



ACO FloorDrain

Stainless Steel Floor Drains, Hub Drains & Cleanouts

Fixed & Adjustable Height Floor Drain Bodies

Grate Options

Hub Drains

Drain Cleanouts



ACO.

we care for water

The ACO Group

Founded in 1946, the ACO Group is a world leader in drainage technology. A changing industry challenged ACO to react effectively with innovative solutions to new health and environmental conditions. With its integrated approach, ACO provides systems for professional grade, efficient, and hygienic surface water and building drainage.

Major innovative strengths of the ACO Group are its continuous research and development and technical expertise in the processing of polymer concrete, plastics, cast iron, stainless steel and cement concretes.

ACO in the USA

ACO, Inc. was founded in Ohio, 1978. Since then, continuous growth in the USA has seen the company expand and build manufacturing facilities in Mentor, OH, and Casa Grande, AZ. The company has further locations in Phoenix, AZ, and Fort Mill, SC. Today, ACO USA has sales personnel across the country and an extensive distribution network through all states.

ACO Building Drainage

ACO offers drainage systems designed to protect your business and the environment. The stainless steel drainage products are corrosion-resistant and built with hygiene in mind, ensuring the health and safety of workers, customers and products while still allowing clean-in-place functionality.

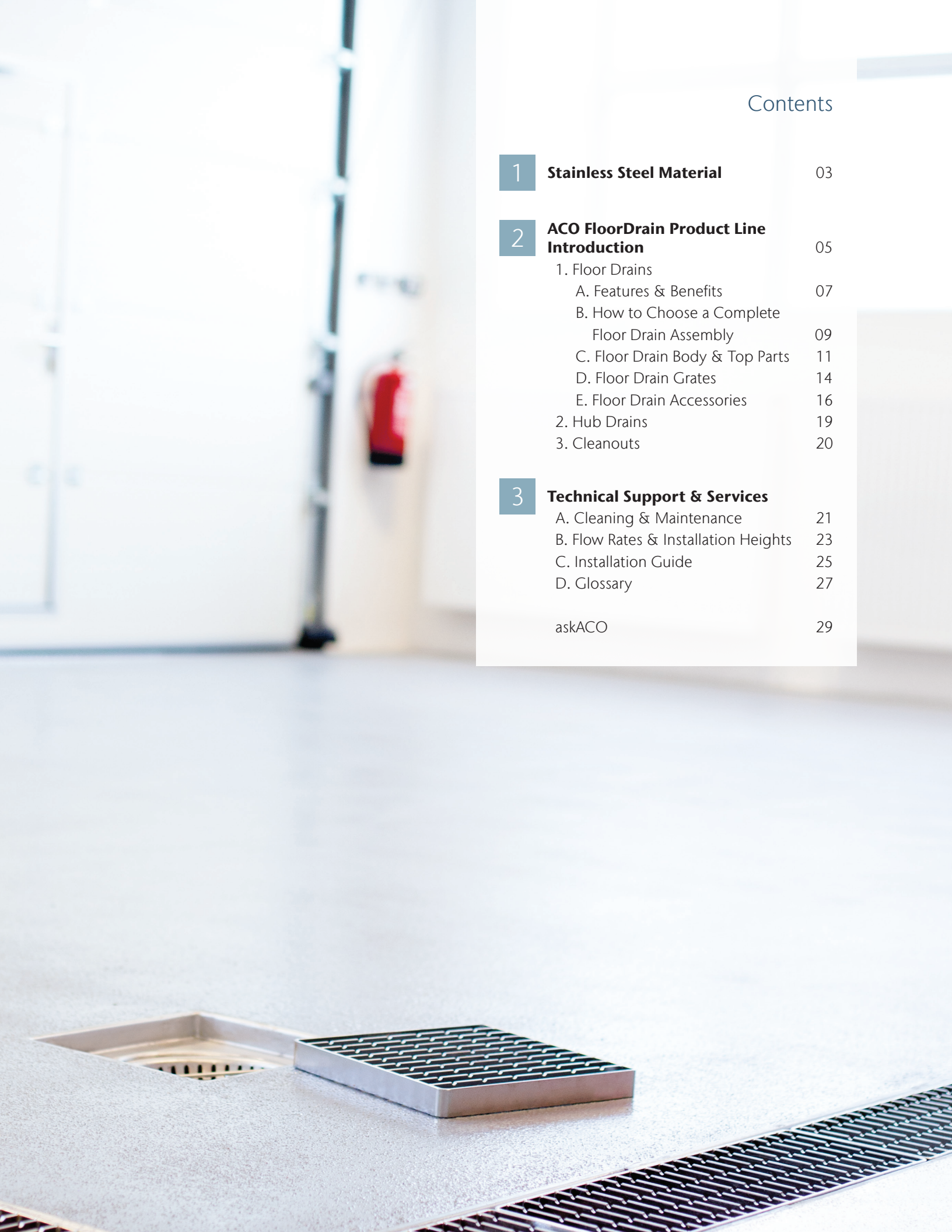
Products include:

- Modular Grated Trench Drains
- Slot Drain Systems
- Floor Drains
- Hygienic push-fit pipes
- Box Drains for kitchen floors
- Grease removal devices



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Stainless Steel

Hygienic Material For Handling Water

MATERIAL TECHNOLOGY

Long Term Value

The properties of stainless steel make it a powerful candidate in material selection. When total life cycle cost is considered, stainless steel is often the least expensive option.

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

- Resistance to corrosion in pure water environments and to cleaning agents used in process plants
- Resistance to oxidation and scaling while retaining strength at high temperatures
- Easy cleaning makes it the correct choice for strict hygiene conditions
- Bright and easily maintained surfaces provide a modern and attractive appearance

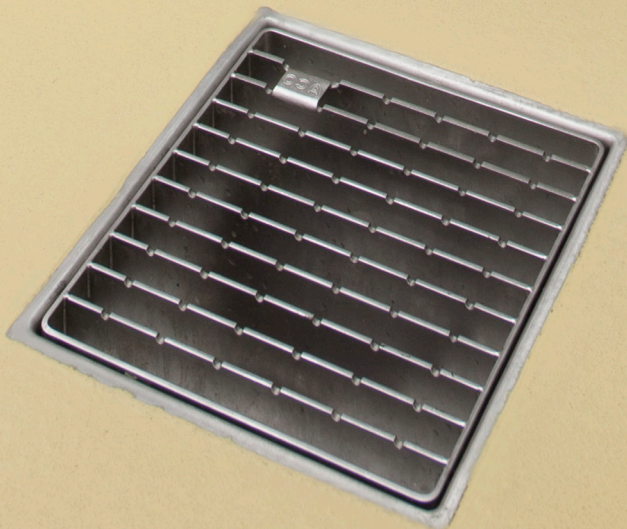
These features make stainless steel an obvious choice for demanding drainage applications.



There is a variety of different stainless steels available. Austenitic stainless steels are the most widely used and encompass the generic 304 and 316L grades. These material grades are ideal for many applications found in food processing, dairy, commercial kitchens, pharmaceutical, chemical, winery and brewery industries.

304 grade stainless steel is the most common material available but grade 316L provides superior corrosion resistance and is ideal for conditions where extreme heat or chemicals are used.

Stainless steel is one of the most sustainable material choices available and is 100% recyclable. One benefit is that it reduces the consumption, expenses, energy and time to mine other valuable resources. On average, the recycled content of stainless steel is 60%. Recycled stainless steel is beneficial to the environment as it consumes less energy and resources to produce.

