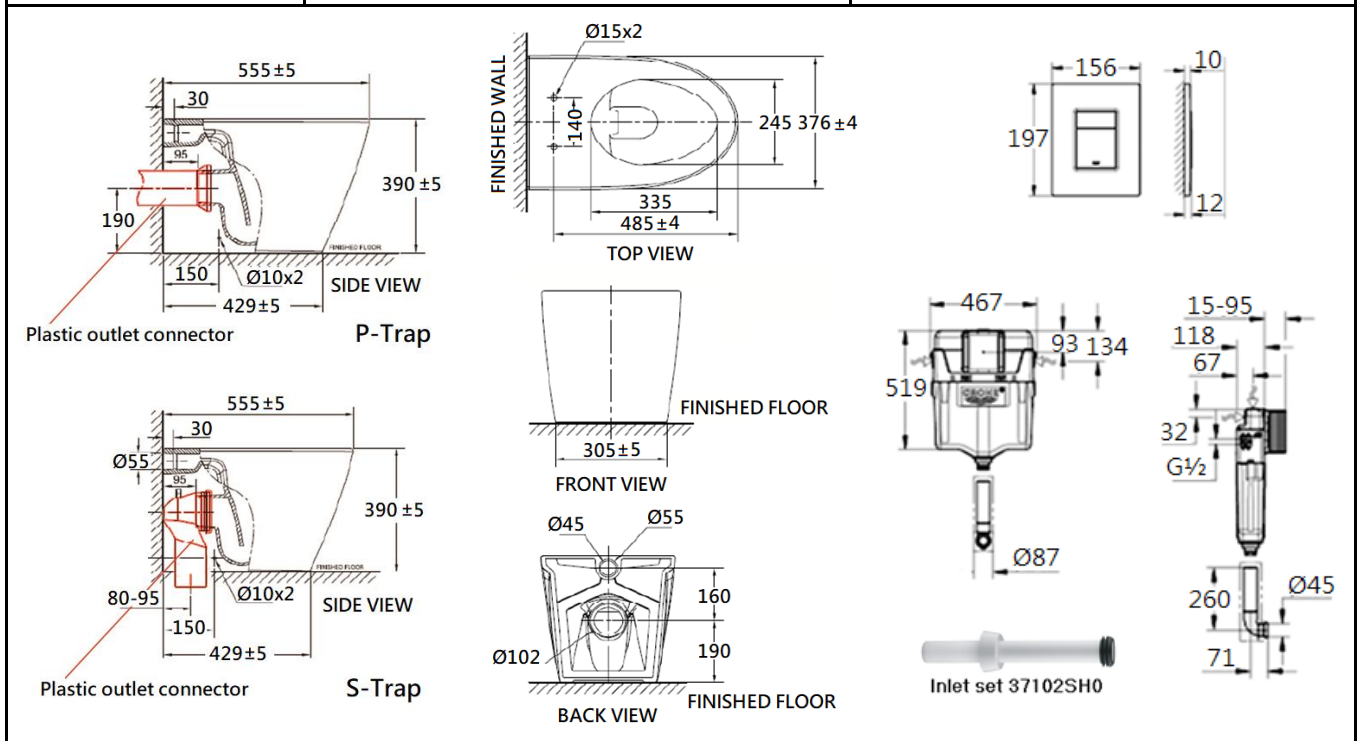




PROJECT		REF		REV	ITEM CODE	
LOCATION		DATE			LEGEND	

SANITARY WARE SPECIFICATION SHEET

Item Descriptions	American Standard (Thailand) "Acacia Evolution" Vitreous china solid back-to-wall double vortex watercloset with soft-closing seat & cover; Aqua Ceramic & ComfortClean Technology against stain, bacteria and germs; GROHE (Germany) concealed flushing cistern, 1.13M installation height; Skate Cosmopolitan ABS wall plate for pneumatic discharge valve in the vertical orientation during installation; Inlet Set included; tested on BS 3402:1969, HTM 64, BS EN 997:2012+A1:2015 & Modified ISO 22196 ; test report J25283A, J25283B & IMSL 2015/11/002.1B; nominated flow rate 3/4.6 & 3.1/4.8 LPF in WELS Grade 1; Registration No.: WC 20-0010 & WC 21-0134	Illustration/ Drawing
Model	TF3229 (Bowl) 640000S (Seat & Cover) 38732000 (Chrome plated wall plate) 38661000 (Concealed cistern) 37102SH0 (Inlet Set)	
Material/Colour	Vitreous China / White (Water Closet)	
Manufacturer	American Standard (Thailand) / GROHE Limited	
Source	Acme Sanitary Ware Co. Ltd Mr. Eric Wong/ Mr. Wilson Hung	
Contact Tel/Fax	(852) 2388-7171 / (852) 2710-8012	
E-mail	acme@acmesanitary.com.hk	
Website	www.acmesanitary.com.hk	



Note: New Code : CL3229B-6DACTCB

* All information of the above is for the reference only. No prior notice is made if any changes.



自願參與用水效益標籤計劃 - 水廁
Voluntary Water Efficiency Labelling Scheme - Water Closets



茲證明
This is to certify that
Acme Sanitary Ware Co. Ltd.

將下列水廁在本計劃內註冊：
has registered the following water closet under this scheme :

- 牌 子 / Brand : American Standard
- 型 號 / Model : TF3229
- 種 類 / Category : Water Closet Pan
- 原 產 地 / Country or Region Origin : Thailand

- 在用水效益標籤上展示的標誌
Symbolic Presentation on the Water Efficiency Label : 滴水點 *Water droplet(s)*
- 用水效益級別
Water Efficiency Grade : 1
- 全沖水量
Water Flush Volume (Full) : 4.6 公升/沖廁 *litres/flush*
- 低沖水量
Water Flush Volume (Reduced) : 3.0 公升/沖廁 *litres/flush*

簽發日期:
Date of Issue: 29 April 2020



水務署署長(張業駒代行)
for Director of Water Supplies

+ 上述水廁具額外節水功能，即： reuse 洗盤水作沖廁用途。
The above water closet is equipped with additional water saving feature, that is: re-use the water collected from wash basin for flushing purpose.



