ACO Building Drainage Products

Bathroom Drainage

QuARTz by ACO

Linear drainage and floor waste bathroom solutions

Technical catalogue and handbook

ACO

The shower drainage option designed to impress

QuARTz by ACO bathroom drainage solutions inspire creative bathroom planning. They allow the use or elimination of physical barriers within the bathroom floor and can be incorporated into a wide range of designs.

Grates can be replaced or LED lights added at a later date to generate a totally new look.

Quality and functionality

The high quality of components is not limited to the design, materials and finish; ease of handling and installation are given the same attention to detail.

The difference is in the details

Products are designed to provide a long, reliable service life. The smooth surfaces guarantee efficient drainage and hygiene in bathrooms.

Award-winning design

The stainless steel grates visibly demonstrate the quality of the shower channels and floor wastes. **QuARTz by ACO** bathroom drainage solutions give any number of opportunities to impress through quality and looks!

reddot design award winner 2009

product design award 2009

WaterMark Licence Level 2

WaterMark is granted to products that comply with ATS 5200.040, AS/NZS 3500 and certified in accordance with ISO/IEC Guide 67, System 1B. **QuARTz by ACO** products are certified to conform.

WaterMark ATS 5200.040 CERTIFICATE NO. 23120

Member of ASSDA

ASSDA Australian Stainless Steel Development Association

Product features

Multiple grate designs

The range of grate designs complements personal design preferences and enhances the appearance of the room.

Grates are also easily replaced for a new look. Page 7

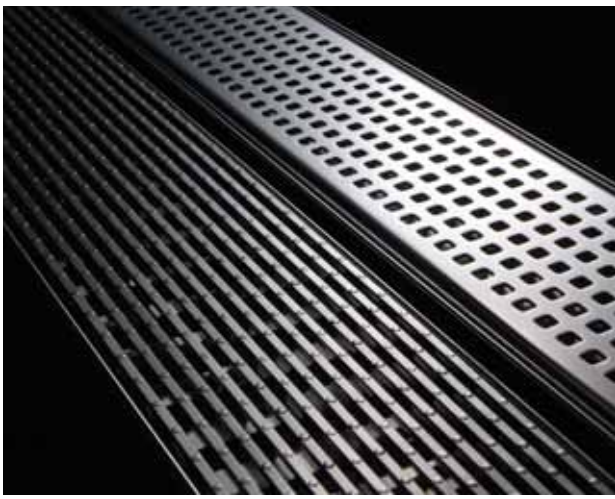
ACO quality

ShowerChannel bodies are manufactured from grade 304 stainless steel and comprise a fully welded, integrated outlet.

Material finish

Channels and grates are electropolished. This process creates a shiny defect-free surface, which minimises cleaning and maintenance for a high class finish.

The textured appearance of the grate is still visible after electropolishing and helps reduce the appearance of finger prints and soap residue.



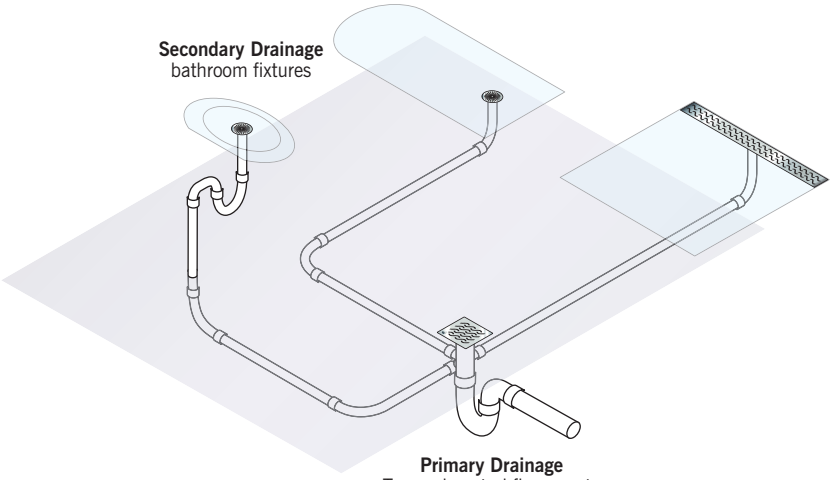
Determining type of drainage

An interconnected system

One of the most important decisions to consider with a bathroom, is how to incorporate drainage into the design. The solution must fit the bathroom floor layout to ensure it functions properly.

For a bathroom with a single primary drainage trap, there are two types of bathroom drains. A trapped central floor waste (overflow gully) and other waste outlets from a bathroom's fixtures (showers, basins, bathtubs etc.). The drains from these fixtures (secondary drainage) are connected to the central floor waste (primary drainage). These form part of a bathroom's interconnected pipe system.

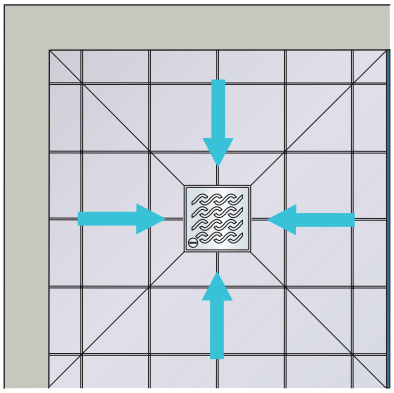
Some bathrooms are plumbed with separate traps to each fixture.



Traditional floor wastes

Floor wastes offer a point outlet, typically located at the centre of the shower area and/or bathroom floor.

- Generally a cheaper initial product cost
- Usually not appropriate for level threshold applications
- Requires traditional tiled threshold step/hob to contain water
- Tiling can be complex, typically requiring careful 4-way grading of the floor
- Increased tile wastage due to diagonal cutting and lipping requirements to AS3958
- Higher flooring cost due to extra time required to produce a 3D floor plan

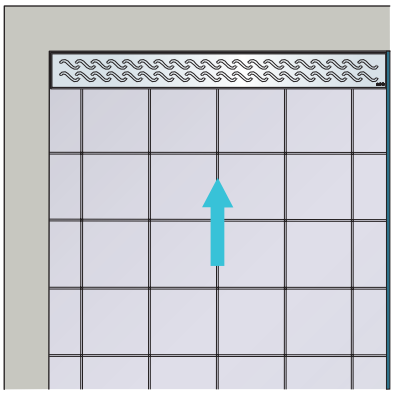


Floor waste

Linear drains

A linear grate and channel can be located anywhere within the shower area and requires simple 2D grading of the floor towards the channel.

