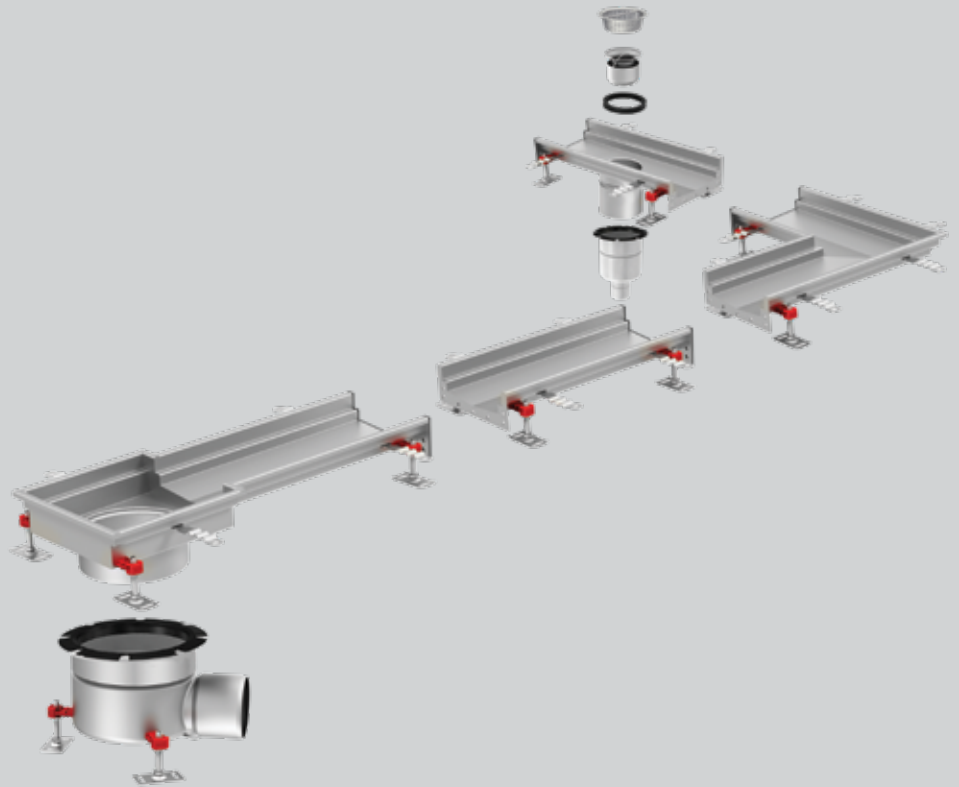




ACO Building Drainage



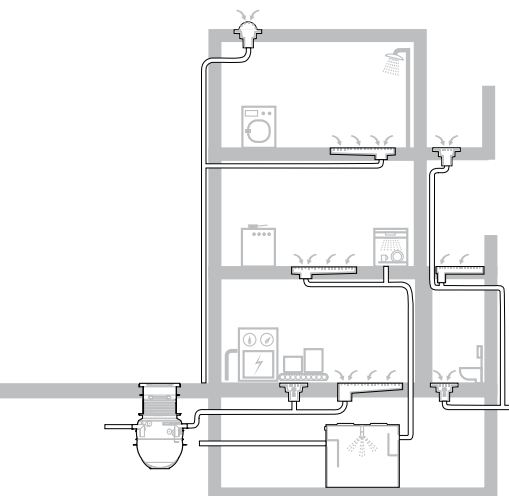
STAINLESS STEEL TRENCH BROCHURE

Modular 125

Modular 200

Slot Drain 20

Custom Solutions

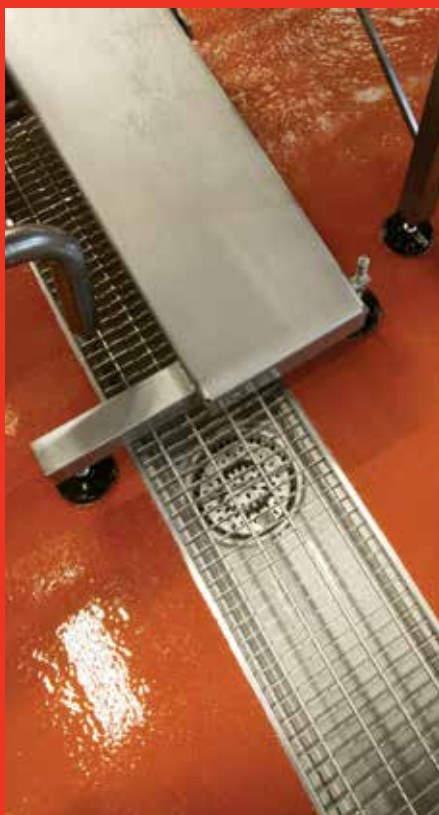


ACO Building Drainage

ACO offers drainage systems designed to protect your business and the environment. The stainless steel floor drainage products in the Building Drainage product line are designed for ultimate hygienic and corrosion resistant performance, ensuring health & safety of workers, customers and products while still allowing clean-in-place functionality.

Product Portfolio

- **Stainless Steel Trench Drains**
versatile, modular stainless steel drainage
- **Floor Drains**
stainless steel floor drains
- **Hygienic Stainless Steel Box Drains**
stainless steel drainage for commercial kitchens or food applications
- **Pipe**
stainless steel push-fit pipe for gravity and vacuum applications
- **BuildLine**
green roof, facade and threshold drainage
- **QuARTz ShowerDrain**
stainless steel bathroom drainage



Modular Trench Drainage

The ACO Modular Drain line includes two product lines; Modular 125 with a 4.92" (125 mm) grate width and Modular 200 with a 7.87" (200 mm) grate width.

A benefit of the ACO Trench Drain System is ease of configuration. Trench drain layouts can be designed with the following options:

- Outlet size/type
- Outlet position
- Edge detail
- Channel depth
- Channel slope
- Channel width
- 'T' and 'L' layouts

Slot Drainage

ACO Slot Drain is a collection of products with a 0.8" (20 mm) opening, ideal for threshold drainage and wash-down areas.

The modular concept of Slot Drain allows different standard channel units to suit various layouts.

A shallow 'V' profile within the channels provide enhanced flow efficiency at low flow rates.

Customization

Semi-customizations are available for both Modular and Slot Drain products.

Full custom solutions are also available. ACO can provide complete design assistance, technical support, layout drawings and assembly instructions. Contact ACO for details.

Typical Applications

- Supermarkets
- Commercial kitchens/Restaurants
- Food & beverage processing
- Wineries/Breweries
- Chilled warehouses
- Laboratories
- Pharmaceutical industries
- Chemical facilities
- Wash-down areas
- Schools
- Hospitals
- Animal care/Veterinary clinics
- Storage depots
- Industrial facilities
- Hospitality

Industrial Applications

For applications of surface water collection where material properties are critical - such as chemical, pharmaceutical industries, chilled warehouses, schools, hospitals etc. ACO offers standard parts and pieces, semi-custom or a full custom trench drainage solution manufactured from stainless steel to meet your needs.

In industrial applications, priority considerations for stainless steel drainage solutions are often corrosion resistance, temperature resistance and the ability to withstand heavy loads. In addition to ensuring that grates meet loading requirements, it is also essential that the channel edge profile integrates fully with the floor and provides an equally durable solution. Systems are available in either grade 304 or 316L stainless steel to suit a wide range of corrosion resistance.

In commercial applications, such as kitchen and food manufacturing, ACO's Modular and Slot systems are ideally suited for preparation and washing areas, or zones without direct risk for food safety. Featuring easy access for maintenance and clean-in-place functionality, ACO's Modular and Slot systems are an excellent solution for a variety of applications.

Modular 125, 200 and Slot Drain 20 ranges provide versatile, off-the-shelf availability. Accessories such as corner units and a choice of grates to meet a variety of load classes, make these systems perfect for a wide range of applications.

For high risk hygiene applications, ACO can provide a stainless steel drainage solution with hygienic features to reduce the potential of contamination by residual bacteria and other microorganisms.

HygieneFirst

Table of Contents

Introduction	3
Why Stainless Steel?	4
Choosing the Right System - Overview	6
Choosing the Right System - Selection criteria	8
ACO Modular Channels	12
Modular Grate Lockings	16
Modular 125	18
Modular 200	26
ACO Slot Drain 20	34
Floor Drain Bodies and Grates	41
Flow Rates	45
ACO Custom Products	46
Installation	48
Slip Resistance	50



Material Technology

Stainless steel

Stainless steel is the name given to a range of steels that have greatly enhanced corrosion resistance over conventional mild steels.

In the building and construction industry, stainless steel is selected due to:

- Excellent strength and resistance to oxidation at high temperatures
- Durability and corrosion resistance in highly aggressive environments
- Hygienic and easily cleaned surfaces
- Aesthetically attractive surface finishes
- Non-magnetic properties (working the material can introduce some magnetic properties)

These features make stainless steel an obvious choice for demanding drainage applications.



There is a vast range of different stainless steels available. Austenitic stainless steels are the most widely used and encompass the generic 304 and 316L grades. These materials are ideal for applications found in the food processing, dairy, brewing, pharmaceutical, chemical and petrochemical industries.

Marine grade is often used in reference to grade 316L. Although correct, it is not the only grade available in this group. Other grades have different characteristics. If in doubt, contact ACO to assess the material suitability for the application.



Most stainless steel is manufactured from a minimum of 20% recycled material. Stainless steel is 100% recyclable.

Performance

Corrosion and temperature resistance

Some industrial applications present a challenging environment for drainage systems. All systems featured in this brochure are manufactured from stainless steel grade 304 or grade 316L. All products are pickled and passivated in order to ensure corrosion free joints.

In applications where highly aggressive liquids, or very alkaline cleaning agents are used drainage products should be durable and corrosion resistant. For these applications, ACO recommends stainless steel systems be manufactured in grade 316L.



Hygiene

Food safety

Medium and high risk zones within food processing environments often necessitate additional hygiene considerations.


- Stainless steel is an excellent material for use in areas where hygiene performance is paramount
- In addition to the material properties of stainless trench, ACO manufactures its trench drains and floor drains incorporating a hygienic design which allow easy cleaning and protection against microorganisms and bacteria
- We apply relevant hygienic design principles reserved for food contact surfaces or recommended by NSF/ANSI and EHEDG

Pickling & Passivation

Ultimate finishing

Bending, cutting, punching and welding during manufacturing results in damage of the stainless steel surface that can lead to corrosion. Pickling and passivation are chemical processes that restores physical properties of stainless steel.

- Improves corrosion resistance
- Smooth, uniform finish and appearance
- Ease of cleaning/maintenance
- Extended product life

Products shown with the  symbol in the catalog indicate hygienic design in addition to the stainless steel hygienic properties.

Hygiene**First**

Choosing the Right System - Selection Overview

When selecting a stainless trench system, careful consideration should be given to the following factors:

1 LOADING - Grate Type & Edge Details

Consider type of traffic - pedestrian, carts, forklifts. For wheeled traffic calculate wheel load and contact area to estimate required psi load (pneumatic tires have larger contact area than solid tires).

Affects grate load class, channel edge detail and installation details.

2 SITE - Material Requirements

Consider any chemical(s), concentration, contact times, frequency and temperature. Cleaning agents must also be considered.

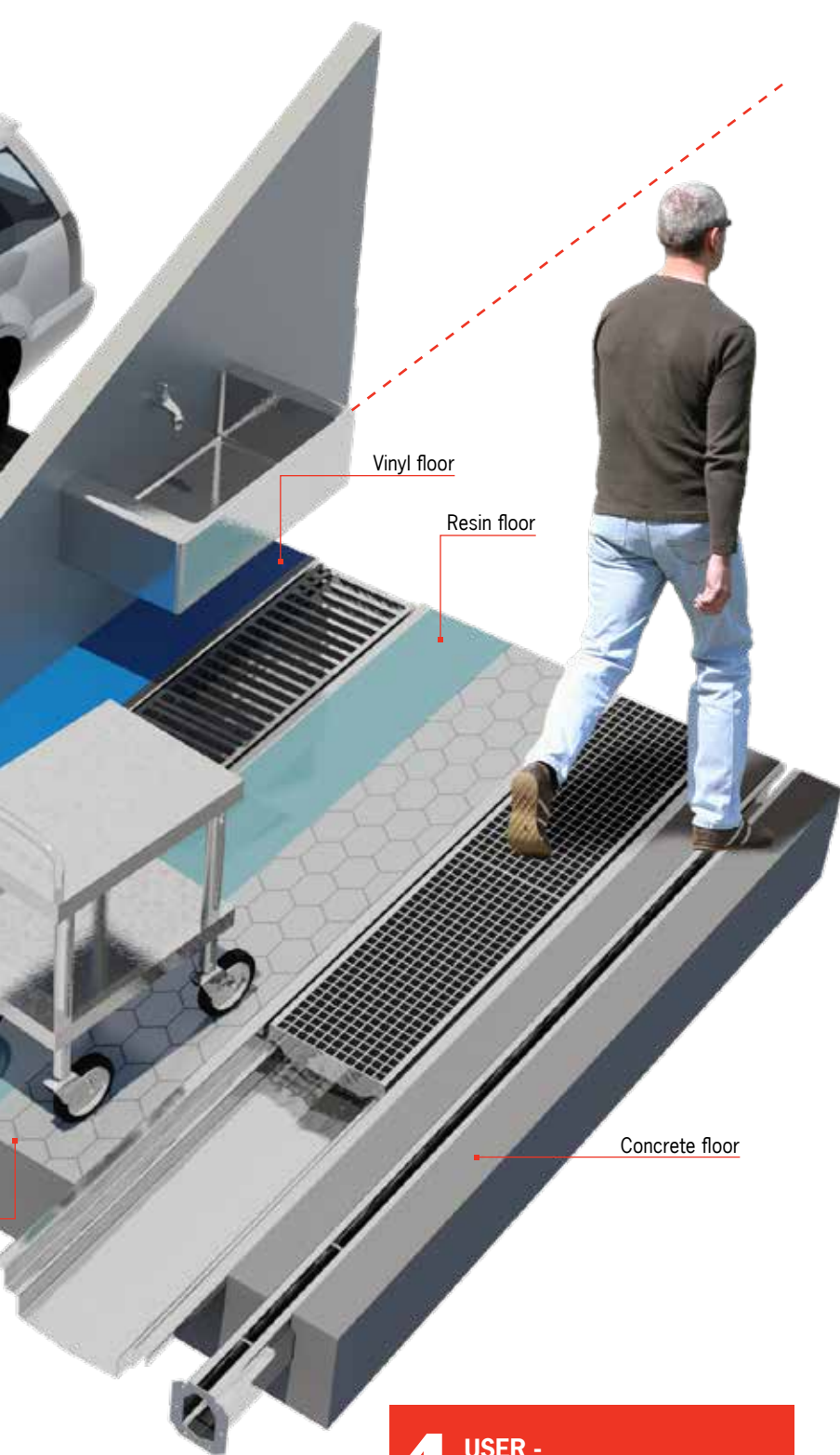
Affects grade of stainless steel chosen (Grade 304 or 316L) and type of post fabrication material finishing - pickling, passivation and electropolishing. See page 10

3 SITE - Layout Requirements

Consider any fixed equipment and outlets to work around, any restrictions to construction depth, and type of flooring finish. BIM models are available for standard products.

Affects product choice - fully standard parts (often lower costs and lead time), semi customized (shortened channels, non-standard outlet size/position etc), or a full custom solution. Flooring type may affect edge detail.





6 HYDRAULICS - Outlet Type & Position

Consider outlet and underground pipe system capacity, as undersized outlets and pipes can cause flooding. Also, oversized outlets incur unnecessary additional pipe costs. It is necessary to ensure that the underground pipe system meets or exceeds the anticipated flow.

Affects position, number and size of outlet. Remember use of strainers, sieves and foul air traps restrict outlet performance. Regular cleaning of strainers and sieves prevent debris build up and maintains maximum flow capacity.

5 HYDRAULICS - Volume of Liquid

Verify total volume and source of liquids that will be drained – wash down, process run off and point loads from equipment discharge.

Affects widths, lengths, invert depth, and invert slopes of the trench run. Grate types (open intake area) may also need to be considered.

4 USER - Safety, Security & Aesthetics

Consider factors affecting end user - slip resistance, grate lockings, ADA and Heel-safe requirements, ease/time/cost of cleaning and maintenance, hygiene requirements to help reduce the risk of contamination and microorganisms.

Affects grate type/style, use of grate lockings (recommended for heavier loads). Shorter runs to outlet can help shorten cleaning times.

Choosing the Right System - Selection Details

1 LOADING - Grate Type & Edge Details

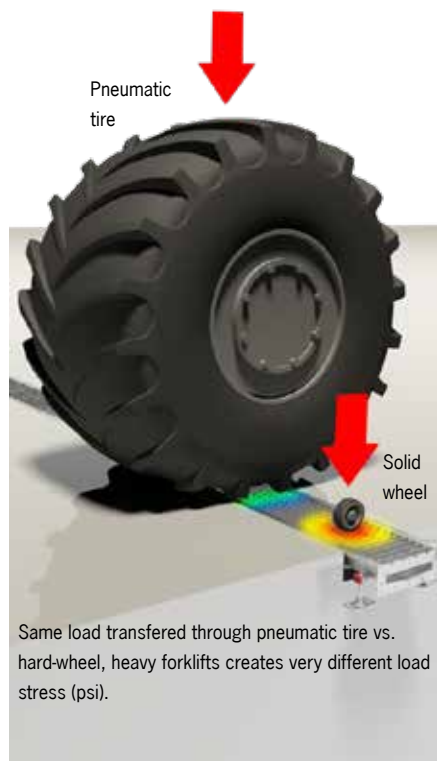
Loading refers to any kind of traffic or load being applied to the trench and grate.

To estimate load resistance required, consider:

- Type of traffic - Pedestrians, carts, forklift, other vehicles, etc.
- Wheel loads - Include vehicle, weight of load being carried and type of tire (solid wheel vs. pneumatic tires create different size contact area giving different psi loads).
- 'Unusual' traffic – e.g. food carts being moved across trench etc.
- Frequency - Occasional versus frequent use may also affect product choice.
- Dynamic loads

Load standards create a way to compare and categorize loads - typically into several load classes (light, medium and heavy etc.).

Load standards do not account for dynamic (moving) loads. Faster moving and/or turning loads will require a heavier duty drain and grate. Applications with heavy duty turning and/or braking traffic should avoid grates with high anti-slip ratings as the dynamic nature will potentially distort and damage those grates.



