



Block 7 Toa Payoh Ind. Park #01-1245 Singapore 319059 Tel: 6252-6707 Fax: 6253-4435 Email: wbsales@singnet.com.sg

To: The Project Manager.

Date: 31st Dec 2018

Our Ref: tech/2912

Re: AMCA 500D Test Report AA00169 for VCD & Motorised damper

Dear Sir / Md.

Please note the AMCA 500D test results AA0169 applies to both VCD (model WB-DVCD) and Motorised damper (model WB-DMDO) as the construction within the air stream is the same.

You may refer to the submittal drawing on the construction for further elaboration.

Please do contact us for further clarifications.

Thank you for your interest in WB Air products.

Yours sincerely

K H Ng
Director
For WB Air / Wong Brothers PL



ASIA AMCA SDN BHD

No.7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, Mukim Jelutong, 79200 Nusajaya, Johor

TEST NO. AA00168

Date: 02 January 2019

To: Wong Brothers Pte Ltd
7 Toa Payoh Ind Park #01-1245
SINGAPORE 319059

Attn: Mr. Ng

SUBJECT: DAMPER TEST

MODEL No.: Non Return Damper / DNRD 610x610 (Sample 1)

TYPE OF TEST: Leakage Test, AMCA 500-D Fig.5.4A

Attached are the test results of the subject model performed on 27 December 2018.

AA00168-L1 Leakage Test

These tests were conducted in an AMCA Independent Accredited Laboratory for AMCA500-D testing. To pursue further for the AMCA Product Certification, manufacturer or seller has to submit the published performance rating for AMCA reviewed and approved in accordance with the requirements of the AMCA Certified Ratings Program (CRP).

Should you have any questions concerning these data, please let us know.

Best Rgds

Tin Tin
Asia AMCA Sdn Bhd
Approved Signatory

TEST REPORT**Asia AMCA Sdn. Bhd.**

No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number**AA00168-L1**

Manufacturer: Wong Brothers Pte Ltd
Trade Name: Non Return Damper
Model Number: DNRD 610x610 (Sample 1)
Size: 24" x 24" inch square
Face Area: 0.3721 m²

Damper Type: Backdraft Damper
Blade Orientation: Horizontal
Blade Action: Parallel

Closure Method: Applied Torque

Test Purpose: Contract Test
Date of Test: 27 Dec 2018
Client: Wong Brothers Pte Ltd
Witness: Yes
Personnel: TBL

