SJL SINGAPORE TEST LAB

TEST REPORT 2524848/03-AYL

Date 07 OCT 2025

Singapore Test Lab Pte Ltd, 10B Enterprise Road, Singapore 629828, Tel: +65 6353 6393, Fax: +65 6353 6395

SUBJECT:

Testing of "HAH" brand heavy-duty ductile iron double valve box cover & frame submitted by Chong Cheong Foundry Works Pte Ltd.

TESTED FOR:

Chong Cheong Foundry Works Pte Ltd.
No. 2 Benoi Crescent,
Singapore 629969.

Attn: Mr. Kelvin Teo

SAMPLE RECEIVED DATE:

19 September 2025

TEST DATE:

30 September 2025

METHOD OF TEST:

SS EN 124-2 : 2021 - Gully Tops and Manhole Tops for Vehicle and Pedestrian Areas.
(Part 2: Gully Tops and Manhole Tops made of Cast Iron)

DESCRIPTION OF SAMPLE:

One set of "HAH" brand heavy-duty ductile iron double valve box cover & frame said to be class D400 (See photograph 1) with clear opening of 310mm x 350mm was submitted for dimensional measurement and compression load test.

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TEST RESULTS:

Table 1: Design Requirements

"HAH" brand heavy-duty ductile iron double valve box cover & frame				
S/N	**Class of Manhole: D400**		**Results**	**BS EN 124-1:2015 Requirements**
1	Clear opening of manhole tops for man entry (mm)		310 x 350	Clause 6.2 At least 600 mm
2	Depth of insertion (mm)		51.4	Clause 6.3 Min. 50 mm (Class D, E and F)
3	Clearance (mm)	Left, α_l	2.1	Clause 6.4 $\Sigma\alpha \leq 9$ mm (CO > 400 mm) $\Sigma\alpha \leq 7$ mm (CO ≤ 400 mm)
		Centre, α_c	N/A	
		Right, α_r	1.2	
4	Compatibility of seatings		Complied	Clause 6.5
5	Securing of cover/grating within the frame		Other surface mass value	Clause 6.6
6	Handling of covers and gratings		Complied	Clause 6.7
7	Positioning of covers		Complied	Clause 6.10
8	Flatness of manhole covers and gratings		N/A	Clause 6.11
9	Surface condition (Skid resistance)	Height of raised pattern (mm)	3.1	Clause 6.13 2 - 6 mm (Class A, B & C) 3 - 8 mm (Class D, E & F)
		Surface area of raised pattern (%)	29.1	10% - 70%
10	Manhole tops with sealing features		Complied	Clause 6.14
11	Frame bearing area (N/mm²)		3.2	Clause 6.15 ≤ 7.5 N/mm²
12	Frame depth (mm)		105	Clause 6.16 Min. 100 mm (Class D, E & F)
13	Appearance		Complied	Clause 7.1

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TEST RESULTS (CONT'D):

(2) Compressive Load Test

Class of manhole: D400	**Results**	**BS EN 124-1:2015 Requirements (Table 4)**
Clear opening, CO (mm)	310	Clause 6.2
Test load, F_T (kN)	400	Table 4
Test block (mm)	Ø250	Table A.1
Permanent set (mm) (After 5 repetitions at 2/3 F_T)	0.5	Table 5 (1/500xCO Max.1.2mm)
Load bearing capacity	Satisfactory	Clause 7.2

Note: The above results meet the necessary requirement as per SS EN 124-2:2021



Photograph 1: Submitted sample

Au Yong Liang
Testing Officer

Ong Yeo Chuan
Manager

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