Relevant Load Standards

In the US the ASME: A112.6.3 - 2016 is the most relevant standard. However, it is designed primarily for floor drains and does not effectively address linear trench drains. ACO has independent certification for floor drains to ASME 112.6.3 and EN 1253, trench drains are tested to EN 1433 : 2002 Drainage channels for vehicular and pedestrian areas.

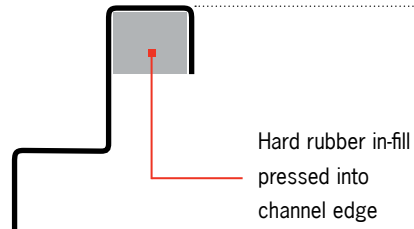
To assist with evaluating and comparing these standards to ACO products, a guide is provided below equating stresses (psi) from ASME : A112.6.3 - 2016 Load categories to the Load Class A - F categories from EN 1433. It is also broken down by internal channel widths. A comparison to EN 1253 : 2015 Gullies for Buildings is also provided. Load class certification for each product is available upon request.

ASME: A112.6.3 - 2016 Plumbing standard relating to internal floor drains.	EN 1433 Load class of similar rating:		EN 1253 Load class of similar rating:
	4<8" channel	8<12" channel	All channel widths
Safe Live Load			
Light Duty Less than 2,000lb	A - B	A - B	L 15 - R 50
Medium Duty Between 2,000lb and 4,999lb	B - C	B - D	R 50 - M 125
Heavy Duty Between 5,000lb and 7,499lb	C - D	D	M 125 - N 250
Extra Heavy Duty Between 7,500lb and 9,999lb	D - E	E	P400
Special Duty Greater than 10,000lb	E - F	E - F	-

Channel Edge Options

All ACO Stainless Steel Trench Systems are available with different edge details to suit varying load requirements and the surrounding floor material.

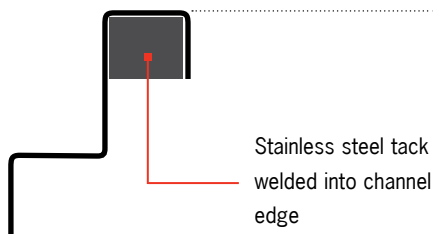
Standard Edge



Suitable for tiled, concrete and epoxy resin floors in pedestrian and light industrial applications. Drains without in-fill are susceptible to failure as the surrounding concrete rarely fills that void. As edges compress, cavities create breeding grounds for pathogens and are impossible to clean. Edge in-fill in other materials - contact ACO for details.

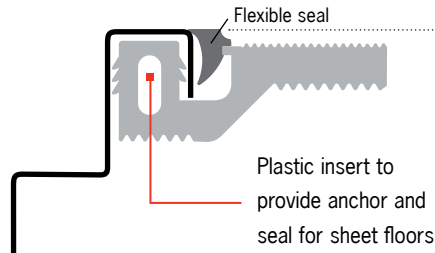
Semi-customization - Alternative Edge Options

Solid Steel Edge In-fill - heavy duty



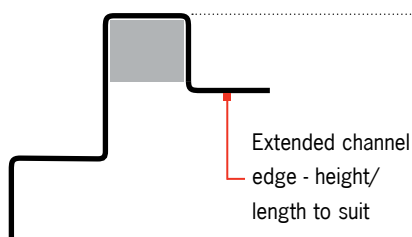
ACO recommends the use of a solid steel edge in-fill when using class E grates or where fork lift traffic is expected.

Vinyl Seal Edge - vinyl sheet floors



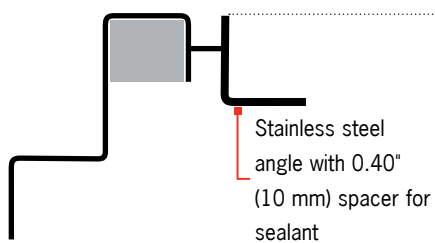
Fits standard channels - replaces standard edge insert and provides an anchoring point and seal between vinyl sheet flooring and trench edges. (Vinyl Seal # 49061, flexible seal # 49062 per meter)

Extended Edge - tile floors



Suitable for tiled floors in pedestrian and light industrial applications.

Floor Angle Edge - heavy duty resin floor



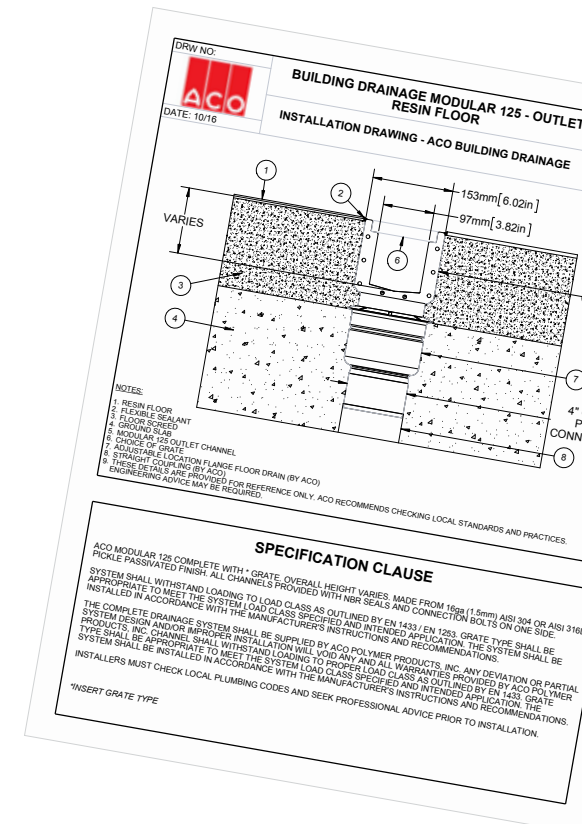
Suitable for heavy duty tiled, paver and resin floor applications, isolates channel from floor and provides gap for sealant. If deeper steel angle required contact ACO.

Installation Details

Loading will impact installation. It is necessary that the installation detail and concrete encasement provide sufficient support for all anticipated loads.

Poor site conditions and low load bearing pavements will require an increase in these dimensions to meet both vertical and lateral loads. Some applications will also require concrete reinforcement.

Always seek engineering advice for specific applications.



See page 42 for typical custom edge details

Choosing the right system - Selection details contd.

2 SITE - Material Requirements

Stainless steel is offered in several grades, ACO offer trench drains and grates in non-magnetic Austenitic stainless steel ([see note page 4](#)) in either Grade 304 or 316L. All products are pickled and passivated, and grates can be electropolished.

Typical factors that affect material selection:

- Types of chemicals
- Concentration percentages
- Contact time with trench system
- Temperatures of liquid flowing into trench
- Flushing system used
- Type of cleaning agent

Post Fabrication Processes

Heat from welding often causes surface



discoloration. Material is no longer corrosion resistant and will rust and deteriorate.

Bead blasting or polishing will restore the aesthetics of the material, but does not restore corrosion resistance. Chemical processes, such as pickling and passivation, are needed. Fabrication processes such as cutting and bending can embed iron particles into stainless steel - pickling will remove these impurities.



Electropolishing is an electro-chemical process that is essentially the reverse of electroplating.



It creates a uniform, highly reflective chrome-like luster with an extremely smooth finish. It considerably improves bacterial resistance.

Certification to confirm chemical resistance is available, contact ACO.

3 SITE - Layout Requirements

Standard products (parts and pieces) typically offer lowest cost and shortest lead time, but some applications require a non-standard solution.

Both semi-customization of standard parts or a fully custom solution is available from ACO.

Semi-customization

- Non-standard outlet position, or size
- Shortened channel length
- Non-standard corner or branch unit
- Non-standard invert or slope
- Custom grate style

Full customization

- Non-standard widths - unique grates
- Non-standard channel profile
- Unique branches and corners
- Unique edge details
- Variable slope options
- Non-standard outlets
- Non-standard accessories



4 USER - Safety, Security & Aesthetics

Safety

User safety is a key consideration to mitigate liability, key considerations:

- **ADA compliance** - The Americans with Disabilities Act of 1990; Section 4.5.4. requires that open slots should be no greater than 0.5 inches (12.7 mm) wide in the direction of traffic flow
- **Heel resistance** - ASME: A112.6.3 : Section 7.12 Heel Resistant Strainers & Grates requires grate hole size to not exceed 0.31" (8 mm).
- **Slip resistance** - User safety is paramount, therefore, slip resistance of grates should be considered. Grates should be chosen to offer a similar slip-resistance to that of the surrounding floor to avoid a trip hazard. ACO carries out empirical testing of grate surfaces using a pendulum test. Grate tables provide slip rating results - typically values in excess of 36 should be used where slip resistance is required. [See page 50.](#)

Security

Some applications may require grates to be locked to prevent access to the drainage channel. Other applications may require grate locking due to dynamic loads - locked grates help protect grate and channel from damage from heavy, dynamic loads. [See page 16.](#)

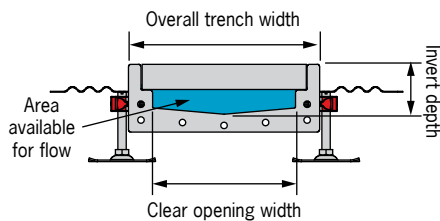
Aesthetics

Project aesthetics can be impacted by either the grate material or slot styles. A number of aesthetic grate options (perforated or heelsafe) are available or the slot channel can offer a more discreet option. Grates are pickled and passivated, and have a dull, matte finish. Grates can be electropolished to give a bright, shiny finish; other finishes are available on request - eg. bead blasting etc.

5 HYDRAULICS - Volume of Liquid

The volume of liquid a trench system needs to collect and remove in a given time period determines its minimum size.

The clear internal **width** and **depth** of a trench drain determines its **area available for flow**.



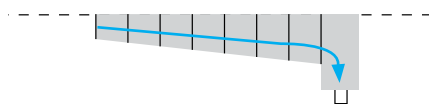
Depth restrictions may limit maximum trench depth leaving width as the only variable.

Slope increases liquid velocity providing a more efficient trench. Constant depth channels are suitable for restricted depth applications.

Constant depth channels



Sloping channels



Grate intake: In some applications, grates can be exposed to high water flows. Different open area ratios can sometimes affect how quickly liquids can enter the trench drain. ACO can advise on grate intake performance



ACO offers different sized trench systems and a broad selection of grates to meet most hydraulic requirements.

A technical support service is available to help ensure correct system specification.

6 HYDRAULICS - Outlet Type & Position

Type, size, position and number of outlets is critical to efficient drainage of the trench system. A number of options exist:

End outlet plate - pipe connected horizontally at the end of the trench. Minimizes excavation but offers lowest outlet capacity.



Outlet channel - connect to waste system via direct pipe connection, P-trap, or floor drain body (required if floor membrane used).

Floor drain channel - offers connection to larger outlet pipes, option of larger silt baskets if run-off contains large amounts of debris



Modular Channel Systems

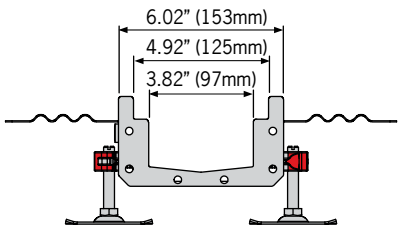
Modular 125	18
Modular 200	26
Floor Drain Bodies	41

Modular Channel Systems

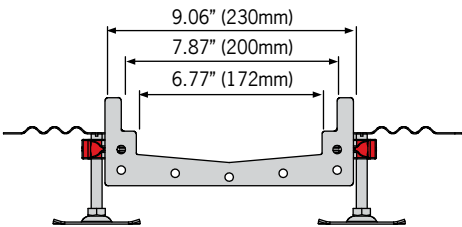
ACO Modular channels are available in AISI 304 or AISI 316L stainless steel with either a 4.92" (125 mm) or 7.87" (200 mm) grate width. A number of different grate styles and loadings are available to suit any application - locking grates are also available.

The constant depth or sloping system is manufactured with a variety of different outlet options to suit various applications and flow requirements. Outlet units provide direct pipe connection, P-trap connection or floor drain body connection.

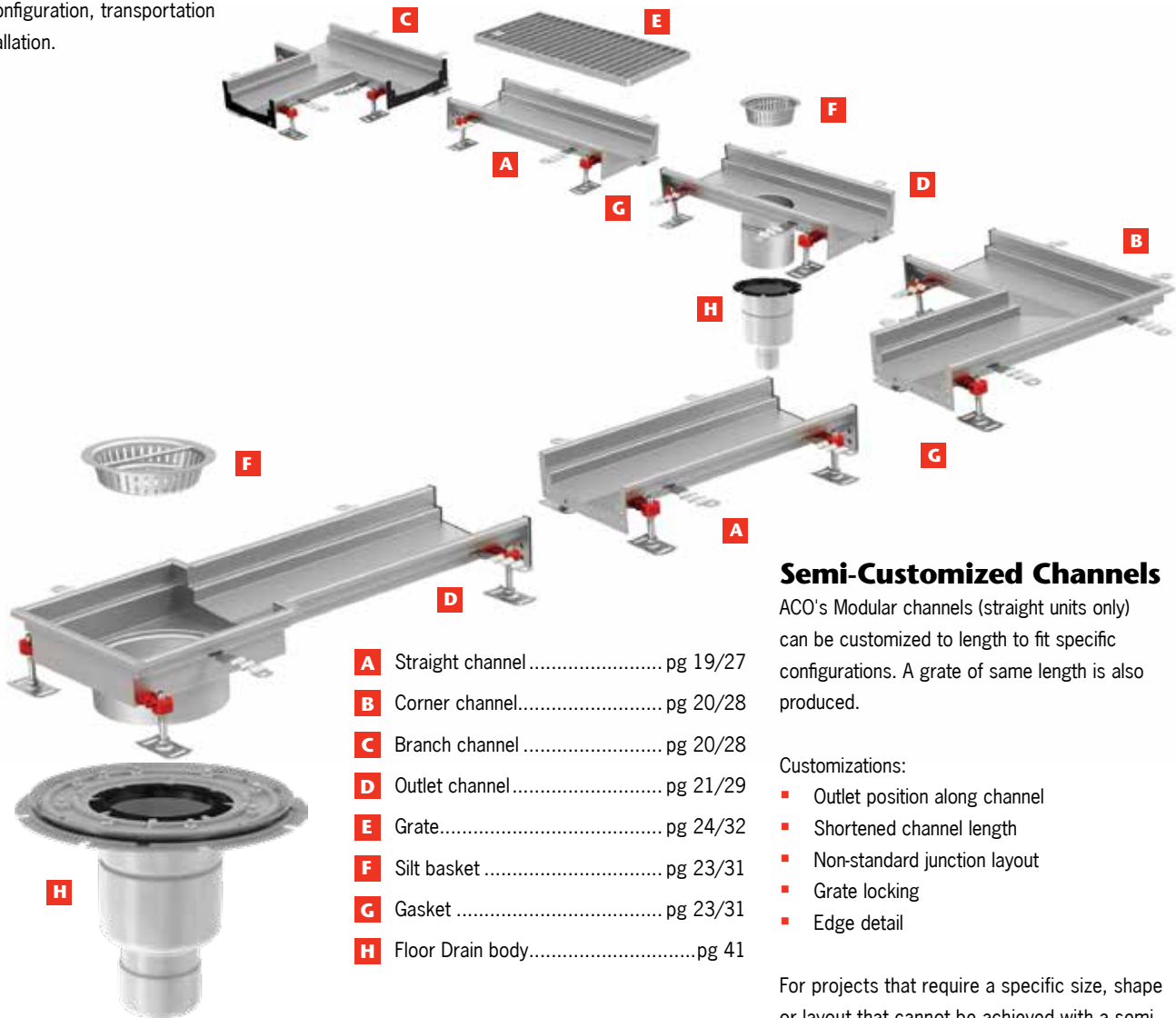
The modular format of the drain offers easy layout configuration, transportation and installation.



ACO Modular 125



ACO Modular 200



A	Straight channel	pg 19/27
B	Corner channel.....	pg 20/28
C	Branch channel	pg 20/28
D	Outlet channel.....	pg 21/29
E	Grate.....	pg 24/32
F	Silt basket	pg 23/31
G	Gasket	pg 23/31
H	Floor Drain body.....	pg 41

Semi-Customized Channels

ACO's Modular channels (straight units only) can be customized to length to fit specific configurations. A grate of same length is also produced.

- Customizations:
- Outlet position along channel
 - Shortened channel length
 - Non-standard junction layout
 - Grate locking
 - Edge detail

For projects that require a specific size, shape or layout that cannot be achieved with a semi-custom solution, ACO can manufacture a full-custom product. [See page 46.](#)

ACO Modular Features & Benefits

Channel edge

Modular channels come standard with a solid rubber edge in-fill. If a solid stainless steel in-fill is required, please contact ACO. Load class or flooring type may determine the edge in-fill choice.

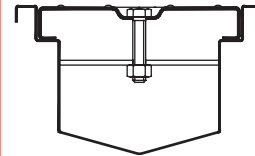


Edge in-fill ensures stable and durable transition of applied loads between the trench and surrounding floor, which helps minimize risk of floor cracks that can harbor microorganisms.