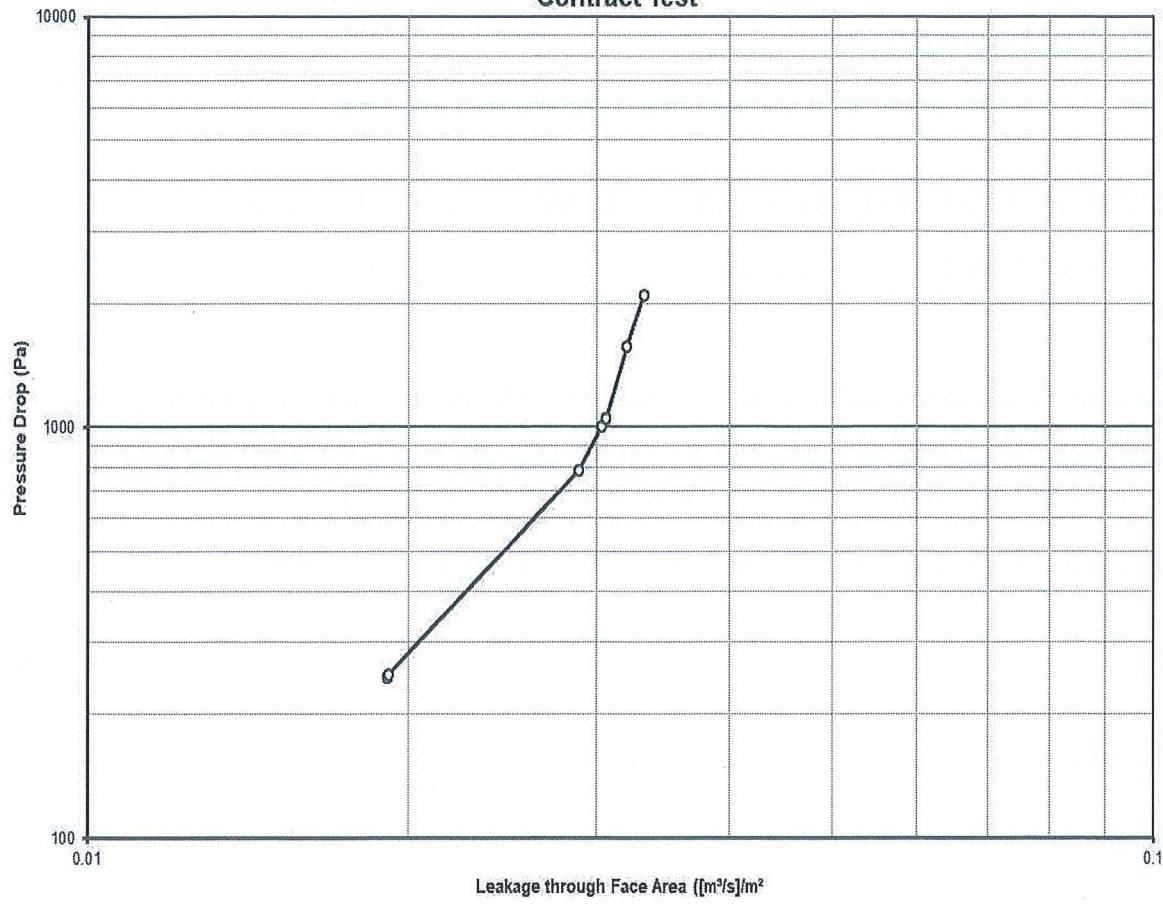
Blade Position: Closed
Flow Direction: Intake
Mounting Position: Vertical

Applied Torque:

Test Method per ANSI / AMCA Standard 500-D-07 (Leakage), Figure 5.4 Alternate

Appurtenances: -

Comments:

**Test No. AA00168-L1
Contract Test**

—○— Test Result

TEST REPORT



Asia AMCA Sdn. Bhd.

No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number

AA00168-L1

Manufacturer:	Wong Brothers Pte Ltd	Test Purpose:	Contract Test
Trade Name:	Non Return Damper	Date of Test:	27 Dec 2018
Model Number:	DNRD 610x610 (Sample 1)	Client:	Wong Brothers Pte Ltd
Size:	24" x 24" inch square	Witness:	Yes
Face Area:	0.3721 m ²	Personnel:	TBL
Damper Type:	Backdraft Damper	Blade Position:	Closed
Blade Orientation:	Horizontal	Flow Direction:	Intake
Blade Action:	Parallel	Mounting Position:	Vertical
Closure Method:	Applied Torque	Applied Torque:	-

Test Method per ANSI / AMCA Standard 500-D-07 (Leakage), Figure 5.4 Alternate

Appurtenances:

-

Comments:





ASIA AMCA SDN BHD

No.7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, Mukim Jelutong, 79200 Nusajaya, Johor

TEST NO. AA00169

Date: 03 January 2019

To: Wong Brothers Pte Ltd
7 Toa Payoh Ind Park #01-1245
SINGAPORE 319059

Attn: Mr. Ng

SUBJECT: DAMPER TEST

MODEL No.: Volume Control Damper / DVCD 610x610 (Sample 2)

TYPE OF TEST: Leakage Test, AMCA 500-D Fig.5.4A

Attached are the test results of the subject model performed on 27 December 2018.

AA00169-L1	Leakage Test (intake)
AA00169-L2	Leakage Test (intake)
AA00169-L3	Leakage Test (exhaust)
AA00169-L4	Leakage Test (exhaust)

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Should you have any questions concerning these data, please let us know.