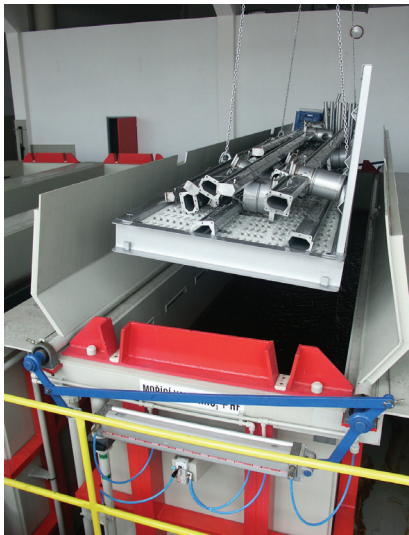


PERFORMANCE

Corrosion and Temperature Resistance

Some industrial applications present a challenging environment for drainage systems. All systems featured are manufactured from stainless steel grade 304 or 316L. Products are finished with a pickle passivation process ensuring corrosion-free welded joints.

Environments where highly aggressive liquids such as acids, alkaline solutions or chlorine bearing agents are used, drainage products must be durable and corrosion resistant. For these applications, ACO recommends stainless steel systems be manufactured using grade 316L stainless steel.



PICKLING & PASSIVATION

Superior Finish and Protection

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


- Increases corrosion resistance
- Smooth, uniform and attractive appearance
- Extends the life of the product

HYGIENE

Food and Employee Safety

Hygiene requirements can be intense and demanding; from consumption products such as beverage and food preparation, to medical facilities and processing plants.

- Stainless steel is an excellent material suitable for internal and external use for humans and animals, protecting against harmful bacteria and other contaminants
- ACO designs hygienic drains that promote efficient cleaning, protection against microorganisms, bacteria and ultimately minimizing financial risk to you
- ACO applies relevant hygienic design principles reserved for food contact surfaces or recommended by NSF/ANSI and EHEDG

Products shown with the  symbol in the catalog indicate ACO's hygienic design that enhance the hygienic properties of stainless steel.

HygieneFirst

Drainage systems are a particularly important niche for the persistence of listeria and can be a source of food contamination. Poorly specified drainage leads to costly ongoing cleaning and maintenance, and at worst it can result in food contamination.

HygieneFirst stands for ACO's commitment to ultimate hygienic performance. ACO addresses the hygienic requirements of floor drains and applies the design principles reserved for food contact equipment on them to deliver fully hygienic solutions.

- ACO is committed to raising industry standards by designing and promoting hygienic products for multiple commercial applications.
- Hygienic drainage systems reduce the risk of food contamination and optimize total cleaning costs of your organization.
- ACO drainage systems prioritize health and safety in the food sector for employees and end users.
- ACO efficient and hygienic designs reduce the usage of volatile cleaning agents that affect indoor air quality while promoting employee safety.

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Introduction

The ACO FloorDrain product line consists of 3 different types of products that perform 3 different functions.

1. Floor Drains

Floor Drains are a collection of single square or round point drains that provide drainage with minimal installation. These products can be stand-alone or integrated into a trench drain system. Floor drain bodies are available in AISI 304 or 316L stainless steel with either a vertical or horizontal outlet. A number of versions featuring different grates, sizes and outlet diameters are also available to suit various applications and flow requirements.

HygieneFirst  *All floor drains are designed with the highest level of hygienic friendly features.*



ACO is NSF/ANSI 3A 14159-1-2014 certified for its products from NSF International. This standard refers to the hygienic requirements in food processing. All of ACO's hygienic floor drains, hygienic box drains and hygienic ladder grates for the hygienic floor drains now display the NSF certification mark.

i. FIXED HEIGHT FLOOR DRAINS

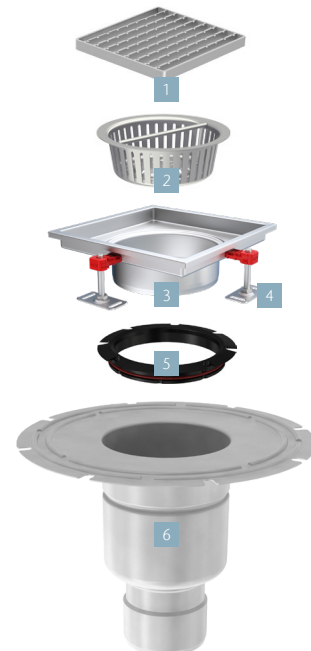
- Fixed height floor drains are suitable for installation in concrete, resin, or tiled floors.
- They can be used as point drainage in areas where waterproofing is independent (below) of the floor drain body.
- Bodies are available with either horizontal or vertical outlets.



- 1 Grates
- 2 Optional Debris Strainer Basket
- 3 ACO FloorDrain Top
- 4 ACO EasyFix Leveling Feet
- 5 Friction Ring
- 6 ACO FloorDrain Body - Horizontal/Vertical Outlet

ii. ADJUSTABLE HEIGHT FLOOR DRAINS

- Adjustable floor drain bodies can be installed with either a floor drain top piece or underneath a stainless trench drain in most flooring constructions, including floors with waterproofing membranes.
- Adjustable solutions enable height and rotational adjustment of connection between floor drain body and floor drain top or channel.
- Adjustable floor drains are available with location or mechanical membrane clamping flanges.
- Bodies are available with either horizontal or vertical outlets.



Note: All floor drains can be produced with a trap primer. Please contact ACO for details.

2. Hub Drains

Above ground outlet solution used in conjunction with floor drains to capture wastewater when needed.

Hub Drains are designed to capture wastewater from multiple outlet lines in a clean and efficient manner.

HUB DRAINS

- Hub Drains are available in multiple sizes ranging from 2" to 10" in both 304 & 316L stainless steel plus custom sizes can be manufactured to meet your specific design requirements.
- Hub Drains come standard pickled and passivated for ultimate corrosion protection.
- Custom strainer baskets can be used to filter debris coming from multiple drain lines.



3. Cleanouts

A cleanout is an access point in the drainage system that provides a convenient place to access a building's drain pipes to clear clogs and debris.

Most local municipal plumbing codes require the installation of cleanouts during the building construction. Extra Heavy Duty load class and different outlet size options are available.

CLEANOUTS

- Floor Cleanouts are available in square and round tops in both 304 & 316L stainless steel suitable for a wide variety of floor finishes.
- Designed to extra heavy-duty standards able to withstand dynamic loads of 3,000 lbs plus.
- Hygienic designs and finishes deliver the strongest requirements to prevent bacterial contamination.



1. Floor Drains

A FEATURES & BENEFITS

Floor Drains are available in both adjustable and fixed height with horizontal or vertical outlet options. Let us help you choose the correct product for your project.

i. Fixed Height Floor Drains



Grates

A variety of grates are available depending on application and required load class. Grates have been independently load-tested to ASME 112.6.3 and EN 1253 and only ladder grates are certified by NSF International. Slip-resistant solutions are also available.



Internal Radii

All internal radii are equal to or larger than 0.125" (3 mm), greatly increasing cleaning effectiveness.

Optional Trap Primer

0.5" NPT threaded nipple to allow water priming of p-trap.

Fixed Height

Free-standing units are suitable for concrete, resin or tiled floors.

Full Drainability

Dry sump design is 100% drainable. Eliminates standing water, foul odors, bacteria and potential chemical hazards.



Edge In-Fill

Ensures stable and durable transition between the floor drain and the surrounding floor. Minimizes risk of floor cracks that lead to harboring of micro-organisms.

Earth Point

A tab or a bolt (on the body) to connect grounding wire as necessary.

Debris Strainer Basket

Removable stainless steel strainer to prevent food waste from entering wastewater systems.

Hygienic Joints

Deep-drawn body ensures smooth contours, eliminating crevices that can harbor dangerous bacteria.



ii. Adjustable Height Floor Drains



Grates

A variety of grates are available depending on application and required load class. Grates have been independently load-tested to ASME 112.6.3 and EN 1253 and only ladder grates are certified by NSF International. Slip-resistant solutions are also available.



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Internal Radii

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Friction Ring

Provides a sealing or drainage function. Optional waterproofing bonding and membrane flange to accommodate waterproofing membrane (not shown) can be fitted at this position.

Earth Point

A tab or a bolt (on the riser) to connect grounding wire as necessary.