Different edge details are available to suit different types of floor finishes - [See page 9.](#)

Grate lockings

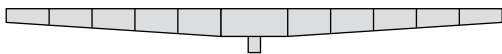
For applications where locked grates are required, ACO Modular channel systems can be supplied with factory fitted standard lockings (activated by a standard hexagon wrench) or security locking (activated by a security wrench). Channel section with optional grate locking detail shown below. [See pages 16-17 for details.](#)



4.92" (125 mm) or 7.87" (200 mm) wide channels

Flexible, off the shelf drainage solution available in:

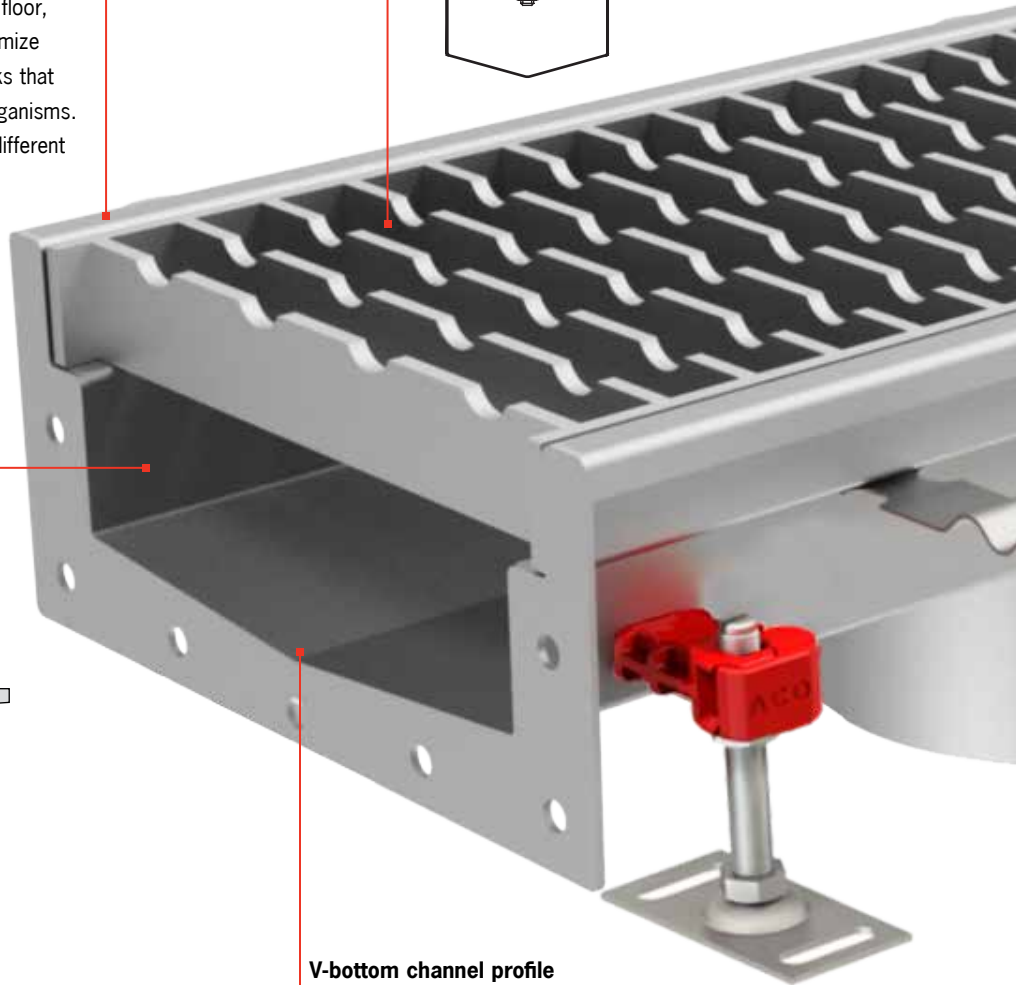
- Constant depth or sloping straight units
- Corner units
- Branch units
- Various outlet options



98ft (30m) continuous 0.5% slope to center outlet

V-bottom channel profile

Offers enhanced flow efficiency at low flow rates and improved self cleaning performance.



Grates

A large selection of grates are available in stainless steel and other materials, and are certified up to 60 tons. Unlocked grates make it easy to get access to the channel and lockable grates prevent unauthorized removal.

[See page 16.](#)

Pickling & Passivation

All ACO stainless steel channels are pickled and passivated to restore corrosion resistance and optimum durability.

Accessories

ACO Modular channels come complete with seal and connecting hardware.

Leveling feet

Threaded leveling feet with red plastic clip allow free adjustment of channel height. Once clip is fully secured, a fine adjustment is still possible using a screw driver.

Earth point

Where the drain needs connection to grounding, either a tab or bolt is available at the outlet.

Material

The properties of stainless steel, such as corrosion resistance, non-magnetic ([see note page 4](#)), durable and smooth (easy to clean/hygienic), makes it the most suitable material for use in waste water applications. In high saline environments, or applications where a higher chemical resistance is required, ACO recommends using grade 316L stainless steel.

Outlet options

There are two outlet options available:

1. For direct connection to waste water pipe
2. Used in combination with Floor Drain bodies

Information about Removable Foul Air Trap

Building codes in North America do not encourage the use of removable foul air traps in Floor Drains. Generally a 'P' trap in the pipework directly below the floor drain acts as a foul air trap. There may be specific instances where a removable foul air trap is desired, such as restricted depth installations, client-specific requirements, marine (ships & boats) etc.

The ACO foul air trap is fully removable and is available as an optional accessory to floor drain bodies. It is available in grade 304 or 316L stainless steel. The foul air trap prevents foul air from the connected drain and sewer from entering the building. A standard foul air trap support must be ordered with the foul air trap.



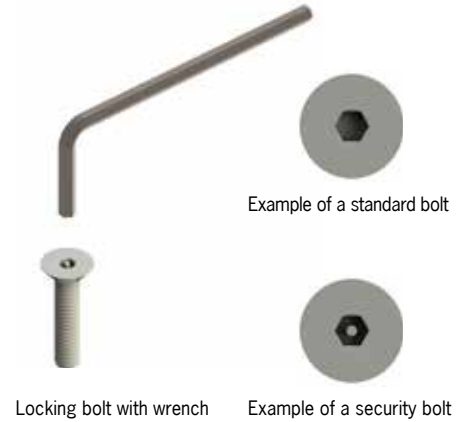
ACO Modular Grate Lockings

For applications where locked grates are required, the ACO Modular channel systems can be supplied with factory fitted standard lockings (activated by a standard hexagon wrench) or security locking (activated by a security wrench).

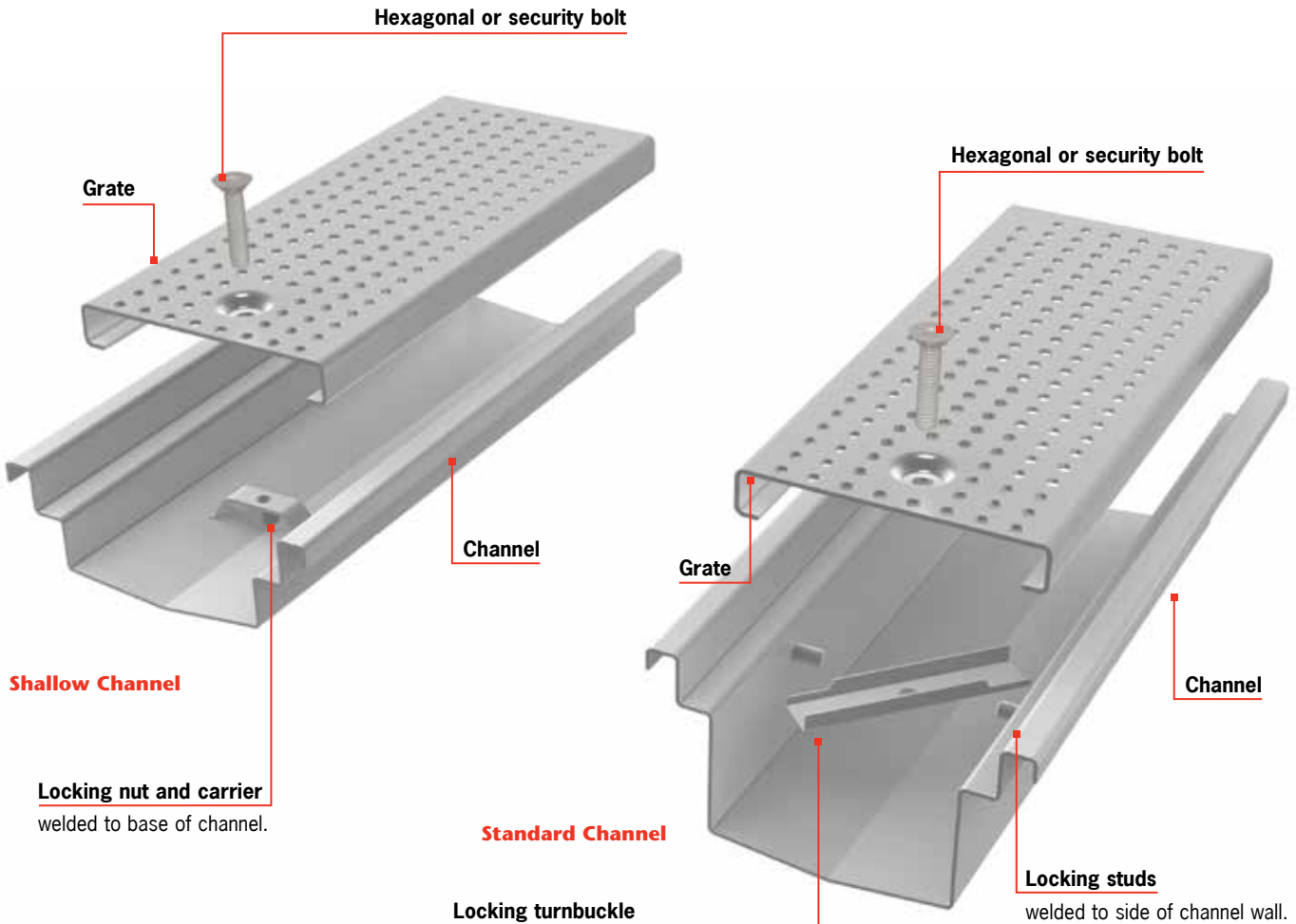
Notes:

1. Channel systems required with locking accessory require appropriate grate recess. If locking recess is not standard, modification will be required.
2. Floor Drain grates will be modified at the factory for locking as part of the Floor Drain locking kit.
3. Locking kits include channel floor drain modification locking bar and fixing (four bolt lengths supplied in kit).
4. Appropriate standard or security locking wrench to be ordered separately.

ACO Modular 125 Grate Locking Kits		
Part #	Description	Unit
142665	Standard Modular 125 M8 Locking Kit - M8 - 1.25	One locking per 19.69" (500 mm) grate. Meter grates require 2 units
142666	Security Modular 125 M8 Locking Kit - M8 - 1.25	
142667	Standard Hexagon Locking Wrench to fit M8	-
142668	Security Hexagon Locking Wrench to fit M8	-
ACO Modular 200 Grate Locking Kits		
142665	Standard Modular 200 M8 Locking Kit - M8 - 1.25	One locking per 19.69" (500 mm) grate. Meter grates require 2 units
142666	Security Modular 200 M8 Locking Kit - M8 - 1.25	
142667	Standard Hexagon Locking Wrench to fit M8	-
142668	Security Hexagon Locking Wrench to fit M8	-



Lockings Details



Grate Locking Installation

All modular channels are supplied with spacer bars - they provide rigidity during delivery, site handling and installation. They also prevent narrowing of the grate recess during concrete

pour. Spacer bars should be left in position until the grates are installed. They are removed by striking them with a sharp horizontal blow using a mallet.

Grates can be supplied with or without locking feature. Depending on the depth of the channel, the locking construction is slightly different. For locking grate details, contact ACO.

Lock Modular Channel Grates (2.0-2.5" [50 - 65 mm] depth)

1



Required:

Hex wrench

2 x locking bolts per meter of channel

2



Begin to screw bolts into channel; this will tighten grate in place using hex wrench.

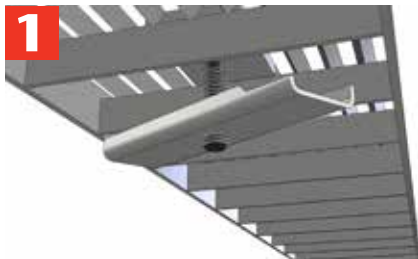
3



Tighten grate into channel and test to ensure grate does not move. Do not over tighten.

Lock Modular Channel Grates (2.5"[65 mm]+ depth)

1



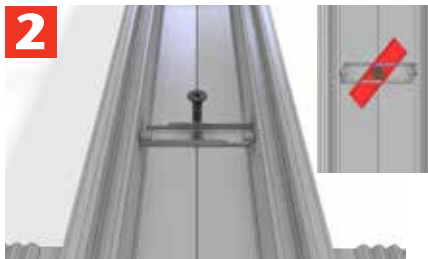
Required:

Hex wrench

2 x locking bolts per meter of channel

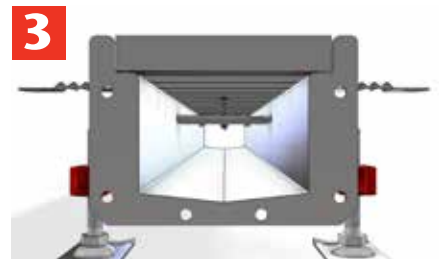
2 x locking bar

2



Attach locking bar to grate. Place grate in channel and begin to tighten bolts. This will turn locking bar to catch on pins on sides of channel. The lower side of locking bar will pass under pin and high side will lock against pin.

3



Tighten grate into channel and test to ensure grate does not move.

Lock Modular Channel Grates in channel with outlet

1



Attach locking bar to grate. Position grate such that locking bar is under pins each side of the outlet. Tighten locking bolt by hand to hold locking bar in position.

2



Tighten bolt further using hex wrench so locking bar pulls up against pins in sides of channel. This will secure grate in place. Tighten grate into channel such that grate does not move.

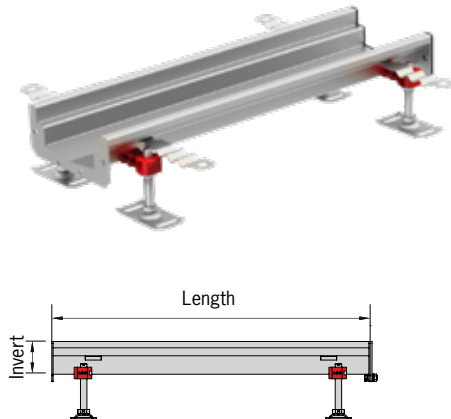
Modular 125 - 4" internal width

Modular 125	18
Floor Drain Bodies	41



Neutral invert Channel

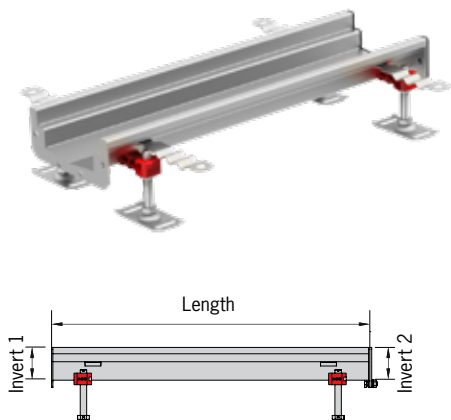
A



Length in (mm)	Invert in (mm)	Part #	
		AISI 304	AISI 316L
19.69 (500)	1.97 (50)	105119	407211
	2.56 (65)	105120	407212
	3.15 (80)	105121	407213
	3.74 (95)	105122	407214
	4.33 (110)	105123	407215
	4.92 (125)	105124	407216
39.37 (1000)	1.97 (50)	105127	407217
	2.56 (65)	105128	407218
	3.15 (80)	105129	407219
	3.74 (95)	105130	407220
	4.33 (110)	105131	407221
	4.92 (125)	105132	407222
78.74 (2000)	1.97 (50)	105135	407223
	2.56 (65)	105136	407224
	3.15 (80)	105137	407225
	3.74 (95)	105138	407226
	4.33 (110)	105139	407227
	4.92 (125)	105140	407228
118.11 (3000)	1.97 (50)	105143	407229
	2.56 (65)	105144	407230
	3.15 (80)	105145	407231
	3.74 (95)	105146	407232
	4.33 (110)	105147	407233
	4.92 (125)	105148	407234

Sloping Invert Channel

A



Length in (mm)	Slope %	Invert 1 in (mm)	Invert 2 in (mm)	Part #	
				AISI 304	AISI 316L
19.69 (500)	3.0	1.97 (50)	2.56 (65)	105151	407235
		2.56 (65)	3.15 (80)	105152	407236
		3.15 (80)	3.74 (95)	142726	142686
		3.74 (95)	4.33 (110)	142727	142687
39.37 (1000)	1.5	1.97 (50)	2.56 (65)	105155	407237
		2.56 (65)	3.15 (80)	105156	407238
		3.15 (80)	3.74 (95)	105157	407239
		3.74 (95)	4.33 (110)	105158	407240
78.74 (2000)	0.75	1.97 (50)	2.56 (65)	105161	407241
		2.56 (65)	3.15 (80)	105162	407242
		3.15 (80)	3.74 (95)	105163	407243
		3.74 (95)	4.33 (110)	105164	407244
118.11 (3000)	0.5	4.33 (110)	4.92 (125)	105165	407245
		1.97 (50)	2.56 (65)	105168	407246
		2.56 (65)	3.15 (80)	105169	407247
		3.15 (80)	3.74 (95)	105170	407248
		3.74 (95)	4.33 (110)	105171	407249
		4.33 (110)	4.92 (125)	105172	407250

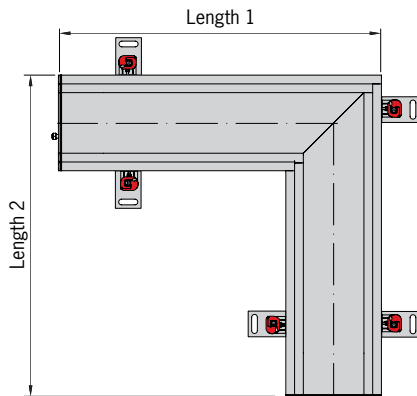
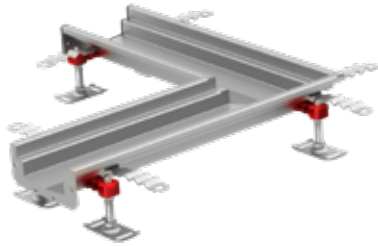
Notes:

Channels supplied with gasket and hardware to suit deeper end of unit.