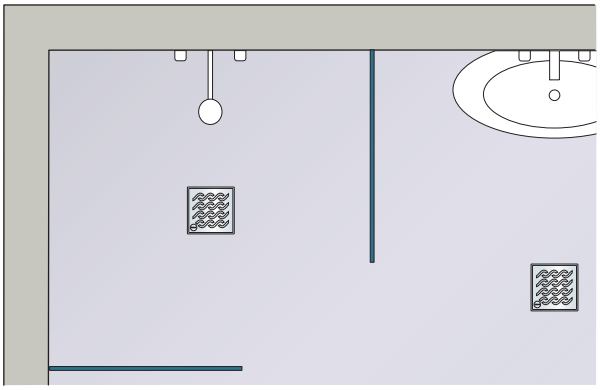
- Usually a higher initial product cost, but reduced tiling cost due to decreased installation time
- Level threshold can be created for easy wheelchair/disabled access
- Can be used to separate wet from dry areas
- Can be used with any type of tiled shower configuration
- Tiling is simplified with minimal cuts required and less wastage
- Easy to use with any tile size and material



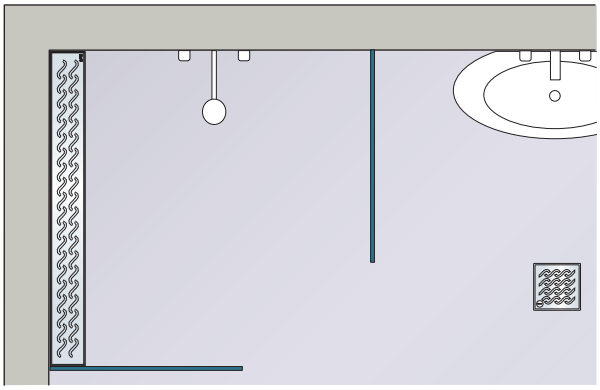
Linear drain

Drainage planning information

Choosing a primary and secondary drainage combination



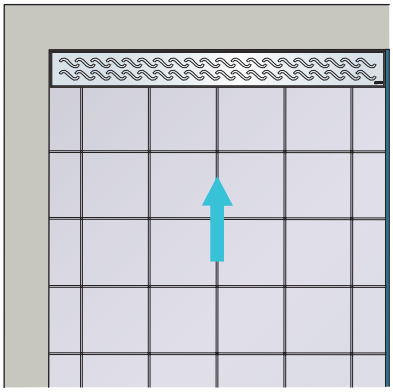
Using two floor wastes – shower and central bathroom



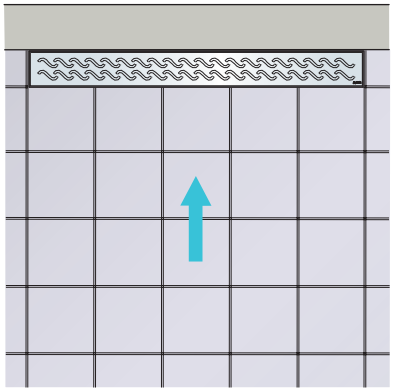
Using linear shower drainage and central bathroom floor waste

Choosing a position for a linear drain

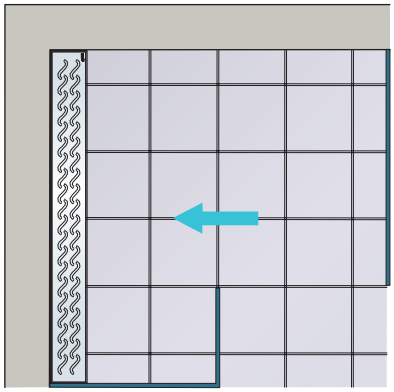
(i) Floor sloping towards the wall



Installation against the wall
Slope in one direction – slope away from the bathroom. No risk of bypass.

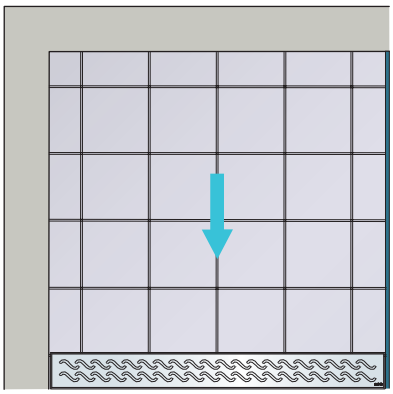


Walk-through: Installation against the wall
Slope in one direction – just shower area or whole bathroom floor can be sloped towards channel.

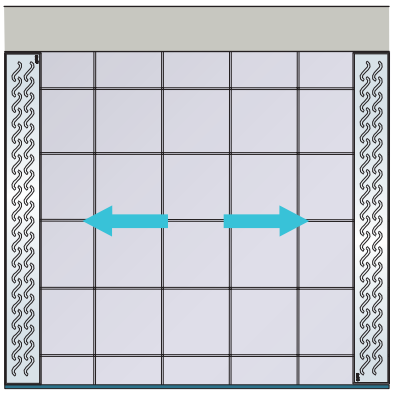


Walk-in: Installation against the wall
Slope in one direction – slope away from the bathroom. No risk of bypass.

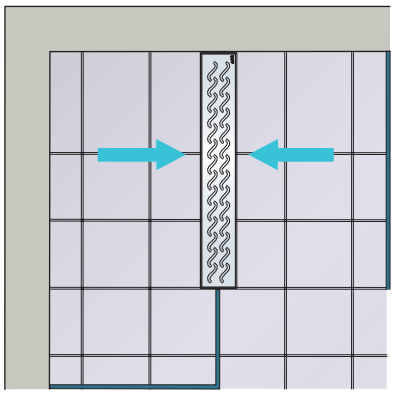
(ii) Floor sloping away from the wall



Installation at shower entrance
Slope in one direction, towards the bathroom – allows for possible risk of bypass. Slope of bathroom floor towards shower area is recommended to contain possible bypass. Channel length should exactly fit the shower opening.



Walk-through: Installation with two channels
Two directional slope towards the bathroom. Channel length should exactly fit the shower opening.



Walk-in: Installation at the entrance
Two directional slope towards the channel. Channel length should exactly fit the shower opening.

Note: Linear drains are not only restricted to shower areas, but can also be used in bathroom floors, e.g. alongside a wall.

Compatible stainless steel grate designs

QuARTz by ACO provides a visually compatible range of bathroom drainage products, creating a completely coordinated design.

A choice of floor wastes are available for use in the shower area (ShowerPoint), or bathroom floor (CentrePoint). These can be used alongside a ShowerChannel to complete a three-fold integrated design scheme.