自願參與用水效益標籤計劃 - 水廁
Voluntary Water Efficiency Labelling Scheme - Water Closets



茲證明
This is to certify that

將下列水廁在本計劃內註冊：
has registered the following water closet under this scheme :

牌子 / Brand	: Grohe
型號 / Model	: 38661000 + 42333000 + 38732XXX + 42320000
種類 / Category	: Water Closet Cistern
原產地 / Country or Region Origin	: Germany (WC Cistern & Flushing Valve)
XXX – denotes the code of colour	

在用水效益標籤上展示的標誌 <i>Symbolic Presentation on the Water Efficiency Label</i>	: 滴水點 <i>Water droplet(s)</i>
用水效益級別 <i>Water Efficiency Grade</i>	: 1
全沖水量 <i>Water Flush Volume (Full)</i>	: 4.8 公升/沖廁 <i>litres/flush</i>
低沖水量 <i>Water Flush Volume (Reduced)</i>	: 3.1 公升/沖廁 <i>litres/flush</i>

簽發日期:
Date of Issue: 22 March 2021

水務署
Water Supplies Department



水務署署長(張業駒代行)
for Director of Water Supplies

† 上述水廁具額外節水功能，即：重用洗盥水作沖廁用途。
The above water closet is equipped with additional water saving feature, that is: re-use the water collected from wash basin for flushing purpose.



**DOUBLE
VORTEX**

**MAXIMUM FLUSHING
PERFORMANCE,
MINIMUM WATER USAGE**

The design of the bowl propels the water forward and creates a strong flushing momentum.



Momentum and power are created by the design of the bowl and force of the water.



100% of the water is ejected through two water openings.



RIMLESS

HYGIENIC AND EASY TO CLEAN

Double Vortex is a rimless flushing system that effectively cleans the entire bowl interior, preventing dirt and deposits from building up. This rimless design makes it easy to clean as no dirt can accumulate over time.



The resulting 'vortex' of water cleans the entire surface of the bowl.



All water flows out from the top of the bowl, cleaning the inner surface of the bowl.



Experience
Double Vortex Here



ANTI-STAIN TECHNOLOGY



AQUA CERAMIC

Less Dirt Stains. Less Water Stains.

This award-winning super-hydrophilic technology prevents dirt and dark ring stains from sticking to ceramic surfaces. In fact, dirt glides off the surface effortlessly as Aqua Ceramic enables water to penetrate between the contaminants and the toilet surface, effectively lifting off that waste with every flush.

AQUA CERAMIC is the first material in the world that is able to address the four main issues that affect the cleanliness of toilets: scuffing and scratching, marks from waste, stains caused by prolonged exposure to hard water, and the build-up of bacteria.

The technology incorporates super-hydrophilic performance in the surface of the ceramic, which permits the rinse water to permeate beneath any waste that may have become attached to the ceramic. And as the stain relinquishes its hold, the water simply lifts it and flushes it away.





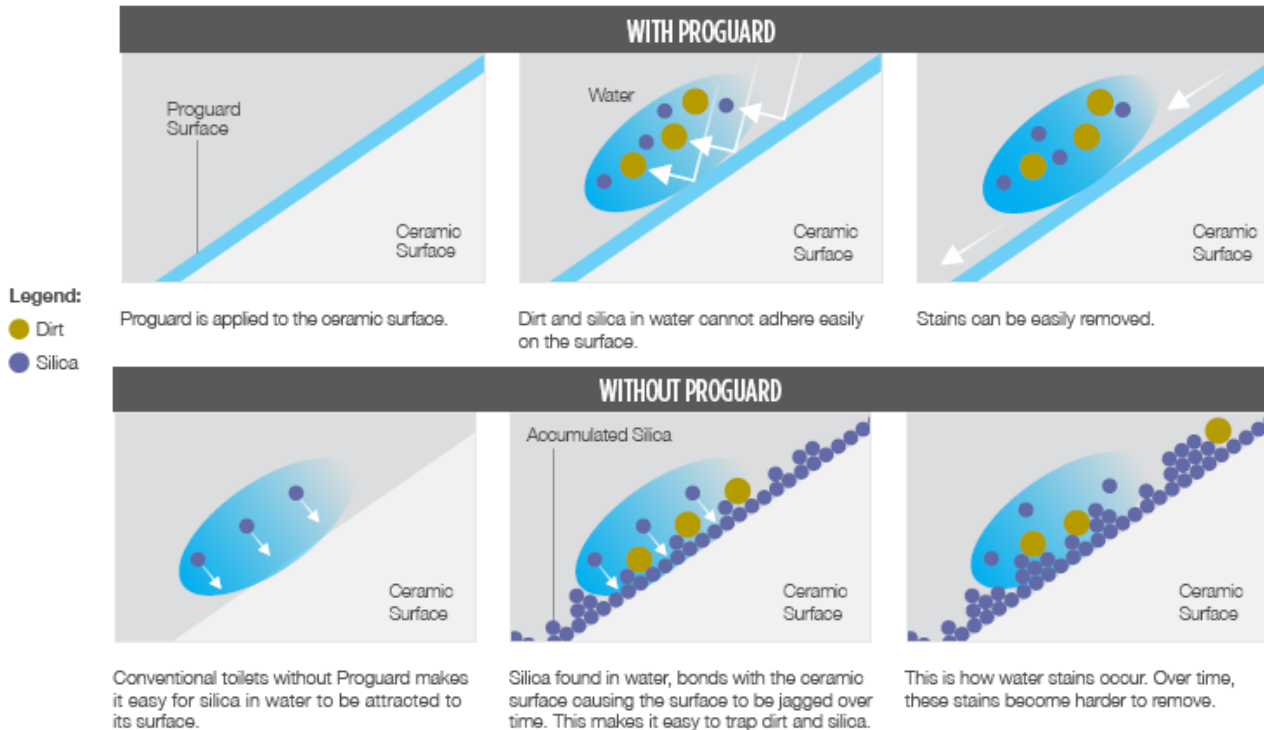
PROGUARD

GUARDS AGAINST WATER STAINS

Proguard, a revolutionary technology which is applied to the ceramics, inhibits the build-up of water stains, making cleaning a breeze.