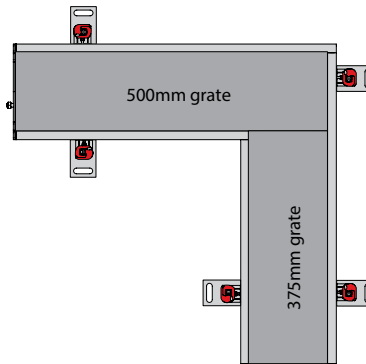
Modular 125 Parts Tables

Corner Channel

B

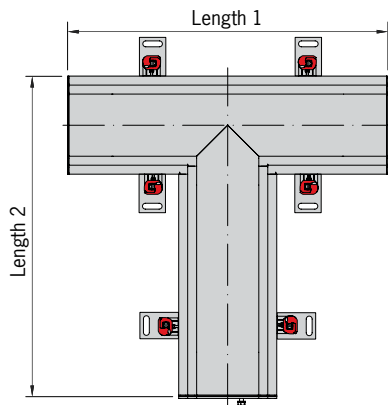
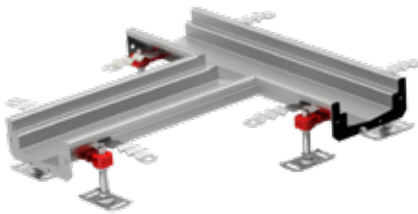


Length 1 in (mm)	Length 2 in (mm)	Grate size	Invert in (mm)	Part #	
				AISI 304	AISI 316L
20.28 (515)	20.28 (515)	1 Qty 19.69" (500) 1 Qty 14.76" (375) See page 24	1.97 (50)	409812	409818
			2.56 (65)	409813	409819
			3.15 (80)	409814	409820
			3.74 (95)	409815	409821
			4.33 (110)	409816	409822
			4.92 (125)	409817	409823

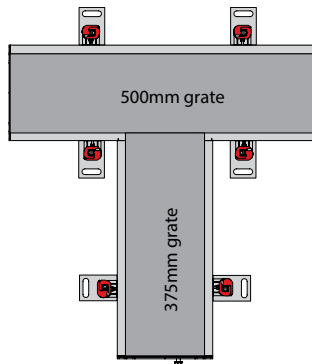


Branch Channel

C



Length 1 in (mm)	Length 2 in (mm)	Grate size	Invert in (mm)	Part #	
				AISI 304	AISI 316L
19.69 (500)	20.28 (515)	1 Qty 19.69" (500) 1 Qty 14.76" (375) See page 24	1.97 (50)	409824	409830
			2.56 (65)	409825	409831
			3.15 (80)	409826	409832
			3.74 (95)	409827	409833
			4.33 (110)	409828	409834
			4.92 (125)	409829	409835



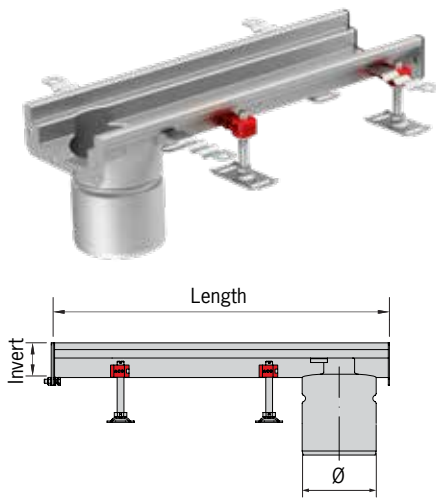
Notes:

Channels supplied with gasket & hardware to suit deeper end of unit.

Branch channels may need an additional gasket to be purchased depending upon layout

End Outlet Channel

D



Outlet options	Length in (mm)	Invert in (mm)	Spigot Ø in (mm)	Part #	
				AISI 304	AISI 316L
ACO P-trap <i>ACO Pipe catalog</i> or 4" Sch10 pipe ¹	19.69 (500)	3.15 (80)	4.49 (114)	445401	445409
		3.74 (95)		445402	445410
		4.33 (110)		445403	445411
		4.92 (125)		445404	445412
125 mm pipe <i>ACO Pipe catalog</i> or Floor drain body Type 142 (8") with 4" outlet ² <i>See page 41</i>		1.97 (50)	4.92 (125)	415946	415991
		2.56 (65)		415947	415992
		3.15 (80)		415948	415993
		3.74 (95)		415949	415994
		4.33 (110)		415950	415995
		4.92 (125)		415951	415996
Floor drain body Type 157 (10") with 4" outlet ³ <i>See page 41</i>		1.97 (50)	5.59 (142)	409732	409733
		2.56 (65)		409736	409737
		3.15 (80)		409740	409741
		3.74 (95)		409744	409745
		4.33 (110)		409724	409725
		4.92 (125)		409728	409729

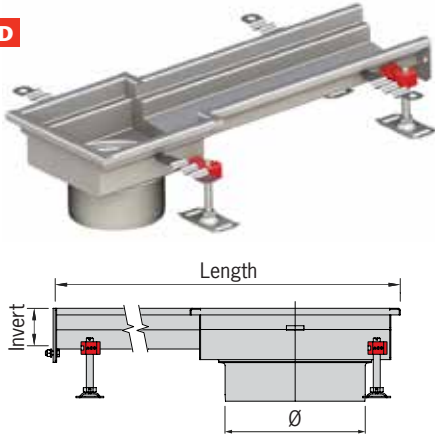
1. Use 409190/409189 basket - [see page 23](#)

2. Use 414339/414440 basket - [see page 23](#)

3. Use 445149/445150 basket - [see page 23](#)

End Outlet Floor Drain Channel

D



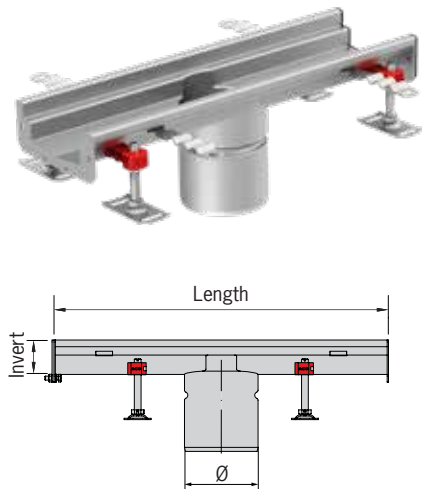
Outlet options	Grate size	Length in (mm)	Invert in (mm)	Spigot Ø in (mm)	Part #	
					AISI 304	AISI 316L
200 mm pipe <i>ACO Pipe catalog</i> or ACO P-trap <i>ACO Pipe catalog</i> or Floor drain body Type 218 (12") with 6" outlet ⁴ <i>See page 41</i>	12" x 12" <i>See page 44</i> and Qty 1 19.69" (500) <i>See page 24</i>	30.91 (785)	2.56 (65)	7.87 (200)	105375	142670
			3.74 (95)		105376	142671
			4.92 (125)		105377	142672

4. Use 408222/408232 basket - [see page 23](#)

Modular 125 Parts Tables

Center Outlet Channel

D



Outlet options	Length in (mm)	Invert in (mm)	Spigot Ø in (mm)	Part #	
				AISI 304	AISI 316L
ACO P-trap <i>ACO Pipe catalog</i> or 4" Sch10 pipe ¹	19.69 (500)	3.15 (80)	4.49 (114)	445405	445413
		3.74 (95)		445406	445414
		4.33 (110)		445407	445415
		4.92 (125)		445408	445416
125 mm pipe <i>ACO Pipe catalog</i> or Floor drain body Type 142 (8") with 4" outlet ² <i>See page 41</i>		1.97 (50)	4.92 (125)	415958	416003
		2.56 (65)		415959	416004
		3.15 (80)		415960	416005
		3.74 (95)		415961	416006
		4.33 (110)		415962	416007
		4.92 (125)		415963	416008
Floor drain body Type 157 (10") with 4" outlet ³ <i>See page 41</i>		1.97 (50)	5.59 (142)	409734	409735
		2.56 (65)		409738	409739
		3.15 (80)		409742	409743
		3.74 (95)		409746	409747
		4.33 (110)		409726	409727
		4.92 (125)		409730	409731

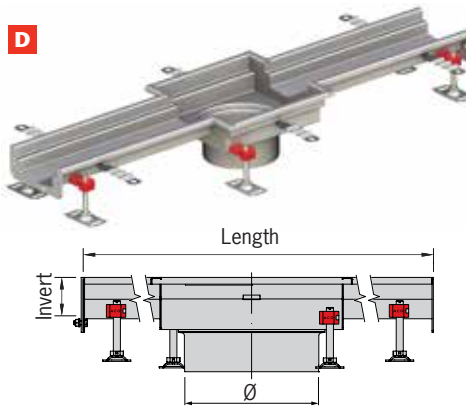
Notes:

Channels supplied with gasket and hardware to suit deeper end of unit.
Refer to [page 41-45](#) for floor drain bodies and grates.

1. Use 409190/409189 basket - [see page 23](#)
2. Use 414339/414440 basket - [see page 23](#)
3. Use 445149/445150 basket - [see page 23](#)

Center Floor Drain Outlet Channel

D



Outlet options	Grate size	Length in (mm)	Invert in (mm)	Spigot Ø in (mm)	Part #	
					AISI 304	AISI 316L
200 mm pipe ACO Pipe catalog or ACO P-trap ACO Pipe catalog or Floor drain body Type 218 (12") with 6" outlet ⁴ See page 41	12" x 12" See page 44 and Qty 2 19.69" (500) See page 24	50.0 (1270)	2.56 (65)	7.87 (200)	105378	142673
			3.74 (95)		105379	142674
			4.92 (125)		105380	142675

4. Use 408222/408232 basket - [see page 23](#)

Silt Baskets

F



Depth in (mm)	For outlet Ø in (mm)	Holding Capacity Pints (Liters)	Part #	
			AISI 304	AISI 316L
3.39 (86)	4.49 (114)	1.06 (0.5)	409190	409189
1.97 (50)	4.92 (125)	1.06 (0.5)	414339	414340
1.97 (50)	5.59 (142)	1.27 (0.6)	445149	445150
1.97 (50)	7.87 (200)	2.96 (1.4)	408222	408232

End Plate



Invert in (mm)	Part #	
	AISI 304	AISI 316L
1.97 (50)	105100	407196
2.56 (65)	105101	407197
3.15 (80)	105102	407198
3.74 (95)	105103	407199
4.33 (110)	105104	407200
4.92 (125)	105105	407201

2" (50 mm) Outlet End Plate



Invert in (mm)	Part #	
	AISI 304	AISI 316L
3.74 (95)	409116	409121
4.33 (110)	409117	409122
4.92 (125)	409118	409123

Notes:

End plate and outlet end plate supplied with hard rubber edge infill as standard.

End plates and outlet end plates are bolted to the channel with gasket and hardware supplied. Add 0.67" (17 mm) to length of run to accommodate edge details. See diagram below.

Nitrile Rubber Gasket

G

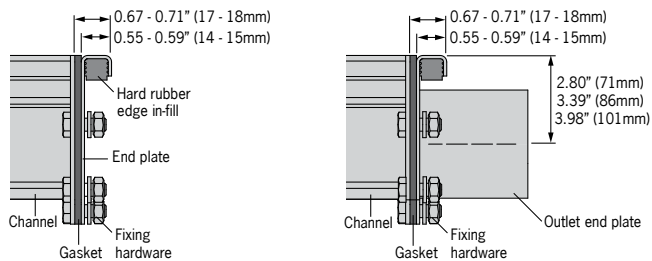


Invert in (mm)	Part #
1.97 (50)	413587
2.56 (65)	413588
3.15 (80)	413589
3.74 (95)	413590
4.33 (110)	413591
4.92 (125)	413592

Notes:

Additional/replacement gasket comes with locking hardware

If a gasket of another material is required, please contact ACO.



Modular 125 Grates Parts Tables

E

Mesh Grate



Length in (mm)	Load class			Slip resistance	Open area sq in	Part #			
	EN 1433	ASME	EN 1253			AISI 304 Non-Locking	AISI 304 Locking	AISI 316L Non-Locking	AISI 316L Locking
14.76 (375)	A15	LD	L15	✓	57.8	414130	n/a	414180	n/a
19.69 (500)					77.5	21710	n/a	21715	n/a
39.37 (1000)					156.6	21610	n/a	21615	n/a
14.76 (375)	C250	MD-HD	M125	✓	51.8	414131	n/a	414181	n/a
19.69 (500)					69.8	21910	n/a	21915	n/a
39.37 (1000)					146.9	21810	n/a	21815	n/a

Heelsafe Grate



Length in (mm)	Load class			Slip resistance	Open area sq in	Part #			
	EN 1433	ASME	EN 1253			AISI 304 Non-Locking	AISI 304 Locking	AISI 316L Non-Locking	AISI 316L Locking
14.76 (375)	B125	MD	R50	✗	29.0	414135	n/a	414185	n/a
19.69 (500)					38.8	96819	n/a	401238	n/a
39.37 (1000)					78.1	96818	n/a	401237	n/a

Multi-Slot 5 Grate



Length in (mm)	Load class			Slip resistance	Open area sq in	Part #			
	EN 1433	ASME	EN 1253			AISI 304 Non-Locking	AISI 304 Locking	AISI 316L Non-Locking	AISI 316L Locking
14.76 (375)	A15	LD	L15	✓	14.6	414139	n/a	414189	n/a
19.69 (500)					19.6	409290	n/a	409291	n/a
39.37 (1000)					33.6	409286	n/a	409287	n/a
19.69 (500)	B125	MD	R50	✓	19.6	409294	n/a	409295	n/a
39.37 (1000)					33.6	409236	n/a	409237	n/a

Perforated Grate



Length in (mm)	Load class			Slip resistance	Open area sq in *	Part #			
	EN 1433	ASME	EN 1253			AISI 304 Non-Locking	AISI 304 Locking	AISI 316L Non-Locking	AISI 316L Locking
14.76 (375)	A15	LD	L15	✗	38.2	414136	n/a	414186	n/a
19.69 (500)					50.2	21760	n/a	21765	n/a
39.37 (1000)					101.3	21660	n/a	21665	n/a
19.69 (500)	C250	MD-HD	M125	✗	50.2	21960	105504	21965	142504
39.37 (1000)					101.3	21860	105505	21865	142505

* Locking will reduce open area by 1.04 sq in

Ladder Grate



Length in (mm)	Load class			Slip resistance	Open area sq in	Part #			
	EN 1433	ASME	EN 1253			AISI 304 Non-Locking	AISI 304 Locking	AISI 316L Non-Locking	AISI 316L Locking
14.76 (375)	C250	MD-HD	M125	✓	52.4	414134	142506	414184	142507
19.69 (500)					69.3	21740	142508	21745	142509
39.37 (1000)					139.2	21741	142510	21746	142511
14.76 (375)	E600	XHD	P400	✓	34.7	138222	142512	138225	142513
19.69 (500)					46.2	138223	142514	138226	142515
39.37 (1000)					94.4	138224	142516	138227	142517



ADA requirements are set out in The Americans with Disabilities Act of 1990; Section 4.5.4.



Tested and Certified by NSF International.



Grates feature a hygienic design.



Locking grate available

Slotted Grate



Length in (mm)	Load class			Slip resistance	Open area sq in	Part #			
	EN 1433	ASME	EN 1253			AISI 304 Non-Locking	AISI 304 Locking	AISI 316L Non-Locking	AISI 316L Locking
19.69 (500)	A15	LD	L15	✗	18.9	n/a	105519	n/a	142522
39.37 (1000)					37.8	n/a	105518	n/a	142523
19.69 (500)	C250	MD-HD	M125	✗	18.9	n/a	105521	n/a	142524
39.37 (1000)					37.8	n/a	105520	n/a	142525
19.69 (500)	E600	XHD	P400	✗	18.9	n/a	142518	n/a	142519
39.37 (1000)					37.8	n/a	142520	n/a	142521

Frameless Ladder Grate



Length in (mm)	Load class			Slip resistance	Open area sq in	Part #			
	EN 1433	ASME	EN 1253			AISI 304 Non-Locking	AISI 304 Locking	AISI 316L Non-Locking	AISI 316L Locking
14.76 (375)	B125	MD	R50	✓	49.1	446278	n/a	446279	n/a
19.69 (500)					65.8	446274	n/a	446275	n/a
14.76 (375)	C250	MD-HD	M125	✓	48.8	446280	n/a	446281	n/a
19.69 (500)					65.6	446276	n/a	446277	n/a



ADA requirements are set out in The Americans with Disabilities Act of 1990; Section 4.5.4.



Tested and Certified by NSF International.



Grates feature a hygienic design.



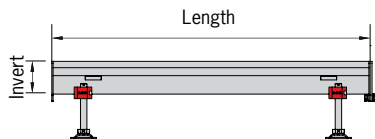
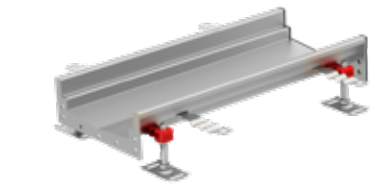
Locking grate available

Modular 200 - 7" internal width

Modular 200	26
Floor Drain Bodies	41

Neutral Invert Channel

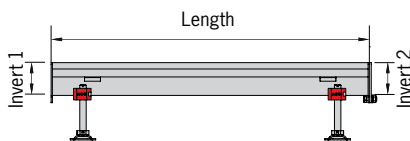
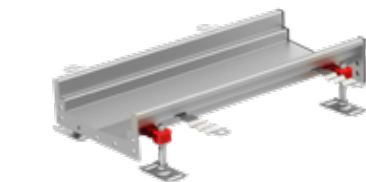
A



Length in (mm)	Invert in (mm)	Part #	
		AISI 304	AISI 316L
19.69 (500)	2.36 (60)	409072	409050
	2.76 (70)	409047	409051
	3.15 (80)	409048	409052
	3.94 (100)	409049	409053
39.37 (1000)	2.36 (60)	401859	401860
	2.76 (70)	409054	409057
	3.15 (80)	409055	409058
	3.94 (100)	409056	409059
78.74 (2000)	2.36 (60)	401875	401876
	2.76 (70)	409060	409063
	3.15 (80)	409061	409064
	3.94 (100)	409062	409065
118.11 (3000)	2.36 (60)	401895	401896
	2.76 (70)	409066	409069
	3.15 (80)	409067	409070
	3.94 (100)	409068	409071

Sloping Invert Channel

A



Length in (mm)	Slope %	Invert 1 in (mm)	Invert 2 in (mm)	Part #	
				AISI 304	AISI 316L
19.69 (500)	1.0	2.17 (55)	2.36 (60)	401855	401856
39.37 (1000)	1.0	2.36 (60)	2.76 (70)	401871	401872
		2.76 (70)	3.15 (80)	402464	402465
		3.15 (80)	3.54 (90)	402466	402467
		3.54 (90)	3.94 (100)	402468	402469
		3.94 (100)	4.33 (110)	402470	402471
78.74 (2000)	0.5	2.36 (60)	2.76 (70)	401887	401888
		2.76 (70)	3.15 (80)	402472	402473
		3.15 (80)	3.54 (90)	402474	402475
		3.54 (90)	3.94 (100)	402476	402477
		3.94 (100)	4.33 (110)	402478	402479
		4.33 (110)	4.72 (120)	402480	402481
118.11 (3000)	0.67	2.36 (60)	3.15 (80)	402482	402483
		3.15 (80)	3.94 (100)	402484	402485
		3.94 (100)	4.72 (120)	402486	402487
		4.72 (120)	5.51 (140)	402488	402489

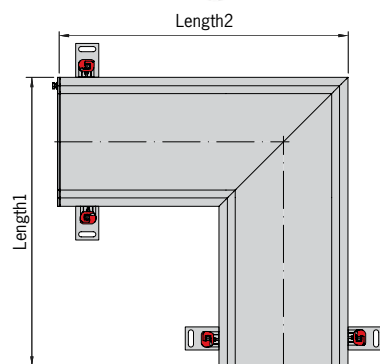
Notes:

Channels supplied with gasket & hardware to suit deeper end of unit.