Hygienic Joints

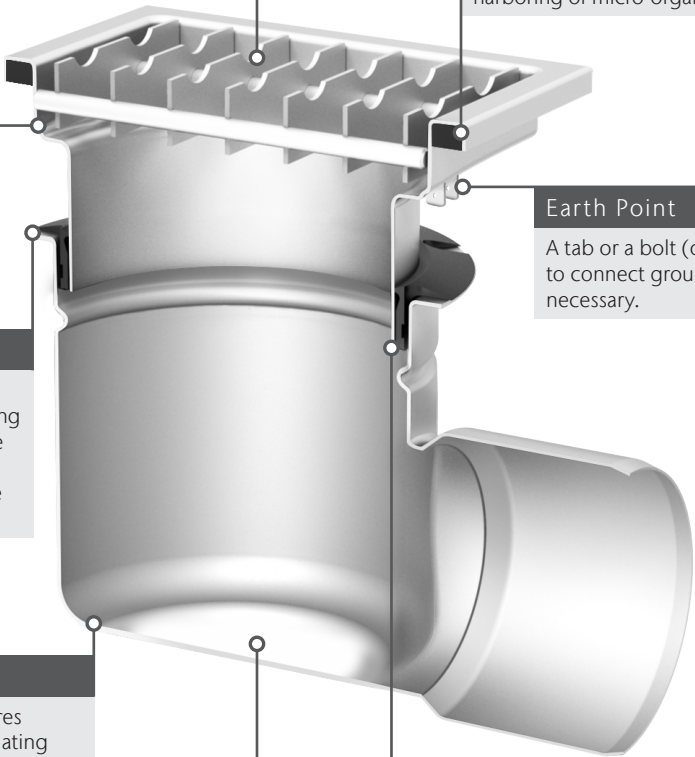
Deep-drawn body ensures smooth contours, eliminating crevices that can harbor dangerous bacteria.

Full Drainability

Dry sump design is 100% drainable. Eliminates standing water, foul odors, bacteria and potential chemical hazards.

Adjustable Height

Adjusts to suit finished floor level. Available with location flange or integrated membrane flange for mechanical clamp.



B**HOW TO CHOOSE A COMPLETE FLOOR DRAIN ASSEMBLY**

ACO FloorDrains are available in a number of configurations to the following:

- Sizes
- Flow rates
- Grate designs
- Outlet positions
- Outlet diameters

Grate options available for square or round floor drains.

C

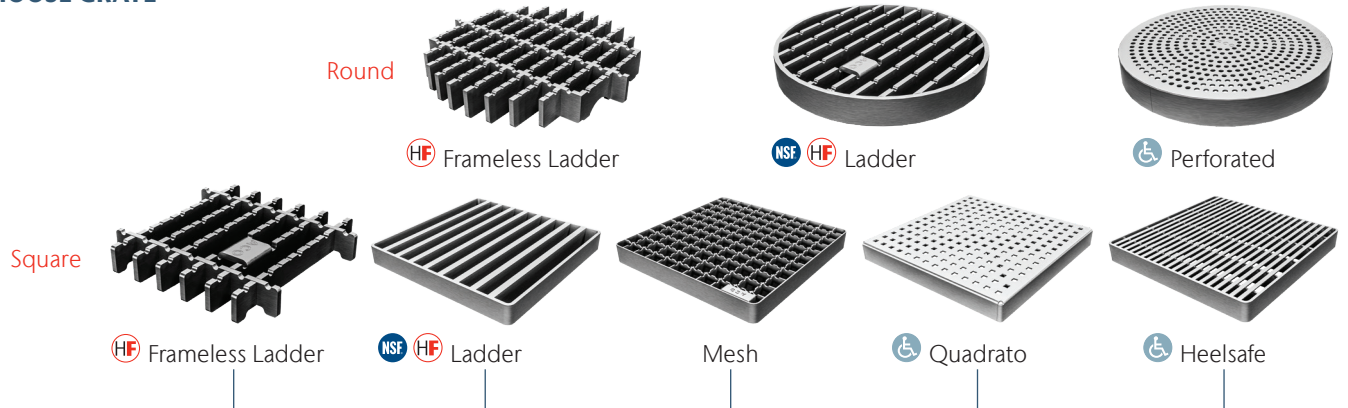
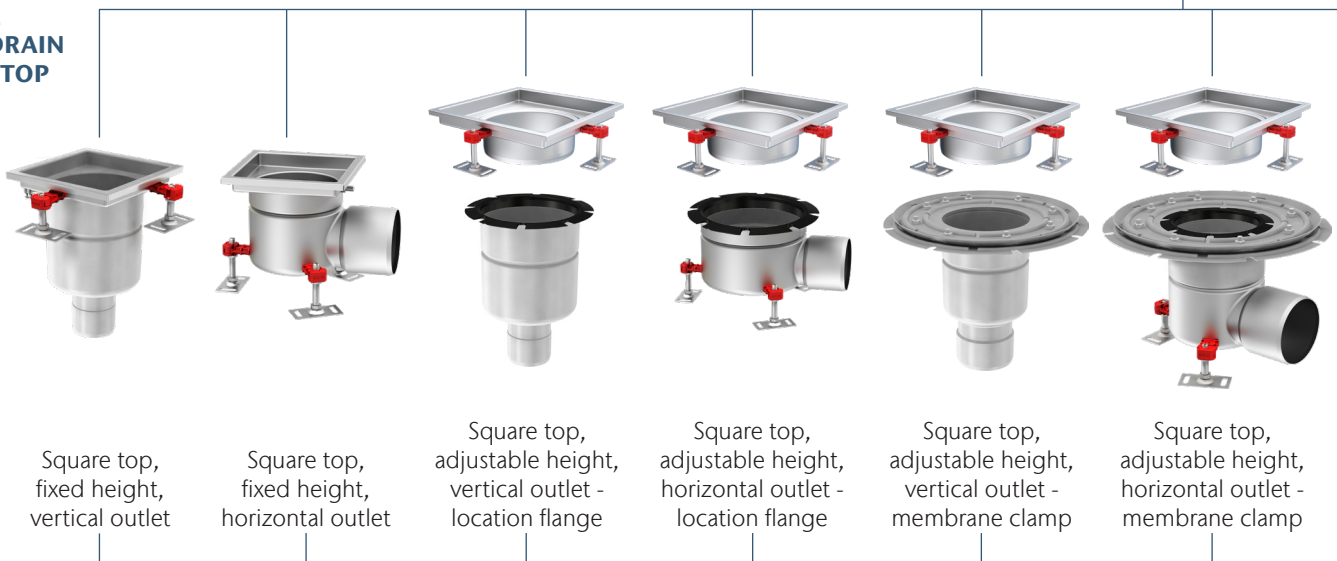
See Page 11 for Floor Drain Body and Top Details

D

See Page 14 for Floor Drain Grate Details

E

See Page 16 for Floor Drain Accessory Details

CHOOSE GRATE**CHOOSE ACCESSORIES (IF APPLICABLE)****CHOOSE FLOOR DRAIN BODY & TOP**

Optional Stainless Steel
P-Trap or Long Sweep P-Trap
(Refer to ACO Pipe Brochure)



Slip-Resistance

Slip-resistance is critical for user safety in pure water environments or wet floor areas.

ACO recommends alignment between the slip-resistance of the floor and of the grate to ensure a smooth transition and not create a trip hazard.

ACO performs the following tests standard. Additional testing options available.