Best Rgds

Tin Tin
Asia AMCA Sdn Bhd
Approved Signatory

TEST REPORT**Asia AMCA Sdn. Bhd.**

No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number**AA00169-L1**

Manufacturer: Wong Brothers Pte Ltd
Trade Name: Volume Control Damper
Model Number: DVCD 610x610 (Sample 2)
Size: 24" x 24" inch square
Face Area: 0.3721 m²

Damper Type: Volume Control Damper
Blade Orientation: Horizontal
Blade Action: Opposed

Closure Method: Applied Torque

Test Purpose: Contract Test
Date of Test: 02 Jan 2019
Client: Wong Brothers Pte Ltd
Witness: Yes
Personnel: TBL

Blade Position: Closed
Flow Direction: Intake
Mounting Position: Vertical

Applied Torque: 5.4 N·m

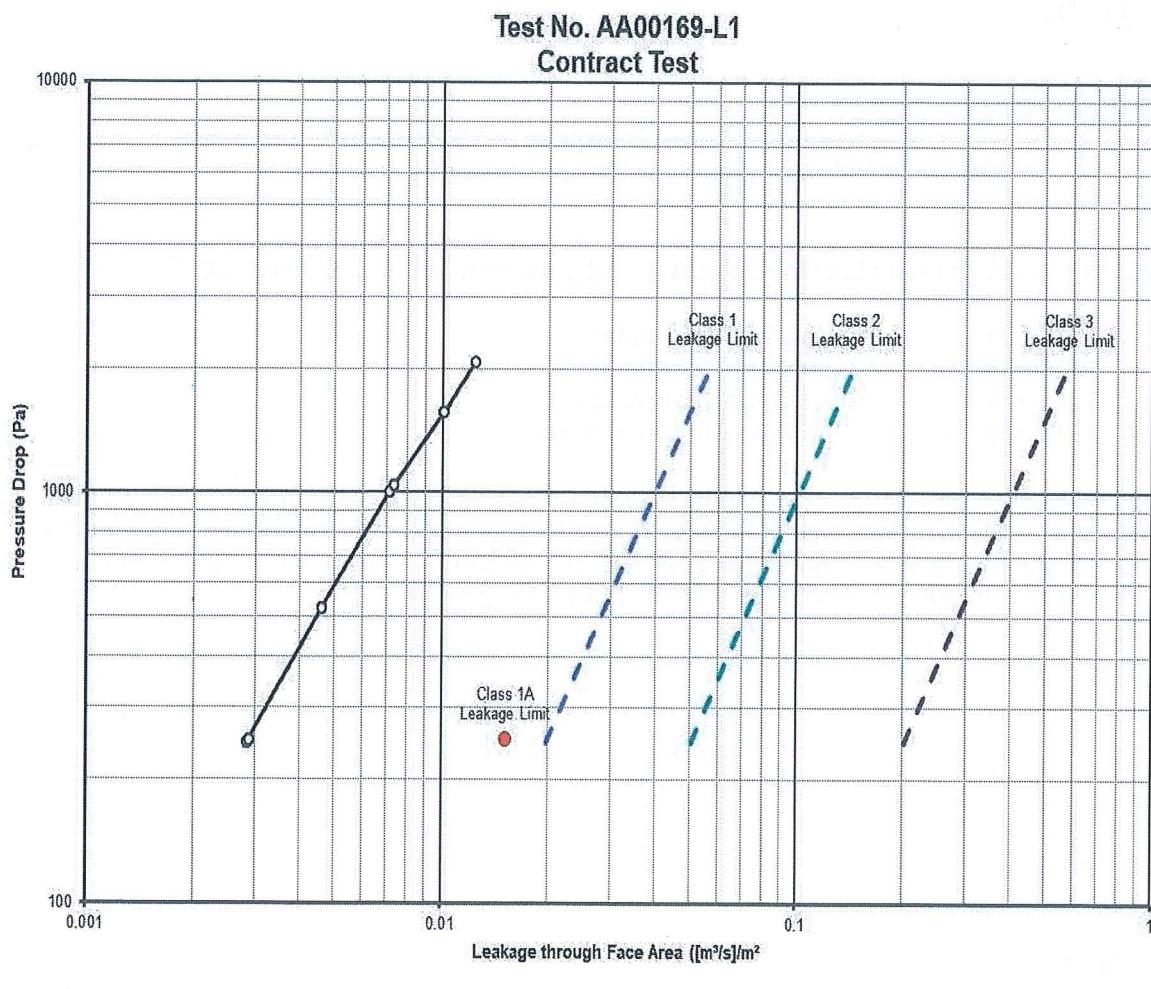
Test Method per ANSI / AMCA Standard 500-D-07 (Leakage), Figure 5.4 Alternate

Appurtenances:

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Comments:

Unit tested in the forward flow direction.