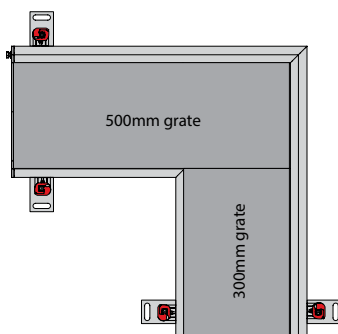
Modular 200 Parts Tables

Corner Channel

B

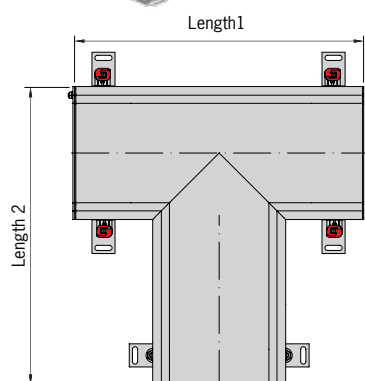


Length 1 in (mm)	Length 2 in (mm)	Grate size	Invert in (mm)	Part #	
				AISI 304	AISI 316L
			2.36 (60)	401921	401922
			3.15 (80)	402490	402491
20.28 (515)	20.28 (515)	1 Qty 19.69" (500) 1 Qty 11.81" (300) See page 32	3.94 (100)	402492	402493

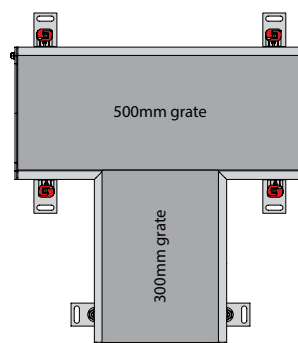


Branch Channel

C



Length 1 in (mm)	Length 2 in (mm)	Grate size	Invert in (mm)	Part #	
				AISI 304	AISI 316L
			2.36 (60)	401933	401934
			3.15 (80)	402494	402495
19.69 (500)	20.28 (515)	1 Qty 19.69" (500) 1 Qty 11.81" (300) See page 32	3.94 (100)	402496	402497



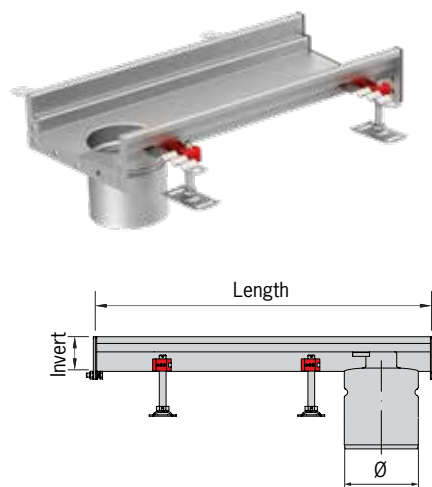
Notes:

Channels supplied with gasket & hardware to suit deeper end of unit.

Branch channels may need an additional gasket to be purchased depending upon layout

End Outlet Channel

D



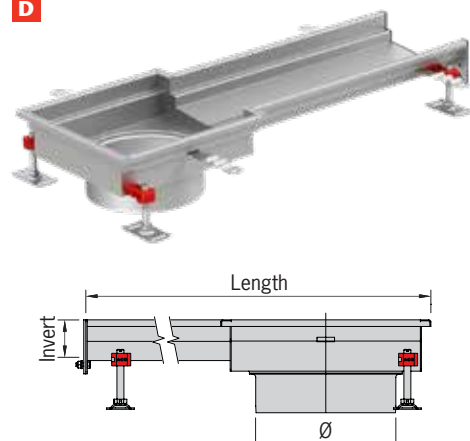
Outlet options	Length in (mm)	Invert in (mm)	Spigot Ø in (mm)	Part #	
				AISI 304	AISI 316L
Floor drain body Type 157 (10") with 4" outlet ¹ See page 41	19.69 (500)	2.36 (60)	5.59 (142)	409900	409908
		2.76 (70)		409901	409909
		3.15 (80)		409902	409910
		3.54 (90)		409903	409911
		3.94 (100)		409904	409912
		4.33 (110)		409905	409913
		4.72 (120)		409906	409914
		5.51 (140)		409907	409915
6" Sch 10 pipe ²		3.15 (80)	6.61 (168)	445417	445423
		3.54 (90)		445418	445424
		3.94 (100)		445419	445425
		4.33 (110)		445420	445426
		4.72 (120)		445421	445427
		5.51 (140)		445422	445428

1. Use 408202/408212 or 445234/445235 baskets - [see page 31](#)

2. Use 416904/416905 baskets - [see page 31](#)

End Outlet Floor Drain Channel

D



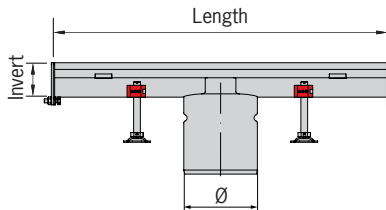
Outlet options	Grate size	Length in (mm)	Invert in (mm)	Spigot Ø in (mm)	Part #	
					AISI 304	AISI 316L
200 mm pipe ACO Pipe catalog or ACO P-trap ACO Pipe catalog or Floor drain body Type 218 (12") with 6" outlet See page 41	12" x 12" See page 44 and Qty 1 19.69" (500) See page 32	30.91 (785)	2.36 (60)	7.87 (200)	414259	414267
			2.76 (70)		414260	414268
			3.15 (80)		414261	414269
			3.54 (90)		414262	414270
			3.94 (100)		414263	414271
			4.33 (110)		414264	414272
			4.72 (120)		414265	414273
			5.51 (140)		414266	414274

Use 408222/408232 baskets - [see page 31](#)

Modular 200 Parts Tables

Center Outlet Channel

D



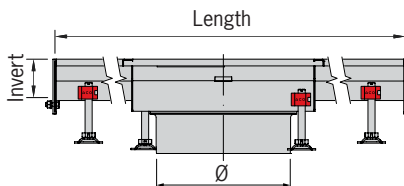
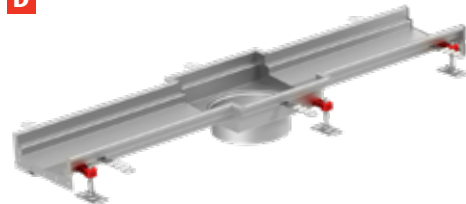
Outlet options	Length in (mm)	Invert in (mm)	Spigot Ø in (mm)	Part #	
				AISI 304	AISI 316L
Floor drain body Type 157 (10") with 4" outlet ¹ See page 41	19.69 (500)	2.36 (60)	5.59 (142)	409916	409924
		2.76 (70)		409917	409925
		3.15 (80)		409918	409926
		3.54 (90)		409919	409927
		3.94 (100)		409920	409928
		4.33 (110)		409921	409929
		4.72 (120)		409922	409930
		5.51 (140)		409923	409931
6" Sch 10 pipe ²		3.15 (80)	6.61 (168)	445429	445435
		3.54 (90)		445430	445436
		3.94 (100)		445431	445437
		4.33 (110)		445432	445438
		4.72 (120)		445433	445439
		5.51 (140)		445434	445440

1. Use 408202/408212 or 445234/445235 baskets - [see page 31](#)

2. Use 416904/416905 baskets - [see page 31](#)

Center Floor Drain Outlet Channel

D



Outlet options	Grate size	Length in (mm)	Invert in (mm)	Spigot Ø in (mm)	Part #	
					AISI 304	AISI 316L
200 mm pipe <i>ACO Pipe catalog</i> or ACO P-trap <i>ACO Pipe catalog</i> or Floor drain body Type 218 (12") with 6" outlet See page 41	12" x 12" See page 44 and Qty 1 19.69" (500) See page 32	50.00 (1270)	2.36 (60)	7.87 (200)	414243	414251
			2.76 (70)		414244	414252
			3.15 (80)		414245	414253
			3.54 (90)		414246	414254
			3.94 (100)		414247	414255
			4.33 (110)		414248	414256
			4.72 (120)		414249	414257
			5.51 (140)		414250	414258

Use 408222/408232 basket - [see page 31](#)

Notes:

Channels supplied with gasket and hardware to suit deeper end of unit. Refer to [page 41-45](#) for floor drain bodies and grates.

Silt Baskets

F



Depth in (mm)	For spigot Ø in (mm)	Holding Capacity Pints (Liters)	Part #	
			AISI 304	AISI 316L
1.02 (50)	5.59 (142)	1.27 (0.6)	408202	408212
3.35 (85)		2.96 (1.4)	445234	445235
1.02 (50)	6.61 (168)	1.27 (0.6)	416904	416905
1.97 (50)	7.87 (200)	2.96 (1.4)	408222	408232

End Plate



Invert in (mm)	Part #	
	AISI 304	AISI 316L
2.17 (55)	402683	402684
2.36 (60)	402028	402029
2.76 (70)	402030	402031
3.15 (80)	402514	402515
3.54 (90)	402032	402033
3.94 (100)	402516	402517
4.33 (110)	402518	402519
4.72 (120)	402036	402037
5.51 (140)	402520	402521

2" (50 mm) Outlet End Plate



Invert in (mm)	Part #	
	AISI 304	AISI 316L
3.94 (100)	402024	402025
4.33 (110)	402020	402021
4.72 (120)	402022	402023
5.51 (140)	401999	402000

Notes:

End plate and outlet end plate supplied with hard rubber edge infill as standard.

End plates and outlet end plates are bolted to the channel with gasket and hardware supplied. Add 0.67 - 71" (17 - 18 mm) to length of run to accommodate edge details. See diagram below.

Nitrile Rubber Gasket

G

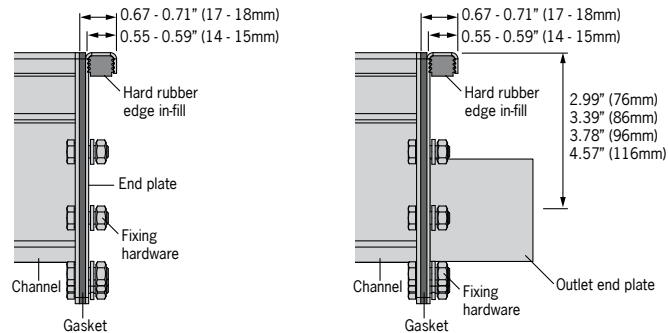


Invert in (mm)	Part #
2.17 (55)	142725
2.36 (60)	413593
2.76 (70)	413594
3.15 (80)	413595
3.54 (90)	413596
3.94 (100)	413597
4.33 (110)	413598
4.72 (120)	413599
5.51 (140)	413600

Notes:

Additional/replacement gasket comes with locking hardware

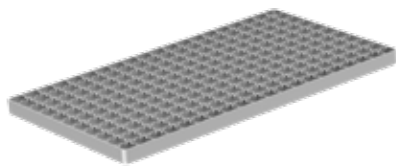
If a gasket of another material is required, please contact ACO.



Modular 200 Grates Parts Tables

E

Mesh Grate



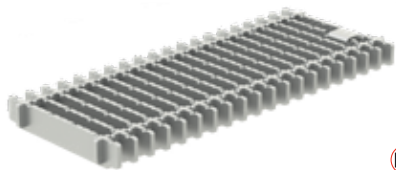
Length in (mm)	Load class			Slip resistance	Open area sq in	Part #			
	EN 1433	ASME	EN 1253			AISI 304 Non-Locking	AISI 304 Locking	AISI 316L Non-Locking	AISI 316L Locking
11.81 (300)	A15	LD	L15	✓	67.0	414140	n/a	414190	n/a
19.69 (500)					127.6	92200	n/a	92250	n/a
39.37 (1000)					256.0	92201	n/a	92251	n/a

Heelsafe Grate



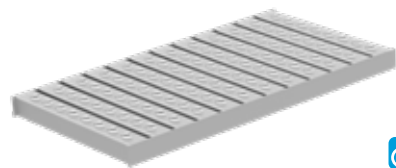
Length in (mm)	Load class			Slip resistance	Open area sq in	Part #			
	EN 1433	ASME	EN 1253			AISI 304 Non-Locking	AISI 304 Locking	AISI 316L Non-Locking	AISI 316L Locking
11.81 (300)	A15	LD	L15	✗	40.3	142526	n/a	142527	n/a
19.69 (500)					67.1	142528	n/a	142529	n/a
39.37 (1000)					134.2	142530	n/a	142531	n/a

Frameless Ladder Grate



Length in (mm)	Load class			Slip resistance	Open area sq in	Part #			
	EN 1433	ASME	EN 1253			AISI 304 Non-Locking	AISI 304 Locking	AISI 316L Non-Locking	AISI 316L Locking
11.81 (300)	A15	LD	L15	✓	68.0	446250	n/a	446251	n/a
19.69 (500)					114.1	446246	n/a	446247	n/a
11.81 (300)	C250	MD-HD	M125	✓	64.6	446252	n/a	446253	n/a
19.69 (500)					108.3	446248	n/a	446249	n/a

Multi-Slot 5 Grate



Length in (mm)	Load class			Slip resistance	Open area sq in	Part #			
	EN 1433	ASME	EN 1253			AISI 304 Non-Locking	AISI 304 Locking	AISI 316L Non-Locking	AISI 316L Locking
11.81 (300)	A15	LD	L15	✓	20.6	414145	n/a	414195	n/a
19.69 (500)					31.4	409292	n/a	409293	n/a
39.37 (1000)					53.5	409288	n/a	409289	n/a
19.69 (500)	B125	MD	R50	✓	31.4	409296	n/a	409297	n/a
39.37 (1000)					53.5	409240	n/a	409241	n/a



ADA requirements are set out in The Americans with Disabilities Act of 1990; Section 4.5.4.



Items shown with the NSF Mark have been tested and Certified by NSF International.



Grates shown with this mark feature a hygienic design.



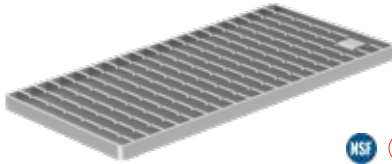
Grates shown with this mark can have locking added

Perforated Grate



Length in (mm)	Load class			Slip resistance	Open area sq in	Part #			
	EN 1433	ASME	EN 1253			AISI 304		AISI 316L	
						Non-Locking	Locking	Non-Locking	Locking
11.81 (300)	A15	LD	L15	x	15.6	414143	142532	414193	142533
19.69 (500)					26.0	402689	142534	405188	142535
39.37 (1000)					52.7	402688	142536	405187	142537

Ladder Grate



Length in (mm)	Load class			Slip resistance	Open area sq in	Part #			
	EN 1433	ASME	EN 1253			AISI 304		AISI 316L	
						Non-Locking	Locking	Non-Locking	Locking
39.37 (1000)	A15	LD	L15	✓	201.0	445948	142538	445949	142539
11.81 (300)	C250	MD-HD	M125	✓	69.6	414142	142540	414192	142541
19.69 (500)					114.7	92214	142542	92264	142543
39.37 (1000)					231.3	92215	142544	92265	142545
11.81 (300)	E600	XHD	P400	✓	47.9	138228	142546	138231	142547
19.69 (500)					79.9	138229	142548	138232	142549
39.37 (1000)					159.7	138230	142550	138233	142551

Portable Tundish



Depth in (mm)	Width in (mm)	Part #	
		AISI 304	AISI 316L
9.84 (250)	9.84 (250)	415821	n/a

ADA requirements are set out in The Americans with Disabilities Act of 1990; Section 4.5.4.

Items shown with the NSF Mark have been tested and Certified by NSF International.

Grates shown with this mark feature a hygienic design.

Grates shown with this mark can have locking added

Slot Drain 20 - 2½" internal width

Slot Drains	34
Floor Drain Bodies	41



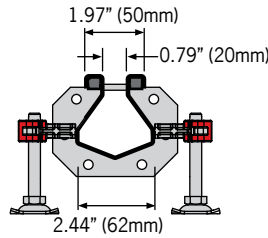
ACO Slot Drain 20

ACO Slot Drain 20 is available in AISI 304 or AISI 316 stainless steel offering a 0.79" (20 mm) central slot. The constant depth or sloping system is manufactured with a central slot for water capture and is available with corner and branch channels.

The modular format of the ACO Slot Drain 20 offers easy layout configuration, transportation and installation.

The continuous 0.79" (20 mm) slot allows for easy cleaning. Flange and gasket connections offer a secure seal.

Outlet units provide access to the channel and can be direct pipe connection, P-trap connection or floor drain connection (usually where floor membrane used). A choice of grates is available for these units - See page 44.



ACO Slot Drain 20

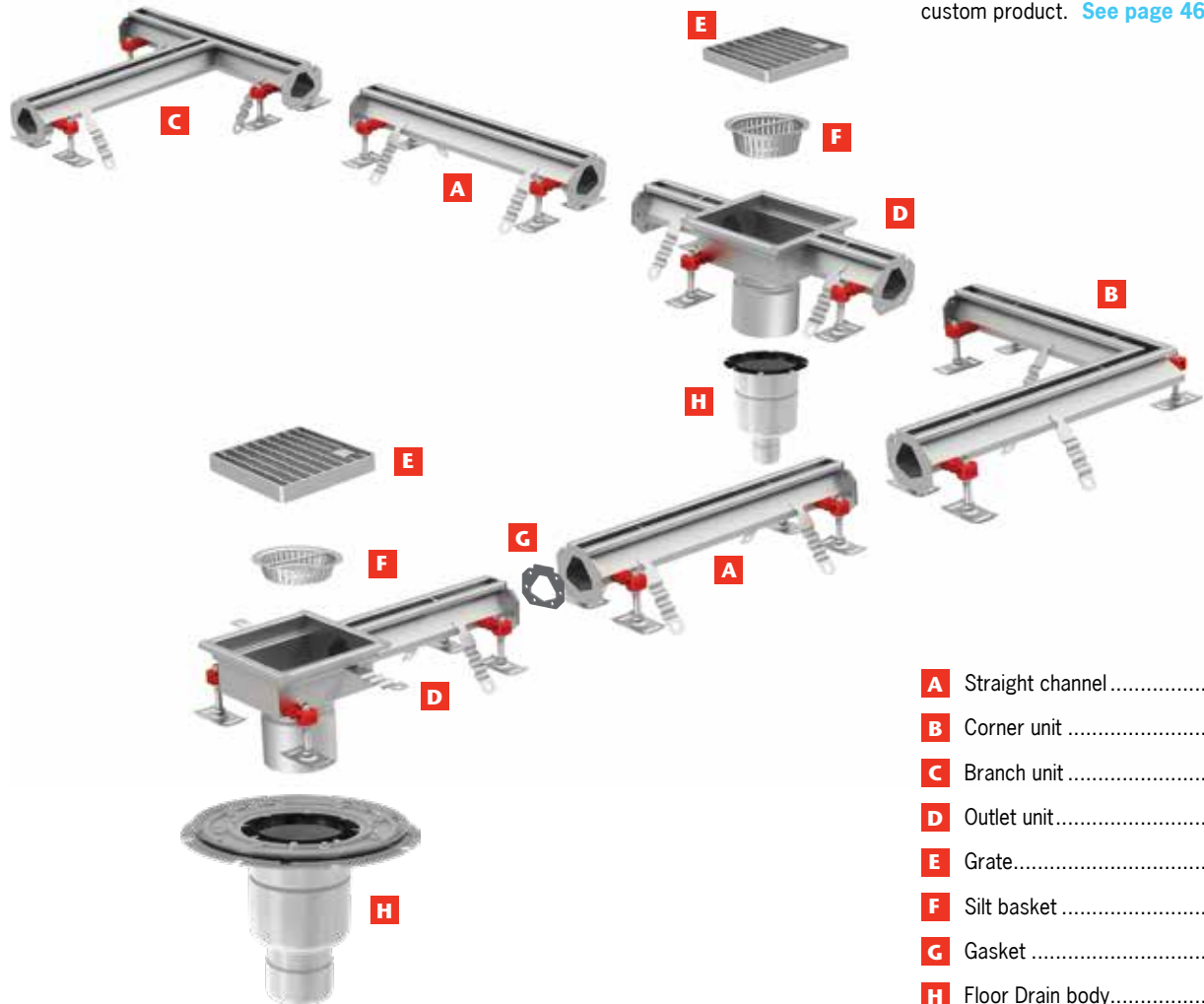
Semi-Customized Slot Drain

The dimensions of the ACO Slot Drain 20 can be made semi-custom to meet specific project requirements.