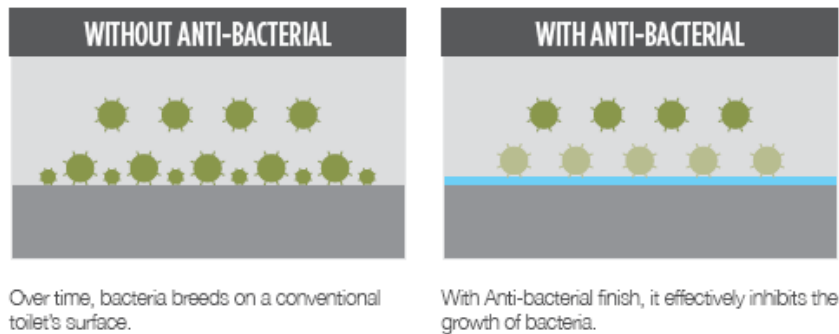
Water stains on ceramic wares are often caused by silica, which occurs naturally in water. Silica bonds chemically with ceramic surfaces, causing water stains. Proguard, a revolutionary technology which is applied to the ceramics, prevents silica in the water from adhering to the surface. This results in easier maintenance and a cleaner bowl.



ANTI-BACTERIAL FINISH

TOTAL HYGIENE PROTECTION

American Standard's anti-bacterial finish covers all essential touch points, including the push button, seat and cover to provide an ultimate hygienic environment.



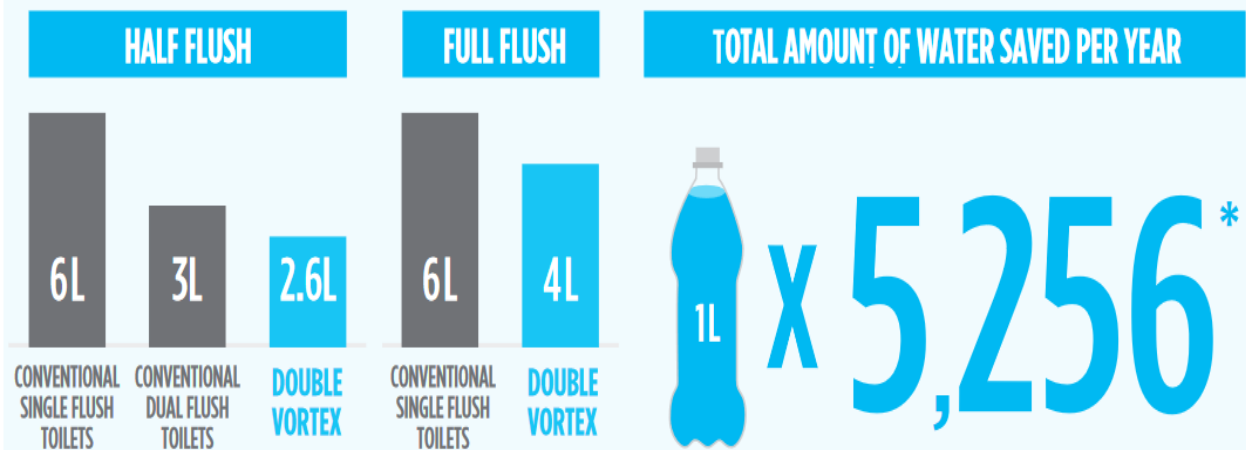
Antimicrobial test result example (24 hours later)



*Japan Industrial Standard (JIS Z 2801:2010) is the standard established by Japan Industrial Standard to test for anti-bacterial activity and efficacy.



American Standard is the first in the industry to meet the *Japan Industrial Standard (JIS Z 2801:2010) for this anti-bacterial technology on the push button. This technology is also applied on the seat and cover to provide a more hygienic environment.



LIXIL

Link to Good Living

About LIXIL

LIXIL is the most comprehensive and connected global company in the housing and building industry, delivering human-centric innovation that enhances people's living spaces – we call this Living Technology.

Delivering core strengths in water, housing, building and kitchen technologies, our brand portfolio businesses including LIXIL, INAX, GROHE, American Standard Brands and Permasteelisa are leaders in the industries and regions in which they operate, bringing better living solutions to the world today and for future generations.



The anti-bacterial innovation is applied as a glaze on ceramic wares, and is certified by the Industrial Microbiological Service Ltd (IMSL) in UK. The anti-bacterial feature cannot be removed even by household detergents, providing a lifetime of hygiene protection.

Good Design Award 2014

American Standard wins 2014 Good Design Award for its Acacia Evolution basin mixer.



**GOOD DESIGN
AWARD 2014**





PROJECT		REF		REV	ITEM CODE	
LOCATION		DATE			PAGE	

GROHE PROFESSIONAL
WORK SMARTER

GROHE WC INSTALLATIONS CONCEALED FLUSHING CISTERN FOR RAPID SL AND UNISET

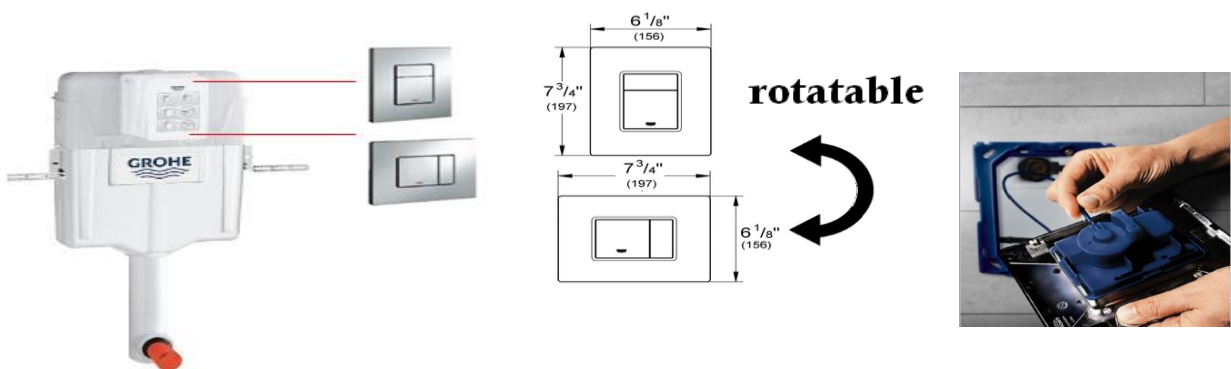
Quick connection, small actuation plates