Wave


Quadrato

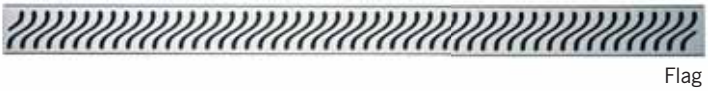

Hawaii


Mix

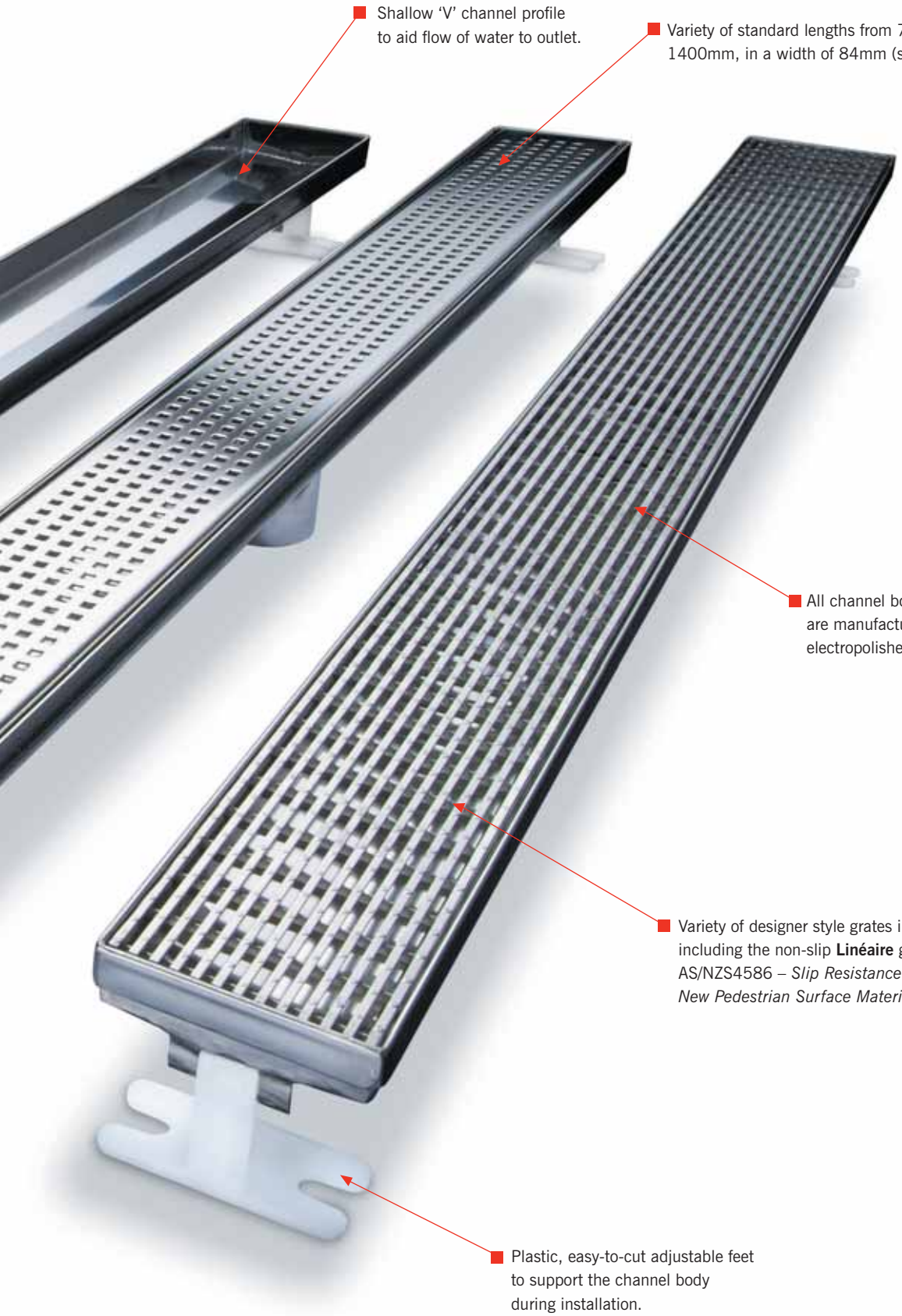

Linéaire


Tile


Pixel


Flag

Features and Benefits



Shallow 'V' channel profile to aid flow of water to outlet.

Variety of standard lengths from 700mm to 1400mm, in a width of 84mm (see page 10).

All channel bodies and grates are manufactured from grade 304 electropolished stainless steel.

Variety of designer style grates in all lengths including the non-slip **Linéaire** grate (meets Class B, AS/NZS4586 – *Slip Resistance Classification of New Pedestrian Surface Materials).*

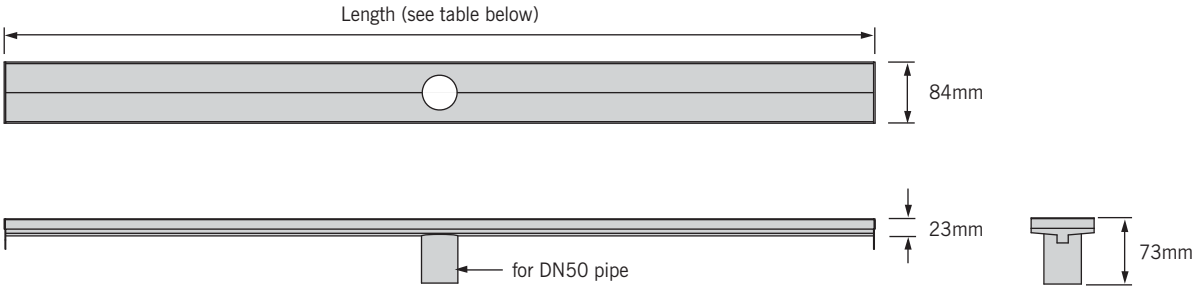
Plastic, easy-to-cut adjustable feet to support the channel body during installation.

ShowerChannel

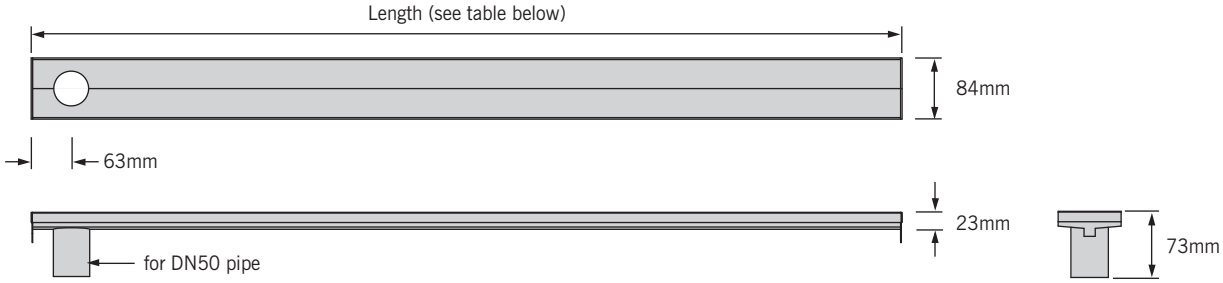
Features

- 50mm integral outlet for DN50 pipe connection
- Flow rate: - at shower entrance 0.4 L/s
  - against the wall 0.6 L/s
  (See page 19 for further information.)
- Channel width: 84mm
- Electropolished finish
- Plastic support feet to aid installation
- Optional accessories include water activated LED lights and debris strainer (see page 16)
- Option of end or centrally located DN50 outlet
- Shallow 'V' profile to aid flow of water to outlet

Channel with centre outlet



Channel with end outlet



Product data table – channel only (select Part No. from page 11)

Length (mm)	700	800	900	1000	1200	1400
Weight (kg)	1.1	1.2	1.4	1.5	1.7	1.9

QuARTz by ACO

ShowerChannel – channel and grate product table

Product	Nominal Lengths mm	Grate Intake Areas mm²	Part No. Centre Outlet	Part No. End Outlet
Wave 	700	8,777	141000	141048
	800	10,011	141001	141049
	900	11,225	141002	141050
	1000	12,455	141003	141051
	1200	14,917	141004	141052
	1400	17,379	141005	141053
Quadrato 	700	9,950	141006	141054
	800	11,450	141007	141055
	900	12,950	141008	141056
	1000	14,450	141009	141057
	1200	17,450	141010	141058
	1400	20,450	141011	141059
Hawaii 	700	10,174	141018	141066
	800	11,304	141019	141067
	900	13,000	141020	141068
	1000	14,696	141021	141069
	1200	17,522	141022	141070
	1400	20,348	141023	141071
Mix 	700	11,655	141024	141072
	800	13,375	141025	141073
	900	14,998	141026	141074
	1000	16,738	141027	141075
	1200	20,277	141028	141076
	1400	23,816	141029	141077
Linéaire 	700	24,934	141036	141084
	800	28,532	141037	141085
	900	32,130	141038	141086
	1000	35,728	141039	141087
	1200	42,923	141040	141088
	1400	50,119	141041	141089
Tile 	700	9,168	141042	141090
	800	10,368	141043	141091
	900	11,568	141044	141092
	1000	12,768	141045	141093
	1200	15,168	141046	141094
	1400	17,568	141047	141095
Pixel 	700	11,059	141030	141078
	800	12,563	141031	141079
	900	14,325	141032	141080
	1000	15,754	141033	141081
	1200	19,019	141034	141082
	1400	22,284	141035	141083
Flag 	700	13,278	141012	141060
	800	15,488	141013	141061
	900	16,962	141014	141062
	1000	19,171	141015	141063
	1200	23,592	141016	141064
	1400	28,013	141017	141065