Customizations:

- Slot width can be adjusted between 0.375" (8 mm) and 0.8" (20 mm) wide
- Length can be fully customized.
- Longitudinal slope of bottom invert can be customized between 1% and 5%
- Outlet position customized along length.
- ADA/Heelsafe compliant slot can be created selecting a custom sized slot or by adding a toe-bar - See page 47.

Projects that require a specific size, shape or layout that cannot be achieved with a semi-custom solution, ACO can manufacture a full-custom product. See page 46.



A	Straight channel.....	pg 38
B	Corner unit	pg 38
C	Branch unit	pg 39
D	Outlet unit.....	pg 39
E	Grate.....	pg 44
F	Silt basket	pg 40
G	Gasket	pg 40
H	Floor Drain body.....	pg 41

Slot Drain Features & Benefits

Channel edge

Modular channels come standard with rubber edge in-fill. If a solid stainless steel in-fill is required, contact ACO. Load class or flooring type may determine correct edge in-fill.

Edge in-fill ensures stable and durable transition of applied loads between the trench and surrounding floor, which helps minimize risk of floor cracks that can harbor microorganisms.

[See page 9.](#)



20 mm slot channels

Flexible, off the shelf drainage solution available in:

- Neutral or sloping straight units
- Neutral corner units
- Neutral branch units
- Various outlet options

Earth point

Where the drain needs connection to grounding, either a tab or bolt is available at the outlet.

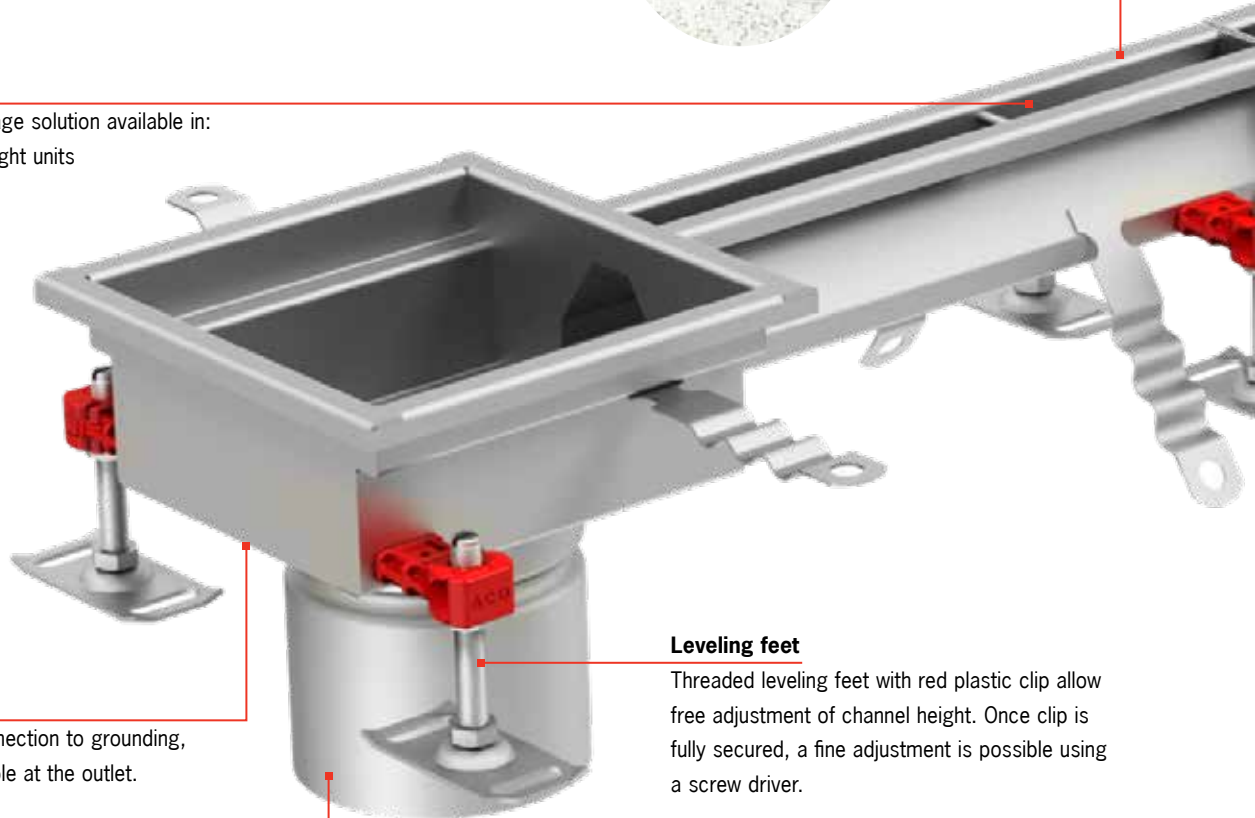
Leveling feet

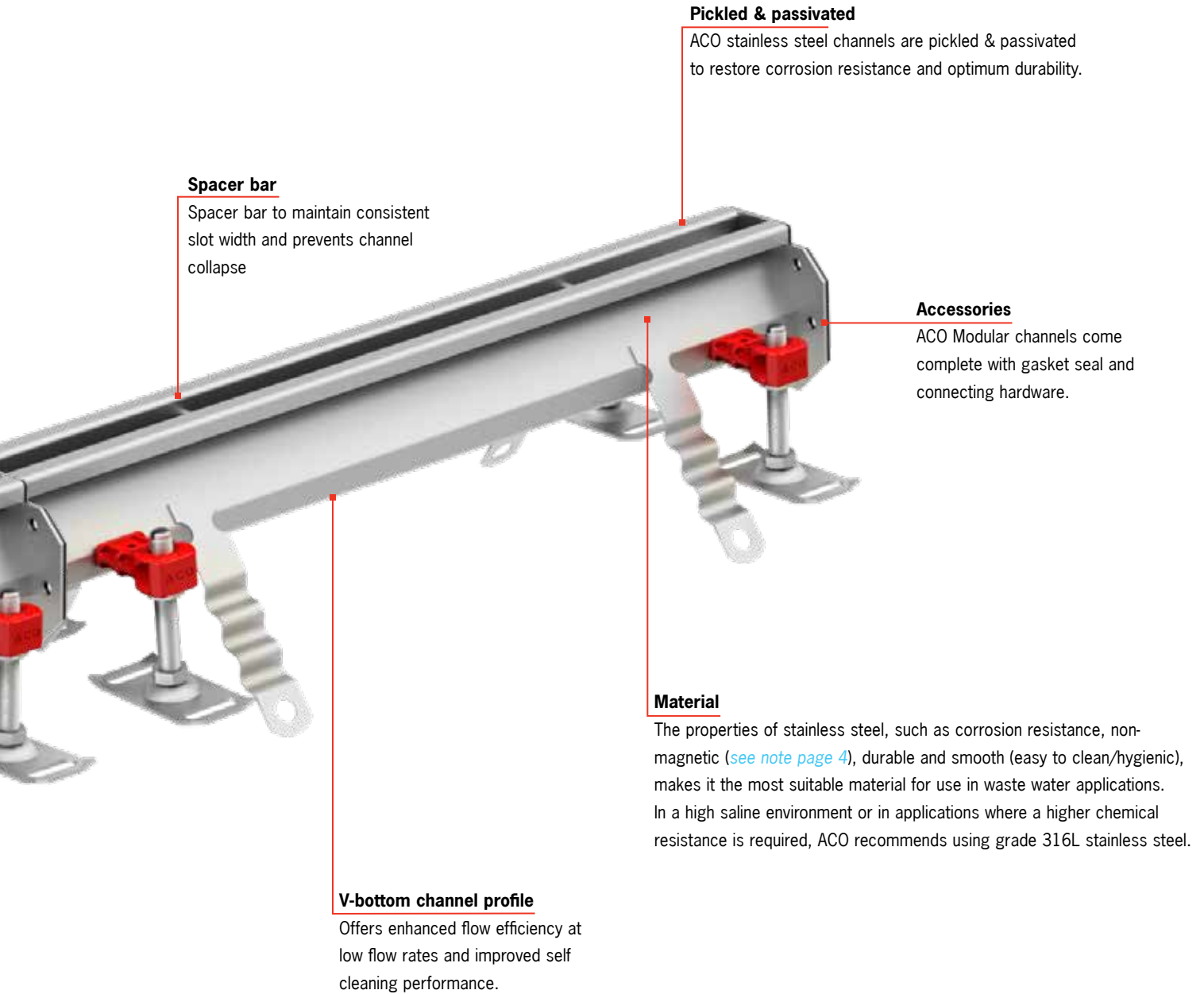
Threaded leveling feet with red plastic clip allow free adjustment of channel height. Once clip is fully secured, a fine adjustment is possible using a screw driver.

Outlet options

Two outlet options available:

1. Direct connection to waste water pipe
2. Used in combination with Floor Drain bodies





Information about Removable Foul Air Trap

Building codes in North America do not encourage the use of removable foul air traps in Floor Drains. Generally a 'P' trap in the pipework directly below the floor drain acts as a foul air trap. There may be specific instances where a removable foul air trap is desired, such as restricted depth installations, client-specific requirements, marine (ships & boats) etc.

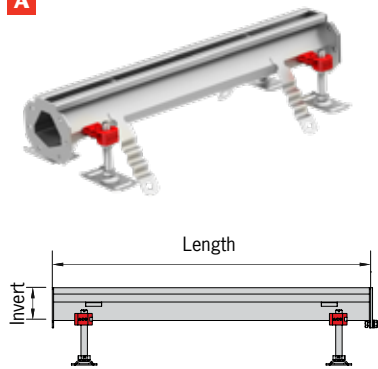
The ACO foul air trap is fully removable and is available as an optional accessory to floor drain bodies. It is available in grade 304 or 316L stainless steel. The foul air trap prevents foul air from the connected drain and sewer from entering the building. A standard foul air trap support must be ordered with the foul air trap.



Slot Drain Parts Tables

Neutral Invert Channel

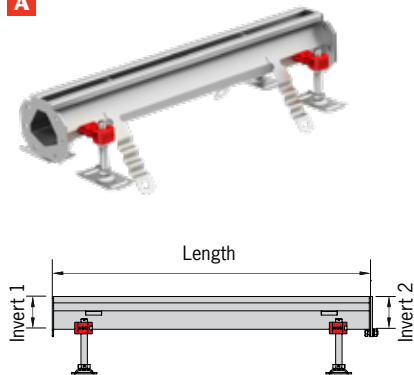
A



Length in (mm)	Invert in (mm)	Part #	
		AISI 304	AISI 316L
19.69 (500)	2.76 (70)	92300	92350
	3.54 (90)	92301	92351
	4.72 (120)	92302	92352
39.37 (1000)	2.76 (70)	92305	92355
	3.54 (90)	92306	92356
	4.72 (120)	92307	92357
78.74 (2000)	2.76 (70)	92310	92360
	3.54 (90)	92311	92361
	4.72 (120)	92312	92362
118.11 (3000)	2.76 (70)	92316	92366
	3.54 (90)	92317	92367
	4.72 (120)	92318	92368

Sloping Invert Channel

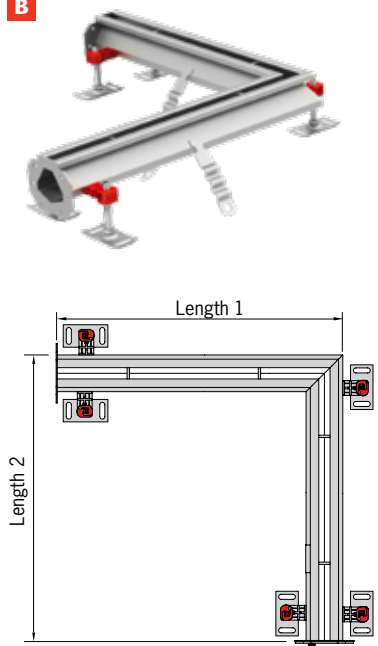
A



Length in (mm)	Slope %	Invert 1 in (mm)	Invert 2 in (mm)	Part #	
				AISI 304	AISI 316L
19.69 (500)	1.0	2.76 (70)	2.95 (75)	92303	92353
		2.95 (75)	3.15 (80)	92304	92354
39.37 (1000)	0.5	2.76 (70)	2.95 (75)	92308	92358
		2.95 (75)	3.15 (80)	92309	92359
78.74 (2000)	0.5	2.76 (70)	3.15 (80)	92313	92363
		3.15 (80)	3.54 (90)	92314	92364
		3.54 (90)	3.94 (100)	92315	92365
118.11 (3000)	0.33	2.76 (70)	3.15 (80)	92319	92369
		3.15 (80)	3.54 (90)	92320	92370
		3.54 (90)	3.94 (100)	92321	92371
		3.94 (100)	4.33 (110)	92322	92372
		4.33 (110)	4.72 (120)	92323	92373

Corner Channel

B



Length 1 in (mm)	Length 2 in (mm)	Invert in (mm)	Part #	
			AISI 304	AISI 316L
19.69 (500)	19.69 (500)	2.76 (70)	92338	92388
		2.95 (75)	92339	92389
		3.15 (80)	92340	92390
		3.54 (90)	92341	92391
		3.94 (100)	92342	92392
		4.33 (110)	92343	92393
		4.72 (120)	92344	92394

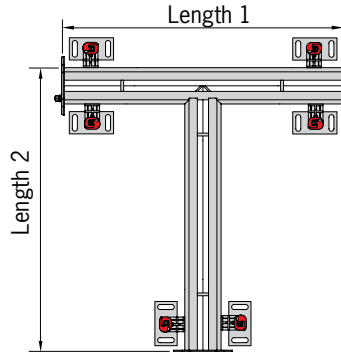
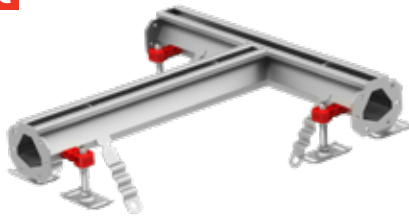
Notes:

Channels supplied with gasket and hardware to suit deeper end of unit.

Slot Drain Parts Tables

Branch Channel

C



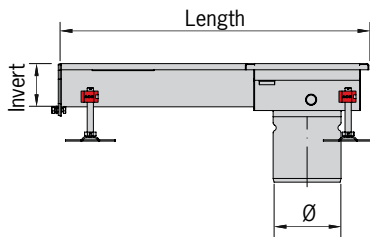
Length 1 in (mm)	Length 2 in (mm)	Invert in (mm)	Part #	
			AISI 304	AISI 316L
19.69 (500)	20.28" (515)	2.76 (70)	92345	92395
		2.95 (75)	92346	92396
		3.15 (80)	92347	92397
		3.54 (90)	92348	92398
		3.94 (100)	92349	92399
		4.33 (110)	92400	92450
		4.72 (120)	92401	92451

Notes:

Branch channels may need an additional gasket to be purchased depending upon layout

End Outlet Channel

D

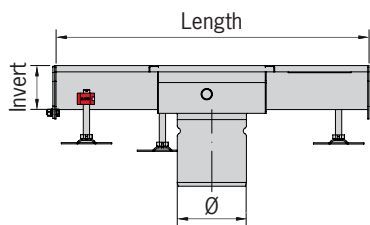
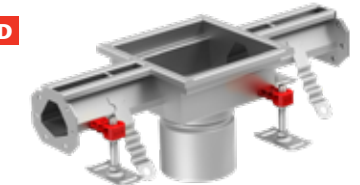


Outlet options	Grate size	Length in (mm)	Invert in (mm)	Spigot Ø in (mm)	Part #	
					AISI 304	AISI 316L
125 mm pipe ACO Pipe catalog or Floor drain body Type 142 (8") with 4" outlet ¹ See page 41	8" x 8" See page 44	19.69 (500)	2.76 (70)	4.92 (125)	415925	415970
			2.95 (75)		415926	415971
			3.15 (80)		415927	415972
			3.54 (90)		415928	415973
			3.94 (100)		415929	415974
			4.33 (110)		415930	415975
			4.72 (120)		415931	415976
Floor drain body Type 157 (10") with 4" outlet ² See page 41	10" x 10" See page 44	19.69 (500)	2.76 (70)	5.59 (142)	414201	414208
			2.95 (75)		414202	414209
			3.15 (80)		414203	414210
			3.54 (90)		414204	414211
			3.94 (100)		414205	414212
			4.33 (110)		414206	414213
			4.72 (120)		414207	414214

1. Use 414739/414839 or 414339/414340 basket - [see page 40](#)
2. Use 408202/408212 or 445234/445235 basket - [see page 40](#)

Center Outlet Channel

D



Outlet options	Grate size	Length in (mm)	Invert in (mm)	Spigot Ø in (mm)	Part #	
					AISI 304	AISI 316L
125 mm pipe ACO Pipe catalog or Floor drain body Type 142 (8") with 4" outlet ¹ See page 41	8" x 8" See page 44	19.69 (500)	2.76 (70)	4.92 (125)	415932	415977
			2.95 (75)		415933	415978
			3.15 (80)		415934	415979
			3.54 (90)		415935	415980
			3.94 (100)		415936	415981
			4.33 (110)		415937	415982
			4.72 (120)		415938	415983
Floor drain body Type 157 (10") with 4" outlet ² See page 41	10" x 10" See page 44	19.69 (500)	2.76 (70)	5.59 (142)	414215	414222
			2.95 (75)		414216	414223
			3.15 (80)		414217	414224
			3.54 (90)		414218	414225
			3.94 (100)		414219	414226
			4.33 (110)		414220	414227
			4.72 (120)		414221	414228

1. Use 414739/414839 or 414339/414340 basket - [see page 40](#)
2. Use 408202/408212 or 445234/445235 basket - [see page 40](#)

Notes:

Channels supplied with gasket and hardware to suit deeper end of unit.
Refer to [page 41-45](#) for floor drain bodies and grates.