TEST REPORT



Asia AMCA Sdn. Bhd.
No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number
AA00169-L1

Manufacturer: Wong Brothers Pte Ltd
Trade Name: Volume Control Damper
Model Number: DVCD 610x610 (Sample 2)
Size: 24" x 24" inch square
Face Area: 0.3721 m²

Damper Type: Volume Control Damper
Blade Orientation: Horizontal
Blade Action: Opposed

Closure Method: Applied Torque

Test Purpose: Contract Test
Date of Test: 02 Jan 2019
Client: Wong Brothers Pte Ltd
Witness: Yes
Personnel: TBL

Blade Position: Closed
Flow Direction: Intake
Mounting Position: Vertical

Applied Torque: 5.4 N·m

Test Method per ANSI / AMCA Standard 500-D-07 (Leakage), Figure 5.4 Alternate

Appurtenances:

-

Comments:

Unit tested in the forward flow direction.



TEST REPORT



Asia AMCA Sdn. Bhd.

No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number

AA00169-L2

Manufacturer:	Wong Brothers Pte Ltd	Test Purpose:	Contract Test
Trade Name:	Volume Control Damper	Date of Test:	02 Jan 2019
Model Number:	DVCD 610x610 (Sample 2)	Client:	Wong Brothers Pte Ltd
Size:	24" x 24" inch square	Witness:	Yes
Face Area:	0.3721 m ²	Personnel:	TBL
Damper Type:	Volume Control Damper	Blade Position:	Closed
Blade Orientation:	Horizontal	Flow Direction:	Intake
Blade Action:	Opposed	Mounting Position:	Vertical
Closure Method:	Applied Torque	Applied Torque:	5.4 N·m

Test Method per ANSI / AMCA Standard 500-D-07 (Leakage), Figure 5.4 Alternate

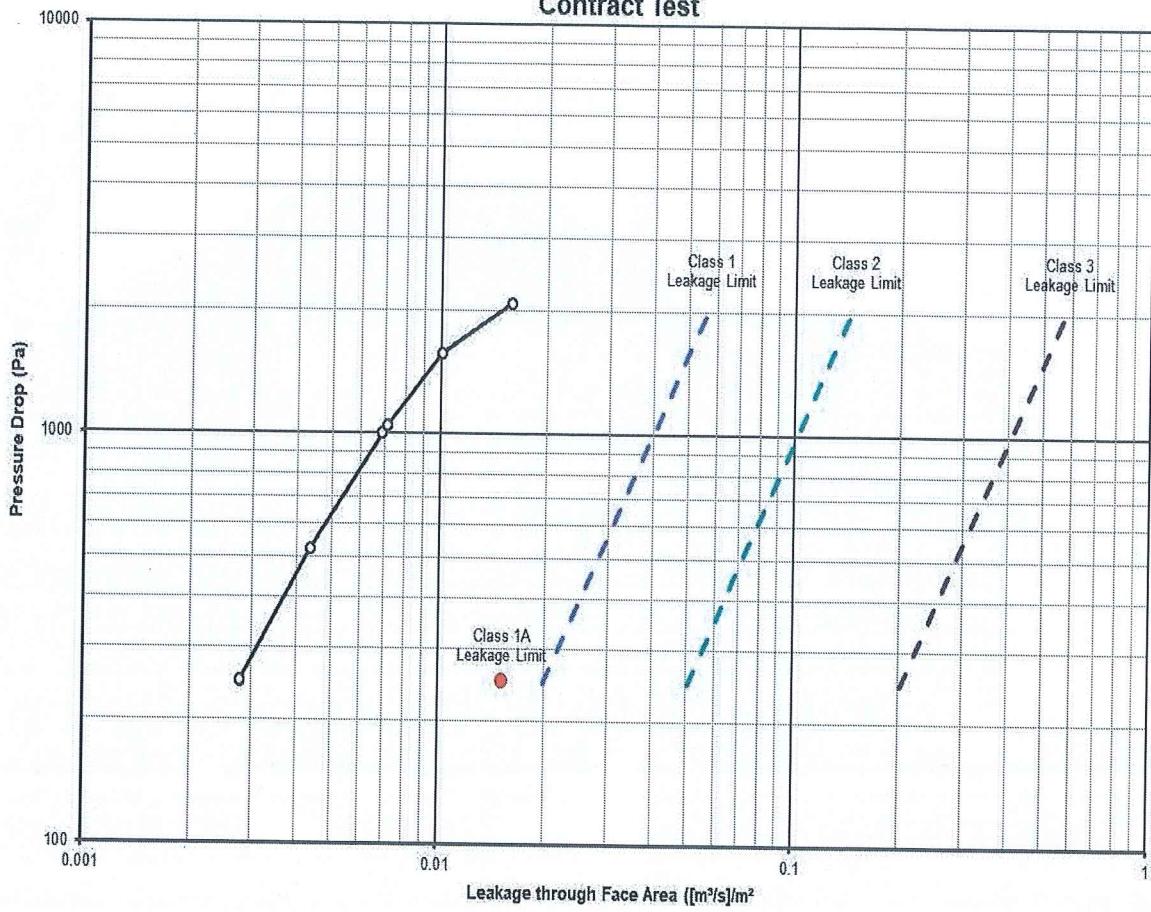
Appurtenances:

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Comments:

Unit tested in the forward flow direction.

Test No. AA00169-L2
Contract Test



—○—Test Result

TEST REPORT



Asia AMCA Sdn. Bhd.

No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number

AA00169-L3

Manufacturer: Wong Brothers Pte Ltd
 Trade Name: Volume Control Damper
 Model Number: DVCD 610x610 (Sample 2)
 Size: 24" x 24" inch square
 Face Area: 0.3721 m²

Test Purpose: Contract Test
 Date of Test: 02 Jan 2019
 Client: Wong Brothers Pte Ltd
 Witness: Yes
 Personnel: TBL

Damper Type: Volume Control Damper
 Blade Orientation: Horizontal
 Blade Action: Opposed

Blade Position: Closed
 Flow Direction: Exhaust
 Mounting Position: Vertical

Closure Method: Applied Torque

Applied Torque: 5.4 N·m

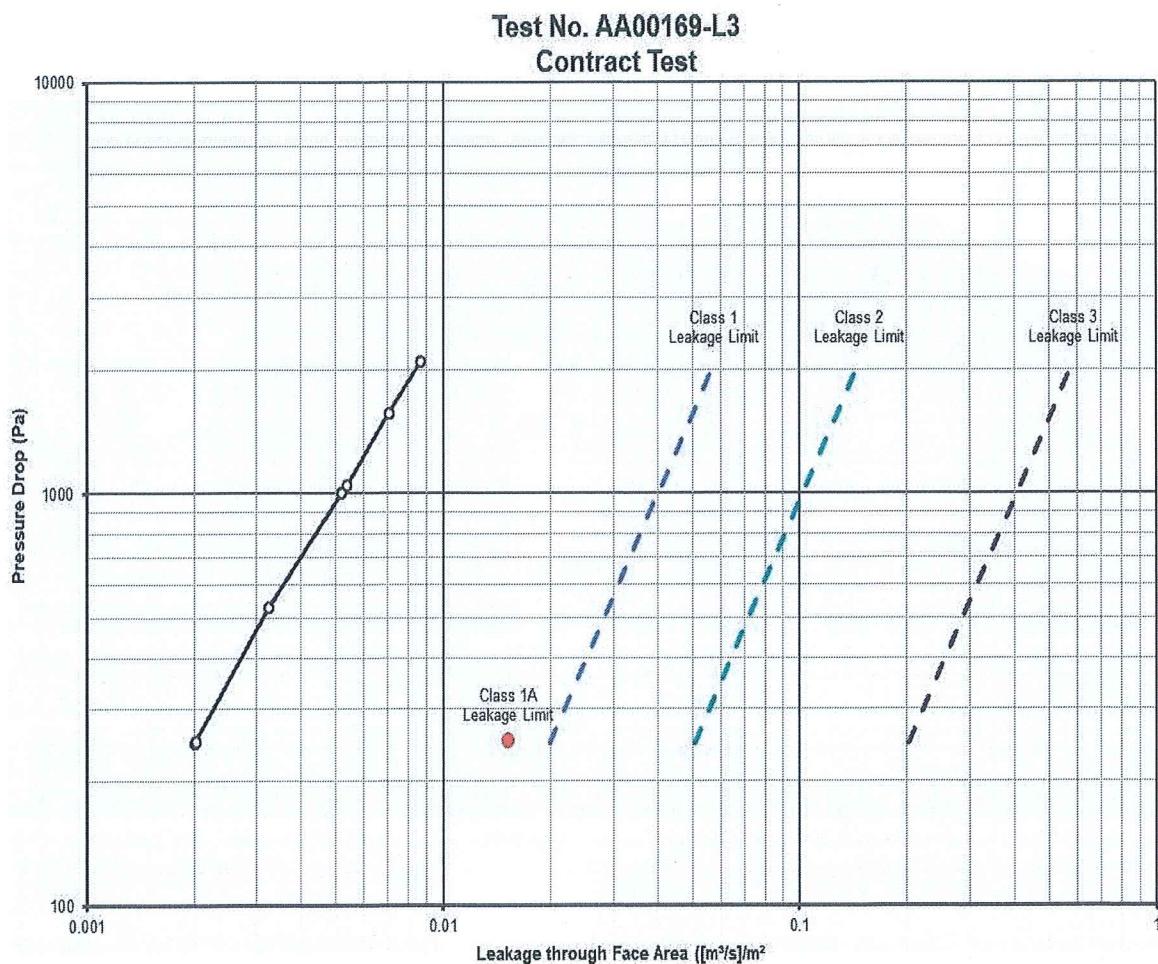
Test Method per ANSI / AMCA Standard 500-D-07 (Leakage), Figure 5.4 Alternate

Appurtenances:

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Comments:

Unit tested in the reverse flow direction.



TEST REPORT



Asia AMCA Sdn. Bhd.

No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number

AA00169-L3

Manufacturer: Wong Brothers Pte Ltd
Trade Name: Volume Control Damper
Model Number: DVCD 610x610 (Sample 2)