Pendulum Test -

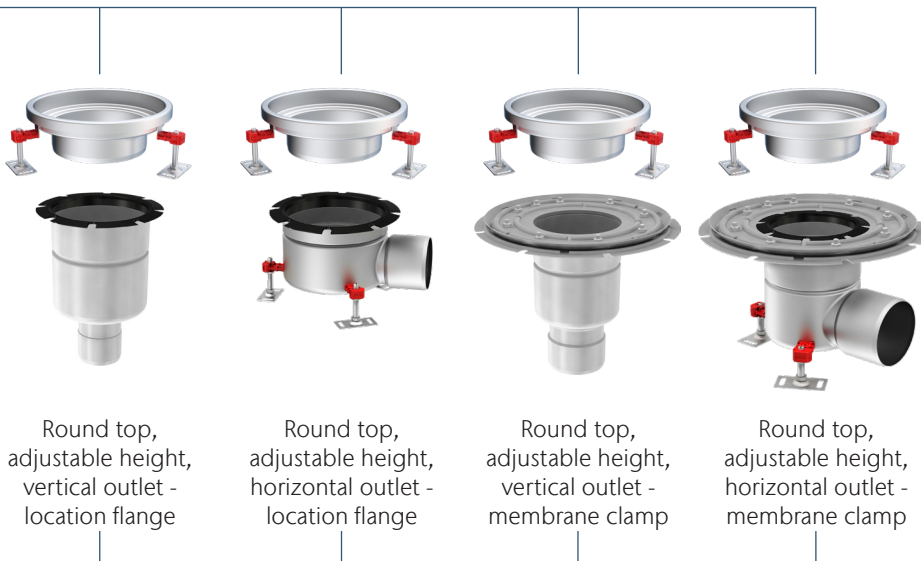
Most accepted pedestrian slip-resistance test method in the world. A pendulum is swung over a wet surface and friction properties are measured. Results are assigned a BPN value - values in excess of 36 would be used.

Variable Angle Ramp Test -

Grates are installed on a mechanical ramp that inclines while a user walks up and down until it becomes unstable. This test is repeated 3 times to create an average "R" value. The higher the "R value" the higher the slip-resistance.

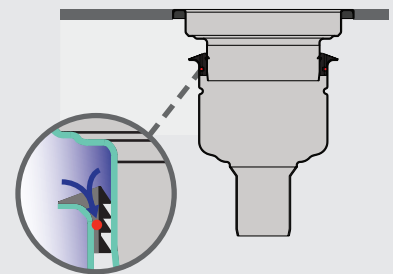
Slope, presence of surface contaminants (grease/oil), etc. can also negatively affect slip and skid-resistance and may require a higher slip-resistance grate.

Refer to the grate parts tables on page 14 for slip-resistant results.

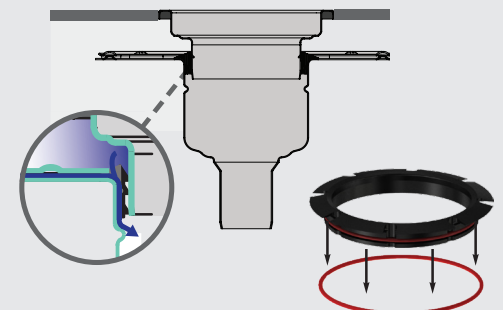


Friction Ring

When using an adjustable height floor drain with **location flange**, a supplied red sealing o-ring must be used to prevent water from entering the floor drain body.



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



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

Items shown with this mark feature a hygienic design.

Compliant with Americans with Disabilities Act of 2010, Section 302.3.

Note: SCH40 outlet options available upon request

Fixed Height

Choose from the options below for fixed height, horizontal/vertical outlet tops and bodies, which are not to be combined with adjustable height products

	Part No.		Top Size in (mm)	Outlet Ø in (mm) SCH10	NSF	HF
	AISI 316L	AISI 304				

i. FIXED HEIGHT, VERTICAL OUTLET



8" x 8" Floor Drain	445274	445238	8 x 8 (200 x 200)	2 (60)	✓	✓
	445276	445240	8 x 8 (200 x 200)	4 (114)	✓	✓
10" x 10" Floor Drain	445180	445114	10 x 10 (250 x 250)	3 (89)	✓	✓
	445182	445116	10 x 10 (250 x 250)	4 (114)	✓	✓
12" x 12" Floor Drain	445170	445104	12 x 12 (300 x 300)	4 (114)	✓	✓
	445172	445106	12 x 12 (300 x 300)	6 (168)	✓	✓

i. FIXED HEIGHT, HORIZONTAL OUTLET



8" x 8" Floor Drain	445278	445242	8 x 8 (200 x 200)	2 (60)	✓	✓
	445280	445244	8 x 8 (200 x 200)	4 (114)	✓	✓
10" x 10" Floor Drain	445184	445118	10 x 10 (250 x 250)	3 (89)	✓	✓
	445186	445120	10 x 10 (250 x 250)	4 (114)	✓	✓
12" x 12" Floor Drain	445178	445112	12 x 12 (300 x 300)	4 (114)	✓	✓

Adjustable Height

Choose from the options below for adjustable height, square or round tops which are to be combined with an adjustable height, horizontal/vertical outlet body on opposite page

	Part No.		Top Size in (mm)	Outlet Ø in (mm) SCH10	NSF	HF
	AISI 316L	AISI 304				

ii. FLOOR DRAIN TOP FOR ADJUSTABLE HEIGHT



8" x 8" Floor Drain Square Top	414832	414732	8 x 8 (200 x 200)	-	✓	✓
10" x 10" Floor Drain Square Top	408258	408248	10 x 10 (250 x 250)	-	✓	✓
12" x 12" Floor Drain Square Top	408238	408228	12 x 12 (300 x 300)	-	✓	✓
9" Floor Drain Round Top	446751	446750	9 (230)	-	✓	✓
12" Floor Drain Round Top	446765	446764	12 (300)	-	✓	✓

Choose from the options below for adjustable height, horizontal/vertical outlet bodies, which are to be combined with an adjustable height, square or round top on opposite page in group B

Part No.		Flange Type	Outlet Ø in (mm) SCH10	NSF	HF
AISI 316L	AISI 304				

ii. ADJUSTABLE HEIGHT, VERTICAL OUTLET



8" x 8" Floor Drain	445282	445246	location	2 (60)	✓	✓
	445286	445250	mechanical membrane clamp	2 (60)	✓	✓
	445288	445252	location	4 (114)	✓	✓
	445292	445256	mechanical membrane clamp	4 (114)	✓	✓

10" x 10" Floor Drain	445189	445123	location	3 (89)	✓	✓
	445193	445127	mechanical membrane clamp	3 (89)	✓	✓
	445195	445129	location	4 (114)	✓	✓
	445199	445133	mechanical membrane clamp	4 (114)	✓	✓



12" x 12" Floor Drain	445201	445135	location	4 (114)	✓	✓
	445205	445139	mechanical membrane clamp	4 (114)	✓	✓
	445207	445141	location	6 (168)	✓	✓
	445211	445145	mechanical membrane clamp	6 (168)	✓	✓

ii. ADJUSTABLE HEIGHT, HORIZONTAL OUTLET



8" x 8" Floor Drain	445294	445258	location	2 (60)	✓	✓
	445298	445262	mechanical membrane clamp	2 (60)	✓	✓
	445300	445264	location	4 (114)	✓	✓
	445304	445268	mechanical membrane clamp	4 (114)	✓	✓

10" x 10" Floor Drain	445213	445147	location	3 (89)	✓	✓
	445217	445151	mechanical membrane clamp	3 (89)	✓	✓
	445219	445153	location	4 (114)	✓	✓
	445223	445157	mechanical membrane clamp	4 (114)	✓	✓



12" x 12" Floor Drain	445225	445159	location	4 (114)	✓	✓
	445229	445163	mechanical membrane clamp	4 (114)	✓	✓

Grate Selection

ACO recommends considering the following when selecting grates:

- **Load class:** Traffic types and weights
- **Slip-resistance:** Safety first design
- **Location traffic:** Speed, type and frequency of traffic
- **Vehicle or cart wheel types:** Wide vs narrow wheels
- **FloorDrain position:** Alignment with equipment
- **Environment hygiene requirements:** Cleaning methods and risk level of bacteria
- **Water capture:** Water intake
- **Dynamic load types:** Live faster moving and/or turning loads that require a heavier duty drain and grate


Best design practice is to minimize traffic across the drain to reduce risk of floor surface to drainage product failure from dynamic loads.

