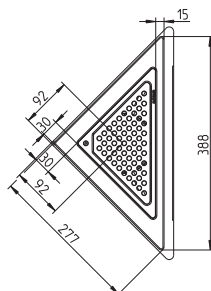
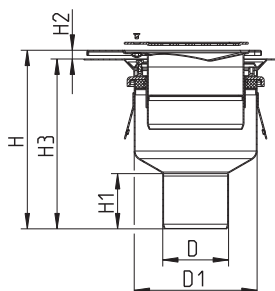
FOR CORNER INSTALLATION, WITH SIDE INLETS



Type no.	EAN no.	D	D1	H	H1	H2	H3	H4	W1	W2
313.360.075	5705499121384	75	140	200-265	155-220	77-127	123-138	49-59	133	119

### ADJUSTABLE SHOWER DRAIN TRIO TYPE 352

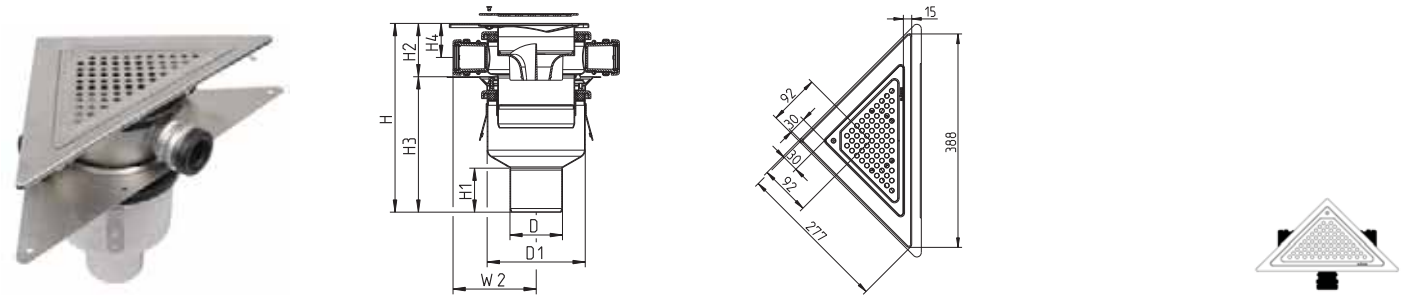
FOR CORNER INSTALLATION



Type no.	EAN no.	D	D1	H	H1	H2	H3
352.360.075	5705499121407	75	140	203-258	63	10-50	193-208

with sheet membrane

ADJUSTABLE SHOWER DRAIN TRIO TYPE 353  
FOR CORNER INSTALLATION, WITH SIDE INLETS

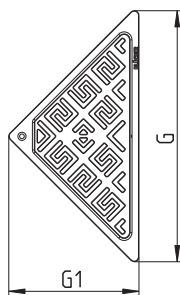


Type no.	EAN no.	D	D1	H	H1	H2	H3	H4	W2
353.360.075	5705499121421	75	140	269-334	63	77-127	193-208	49-59	119

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

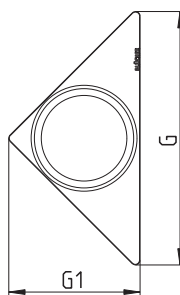
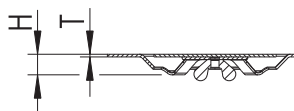
## Grating TRIO

## GRATING TRIO ATHENS



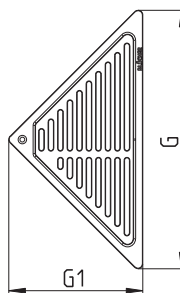
Type no.	EAN no.	G	G1	T	Screws
620.300.031	5705499122855	272	141	2	1