Rapid installation and universal connections are characteristic of this concealed flushing cistern. The recess at the back of the cover for connection from the rear, as well as the other three possible connections from the top, left or right, and the water connection which can be installed most conveniently without requiring tools - this cistern leaves absolutely nothing to be desired by the plumber. Add to this the more attractive small cover plate, the security of a flushing cistern with a capacity of 6 - 9 litres and the optimum pneumatic actuation with its easy installation. All in all: considerable added value for both the plumber and the user.

The actuation plates: for time-saving installation.

The small actuation plates measuring just 156 x 197 mm are available for vertical or horizontal installation. State-of-the-art pneumatic discharge valve technology makes them real all-rounders:

Press large button = full water flow, can be interrupted by pressing the small button. Press small button = economy flush - what better way to save water!



The small GROHE cover plates for

- dual flush technology and start & stop flush on one plate (vertical or horizontal orientation)
- single flush for more security in commercial/public areas, as the full water flow helps to prevent clogged pipes.

1. Skate Cosmopolitan with 3 functions:
 Large button only: full flush.
 Small button only: economy flush.
 Small button after large button: stop flushing.

Skate Cosmopolitan in 2 versions:
 vertical or horizontal installation

2. Skate Air with single flush technology and additional start/stop feature.

To install the cover plate, insert the inspection shaft in a vertical or horizontal position. It simultaneously affords protection during the construction work and is simply cut off flush with the tiles using a knife during the final installation phase.



Colour options:

- 000 | StarLight Chrome
- DC0 | SuperSteel
- DA0 | Warm Sunset
- A00 | Hard Graphite
- AL0 | Brushed Hard Graphite
- GL0 | Cool Sunrise
- GN0 | Brushed Cool Sunrise
- DL0 | Brushed Warm Sunset
- BE0 | Polished Nickel
- EN0 | Brushed Nickel

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PROJECT		REF		REV	ITEM CODE	
LOCATION		DATE			PAGE	

RAPID SL NOISE CONTROL ... AT THE HIGHEST LEVEL



GROHE WHISPER

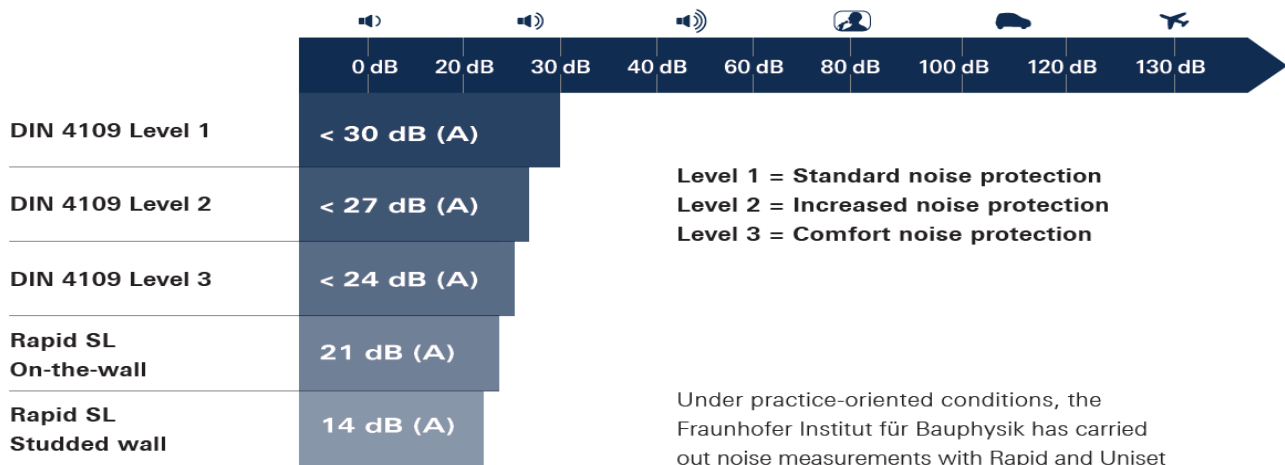
For peace, comfort and design freedom, our concealed cisterns feature GROHE Whisper technology. Thanks to decoupled pipe supports, there is no sound transfer to the structure of the building when the water is released from the cistern to the bowl. Allowing the WC to be located in the most convenient location without fear of disturbing others.

DIN 4109 describes the permitted noise levels in areas requiring protection against noise from household equipment, which must also be observed in the case of sanitary installations. The values specified in DIN 4109/A1 or DIN 4109, Supplement 2, are the generally accepted technical regulations. The renowned Fraunhofer Institute has confirmed the excellent noise-control properties of the GROHE Whisper technology in Rapid SL and Uniset in its own tests. The excellent measurement results of all products meet the requirements of DIN 4109/A1, VDI 4100 or DIN 4109, Supplement 2.

Deviating from standard noise control with 30 dB(A), DIN 4109/A1 defines:

- Increased noise control requirements with 27 dB(A)*
- Comfort noise control with 24 dB(A)*

* Applies to apartment buildings. For semi-detached and terraced houses, the values are 25/22 db(A)



The GROHE Rapid SL flush system has been recognised by the Quiet Mark scheme for a second year running. The flush and cistern refill was tested by Quiet Mark whose key mission is to drive awareness, and support the reduction of noise-related issues.