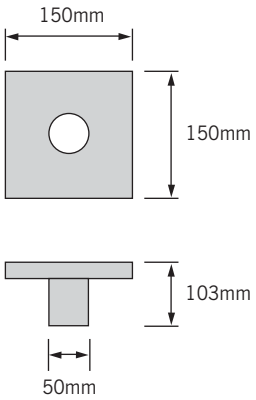
For weights of complete products, visit www.quartzbyaco.com.au

Floor wastes

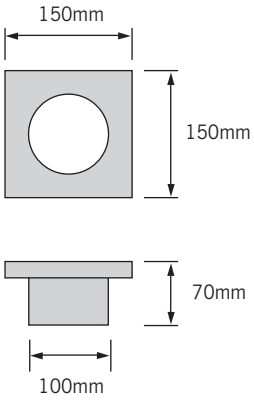
Features

- **CentrePoint** 100mm diameter vertical outlet
- **ShowerPoint** 50mm diameter vertical outlet
- Range of grade 304 stainless steel electropolished designer grates available
- Optional accessories include water activated LED lights and debris strainer (see page 16)
- Lockable grates available with boltless mechanisms
- Chromed ABS or stainless steel bodies available

ShowerPoint



CentrePoint



Note: Depth for Tile and Linéaire body is 81mm

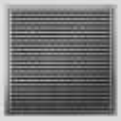
Product data table – floor waste body only (select Part No. from page 13)

Product	ShowerPoint	CentrePoint
Weight (kg)	0.15	0.11

Note: For Tile and Linéaire grates, bodies are manufactured from stainless steel, add 0.4kg to CentrePoint body weight.

QuARTz by ACO

Floor wastes – product table

Product	Intake Areas mm²	Product No. ShowerPoint 50mm ø	Product No. CentrePoint 100mm ø
Wave 	5614	141117	141113
Quadrato 	3161	141116	141112
Hawaii 	4193	141118	141114
Mix 	4011	141119	141115
Linéaire 	9340	-	40351595
Tile [1] 	2780	-	40352086
Pixel 	3727	141183	141184

1. Tile insertion depth is 13.5mm

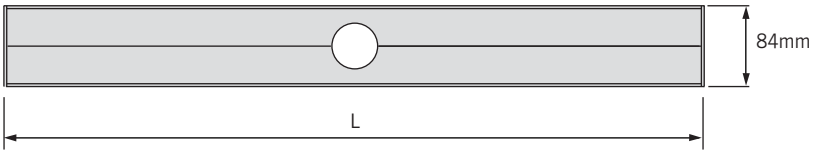
For weights of complete products, visit www.quartzbyaco.com.au

Custom ShowerChannel

When standard channels are not appropriate, a number of features can be customised to ensure the unit meets required performance criteria.

1. Length of ShowerChannel

To meet specific room requirements the channel can be manufactured to specific lengths up to 4800mm. Standard length grates are used, which may result in multiple grates per channel.

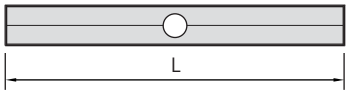
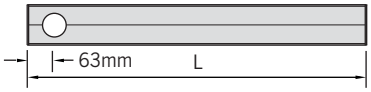
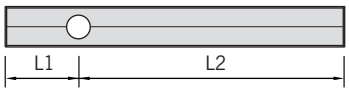


Length L = ... mm

Width is fixed at 84mm

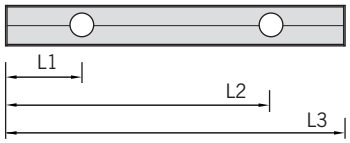
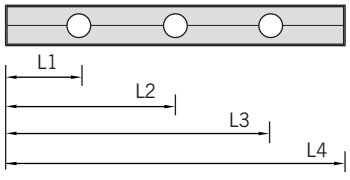
2. Position of 50mm outlet

Plumbing layout restrictions may require a uniquely located outlet – the position of the outlet can be manufactured to suit site requirements.

Centre position		Standard version
End position		Standard version
Custom position		L1 = ... mm L2 = ... mm

3. Number of 50mm outlets

To meet hydraulic requirements of multiple shower heads, the number of outlets can be increased. Outlet size is fixed at 50mm diameter due to the width of the unit and availability of compatible plumbing connections.

Two outlets		L1 = ... mm L2 = ... mm L3 = ... mm
Three outlets		L1 = ... mm L2 = ... mm L3 = ... mm L4 = ... mm

Accessories and ancillary items

A number of items are available to enhance the aesthetics and performance of **QuARTz by ACO** products.

Debris strainer

A stainless steel strainer is available to fit inside a ShowerChannel to collect hair and other debris. Note that strainers will reduce the flow performance of the channels, particularly if not regularly cleaned.

Grate lifter

Grate lifters are standard with each system and assist with grate removal during maintenance.

Product table

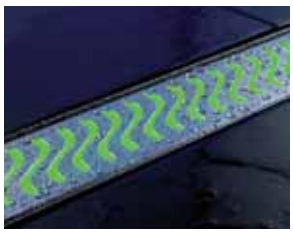
Description	Part No.	Weight (kg)
Debris strainer – electropolished	4030050	0.2
Additional grate lifter	141096	0.1

Water activated LED lights

A water activated lighting system is available for ShowerChannel and ShowerPoint. This system is purpose built to suit **QuARTz by ACO** grates for illumination during showers and for a short time thereafter.

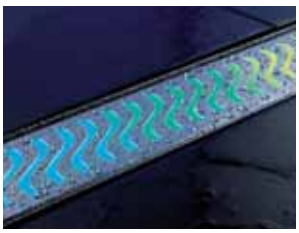
The LED units are waterproof and available in a range of colours. They are easily removable for recharging and fit neatly beneath the grate.

Red



Green

Blue



Rainbow (alternating colours)

Accessories and ancillary items

ShowerChannel – product table

Description	Part No.	Weight (kg)
Blue LED light kit	45040301	1.5
Red LED light kit	45040302	1.5
Green LED light kit	45040303	1.5
Rainbow LED light kit	45040304	1.5

Note: Weight includes 2 lights, charger and adaptor

ShowerPoint – product table

Description	Part No.	Weight (kg)
Blue LED light kit	141123	1.5
Red LED light kit	141124	1.5
Green LED light kit	141125	1.5
White LED light kit	141126	1.5

Note: Weight includes 1 light, charger and adaptor

The illumination is based on simple circuit completion. During showers, water runs over the contacts of the LED units to close the circuit, thereby activating the lights.