The proper load class for the grate is calculated on the defined traffic during all future operations. All ACO FloorDrain grates have been independently load tested to ASME 112.6.3. The corresponding load class according to EN 1253-1 is also indicated. If correlation to EN 1433 standard is required, please contact ACO for details.

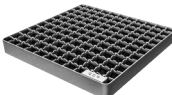
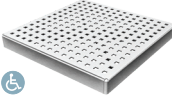
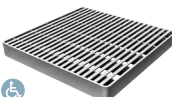


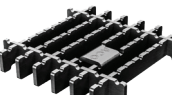

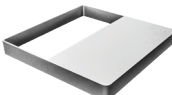
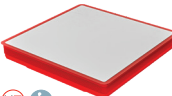
Refer to opposite page for FloorDrain Grates.

RELEVANT LOAD STANDARDS

In the US, the ASME: A112.6.3 - 2019 is the most relevant standard that addresses floor and trench drains. In addition, ACO has independent certification for floor drains to ASME 112.6.3 and EN 1253.

<p>ASME: A112.6.3 - 2019 Plumbing standard relating to internal floor drains.</p> <p>Safe Live Load</p>	<p>EN 1253 Load class of similar rating: All channel widths</p>	
<p>Light Duty - Less than 2,000 lbs Medium Duty - Between 2,000 lbs and 4,999 lbs Heavy Duty - Between 5,000 lbs and 7,499 lbs Extra Heavy Duty - Between 7,500 lbs and 9,999 lbs Special Duty - Greater than 10,000 lbs</p>	<p>L 15 - R 50 R 50 - M 125 M 125 - N 250 P400 -</p>	

D FLOOR DRAIN SQUARE GRATES

Grate	Part No.		Load Class		Slip-Resistance	NSF	HF	♿	
	AISI 316L	AISI 304	ASME: A 112.6.3	EN 1253	ASTM E303-93 (BPN)				
MESH - SQUARE									
	8" x 8"	408190	408090	Medium Duty	L 15	57			
	10" x 10"	408195	408095		L 15	57			
	12" x 12"	408134	408034		L 15	57			
QUADRATO - SQUARE									
	8" x 8"	408192	408092	Light Duty	L 15	15		✓	
♿	10" x 10"	408197	408097		L 15	15		✓	
	12" x 12"	408136	408036		L 15	15		✓	
HEELSAFE - SQUARE									
	8" x 8"	408122	408022	Medium Duty	L 15	36		✓	
♿	10" x 10"	408131	408031		L 15	36		✓	
	12" x 12"	408140	408040		L 15	36		✓	
SLOT COVER - SQUARE									
	8" x 8"	408121	408021	Special Duty	M 125	36	✓	✓	
HF ♿	10" x 10"	408130	408030		M 125	36	✓	✓	
	12" x 12"	408139	408039		M 125	36	✓	✓	
LADDER - SQUARE									
	8" x 8"	416913	416912	Light Duty	R 50	35	✓	✓	
		408193	408093	Medium Duty	M 125	35	✓	✓	
		408143	408043	Heavy Duty	N 250	33	✓	✓	
	10" x 10"	416915	416914	Light Duty	R 50	35	✓	✓	
		408128	408028	Medium Duty	M 125	33	✓	✓	
		408144	408044	Heavy Duty	N 250	33	✓	✓	
	12" x 12"	416917	416916	Light Duty	R 50	35	✓	✓	
		408137	408037	Medium Duty	M 125	35	✓	✓	
		408145	408045	Heavy Duty	N 250	33	✓	✓	
	FRAMELESS LADDER - SQUARE								
		8" x 8"	446263	446262	Heavy Duty	R 50	33		✓
			445265	446264	Special Duty	M 125	33		✓
10" x 10"		446267	446266	Heavy Duty	R 50	33		✓	
		445269	446268	Special Duty	M 125	33		✓	
12" x 12"		446271	446270	Heavy Duty	R 50	33		✓	
		445273	446272	Special Duty	M 125	33		✓	
HALF LADDER - SQUARE									
	8" x 8"	416919	416918	Light Duty	L 15	35			
	10" x 10"	416921	416920		L 15	35			
	12" x 12"	416923	416922		L 15	35			
HALF PLATE - SQUARE									
	8" x 8"	416929	416928	Light Duty	L 15	36			
	10" x 10"	416927	416926		L 15	36			
	12" x 12"	416925	416924		L 15	36			
ODOR SEAL COVER - SQUARE									
	8" x 8"	445398	-	Heavy Duty	R 50	-		✓	
		445605	-	Special Duty	M 125	-		✓	
	10" x 10"	445399	-	Heavy Duty	R 50	-		✓	
		445607	-	Special Duty	M 125	-		✓	
	12" x 12"	445400	-	Heavy Duty	R 50	-		✓	
		445609	-	Special Duty	M 125	-		✓	

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

 Items shown with this mark feature a hygienic design.

 Compliant with Americans with Disabilities Act of 2010, Section 302.3.

D

FLOOR DRAIN ROUND GRATES

Grate	Part No.		Load Class		Slip-Resistance	NSF	HF	♿
	AISI 316L	AISI 304	ASME: A 112.6.3	EN 1253	ASTM E303-93 (BPN)			

PERFORATED - ROUND



9"	447736	447728	Medium Duty	L 15	15			✓
12"	447740	447732		L 15	15			✓

HEELSAFE - ROUND



9"	447733	447725	Medium Duty	R 50	36			✓
12"	447737	447729		R 50	36			✓

SLOT COVER - ROUND



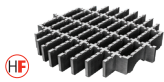
9"	446789	446788	Special Duty	M 125	36		✓	✓
12"	446791	446790		M 125	36		✓	✓

LADDER - ROUND



9"	446777	446776	Heavy Duty	M 125	35	✓	✓	
12"	446779	446778	Heavy Duty	M 125	33	✓	✓	

FRAMELESS LADDER - ROUND



9"	446781	446780	Heavy Duty	R 50	33		✓	
	446785	446784	Special Duty	M 125	33		✓	
12"	446783	446782	Heavy Duty	R 50	33		✓	
	446787	446786	Special Duty	M 125	33		✓	



E FLOOR DRAIN ACCESSORIES

Accessories are available to prevent drain clogging and promote general cleanliness. Debris strainer baskets collect debris and are easy to remove and clean.

	Part No.		Height in (mm)
	AISI 316L	AISI 304	

SHALLOW DEBRIS STRAINER BASKET



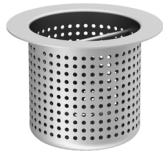
Used with 8" x 8" Floor Drain	416903	416902	0.98
Used with 10" x 10" Floor Drain	416907	416906	1.02
Used with 12" x 12" Floor Drain	416911	416910	1.02

DEBRIS STRAINER BASKET



Used with 8" x 8" Floor Drain	416901	416900	1.77
Used with 10" x 10" Floor Drain	416905	416904	1.97
Used with 12" x 12" Floor Drain	416909	416908	1.97

DEEP DEBRIS STRAINER BASKET



Used with 8" x 8" Floor Drain	445233	445232	3.94
Used with 10" x 10" Floor Drain	408258	408248	5.24
Used with 12" x 12" Floor Drain	408238	408228	5.31

Part No.		Load Class		Slip-Resistance		NSF	HF	♿
AISI 316L	AISI 304	ASME: A 112.6.3	EN 1253	ASTM E303-93 (BPN)				

FUNNEL - ROUND



9"	140158	140157	Light Duty	L 15	36			
12"	140152	140147		L 15	36			

FUNNEL - SQUARE



8" x 8"	-	415918	Light Duty	L 15	36			
10" x 10"	-	413546		L 15	36			
12" x 12"	-	413547		L 15	36			

Note: Replaces grate in body.