GROHE has renewed the Quiet Mark on its Rapid SL WC flush system, retaining its position as the only cistern in the industry to have the sought after mark of approval. GROHE's innovative Whisper quiet water technology delivers extremely quiet acoustics

According to a survey commissioned by Defra and Quiet House*, 78% of the UK population feels that the quality of their home life is affected by noise, with this impacting on health factors such as sleep disruption. Respondents confirmed they had been woken up, kept awake, or changed the time they went to bed or got up because of noise levels, with 47% claiming it is noise from within the home that causes the disruption



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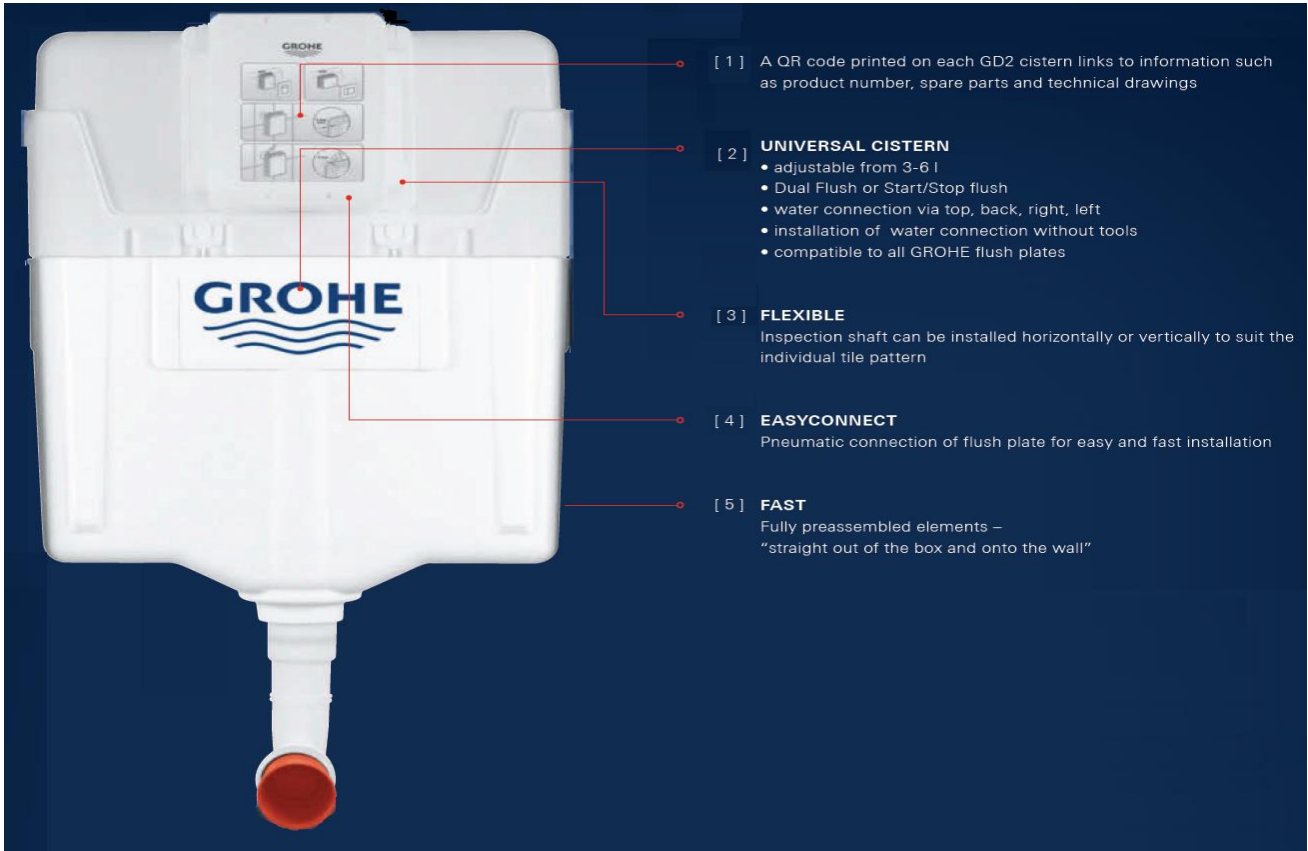


Acme Sanitary Ware Co. Ltd.

1/F, Acme Building, 22-28 Nanking Street, Kowloon, Hong Kong
 Tel: 2388 7171 Fax: 2710 8012
 Email: acme@acmesanitary.com.hk
 Website: www.acmesanitary.com.hk



PROJECT		REF		REV	ITEM CODE	
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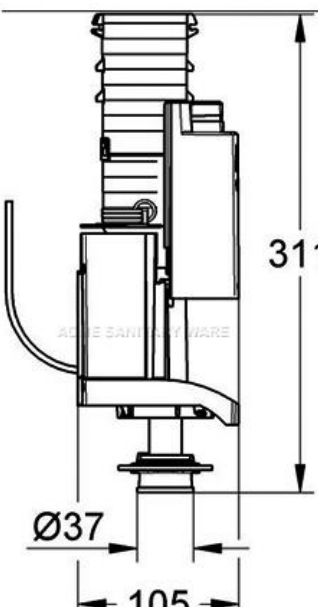


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PROJECT		REF		REV	ITEM CODE	
LOCATION		DATE			PAGE	

SANITARY WARE SPECIFICATION SHEET

<p>Item Descriptions</p> <p>Model</p> <p>Finish</p> <p>Manufacturer</p> <p>Supplier</p> <p>Contact Tel/Fax</p> <p>E-mail</p> <p>Website</p>	<p>GROHE (Germany) Plastic single top push flush valve</p> <p>42320000</p> <p>Plastic</p> <p>GROHE (Germany)</p> <p>Acme Sanitary Ware Co. Ltd Mr. Eric Wong/ Mr. Wilson Hung</p> <p>(852) 2388-7171 / (852) 2710-8012 acme@acmesanitary.com.hk www.acmesanitary.com.hk</p>	<p>Illustration/ Drawing</p>  
---------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Note:

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水務署
Water Supplies Department

總部 Headquarters

香港灣仔告士打道七號入境事務大樓 48 樓

Registration Tower, 7 Gloucester Road, Wan Chai, Hong Kong



本署檔
Our ref.
來函檔號
Your ref.

21/2024 T/J(133/2024)

電話 :
Tel. :
傳真 : 2824 0578
Fax. :

27 February 2024



Approval of "GROHE" Flush Valve
(General Acceptance No. C20240141F)

Your E-Application [file-id: ETJ-GA-20240206-3] dated 6 February 2024 refers.