The units do not require any wiring and on average will only need to be recharged every 3 months (based on a 15 minute daily shower).

ShowerChannel LED light packs, charging unit and power cord

- Water activated during showers
- Suitable for all grate designs, except Tile and Linéaire*
- Waterproof and wireless LED units
- Choice of colours; red, green, blue, white, rainbow (alternating colours)
- Light kit contains:
  LED light unit(s)
  Recharge unit
  240V Power supply
  Instructions

* For Linéaire grates, a custom solution is available

Technical and hydraulic information

QuARTz by ACO bathroom drainage systems are compact enough to be encased neatly in a bathroom's mortar screed bed, beneath the tiles. These systems have integral outlets for a connection of either DN50 or DN100 pipe.

Water containment and drainage plays a vital role in the overall waterproofing of a bathroom. Critical elements are the waterproofing, gradient of the shower floor, size of the waste outlet and the design of the shower screen.

AS3740: ***Waterproofing of wet areas within residential buildings*** recommends falls as small as 1:60 for the shower area and up to 1:100 for outer bathroom areas. The drainage and tiling operations must be integrated neatly within these floor gradients.

AS/NZS3500: ***Plumbing and Drainage*** requires a minimum DN40 connection for showers. The common industry standard however, is DN50, allowing for greater drainage capacities. In some applications, governed by the standard, bathrooms have shower fixtures that may not require foul air traps. Either way, they discharge directly into the underground pipe, which is often directed into the bathroom's trapped central floor waste.

Hydraulic performance

Grates and channel outlets are necessary water capture and plumbing elements, but may have some restriction on the water flow into the drainage pipe, particularly if debris (scum, hair etc.) is present. Using a debris strainer will reduce debris induced flow restriction. The efficiency of a shower's linear drain or floor waste is critical, particularly for level threshold drainage.

The flow value for a 50mm outlet varies depending upon the head of water (water accumulation) above the grate. In the case of linear drains, a head of water is not typical in practice, due to shallower floor grades. This is different from shower floor wastes, where water can pond due to the 'basin' profile of the shower recess.

Installation against the wall
Outlet flow rate up to 0.6 L/s based on floor grades with 5mm head of water.

Installation at the entrance
Outlet flow rate up to 0.4 L/s based on no water accumulation.

Flow values without any head of water (i.e. 0mm) should be adopted when linear drains are placed around the perimeter of the shower and no shower hob/step down is used. If the drain is installed against a wall, there may be a small head of water depending on the shower layout and floor grade. The tables below give results for a 5mm and 15mm head of water, for both linear drains and floor wastes.

A number of custom solutions are available from ACO for high flow rates or showers with multiple showerheads (see page 14).

When considering hydraulic performance for specific projects, seek professional advice and/or contact ACO for further information.

ShowerChannel – outlet flow rate capacities (L/s)

Grate	Accumulation (head of water) 0mm	5mm	15mm
Channel body only	0.42	0.60	0.73

ShowerChannel – effect of grate on outlet flow rate capacities* (L/s)

Grate	Accumulation (head of water) 0mm	5mm	15mm
Wave	0.38	0.54	0.66
Quadrato	0.40	0.57	0.70
Linéaire**	0.42	0.60	0.73
Tile	0.41	0.59	0.71
Flag	0.40	0.57	0.70

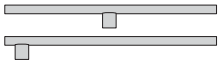
* Calculated using 1000mm channel and grate
** Capacity is restricted by the channel outlet (see first table).

ShowerPoint – outlet flow rate capacities (L/s)

Grate	Accumulation (head of water) 5mm	15mm
Wave	1.1	1.3
Quadrato	0.6	1.1
Hawaii	0.9	1.3
Mix	0.8	1.3
Pixel	0.8	1.3

The above flow rates are indicative only. Pipework design may further restrict the flow.

Installation: linear drainage

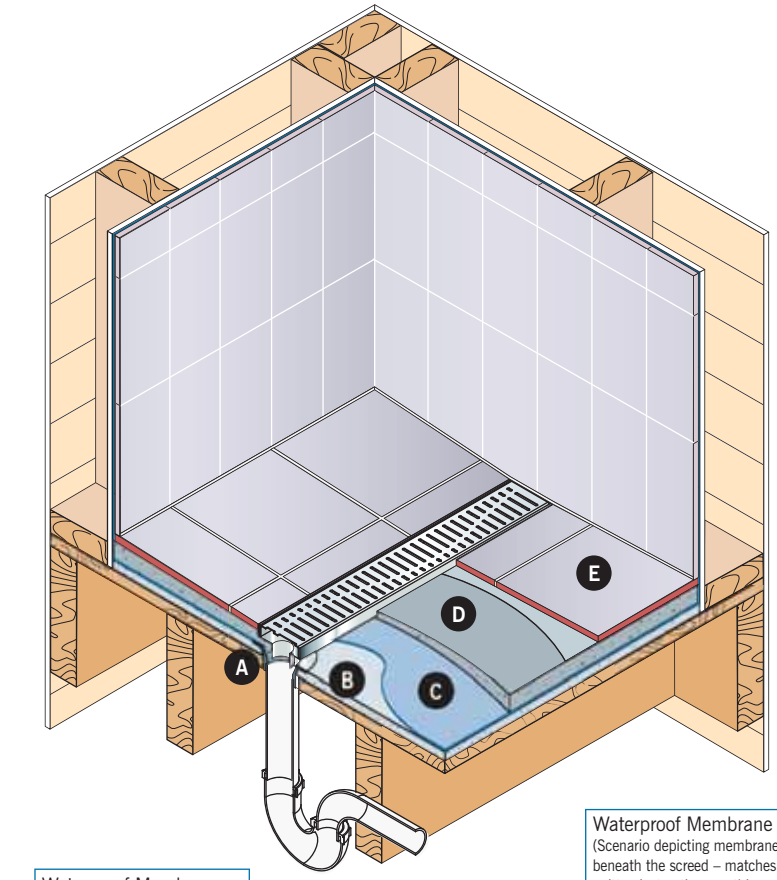


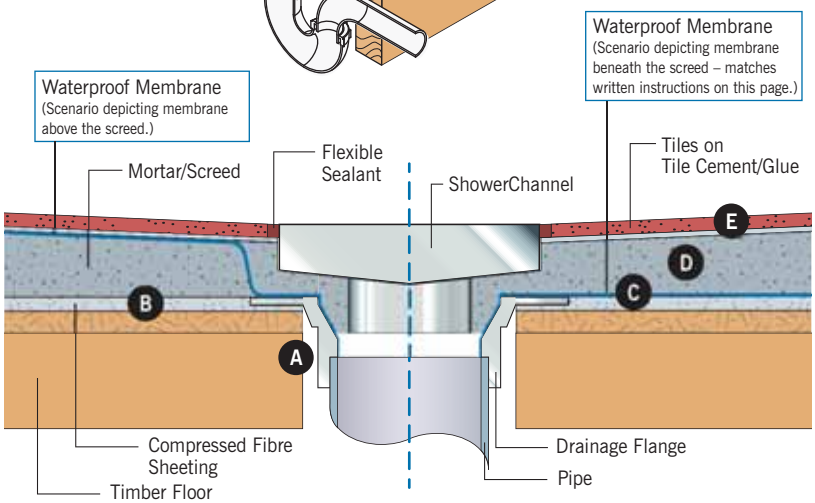
Installation overview

Tiled showers rely on a linear drainage system that is easily integrated into the screed above the waterproofing.
QuARTz by ACO offers a channel profile that ensures compatibility with different floor structures.
The installation details shown, set out to provide the designer with integrated solutions for wet room floor drainage.
The illustrations identify preparation, the installation and construction processes required to install these products in wet room environments.
For both flooring applications, two alternative positions for the waterproof membrane are illustrated. However for simplicity, the *written* guidelines below and opposite refer to the waterproof membranes that are applied beneath the screed mortar bed only.
A drainage flange is shown to provide bracing to the connection and control leakage of the mortar screed bed. It should be recessed into the floor with a router for a timber deck or diamond grinder, for a slab.
These details do not cover every possible situation and should only provide a practical reference. ACO recommends designers and installers check local legislative standards and practices or seek specialised engineering advice.
A broad selection of installation scenarios is displayed at www.quartzbyaco.com.au.