Slot Drain Parts Tables

Silt Baskets

F



A



B

Depth in (mm)	For spigot Ø in (mm)	Holding capacity Pints (Liters)	Part #	
			AISI 304	AISI 316L
1.77 (45) A	4.92 (125)	0.85 (0.4)	414739	414839
1.97 (50) A		1.06 (0.5)	414339	414340
1.97 (50) A	5.59 (142)	1.27 (0.6)	408202	408212
3.35 (85) B		2.96 (1.4)	445234	445235

End Plate



Invert in (mm)	Part #	
	AISI 304	AISI 316L
2.76 (70)	92324	92374
2.95 (75)	92325	92375
3.15 (80)	92326	92376
3.54 (90)	92327	92377
3.94 (100)	92328	92378
4.33 (110)	92329	92379
4.72 (120)	92330	92380

2" (50 mm) Outlet End Plate



Invert in (mm)	Part #	
	AISI 304	AISI 316L
3.94 (100)	92335	92385
4.33 (110)	92336	92386
4.72 (120)	92337	92387

Notes:

End plate and outlet end plate supplied with hard rubber edge infill as standard.

End plates and outlet end plates are bolted to the channel with gasket and hardware supplied. Add 0.71" (18 mm) to length of run to accommodate edge details. See diagram below.

Nitrile Rubber Gasket

G

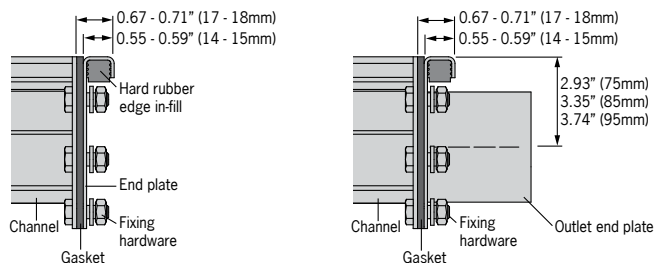


Invert in (mm)	Part #
2.76 (70)	413601
2.95 (75)	413602
3.15 (80)	413603
3.54 (90)	413604
3.94 (100)	413605
4.33 (110)	413606
4.72 (120)	413607

Notes:

Additional/replacement gasket comes with locking hardware

If a gasket of another material is required, please contact ACO.



Floor Drain Bodies & Grates

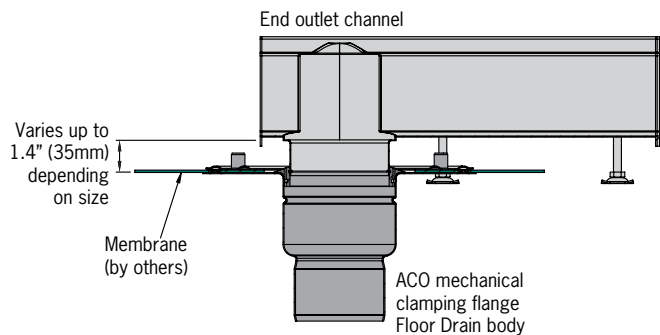
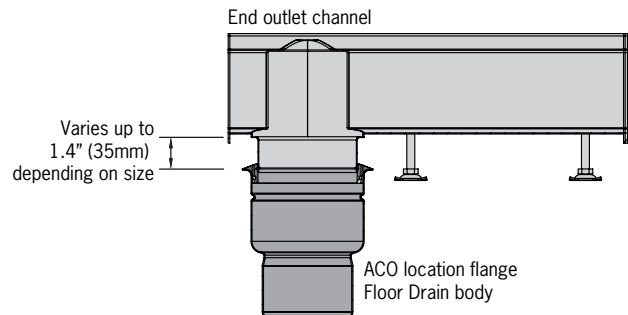
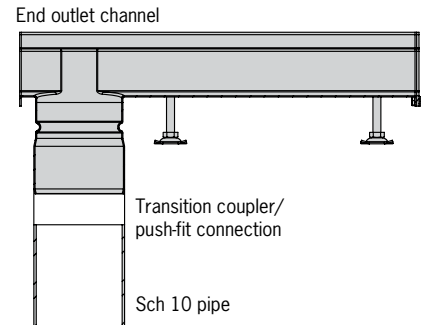


Floor Drain Bodies Parts Tables

Outlet Options

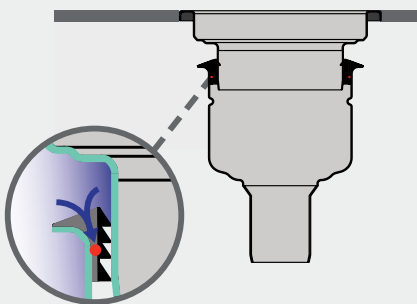
ACO stainless steel trench drains can be connected to underground pipework by the following ways:

1. Vertical pipe spigot out of channel bottom. Simplest method to connect pipework. The connection can be made with a no-hub connector, or ACO stainless steel push fit pipe system. This system usually requires drain and pipework to be set up prior to concrete/floor being poured.
2. Use of a floor drain body with location flange. The floor drain body can be cast into the slab at the first concrete pour. The trench system is then set to finished height. The vertical spigot on the underside of the stainless steel trench will push-fit into the floor drain body. This gives variable height adjustment of approximately 1.4" (35 mm) vertically.
3. Use of a floor drain body with mechanical clamping flange. If the floor slab has a waterproof membrane, the membrane can be dressed into the floor drain body and the trench system installed afterwards. As with the location flange body, the vertical spigot on the underside of the stainless steel trench will push-fit into the floor drain body. This gives variable height adjustment of approximately 1.4" (35 mm) vertically.

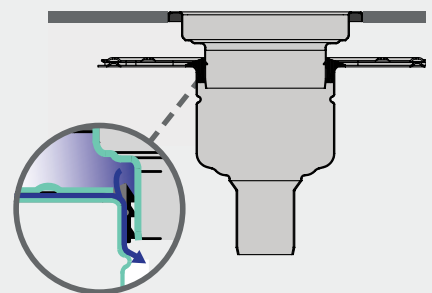


Friction Ring

When using adjustable height floor drain with location flange, red sealing 'o' ring must be used to prevent water from entering body.



When using adjustable height floor drain with mechanical membrane clamping flange, red sealing 'o' ring *must* be removed to allow water to enter floor drain body through weep holes on friction ring.



Parts Table: Floor Drain Bodies

Location Flange Vertical Outlet



Body Size	Fits Spigot Ø in (mm)	Flange Type	Outlet Ø in (mm)	Part #	
				AISI 304	AISI 316L
8"	4.92 (125)	location	4.49 (114) - 4" Sch 10	445252	445288
10"	5.59 (142)		4.49 (114) - 4" Sch 10	445129	445195
12"	7.87 (200)		4.49 (114) - 4" Sch 10	445135	445201
			6.61 (168) - 6" Sch 10	445141	445207

Location Flange Horizontal Outlet



Body Size	Fits Spigot Ø in (mm)	Flange Type	Outlet Ø in (mm)	Part #	
				AISI 304	AISI 316L
8"	4.92 (125)	location	4.49 (114) - 4" Sch 10	445264	445300
10"	5.59 (142)		4.49 (114) - 4" Sch 10	445153	445219
12"	7.87 (200)		4.49 (114) - 4" Sch 10	445159	445225

Mechanical Membrane Clamp Vertical Outlet



Body Size	Fits Spigot Ø in (mm)	Flange Type	Outlet Ø in (mm)	Part #	
				AISI 304	AISI 316L
8"	4.92 (125)	mechanical membrane clamp	4.49 (114) - 4" Sch 10	445256	445292
10"	5.59 (142)		4.49 (114) - 4" Sch 10	445133	445199
12"	7.87 (200)		4.49 (114) - 4" Sch 10	445139	445205
			6.61 (168) - 6" Sch 10	445145	445211

Mechanical Membrane Clamp Horizontal Outlet



Body Size	Fits Spigot Ø in (mm)	Flange Type	Outlet Ø in (mm)	Part #	
				AISI 304	AISI 316L
8"	4.92 (125)	mechanical membrane clamp	4.49 (114) - 4" Sch 10	445268	445304
10"	5.59 (142)		4.49 (114) - 4" Sch 10	445157	445223
12"	7.87 (200)		4.49 (114) - 4" Sch 10	445163	445229

Note - an automatic trap primer can be installed to the floor drain body to prevent the 'P' trap from drying out. Contact ACO for details.

Optional Removable Foul Air Trap

Foul air trap support ring
(required when ordering
foul air trap)





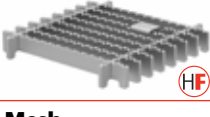
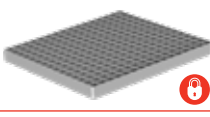
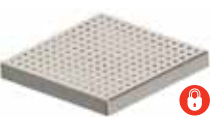


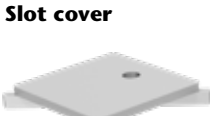



Foul air trap





Part	Used with	Part #	
		AISI 304	AISI 316L
Foul air trap support ring	8" Floor Drain Body	(NBR) 414743	
Foul air trap		414741	414841
Foul air trap support ring	10" Floor Drain Body	(NBR) 408201	
Foul air trap		408200	408210
Foul air trap support ring	12" Floor Drain Body	(NBR) 408221	
Foul air trap		408220	408230


Building codes in North America do not encourage the use of removable foul air traps in Floor Drains. However, a removable foul air trap may be required due to restricted depth installations, client-specific requirements, marine (ships & boats) and others.

Parts Table: Floor Drain Grates E

Floor Drain Grates	Load Class		Slip Resistant ASTM E303-93 (BPN)	8" x 8"		10" x 10"		12" x 12"		Open area sq in		
	ASME: A112.6.3	EN 1253		AISI 304 Part #	AISI 316L Part #	AISI 304 Part #	AISI 316L Part #	AISI 304 Part #	AISI 316L Part #	8"	10"	12"
Cast 	Special duty	P400	48	416942	N/A	416943	N/A	416944	N/A	20.4	39.0	60.9
Ladder 	Light duty	R50	35	416912	416913	416914	416915	416916	416917	31.3	57.9	88.6
	Medium duty	M 125	35	408093	408193	408028	408128	408037	408137	28.9	54.1	88.6
	Heavy duty	N 250	33	408043	408143	408044	408144	408045	408145	26.4	44.5	71.2
Frameless Ladder 	Light duty	R50	51	446262	446423	446266	446267	446270	446271	30.9	53.9	83.1
	Medium duty	M125	51	446264	446265	446268	446269	446272	446273	29.2	51.0	78.7
Mesh 	Medium duty	L 15	57	408090	408190	408095	408195	408034	408134	35.7	83.0	92.3
Perforated 	Light duty	L 15	15	142555	142556	142557	142558	142559	142560	4.3	6.4	10.4
Heelsafe 	Medium duty	L 15	36	408022	408122	408031	408131	408040	408140	20.4	36.5	52.7
Multi-slot 5 	Medium duty	L 15	31	408094	408194	408033	408133	408042	408142	8.6	16.8	27.8
Slot cover 	Special duty	M125	36	408021	408121	408030	408130	408039	408139	10.5	13.9	17.4
Half Ladder 	Light duty	L 15	35	142561	142562	142563	142564	142565	142566	35.0	63.1	96.7
Half Plate 	Light duty	L 15	36	142567	142568	142569	142570	140571	416925	18.8	33.5	51.6
Tundish 	-	-	N/A	415918	N/A	413546	N/A	413547	N/A	2.9	2.9	11.7

 Items shown with the NSF Mark have been tested and Certified by NSF International.

 Grates shown with this mark feature a hygienic design.

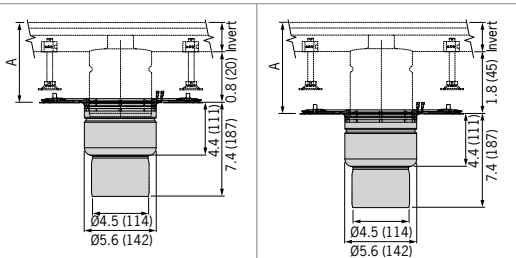
 Contact ACO for locking details.

www.acousa.com

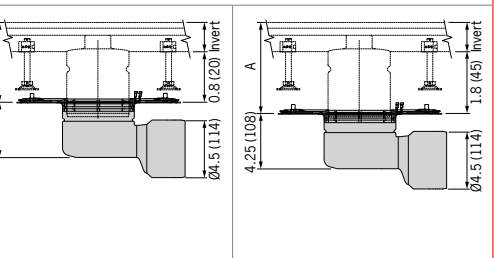
Flow Rates

8" Floor Drain Body – for use under outlet channels

vertical outlet

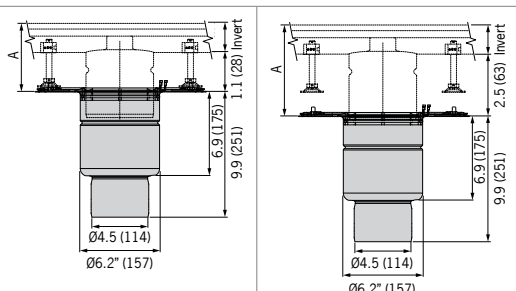
	
Outlet diameter	Flow rate GPM [l/s]*
ØD in [mm]	Min A = 2.83" (72 mm) Max A = 6.77" (172 mm)
4" Sch 10 [Ø 114 mm]	148.1 [9.3] 179.5 [11.3]

horizontal outlet

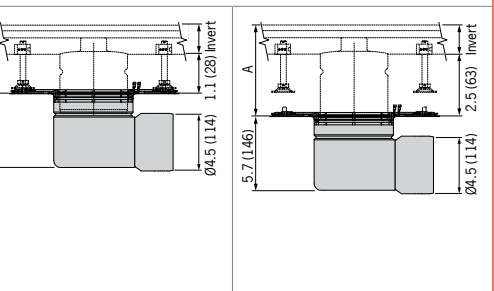
	
Outlet diameter	Flow rate GPM [l/s]*
ØD in [mm]	Min A = 2.83" (72 mm) Max A = 6.77" (172 mm)
4" Sch 10 [Ø 114 mm]	49.4 [3.1] 62.8 [4.0]

10" Floor Drain Body – for use under outlet channels

vertical outlet

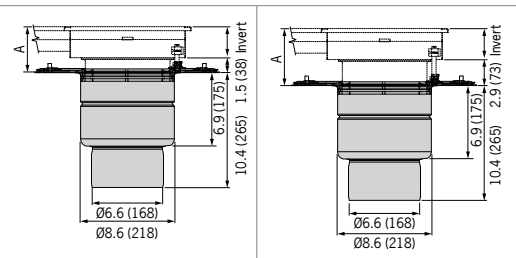
	
Outlet diameter	Flow rate GPM [l/s]*
ØD in [mm]	Min A = 3.74" (95 mm) Max A = 8.07" (250 mm)
4" Sch 10 [Ø 114 mm]	179.5 [11.3] 224.4 [14.2]

horizontal outlet

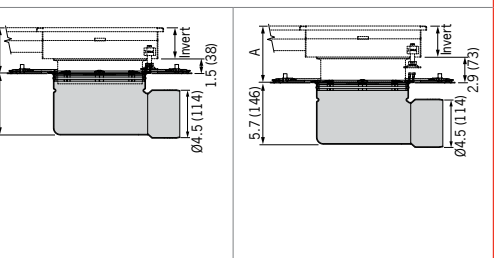
	
Outlet diameter	Flow rate GPM [l/s]*
ØD in [mm]	Min A = 3.74" (95 mm) Max A = 8.07" (250 mm)
4" Sch 10 [Ø 114 mm]	134.6 [8.5] 179.5 [11.3]

12" Floor Drain Body – for use under outlet channels

vertical outlet

	
Outlet diameter	Flow rate GPM [l/s]*
ØD in [mm]	Min A = 3.94" (100 mm) Max A = 8.46" (215 mm)
4" Sch 10 [Ø 114 mm]	186.6 [11.8] 222.2 [14.0]
6" Sch 10 [Ø 168 mm]	403.9 [25.5] 480.2 [30.3]

horizontal outlet

	
Outlet diameter	Flow rate GPM [l/s]*
ØD in [mm]	Min A = 3.94" (100 mm) Max A = 8.46" (215 mm)
4" Sch 10 [Ø 114 mm]	148.1 [9.3] 179.5 [11.3]

Note:

1. Silt basket and debris/solids, or foul air trap will reduce flow rates.
2. Flow rates are based on drowned orifice calculations.

Custom Drain Solutions



Full Custom Solutions

Even unusual requirements can be solved using stainless steel. The broad spectrum of finishes and shapes gives complete design freedom.

Typical non-standard stainless steel drainage can include custom widths, special grates, curved channels and unique depth configurations. ACO has years of experience with these types of applications, and in instances where a standard or modified standard product cannot fulfil the project, please contact us.

Customers' individual project designs can be managed by our expert team with tailored services for specific projects, including complete technical support, CAD layout drawings and assembly instructions.

Contact our Sales/Technical department team to help find the best solution.

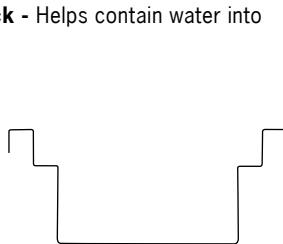
Fully customized channels can include:

- Radius channels and grates
- Custom widths
- Custom depths
- Custom base profile
- Custom edge profile
- Built-in back splash upstand
- Custom configurations of channel layout
- Different invert bottom configurations
- Maximum single piece of 18' (5.5m)
- Different gauge of material for channels
- End profile - overlap end flange



Channel Profile Ideas

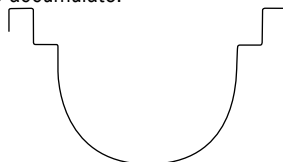
Splash Back - Helps contain water into the channel.