## GRATING TRIO COPENHAGEN



Type no.	EAN no.	G	G1	H	T	Screws
620.300.034	5705499123005	272	141	16	2	0

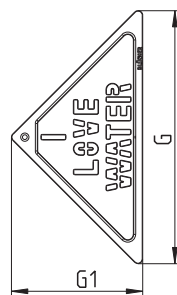
## GRATING TRIO DETROIT



Type no.	EAN no.	G	G1	T	Screws
620.300.032	5705499122923	272	141	2	1

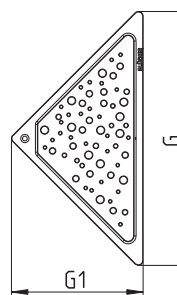
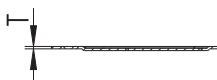
## Grating TRIO

## GRATING TRIO NEW YORK



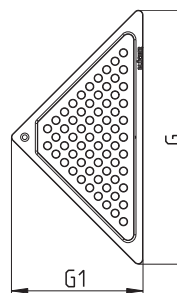
Type no.	EAN no.	G	G1	T	Screws
620.300.033	5705499122992	272	141	2	1

## GRATING TRIO OSLO



Type no.	EAN no.	G	G1	T	Screws
620.300.030	5705499122787	272	141	2	1

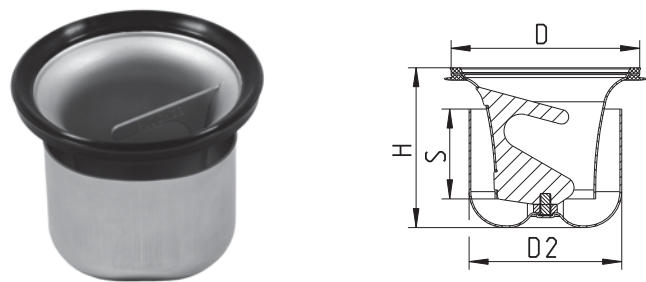
## GRATING TRIO VIENNA



Type no.	EAN no.	G	G1	T	Screws
620.300.035	5705499123012			2	1

Water traps

REMOVABLE TWO-PART WATER TRAP TYPE 502.050

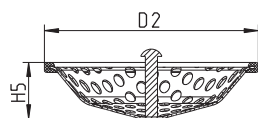


Type no.	EAN no.	D	H	S	D2	Max Flow (l/s)
502.050.110	5705499124064	108	89	50	85	1.7

Fits into all drains except type X10, X11 and X14 produced before 2008.  
Accurate flow rate depending on type of drain and grating.

## Others

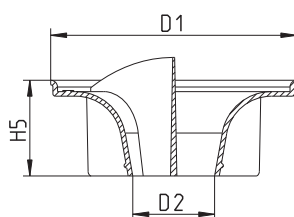
## FILTER BASKET FOR REMOVABLE TWO-PART WATER TRAP



Type no.	EAN no.	H5	D2
502.000.000 S	5705499124101	24	106

## DEFLECTOR

FOR DRAINS WITH SIDE INLETS



Type no.	EAN no.	D1	H5	D2
620.300.009	5705499106701	108	42	36

## 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<sub>3</sub> (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/cm <sup>3</sup> )	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 x 10 <sup>-6</sup>	16,5 x 10 <sup>-6</sup>
Specific resistance (20° C) (Ohm · mm <sup>2</sup> /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/mm <sup>2</sup> )	490 - 690	500 - 700
Yield point (Rp02) (N/mm <sup>2</sup> )	190	195
Modulus of elasticity (E) (20° C) (N/mm <sup>2</sup> )	2,0 x 10 <sup>5</sup>	2,0 x 10 <sup>5</sup>
Hardness Brinell (HB) (N/mm <sup>2</sup> )	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	PPM
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

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

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	PPM
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
Phosphoric 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
Propylene 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 hypochlorite	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