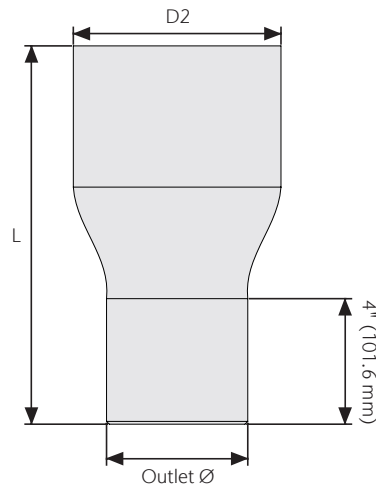




2. Hub Drains

Above ground outlet solution used in conjunction with floor drains to capture wastewater when needed.

Use of hub drain eliminates air bubbles forming when pipes are discharging.



	Part No.	Outlet Ø in (mm)	Diameter (D2) in (mm)	Length (L) in (mm)	Thickness in (mm)	Material	Weight lbs
HUB DRAIN							
2"	448814	2.375 (60.3)	4.5 (114.3)	12 (305)	SCH10 (2.8)	AISI 304	4.2
	448826	2.375 (60.3)	4.5 (114.3)	12 (305)	SCH10 (2.8)	AISI 316L	4.2
	448820	2.375 (60.3)	4.5 (114.3)	12 (305)	SCH40 (3.9)	AISI 304	7.2
	448832	2.375 (60.3)	4.5 (114.3)	12 (305)	SCH40 (3.9)	AISI 316L	7.2
3"	448815	3.50 (88.9)	6.625 (168.3)	12 (305)	SCH10 (3.1)	AISI 304	6.9
	448827	3.50 (88.9)	6.625 (168.3)	12 (305)	SCH10 (3.1)	AISI 316L	6.9
	448821	3.50 (88.9)	6.625 (168.3)	12 (305)	SCH40 (5.5)	AISI 304	13.2
	448833	3.50 (88.9)	6.625 (168.3)	12 (305)	SCH40 (5.5)	AISI 316L	13.2
4"	448816	4.50 (114.3)	6.625 (168.3)	12 (305)	SCH10 (3.1)	AISI 304	7.5
	448828	4.50 (114.3)	6.625 (168.3)	12 (305)	SCH10 (3.1)	AISI 316L	7.5
	448822	4.50 (114.3)	6.625 (168.3)	12 (305)	SCH40 (6)	AISI 304	14.9
	448834	4.50 (114.3)	6.625 (168.3)	12 (305)	SCH40 (6)	AISI 316L	14.9
6"	448817	6.625 (168.3)	8.625 (219)	14 (356)	SCH10 (3.4)	AISI 304	13.4
	448829	6.625 (168.3)	8.625 (219)	14 (356)	SCH10 (3.4)	AISI 316L	13.4
	448823	6.625 (168.3)	8.625 (219)	14 (356)	SCH40 (7.1)	AISI 304	27.7
	448835	6.625 (168.3)	8.625 (219)	14 (356)	SCH40 (7.1)	AISI 316L	27.7
8"	448818	8.625 (219)	10.75 (273)	16 (406)	SCH10 (3.8)	AISI 304	21.6
	448830	8.625 (219)	10.75 (273)	16 (406)	SCH10 (3.8)	AISI 316L	21.6
	448824	8.625 (219)	10.75 (273)	16 (406)	SCH40 (7.2)	AISI 304	46.0
	448836	8.625 (219)	10.75 (273)	16 (406)	SCH40 (7.2)	AISI 316L	46.0
10"	448819	10.75 (273)	12.75 (324)	16 (406)	SCH10 (4.2)	AISI 304	28.8
	448831	10.75 (273)	12.75 (324)	16 (406)	SCH10 (4.2)	AISI 316L	28.8
	448825	10.75 (273)	12.75 (324)	16 (406)	SCH40 (9.3)	AISI 304	60.0
	448837	10.75 (273)	12.75 (324)	16 (406)	SCH40 (9.3)	AISI 316L	60.0

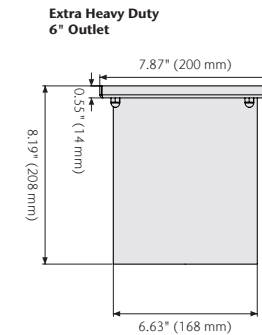
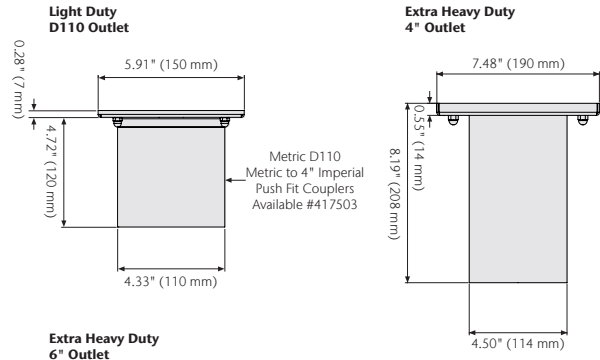
3. Cleanouts

A cleanout is an access point in a drainage system that provides a convenient place to access a building's drain pipes to clear clogs and debris.

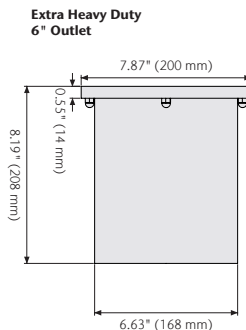
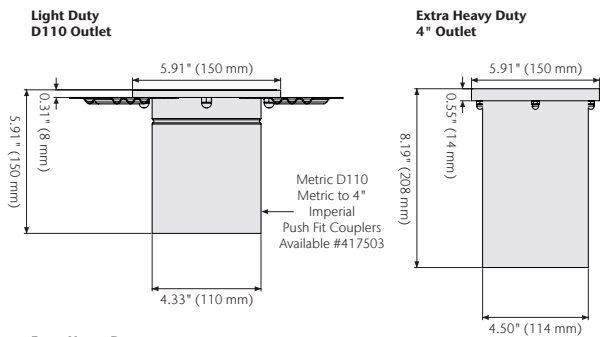
Most local municipal plumbing codes require the installation of a cleanout during the building construction. Contact ACO for Extra Heavy Duty load class and the different outlet size options available.



	Part No.	EN 1433	Thickness in (mm)	Material	Weight lbs
CLEANOUT - SQUARE					
Light Duty FCO D110 Outlet	414596	A15	0.04 (1.5)	AISI 304	3.3
	416998	A15	0.04 (1.5)	AISI 316L	3.1
Extra Heavy Duty FCO 4" Outlet	140163	E600	SCH10 (3.0)	AISI 304	12.1
	140165	E600	SCH10 (3.0)	AISI 316L	12.1
Extra Heavy Duty FCO 6" Outlet	140164	E600	SCH10 (3.0)	AISI 304	17.6
	140166	E600	SCH10 (3.0)	AISI 316L	17.6



	Part No.	EN 1433	Thickness in (mm)	Material	Weight lbs
CLEANOUT - ROUND					
Light Duty FCO D110 Outlet	138220	A15	0.06 (1.5)	AISI 304	6.4
	138221	A15	0.06 (1.5)	AISI 316L	6.4
Extra Heavy Duty FCO 4" Outlet	140159	E600	SCH10 (3.0)	AISI 304	8.6
	140161	E600	SCH10 (3.0)	AISI 316L	8.6
Extra Heavy Duty FCO 6" Outlet	140160	E600	SCH10 (3.0)	AISI 304	15.6
	140162	E600	SCH10 (3.0)	AISI 316L	15.6



3

Technical Support & Services

A CLEANING & MAINTENANCE

ACO stainless steel floor drains and cleanouts are easy to clean and maintain. For day to day cleaning, plenty of water, some mild detergent and a cloth or soft brush will do the job.

A broad group of chemicals are widely used in food & beverage industries.

Acids, both organic and inorganic, are commonly used for removal of mineral deposits, such as hard water scale or milkstone. Acids are potentially corrosive to construction materials and must be used with care.

Alkaline compounds are effective for dissolution of proteins and removal of fats. Example of alkalis are sodium hydroxide (caustic soda) and potassium hydroxide. These compounds are hazardous to personnel and mostly used in CIP – automatic dosing system is recommended.