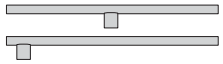
Joisted timber floor (for membranes beneath the screed)

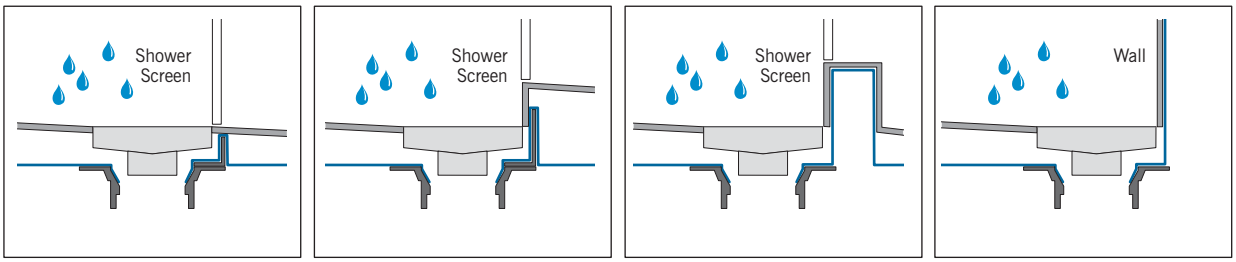
1. Where alterations to floor joists are necessary, consult a structural engineer for advice. Floor joist reinforcement may be necessary.
2. Frame out the shower surround as required, leaving a penetration in the wooden floor for drainage.
3. Connect an appropriately sized drainage flange (A) to the pipework. Ensure it is adequately fastened or bonded in position.
4. Block the drain opening with a rag to prevent floor mortar blocking up the pipe.
5. Lay compressed fibre sheeting (B) (or similar) and create levels if required. Ensure the sheeting is finished flush with the drainage flange and that there are no rough edges for the waterproof membrane to bridge.
6. The waterproof membrane (C) is then applied to the sheeting and continued on to and turned into the drainage flange as well as up the wall, in accordance with AS3740. It is then left to cure before covering.
7. Cut installation feet of the ShowerChannel to height to rest on the membrane and ensure channel is kept at required height and level.
8. A screed is then laid (D) and trowelled to the correct levels and height, allowing for the thickness of the overlying tile layer.
9. After the screed has cured, apply tile cement, tiles and grout (E).
10. Place the grate in the channel.





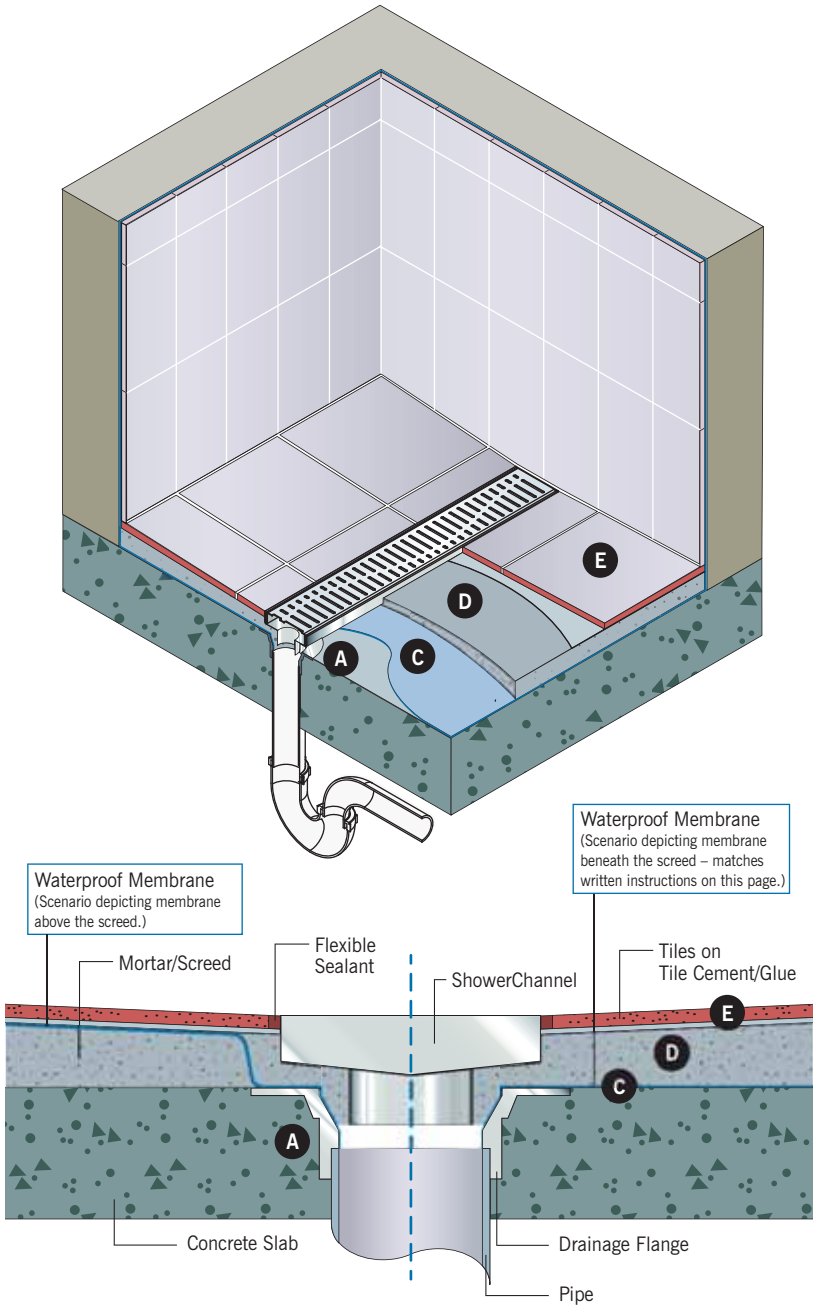
Typical scenarios





Level Access | **Step Down** | **Shower Hob** | **Adjacent Wall**

For further information refer to www.quartzbyaco.com.au/selector



Cement concrete floor (for membranes beneath the screed)

1. Frame out the shower surround as required, leaving a penetration in the concrete floor for drainage.
2. Connect an appropriately sized drainage flange (A) to the pipework. Ensure it is adequately fastened or bonded in position and flush with the top of the concrete slab. A drainage flange is particularly recommended for rectification applications.
3. Block the drain opening with a rag to prevent floor mortar blocking up the pipe.
4. The waterproof membrane (C) is then applied to the slab and continued on to and turned into the drainage flange as well as up the wall, in accordance with AS3740. It is then left to cure before covering.
5. Cut installation feet to height to rest on the membrane and ensure channel is kept at required height and level.
6. A screed is then laid (D) and trowelled to the correct levels and height allowing for the thickness of the overlying tile layer.
7. After the screed has cured, apply tile cement, tiles and grout (E).
8. Place the grate in the channel.