Having considered the test report ref. J29467 issued on 4 January 2024 by Nutek Systems (HK) Limited, this Authority accepts that the fitting described below complies with, and its use when correctly installed does not contravene, the Waterworks Ordinance and Regulations.

Name of Manufacturer: Grohe AG
Country of Origin: Germany
Brand: Grohe
Details of Fitting: 37mm Plastic dual flush valve
Model: 42320000
Body Markings: 
Expiry Date: 19 December 2028



Proviso: As the fitting has not been tested for use in contact with water intended for human consumption, the fitting can only be used in flushing water plumbing system.

This Authority hereby permits the use of the above fitting in flushing water plumbing systems subject to full adherence to Waterworks installation requirements. In particular, you are required to draw your customers' attention to the following requirement-

"The flushing volume of the flushing valve should be adjusted to suit the design of the toilet bowl so that wastes can be cleared effectively by a single flush."

"The fitting should be used within the range of working pressures specified by the manufacturer." AND

"The installed fitting should not result in backflow of water that will contaminate the flushing water supply."

A condition of this acceptance is that the fitting to be installed shall be replicas of the sample as certified by the testing agent mentioned above and without modifications. This acceptance may be withdrawn at any time if the standard of the fitting installed fails to meet that of the approved sample or if the fitting is found to be unsuitable for use in flushing water plumbing systems.

For the use of the fitting in any project, the General Acceptance Number of this letter must be quoted as a means of identification of acceptance of the fitting by this Authority.

Should you have any enquiries, please contact our Engineer Mr Albert CHOW at tel. no. 3583 4086.

Yours faithfully,



(Terry KUNG)

for Director of Water Supplies

Encl.

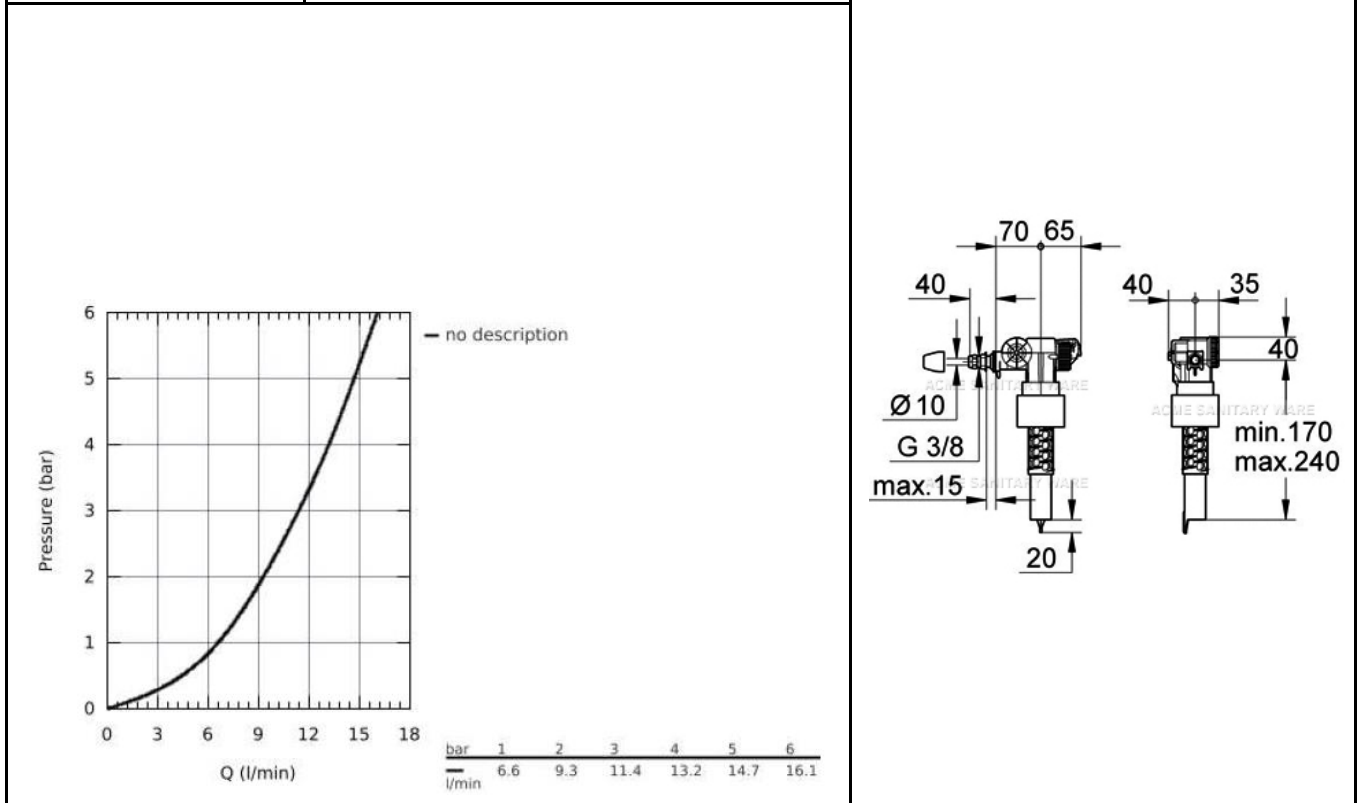
c.c. WSD 3321/1/82] - without catalogue
ME/MC] - with soft copy only



PROJECT		REF		REV	ITEM CODE	
LOCATION		DATE			PAGE	

SANITARY WARE SPECIFICATION SHEET

Item Descriptions	GROHE (Germany) Plastic inlet valve	Illustration/ Drawing
Model	37095000	
Finish	Plastic	
Manufacturer	GROHE (Germany)	
Supplier	Acme Sanitary Ware Co. Ltd Mr. Eric Wong/ Mr. Wilson Hung	
Contact Tel/Fax	(852) 2388-7171 / (852) 2710-8012	
E-mail Website	acme@acmesanitary.com.hk www.acmesanitary.com.hk	



Note:

** All information of the above is for the reference only. No prior notice is made if any changes.*



水務署
Water Supplies Department

總部 Headquarters

香港灣仔道七號入境事務大樓 48 樓

Tower, 7 Gloucester Road, Wan Chai, Hong Kong



本署檔號
Our ref.
來函檔號

C2020 T/J(1065/2020)

電話
Tel.
傳真
Fax.