If suggestions in the table below have been attempted and results are unsatisfactory, stainless steel can be mechanically cleaned by specialists on site. Contact ACO for further information.



PROBLEM	CLEANING AGENT	COMMENT
Routine cleaning, all finishes	Soap or mild detergent and water (such as dishwashing liquid)	Sponge, rinse with clean water, wipe dry if necessary.
Fingerprints, all finishes	Soap, warm water or organic solvent (e.g. acetone, alcohol)	Rinse with clean water, wipe dry if necessary.
Stubborn stains and discoloration	Mild cleaning solutions or cream cleanser	Rinse well with clean water and wipe dry.
Oil and grease marks, all finishes	Organic solvents (e.g. acetone, alcohol)	Clean after with soap and water, rinse with clean water and dry.
Rust and other corrosion products	Oxalic acid	Rinse well with clean water. The cleaning solution should be applied with a swab and allowed to stand for 15–20 minutes before being washed away with water. Use a mild cleaning solution to give a final clean if required.
Scratches on brush (satin) finish	Household synthetic fiber scouring pads	Do not use ordinary steel wool, as particles can become embedded in stainless steel and cause surface problems. For deeper scratches; apply scourer in direction of polishing. Clean with soap or detergent as per routine cleaning.

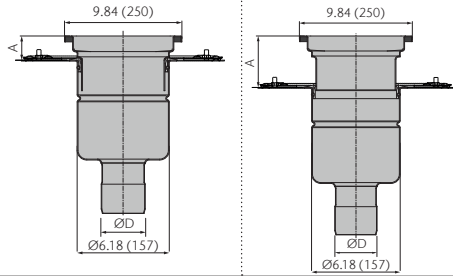


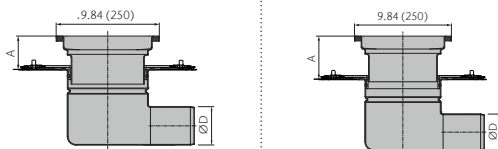
B FLOW RATES AND INSTALLATION HEIGHTS

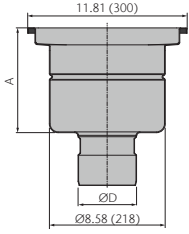
Calculated flow rates are in gallons per minute (gpm) and represent the actual volume of water flowing through the outlet per minute.

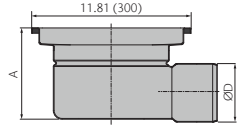
8" X 8" FLOOR DRAIN FIXED HEIGHT, VERTICAL OUTLET		8" X 8" FLOOR DRAIN FIXED HEIGHT, HORIZONTAL OUTLET		
A = 5.32" (135 mm)		A = 5.51" (140 mm)		
Outlet (Ø) in (mm)	Flow Rate gpm	Flow Rate gpm		
2 (60)	40	35		
4 (114)	144	104		
8" X 8" FLOOR DRAIN ADJUSTABLE HEIGHT, VERTICAL OUTLET			8" X 8" FLOOR DRAIN ADJUSTABLE HEIGHT, HORIZONTAL OUTLET	
A = 1.57" (40 mm) A = 2.17" (55 mm)			A = 1.57" (40 mm) A = 2.17" (55 mm)	
Outlet (Ø) in (mm)	Flow Rate gpm	Flow Rate gpm	Flow Rate gpm	Flow Rate gpm
2 (60)	41	44	36	39
4 (114)	147	155	108	112
10" X 10" FLOOR DRAIN FIXED HEIGHT, VERTICAL OUTLET		10" X 10" FLOOR DRAIN FIXED HEIGHT, HORIZONTAL OUTLET		
A = 7.87" (200 mm)		A = 6.89" (175 mm)		
Outlet (Ø) in (mm)	Flow Rate gpm	Flow Rate gpm		
3 (89)	74	63		
4 (114)	165	112		

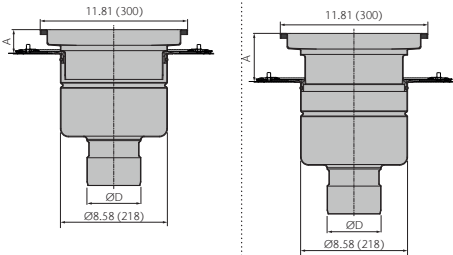
Note: Flow rates are based on drowned orifice calculations. Silt basket debris and solids will reduce flow rate.

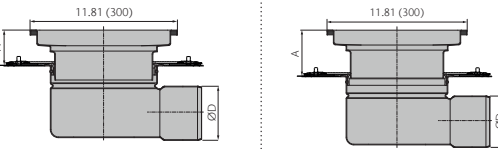
10" X 10" FLOOR DRAIN ADJUSTABLE HEIGHT, VERTICAL OUTLET		
		
<p>A = 1.85" (47 mm) A = 2.95" (75 mm)</p>		
Outlet (Ø) in (mm)	Flow Rate gpm	Flow Rate gpm
3 (89)	77	82
4 (114)	169	177

10" X 10" FLOOR DRAIN ADJUSTABLE HEIGHT, HORIZONTAL OUTLET		
		
<p>A = 1.85" (47 mm) A = 2.95" (75 mm)</p>		
Flow Rate gpm	Flow Rate gpm	Flow Rate gpm
65	70	128
120	128	

12" X 12" FLOOR DRAIN FIXED HEIGHT, VERTICAL OUTLET	
	
<p>A = 7.91" (201 mm)</p>	
Outlet (Ø) in (mm)	Flow Rate gpm
4 (114)	165
6 (168)	360

12" X 12" FLOOR DRAIN FIXED HEIGHT, HORIZONTAL OUTLET	
	
<p>A = 6.97" (177 mm)</p>	
Flow Rate gpm	Flow Rate gpm
112	-

12" X 12" FLOOR DRAIN ADJUSTABLE HEIGHT, VERTICAL OUTLET		
		
<p>A = 1.97" (50 mm) A = 2.95" (75 mm)</p>		
Outlet (Ø) in (mm)	Flow Rate gpm	Flow Rate gpm
4 (114)	169	177
6 (168)	372	398

12" X 12" FLOOR DRAIN ADJUSTABLE HEIGHT, HORIZONTAL OUTLET		
		
<p>A = 1.97" (50 mm) A = 2.95" (75 mm)</p>		
Flow Rate gpm	Flow Rate gpm	Flow Rate gpm
120	128	
-	-	

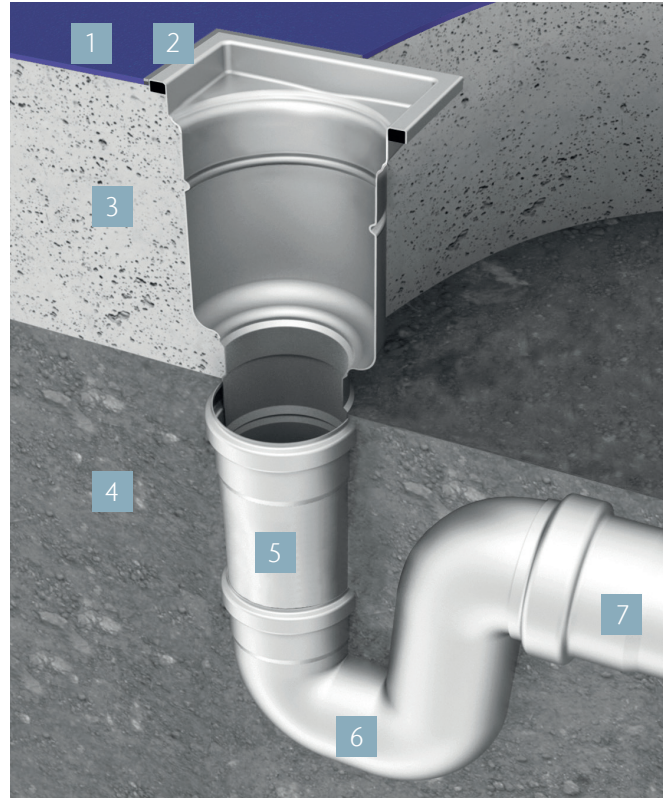
Note: Flow rates are based on drowned orifice calculations. Silt basket debris and solids will reduce flow rate.