Installation: floor wastes

Installation overview

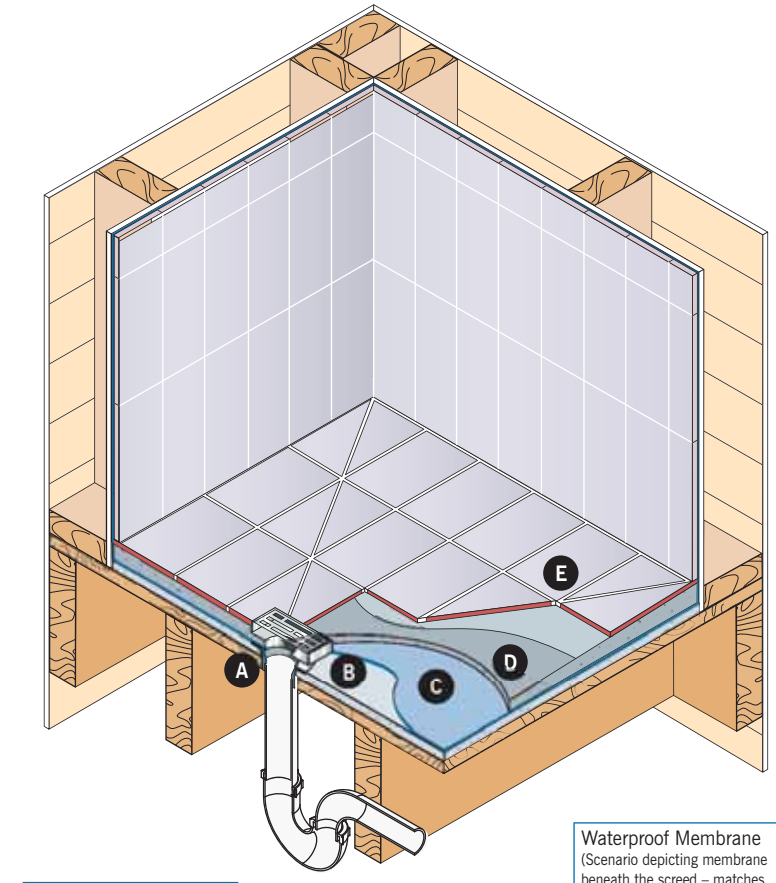
QuARTz by ACO offers floor wastes compatible with different floor structures. The installation details shown, set out to provide the designer with integrated solutions for wet room floor drainage. The illustrations identify preparation, the installation and construction processes required to install these products in wetroom environments. For both flooring applications, two alternative positions for the waterproof membrane are illustrated.

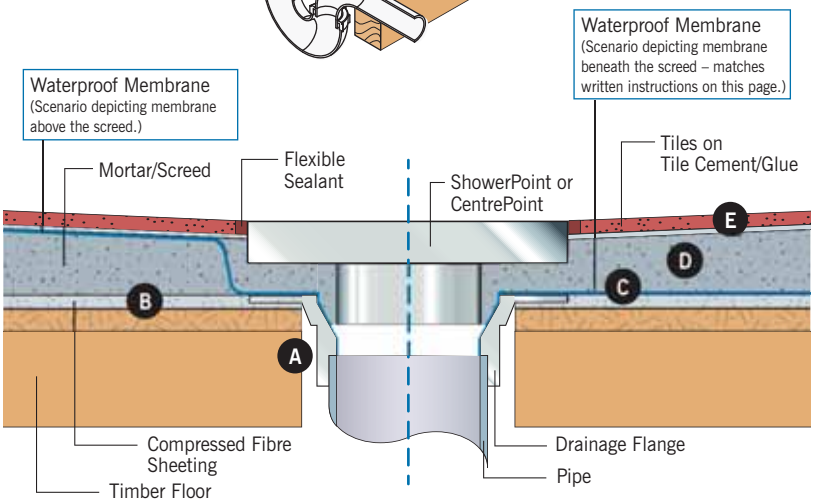
However for simplicity, the *written* guidelines below and opposite refer to the waterproof membranes that are applied beneath the screed mortar bed only. A drainage flange is shown to provide bracing to the connection and control leakage of the mortar screed bed. It should be recessed into the floor with a router for a timber deck or diamond grinder for a slab.

These details do not cover every possible situation and should only provide a practical reference. ACO recommends designers and installers check local legislative standards and practices, or seek specialised engineering advice. A broad selection of installation scenarios is displayed at www.quartzbyaco.com.au.

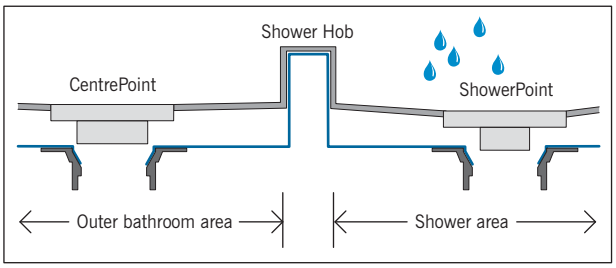
Joisted timber floor (for membranes beneath the screed)

1. Where alterations to floor joists are necessary, consult a structural engineer for advice. Floor joist reinforcement may be necessary.
2. Frame out the shower surround as required, leaving a penetration in the wooden floor for drainage.
3. Connect an appropriately sized drainage flange (A) to the pipework. Ensure it is adequately fastened or bonded in position.
4. Block the drain opening with a rag to prevent floor mortar blocking up the pipe.
5. Lay compressed fibre sheeting (B) (or similar) and create levels if required. Ensure the sheeting is finished flush with the drainage flange and that there are no rough edges for the waterproof membrane to bridge.
6. The waterproof membrane (C) is then applied to the sheeting and continued on to and turned into the drainage flange as well as up the wall, in accordance with AS3740. It is then left to cure before covering.
7. Build up the screed to support the floor waste to the correct finished floor level.
8. A screed is then laid (D) and trowelled to the correct levels and height, allowing for the thickness of the overlying tile layer.
9. After the screed has cured, apply tile cement, tiles and grout (E).
10. Place the grate on the floor waste.