## 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
Rubber type	Ethylene propene	Nitrile	Fluorine (Viton)
Nominal hardness IRHD	60 (+/-5)	60 (+/-5)	60 (+/-5)
Colour	Black	Black/yellow dot	Purple (New: green)
Tensile strength MPa	≥ 10 N/mm <sup>2</sup>	≥ 10 N/mm <sup>2</sup>	≥ 8 N/mm <sup>2</sup>
Elongation after fracture %	≥ 300%	≥ 300%	≥ 260%
Max. temperatur range	-35/+100° C	-30/+80° C	-25/+200° C

## Resistance

Wearability	B	B	B
Resistance to mineral oil	D	A	A
Resistance to vegetable oil	B	A	A
Resistance to benzene/petrol	D	A	A
Resistance to aromatic compounds and hydrocarbons	D	B	A
Resistance to ketones	A	D	D
Resistance to ordinary diluted acids and alkalines	A	A	A
Resistance to ozone and weather stresses	A	C	A
Resistance to air diffusion	D	C	A

A = Very good service - B = Moderate service - C = Limited or variable service - D = Unsatisfactory

A lip sealing ring constitutes the seal between socket and spigot end. The lip sealing ring ensures quick and efficient jointing of the pipe system while providing a tight seal in case of both pressure and vacuum. BLÜCHER® sealing rings are available in three different rubber qualities.

**EPDM** This sealing ring is black and made of ethylene propene 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 connection with oil and petrol separators at service stations, garages etc.). The NBR lip seal 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.**



## 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 cooperates 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](http://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.

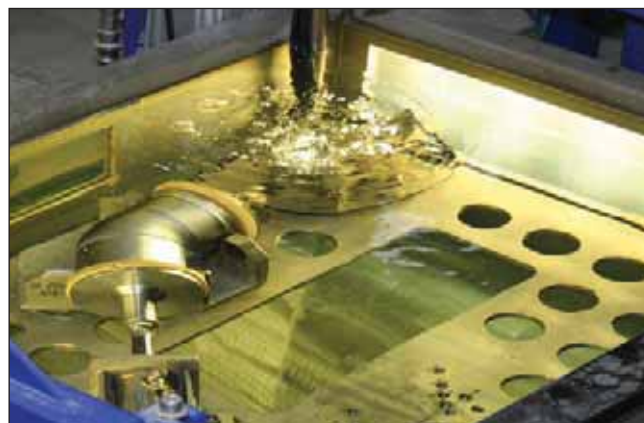
The smooth, acid-pickled surface retains its uniform matt silver finish in most environments such as wet rooms, bathrooms and kitchens. However, in particularly demanding environments such as the food industry, laboratories, the chemical industry and agriculture, it may be necessary to clean the installation 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](http://www.blucher.com)

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

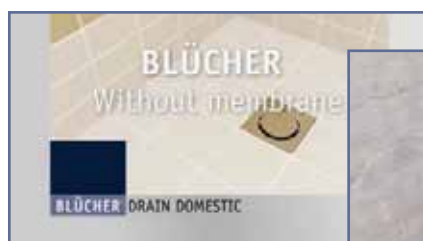
#### BLÜCHER® EuroPipe

Introduction to use and applications



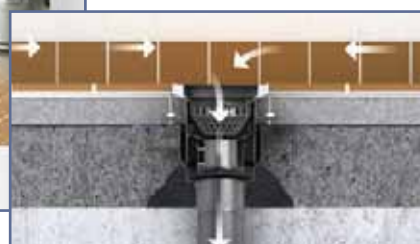
#### BLÜCHER® Drain Domestic

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









## 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, Czàsar 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®

At BLÜCHER® more than 300 employees create an annual turnover of more than 50 million euro.

Through know-how, dedicated service and common sense we develop, produce and market high quality stainless steel drainage solutions for customers within the housing, commercial, industrial and marine sectors all over the world.

Find your local BLÜCHER® specialist at [www.blucher.com](http://www.blucher.com)

## BLÜCHER® EuroPipe

## BLÜCHER® Channel

## BLÜCHER® Drain



KEEPING UP THE FLOW