C INSTALLATION GUIDE

i. FloorDrain - Fixed Height

Fixed height floor drain in ground slab with resin floor finish connecting into stainless pipe and P-Trap.

- 1 Resin floor
- 2 Flexible sealant
- 3 Ground slab
- 4 Soil
- 5 Expansion Pipe (by ACO)
- 6 P-Trap (by ACO)
- 7 Socketed pipe (by ACO)



ii. FloorDrain - Adjustable Height

Adjustable height floor drain in ground slab with resin floor finish connecting into stainless pipe and P-Trap.

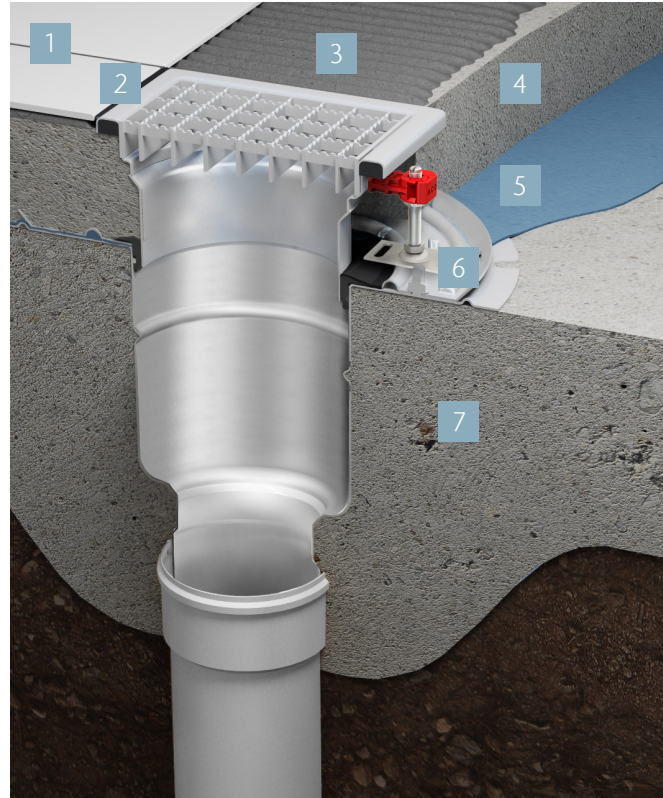
- 1 Resin floor
- 2 Flexible sealant
- 3 Ground slab
- 4 Soil
- 5 Expansion Pipe (by ACO)
- 6 P-Trap (by ACO)
- 7 Socketed pipe (by ACO)



ii. FloorDrain - Adjustable Height

Adjustable height floor drain in suspended slab with a tile floor finish connecting into stainless pipe.

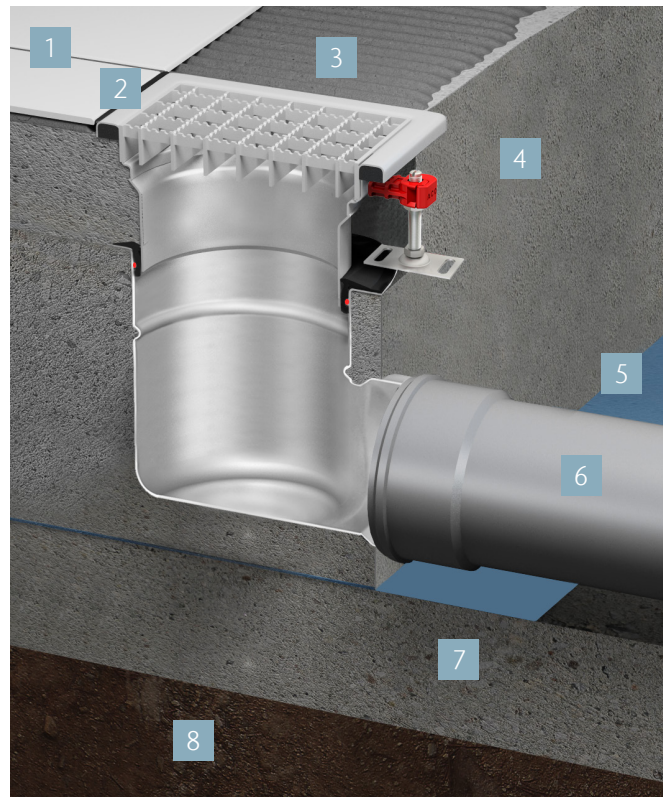
- 1 Tile
- 2 Flexible sealant
- 3 Cement /tile adhesive
- 4 Screed
- 5 Waterproof membrane (liquid/fabric)
- 6 Waterproofing Bonding/Clamp Flange (by ACO)
- 7 Suspended concrete slab



ii. FloorDrain - Adjustable Height

Adjustable height floor drain with horizontal outlet in ground slab with a tile floor finish connecting into stainless pipe.

- 1 Tile
- 2 Flexible sealant
- 3 Cement /tile adhesive
- 4 Screed
- 5 Waterproof membrane (liquid/fabric)
- 6 Socketed pipe (by ACO)
- 7 Ground slab
- 8 Compacted soil



ADA compliant - the product is accessible to those with disabilities according to the Americans with Disabilities Act Standards for Accessible Design.

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

ASME standards - American Society of Mechanical Engineers (www.asme.org)

Axle load - load carried by each axle of vehicle.

Bead blasting - preps, cleans the surface or changes its appearance using an abrasive blasting process using air at specific pressures.

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

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

Dynamic loads - a dynamic load is any load that changes over time, such as forklift or cart traffic that is transporting various weights.

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

EN standards - the European Standard (www.en-standard.eu)

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

Friction ring - rubber material gasket that creates a leak proof seal between floor drain and floor drain body.

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

Hygienic first - design philosophy developed by ACO to enhance the hygienic properties of stainless steel.

Leveling feet - used to provide an adjustable, level, and stable base during the installation process.

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

Passivation process - is a post-fabrication best practice to remove contamination from surface and provide a chemical file barrier against rust which significantly extend the life of the product.

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

Pickling process - pre-passivation process of treating stainless steel parts with an acid solution to remove oxide scale and heat tint while dissolving steel flecks embedded in the part.

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

Screed - the leveling layer of the floor that is between the subfloor and finished floor surface.

Socketed pipe - refers to ACO's stainless steel push fit pipe system designed to easily fit together using a spigot and socket feature.

Slip-Resistance - the relative force that resists the tendency of the shoe or foot to slide along the surface of the grate.

Trap primer - used in plumbing systems to prevent floor drain traps from losing their water seal by evaporation and required when a possibility of the p-trap drying out. Can be automated.

Wheel load - load exerted through one wheel of vehicle/trolley.



askACO

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There are many drainage solutions to consider when planning a project. But which option leads to the most economically and technically safest solution? We help you to find the right answer.





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ACO products support the ACO System Chain



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- ACO BoxDrain - Stainless Hygienic Drains
- ACO FloorDrain - Stainless Point Drains
- ACO Pipe - Stainless Push-fit Piping
- ACO ShowerDrain - Bathroom Drainage

Surface Water Management

- ACO Drain - Commercial Trench Drains
- ACO Infrastructure - Heavy Duty Drainage
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- ACO StormBrixx - Geocellular Tanks
- ACO Aquaduct - Custom Drainage
- ACO Environment - Solid & Oil Separators
- ACO Wildlife - Guidance & Passage
- ACO Self - Garden & Landscape Drainage
- ACO UtilityDuct - Ducting System

ACO, Inc.

West Sales Office
825 W. Beechcraft St.
Casa Grande, AZ 85122
Tel: (520) 421-9988
Toll-Free: (888) 490-9552
Fax: (520) 421-9899

info@acousa.com
www.acousa.com
www.acobd.com

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