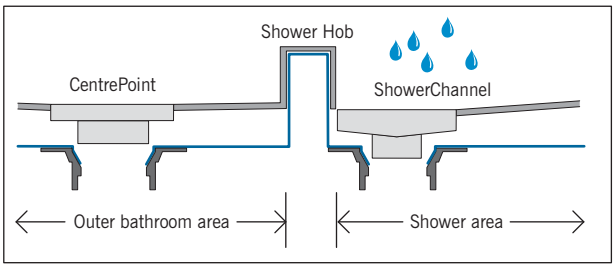




Typical scenarios

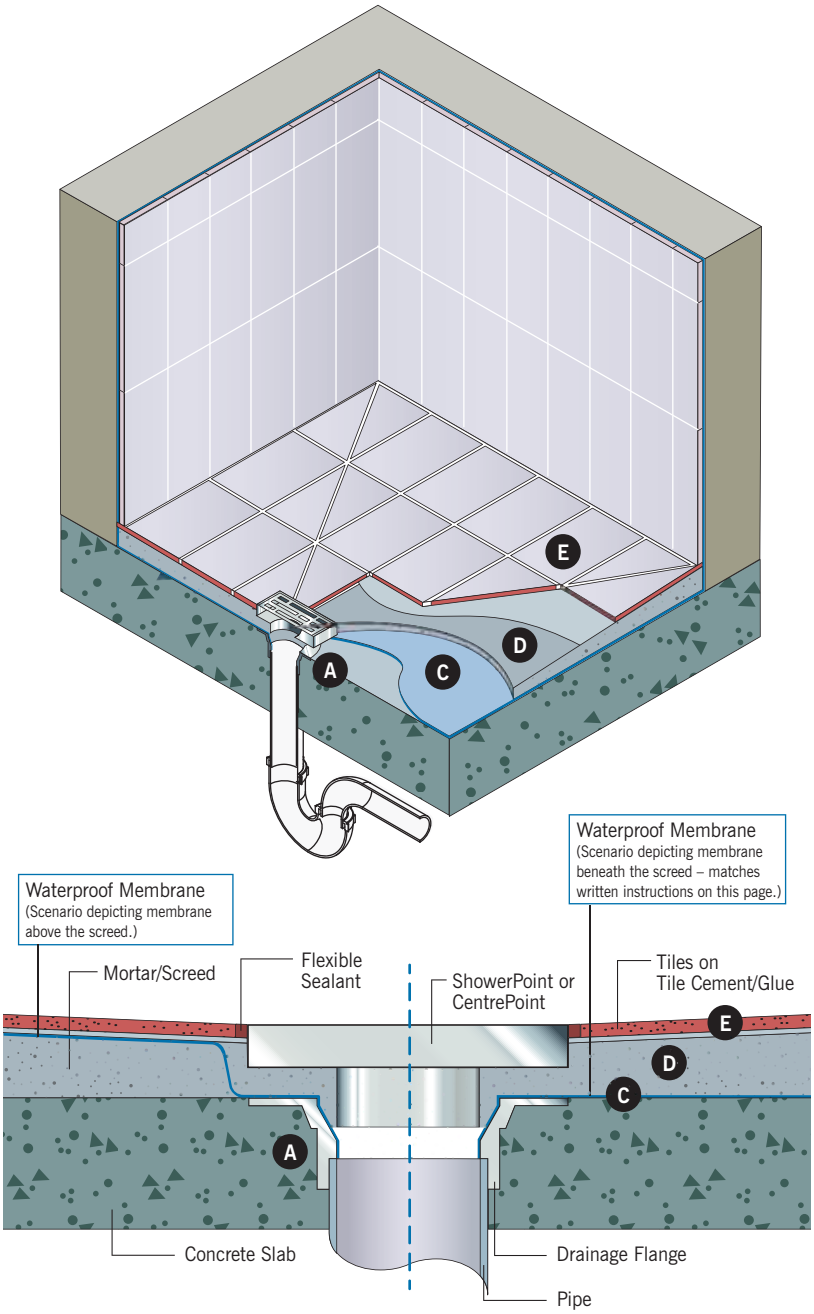


Floor Waste / Floor Waste



Floor Waste / ShowerChannel

For further information refer to www.quartzbyaco.com.au/selector



Cement concrete floor (for membranes beneath the screed)

1. Frame out the shower surround as required, leaving a penetration in the concrete floor for drainage.
2. Connect an appropriately sized drainage flange (A) to the pipework. Ensure it is adequately fastened or bonded in position and flush with the top of the concrete slab. A drainage flange is particularly recommended for rectification applications.
3. Block the drain opening with a rag to prevent floor mortar blocking up the pipe.
4. The waterproof membrane (C) is then applied to the slab and continued on to and turned into the drainage flange as well as up the wall, in accordance with AS3740. It is then left to cure before covering.
5. Build up the screed to support the floor waste to the correct finished floor level.
6. A screed is then laid across the floor (D) and trowelled to the correct levels and height allowing for the thickness of the overlying tile layer.
7. After the screed has cured, apply tile cement, tiles and grout (E).
8. Place the grate on the floor waste.

QuARTz by ACO
A range of compact bathroom floor drainage systems complete with the industry's largest selection of highly aesthetic grates.

QuARTz by ACO is a brand of ACO Polycrete Pty Ltd.

This Product Handbook is printed on FSC certified paper which is sourced from well-managed forests and other controlled sources.

Other ACO Product Lines

- **ACO STAINLESS**
  A range of high performance stainless steel drainage channels, grates, floor drains and pipes for hygiene and aesthetic applications.
- **ACO PIPE**
  Grade 316 stainless steel socketed pipe system. Chemically pickle passivated for optimum durability and corrosion resistance.
- **ACO DRAIN**
  A range of grated trench drainage systems and pits made from polymer concrete. Grates are available in various materials and finishes for all loadings.
- **ACO INFRASTRUCTURE**
  A range of linear drainage solutions for transport infrastructure projects – roads, motorways, container ports, airport tarmacs and other heavy duty applications.
- **ACO CABLEMATE**
  A range of electrical and communication cable jointing pits and surface ducting systems.
- **ACO ACCESS**
  A range of ductile iron, galvanised steel and composite access covers in a wide range of sizes and configurations from single to large multi-part units.
- **ACO SPORT**
  A range of surface drainage systems and ancillary products for sport fields, running tracks and stadiums.
- **ACO HOME**
  A range of economical domestic drainage products, ideal for homes, gardens and landscaped areas.

ACO Polycrete Pty Ltd
ABN 65 050 102 942
www.acoaus.com.au

Sales Hotlines
Australia 1300 765 226
International +61 2 4747 4000
Email info@quartzbyaco.com.au
Technical Services
email technical@acoaus.com.au

NSW and Head Office
134-140 Old Bathurst Road
Emu Plains NSW 2750
Australia
Telephone +61 2 4747 4000
Facsimile +61 2 4747 4040

QLD
467 Tufnell Road
Banyo QLD 4014
Telephone (07) 3292 4500
Facsimile (07) 3292 4599
acoqld@acoaus.com.au

VIC & TAS
9 Overseas Drive
Noble Park VIC 3174
Telephone (03) 9790 8800
Facsimile (03) 9790 8899
acovic@acoaus.com.au

WA
33-35 Sorbonne Crescent
Canning Vale WA
Telephone (08) 6250 3700
Facsimile (08) 6250 3799
acowa@acoaus.com.au

SA & NT
Unit 14, 17-19 Churchill Road North
Dry Creek SA 5094
Telephone (08) 8162 7800
Facsimile (08) 8162 7899
acosa@acoaus.com.au

New Zealand
Unit 2A, 49 Sainsbury Road
St Lukes
Auckland 1025
Telephone (09) 815 9500
sales@aconz.co.nz

Quality System
Quality Endorsed Company
ISO 9001
QEC 1883
SAI Global
Assurance Services

CA0011
∇-2012