2824 0578



6 October 2020

**Approval of "GROHE" Float Operated Valve
(General Acceptance No. C20200864F)**

Your letter ref. WRC/2305 dated 13 August 2020 refers.

Having considered the test report ref. J24281 issued on 30 July 2020 by Nutek Systems (HK) Limited, this Authority accepts that the fitting described below complies with, and its use when correctly installed does not contravene, the Waterworks Ordinance and Regulations.

Name of Manufacturer: Grohe AG
Country of Origin: Germany
Brand: Grohe
Details of Fitting: 3/8" Plastic float operated valve
Model: 37095000
Body Markings: 
Expiry Date: 2 June 2025



Proviso: As the fitting has not been tested for use in contact with water intended for human consumption, the fitting can only be used in flushing water plumbing system.

This Authority hereby permits the use of the above fitting in flushing water plumbing systems subject to full adherence to Waterworks installation requirements. In particular, you are required to draw your customers' attention to the following requirement-

"The flushing volume of the flushing valve should be adjusted to suit the design of the toilet bowl so that wastes can be cleared effectively by a single flush."

"The fitting should be used within the range of working pressures specified by the manufacturer." AND

"The installed fitting should not result in backflow of water that will contaminate the flushing water supply."

A condition of this acceptance is that the fitting to be installed shall be replicas of the sample as certified by the testing agent mentioned above and without modifications. This acceptance may be withdrawn at any time if the standard of the fitting installed fails to meet that of the approved sample or if the fitting is found to be unsuitable for use in flushing water plumbing systems.

For the use of the fitting in any project, the General Acceptance Number of this letter must be quoted as a means of identification of acceptance of the fitting by this Authority.

Should you have any enquiries, please contact our Engineer Mr. Terry KUNG at tel. no. 3583 4086.

Yours faithfully,


(CHAN Chung-kun)

for Director of Water Supplies

Encl.

c.c. WSD 3321/1/82] - without catalogue
ME/MC] - with soft copy only

Test Report



3229-WT=TF3229

Test
 Title: Testing of WC Pan
 Method: BS 3402: 1969
 Report No.: J 25283B
 Completion: 19 Nov., 2020 to 27 Nov., 2020

Applicant (Information provided by client)
 Name: _____
 Address: _____



Sample (Information provided by client)
 Description: Back to Wall WC Pan

Brand: AMERICAN STANDARD
 Model: 3229-WT
 Body Marking: *American Standard*
 Manufacturer: LIXIL (Thailand) Public Company Limited
 Origin: Thailand

Approved Signatory

Signature: Hing Kah Kuin
 Name (title): Hing Kah Kuin (Engineer)
 Date: 13 May, 2022

Nutek Systems is a testing agency, accepted by the Water Supplies Department, for testing water supply fittings.

Summary

Test	Remark
1 Visual Examination	C
2 Water Absorption	C
3 Crazeing	C
4 Chemical Resistance Test	C
5 Resistance to Staining and Burning	C



Results (apply only to samples tested)

1 Visual Examination
 BS 3402: 1969 Cl. 5 & Table 1

Location	Blemish or defect	Maximum permitted	Remark
General	Wavy finish	None on all visible surfaces	C
	Warpage	Not more than 6mm	C
	Discoloration	None on all visible surfaces	C
Flushing surface and horizontal face of rims of WC pans bidets and urinals	Spots, blister and pinholes	A total of not over three; no grouping; for coloured appliances, blister and pinhole limited to one.	C
	Bubbles and specks	Not over two in one pottery square; a total of not over four	C
	Polishing marks	One only; none permitted for coloured fixtures	C
Visible surfaces other than above	Spots, blisters and pinholes	A total of not over five; no grouping; for coloured appliances, no blisters are permitted and pinholes are limited to a total of two	C
	Bubbles and specks	Not over three in one pottery square; a total of not over ten	C
Overall result			C

2 Water Absorption
 BS 3402: 1969 Cl. 6

ID	Weight (kg)		Absorption (%)	Required	Remark
	Before Test	After Test			
Sample 1	117.3213	117.4076	0.07	0.75% max.	C
Sample 2	142.8026	142.8873	0.06	0.75% max.	C
Sample 3	135.1394	135.2299	0.07	0.75% max.	C
Average			0.07	0.50% max.	C
Overall result					C

3 Cracking
BS 3402: 1969 Cl. 7

ID	Variable	Unit	Measured	Required	Remark	
1	Saturated steam	MN/m ²	0.34	0.33 - 0.35	C	
	Duration	h	10	10	C	
	Cracking	Sample 1	---	No	No	C
		Sample 2	---	No		C
Sample 3		---	No	C		
Overall result					C	

4 Chemical Resistance Test
BS 3402: 1969 Cl. 8

Table 4 — Chemical solutions

Name of Chemical	Strength of solution %	Time hours	Temperature °C
Acetic acid	10	16	100
Citric acid	10	16	100
Detergent (Note 1)	(Note 1)	48	60
Hydrochloric acid	(Note 2)	48	15 to 21
Sodium hydroxide	5	0.5	60
Sodium stearate	0.15	48	60
Sulphuric acid	3	16	100

NOTE 1 This consists of an aqueous solution containing 0.04% (w/vol) of a condensation product of nonylphenol with 8-10 molecules of ethylene oxide. Available solution which contains 0.15% (w/vol) of the product is obtainable commercially under the trade name "Lisapal N".
NOTE 2 This solution consists of equal volumes of water and of hydrochloric acid of specific gravity 1.18.