Folded Edge - Provides a discrete edge detail.



Half Round - Easy clean as fewer corners for debris to accumulate.

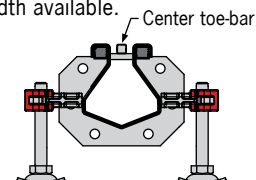


Welded channel connection

For certain installations it may be required to weld ACO modular channels into continuous runs. This will eliminate the 0.08-0.12" (2-3 mm) rubber gasket at each joint and run lengths and outlet positions need to be adjusted accordingly. A technical bulletin is available upon request for additional guidance.

Toe-bar for Slot 20

Provides a smaller 1/4" (6.5 mm) twin slot with 1/4" (6.5 mm) central toe-bar, while keeping the larger drainage throat of the Slot 20 channel - perfect for ADA, Heelsafe and bare foot applications. Custom slot width and toe-bar width available.

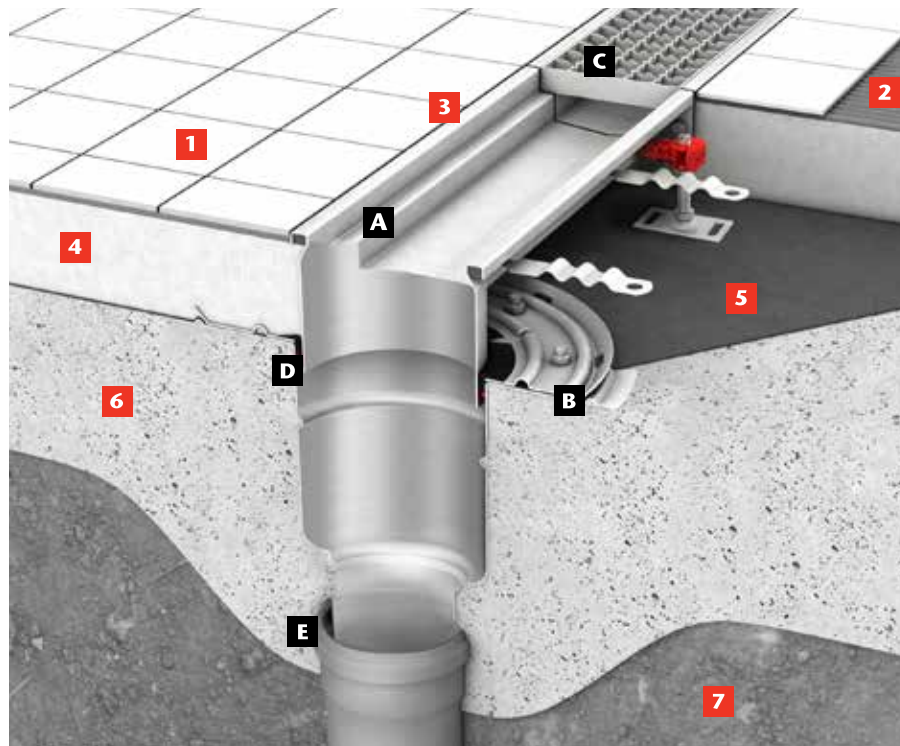


Modular 125 & 200 Installation Guide

Modular Trench Drain - Outlet channel connected to ACO Floor Drain Body with mechanical clamping flange (tiled floor)

- 1** Tile
- 2** Cement/tile adhesive
- 3** Flexible sealant
- 4** Screed
- 5** Waterproof membrane
- 6** Solid concrete floor slab
- 7** Compacted soil

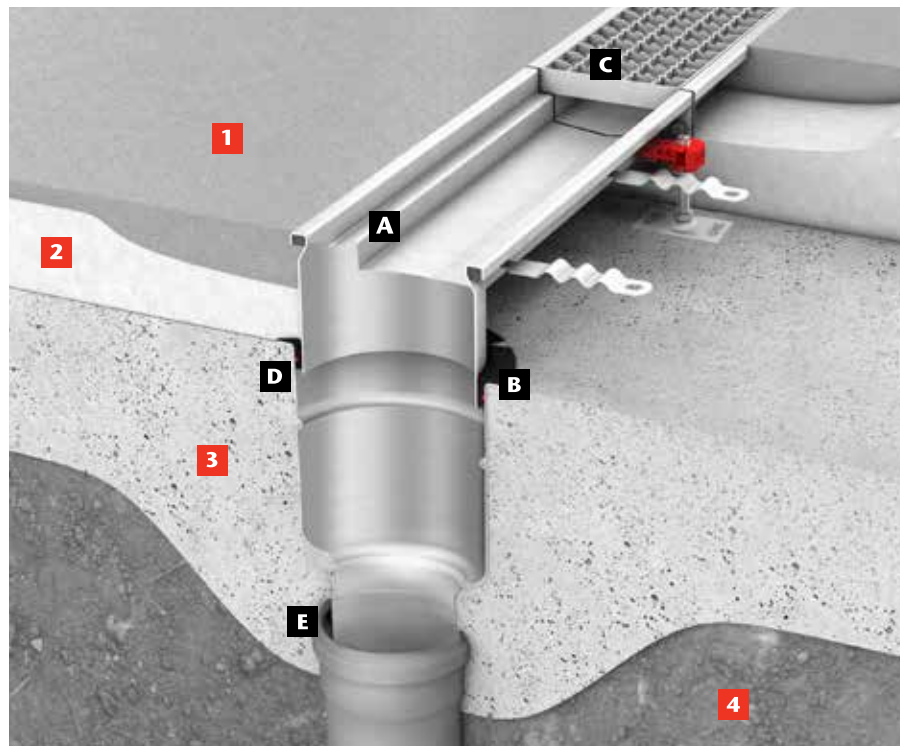
- A** Outlet channel
- B** Mechanical flange floor drain body
- C** Grate
- D** Friction ring without red O-ring
- E** Outlet pipe connection



Modular Trench Drain - Outlet channel connected to ACO Floor Drain Body with fixed height location flange (resin floor)

- 1** Epoxy/resin floor
- 2** Screed
- 3** Solid concrete floor slab
- 4** Compacted soil

- A** Outlet channel
- B** Location flange floor drain body
- C** Grate
- D** Friction ring with red O-ring
- E** Outlet pipe connection



Post-Install Cleaning:

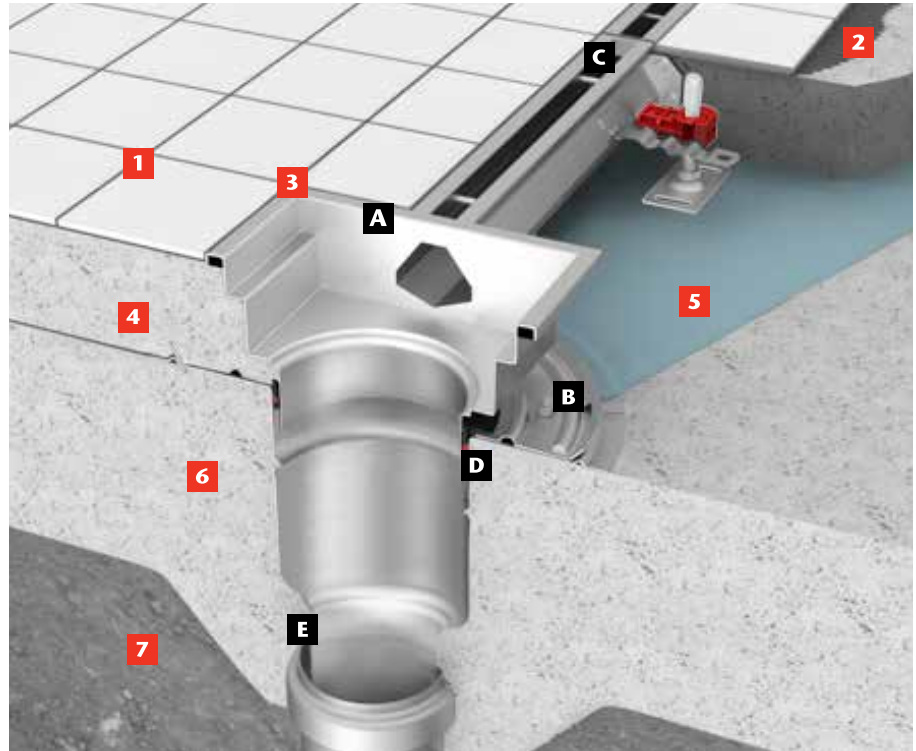
Remove spacer bars from channels (use mallet), protective tape from channel edges and clean surfaces with a solvent if necessary to remove any adhesive residue. Wash and clean channel (and floor drain if applicable), empty silt basket (if applicable) and refit grates.

Slot Drain Installation Guide

ACO Slot Drain - Outlet channel connected to ACO Floor Drain Body with mechanical clamping flange (tiled floor)

- 1** Tile
- 2** Cement/tile adhesive
- 3** Flexible sealant
- 4** Screed
- 5** Waterproof membrane
- 6** Solid concrete floor slab
- 7** Compacted soil

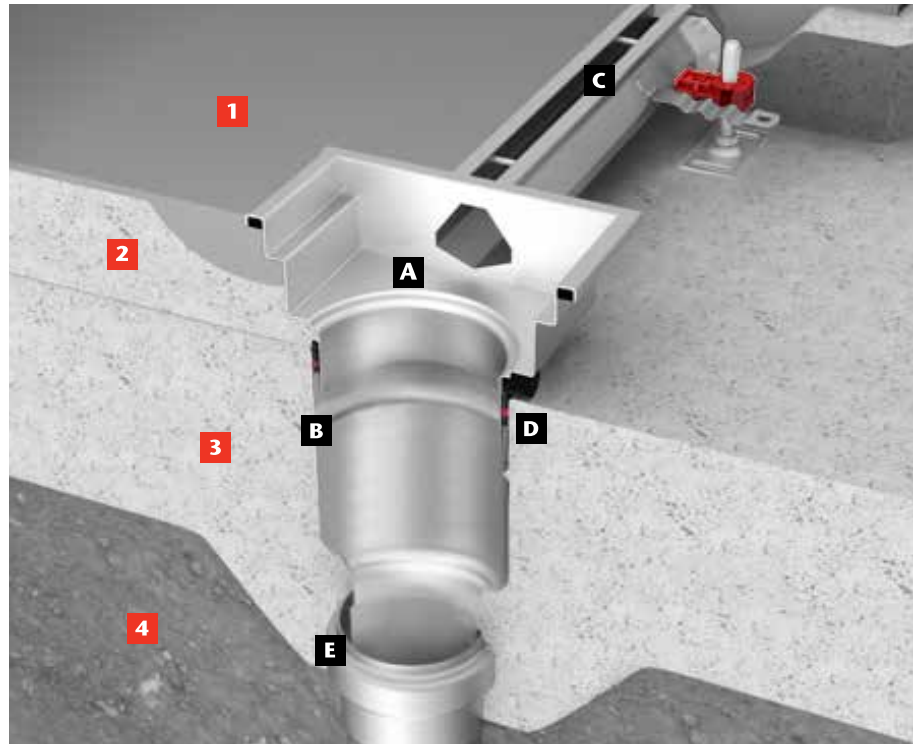
- A** Outlet channel - requires Floor drain grate
- B** Mechanical flange floor drain body
- C** Slot channel
- D** Friction ring without red O-ring
- E** Outlet pipe connection



ACO Slot Drain - Outlet channel connected to ACO Floor Drain Body with fixed height location flange (resin floor)

- 1** Epoxy/resin floor
- 2** Screed
- 3** Solid concrete floor slab
- 4** Compacted soil

- A** Outlet channel - requires Floor drain grate
- B** Location flange floor drain body
- C** Slot channel
- D** Friction ring with red O-ring
- E** Outlet pipe connection



Post-Install Cleaning:

Remove spacer bars from channels (use mallet), protective tape from channel edges and clean surfaces with a solvent if necessary to remove any adhesive residue. Wash and clean channel (and floor drain if applicable), empty silt basket (if applicable) and refit grates.

Slip Resistance

Slip resistance is critical for user safety, particularly where wet surfaces are common.

Ideally the slip resistance of the grate should be similar to that of the surrounding floor finish to avoid both slip and trip hazards.

A number of test options are available;

- **Pendulum Test.** A pendulum is swung over a surface (usually wet) and the surface frictional properties are measured. Test results are given a BPN value - typically values in excess of 36 would be used, but this is not a set number.
- **Variable Angle Ramp Test.** Grate samples are mounted to a ramp which is gradually inclined, an operator walks up and down the ramp until the angle is such that they become unstable (slip). Test is repeated three times to create an average R value. The higher the R value the higher the slip resistance.

Slope, presence of surface contaminants (grease/oil), etc. can also negatively affect slip and skid resistance and may require a higher slip resistance rating. Good maintenance practices to minimize contaminants should be applied.



Grate Style	Slip resistance	Pendulum Test Data BPN value	Wet Ramp Test Data R- value
Mesh	✓	62	-
Heelguard	✗	-	R9
Multi-slot 5	✓	-	R11
Perforated	✗	30	-
Ladder	✓	45	-
Frameless Ladder	✓	-	R12
Plastic	✓	-	-

BPN value	Likelihood of a Slip*
36	1 in a million
34	1 in 100,000
29	1 in 10,000
27	1 in 200
24	1 in 20

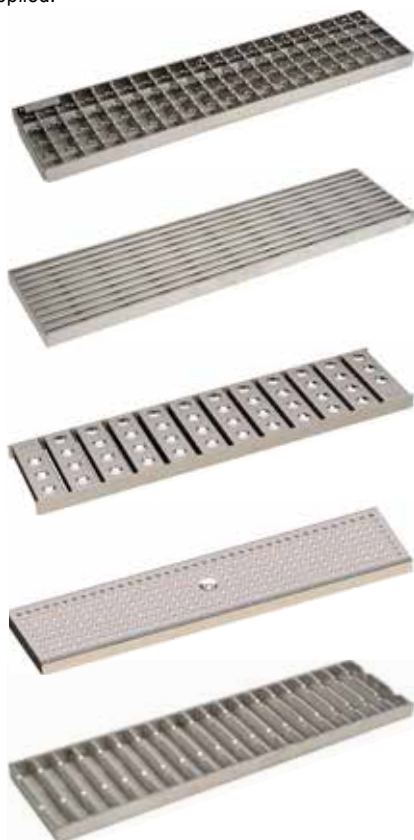
BPN value	R-Value
11-18	R9
18-34	R10
34-51	R11
51-70	R12
70+	R13

* Construction Industry Research and Information Association (UK CIRIA) Safer Surfaces to walk on 2006

Slopes - ramps etc create an increased risk of slips, even a 5 degree slope requires a higher slip resistance value to be used - minimum Pendulum Test Value (BPN) of 45, or minimum of R12, ideally R13 rating for any slopes.

Flooring contaminants - water, grease, oils, etc will affect slip resistance and higher slip resistance values should be considered. Application specific test can be carried out as necessary.

To minimize the slip/trip hazard impact of a drainage grate, where possible, design the drainage system to be located out of the main area of traffic - close to equipment, walls etc. This may also allow a lower load rating to be used.



Glossary

Anti-shunt lugs - device to prevent lateral grate movement along channel length due to dynamic traffic.

Anti-slip grate - grates certified to offer improved grip.

Axle load - load carried by each axle of vehicle.

BPN - British Pendulum Number - a slip resistance rating resulting from the Pendulum test. [See page 50.](#)

Clamping flange - metal plate with mechanical fixing (bolts) that allows a floor membrane to be dressed into floor drain.

Electropolished - electrolytic process producing a highly reflective luster which offers chemical and bacterial resistance.

Earth point - either a tab or bolt is added at the outlet to accept a grounding wire.

Floor edge - channel edge option that allows floor material to be isolated from channel. [See page 9.](#)

Flow rate - quantity of liquid evacuated through outlet in a given time frame - gallons per minute (GPM).

Foul air trap - shaped pipe section to prevent odors traveling up from underground waste water system. ACO also offer an inline option.

Gasket - flexible, non-absorbent seal between connecting components. Supplied in neoprene material as standard - viton and nitrile options available - Call ACO for details.

Heelsafe - per ASME A112.6 - maximum grate hole size in least dimension of 0.31", deemed safe for high-heeled shoes.

Invert depth - depth from top of grate to inside base of channel.

Leveling feet - fixed to base of channels to allow height and level adjustment.

Linished - brushed effect usually on channel edge surface.

Load class - ability of grate to resist load specified in a load standard.

Pickled & passivated - chemical descaling and coating of stainless steel part to restore corrosion and chemical resistance qualities.

Point load - load exerted through a specific area for specification and testing purposes.

'R' Value - a slip resistance rating resulting from Variable Angle Ramp Test. [See page 50.](#)

Sieve - perforated plate to prevent sediment/debris passing into pipework.

Silt basket - perforated basket to collect larger volumes of sediment/debris passing into pipework.

Spacer bars - stainless steel cross sections tack welded in grate recess to maintain channel width/profile during installation and handling.

Spigot - section of pipe used for outlet connection, may require a coupler.

Splash back - custom channel edge detail for areas where inflow liquids need to be contained.

Trap primer - an automatic trap primer can be installed at the outlet to prevent the 'P' trap from drying out.

Vinyl seal - channel edge option that allows connection/sealing of vinyl sheet floor material. [See page 9.](#)

Wheel load - load exerted through one wheel of vehicle/trolley - not always equal to axle load divided by number of wheels.



Other ACO products

External drainage

ACO Drain

Modular trench drain systems for commercial, industrial and landscape applications.

ACO Sport

Surface drainage and building accessories for track & field.

ACO Infrastructure

Surface drainage products engineered for highways, urban roads and bridges.

Aquaduct

Custom design and manufacture of fiberglass trench drain systems.

ACO Duct

Linear ducting system with removable solid covers.

ACO Environment

Oil water separators and spill containment systems.

ACO Wildlife

Tunnel and fence system to guide amphibians and other small creatures safely across roads.

ACO StormBrixx

A unique and patented plastic geocellular storm water management system.

ACO Self

Simple drainage and building components for use around the home, garden and office.

Building drainage

ACO Stainless

Stainless steel trench drains.

ACO Floor Drain

Stainless steel floor drains.

ACO BuildLine

Drainage products for thresholds, balconies, green roofs and building façades.

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