ID	Solution	Time (h)	Temperature (°C)	Measured	Required	Remark
1	Acetic acid	16	100	No Loss	No loss of reflectivity on glaze	C
	Citric acid	16	100	No Loss		C
	Detergent	48	60	No Loss		C
	Hydrochloric acid	48	20	No Loss		C
	Sodium hydroxide	0.5	60	No Loss		C
	Sodium stearate	48	60	No Loss		C
	Sulphuric acid	16	100	No Loss		C
Overall result						C

5 Resistance to Staining and Burning
BS 3402: 1969 Cl. 9

ID	Variable	Unit	Measured	Required	Remark
1	Methylene blue	---	No Stain	No stain remains	C
	Sodium hypochlorite	---	No Stain		C
	Hydrogen peroxide	---	No Stain		C
	Amyl acetate	---	No Stain		C
	Iodine in ethanol	---	No Stain		C
2	Lighted cigarette	---	No Stain		C
Overall result					C

Figure 1 - Sample



Figure 2 - Body marking





REPORT NO: J 252838

General Note(s)

Definitions:

- C - conformance
- N - no requirement
- NC - non-conformance
- R - remainder

Organizations:

- WSD - Water Supplies Department (of Hong Kong)
- WHO - World Health Organization

- End of report



Test Report



3229-WT=TF3229

Test
 Title: Testing of WC
 Method: Health Technical Memorandum(HTM) 64 & BS EN 997: 2012 +A1: 2015
 Report No.: J 25283A
 Completion: 13 Nov, 2020

Applicant: (Information provided by client)
 Name: _____
 Address: _____

Sample: (Information provided by client)
 Description: Back to Wall WC Pan

WC Pan
 Brand: American Standard
 Model: 3229-WT
 Body Marking: *American Standard*

Manufacturer: LIXIL (Thailand) Public Company Limited
 Origin: Thailand

Approved Signatory

Signature: *Jac. J.C. Hing*
 Name (title): Hing Kah Kuin (Engineer)
 Date: 13 May, 2022

Nutek Systems is a testing agency,
 accepted by the Water Supplies
 Department, for testing water supply
 fittings.

Summary

Test	Remark
1 Dimensions of WC Pan	C
2 Static Load of Class 2 Products	C

Results (apply only to samples tested)

1 Dimensions of WC Pan

Health Technical Memorandum(HTM) 64

Variable	Measured	Required	Remark
Maximum length of WC Pan	550	520-550	C
Overall result			C

2 Static Load of Class 2 Products

BS EN 997: 2012 + A1: 2015 Cl. 5.7.4

ID	Variable	Unit	Measured	Required	Remark
1	Force applied	kN	4.00	4.00 ± 0.05	C
	Duration	h	1	1	C
	Cracking or permanent deformation	---	No	No	C
Overall result					C

Note :

Refer to Health Technical Memorandum(HTM) 64, a load of 140kg shall be sustained, this test result also applies to HTM 64 requirements



Figure 1 - Top View

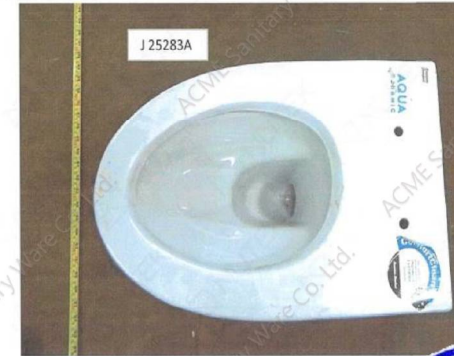


Figure 2 - Side View





REPORT NO.: J 25283A

General Note(s)

Definitions:

- C - conformance
- N - no requirement
- NC - non-conformance
- R - remainder

Organizations:

- WSD - Water Supplies Department (of Hong Kong)
- WHO - World Health Organization



- End of report -

IMSL

INDUSTRIAL MICROBIOLOGICAL SERVICES LTD

STUDY REPORT: Determination of the Antibacterial Activity of a Ceramic Glaze Formulation against *Escherichia coli* and *Staphylococcus aureus* using ISO 22196: 2011.

CLIENT:

REPORT NO: IMSL 2015/11/002.1B

DATED: 21st December 2015



Study: Determination of the Antibacterial Activity of a Ceramic Glaze Formulation against *Escherichia coli* and *Staphylococcus aureus* using ISO 22196: 2011.

Number: IMSL 2015/11/002.1B

Client:

The above study was conducted in the laboratories of Industrial Microbiological Services Ltd at Pale Lane Hartley Wintney, Hants, RG27 8DH, UK. This report represents a true and accurate account of the results obtained.

Start Date 14th December 2015

Report Issued 21st December 2015

Supervisor Kyle Allison
Senior Microbiologist



Operator Richard Webb
Microbiologist



IMSL

INDUSTRIAL MICROBIOLOGICAL SERVICES LTD

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 1029047.1B

CUSTOMER

CUSTOMER REF.

SAMPLE DETAILS

DATE RECEIVED 14-Dec-15

Ceramic Tile

METHOD: (Determination of Antibacterial Activity using Modified ISO 22196)

DATE ANALYSED 15-Dec-15

DATE REPORTED 21-Dec-15

RESULTS (AS CFU CM -2)

SAMPLE		CONTACT TIME		LOG REDUCTION	% DIFFERENCE
		0	24		
Polypropylene	<i>E. coli</i>	1.5E+04	2.4E+05	-	-
IMSL Tile	<i>E. coli</i>	1.5E+04	1.9E+05	-	-
Blank Tile	<i>E. coli</i>	1.5E+04	6.0E+04	-	-
Treated Sample	<i>E. coli</i>	1.5E+04	2.6E+02	2.4	99.57%
Polypropylene	<i>S aureus</i>	1.5E+04	5.2E+03	-	-
IMSL Tile	<i>S aureus</i>	1.5E+04	7.3E+03	-	-
Blank Tile	<i>S aureus</i>	1.5E+04	3.8E+03	-	-
Treated Sample	<i>S aureus</i>	1.5E+04	1.6E+03	0.4	58.06%

The above data shows the difference in the population following contact with the surface of the Treated Sample for 24 hours at 35°C under a RH of > 95% relative to the population recovered from the Blank Tile.

NS = Poor survival on control supplied.

INDUSTRIAL MICROBIOLOGICAL SERVICE LTD

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PETER D ASKEW
MANAGING DIRECTOR