Size: 24" x 24" inch square
Face Area: 0.3721 m²

Test Purpose: Contract Test
Date of Test: 02 Jan 2019
Client: Wong Brothers Pte Ltd
Witness: Yes
Personnel: TBL

Damper Type: Volume Control Damper
Blade Orientation: Horizontal
Blade Action: Opposed

Blade Position: Closed
Flow Direction: Exhaust
Mounting Position: Vertical

Closure Method: Applied Torque

Applied Torque: 5.4 N·m

Test Method per ANSI / AMCA Standard 500-D-07 (Leakage), Figure 5.4 Alternate

Appurtenances:

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Comments:

Unit tested in the reverse flow direction.



TEST REPORT



Asia AMCA Sdn. Bhd.
No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number

AA00169-L4

Manufacturer:	Wong Brothers Pte Ltd	Test Purpose:	Contract Test
Trade Name:	Volume Control Damper	Date of Test:	02 Jan 2019
Model Number:	DVCD 610x610 (Sample 2)	Client:	Wong Brothers Pte Ltd
Size:	24" x 24" inch square	Witness:	Yes
Face Area:	0.3721 m ²	Personnel:	TBL
Damper Type:	Volume Control Damper	Blade Position:	Closed
Blade Orientation:	Horizontal	Flow Direction:	Exhaust
Blade Action:	Opposed	Mounting Position:	Vertical
Closure Method:	Applied Torque	Applied Torque:	5.4 N·m

Test Method per ANSI / AMCA Standard 500-D-07 (Leakage), Figure 5.4 Alternate

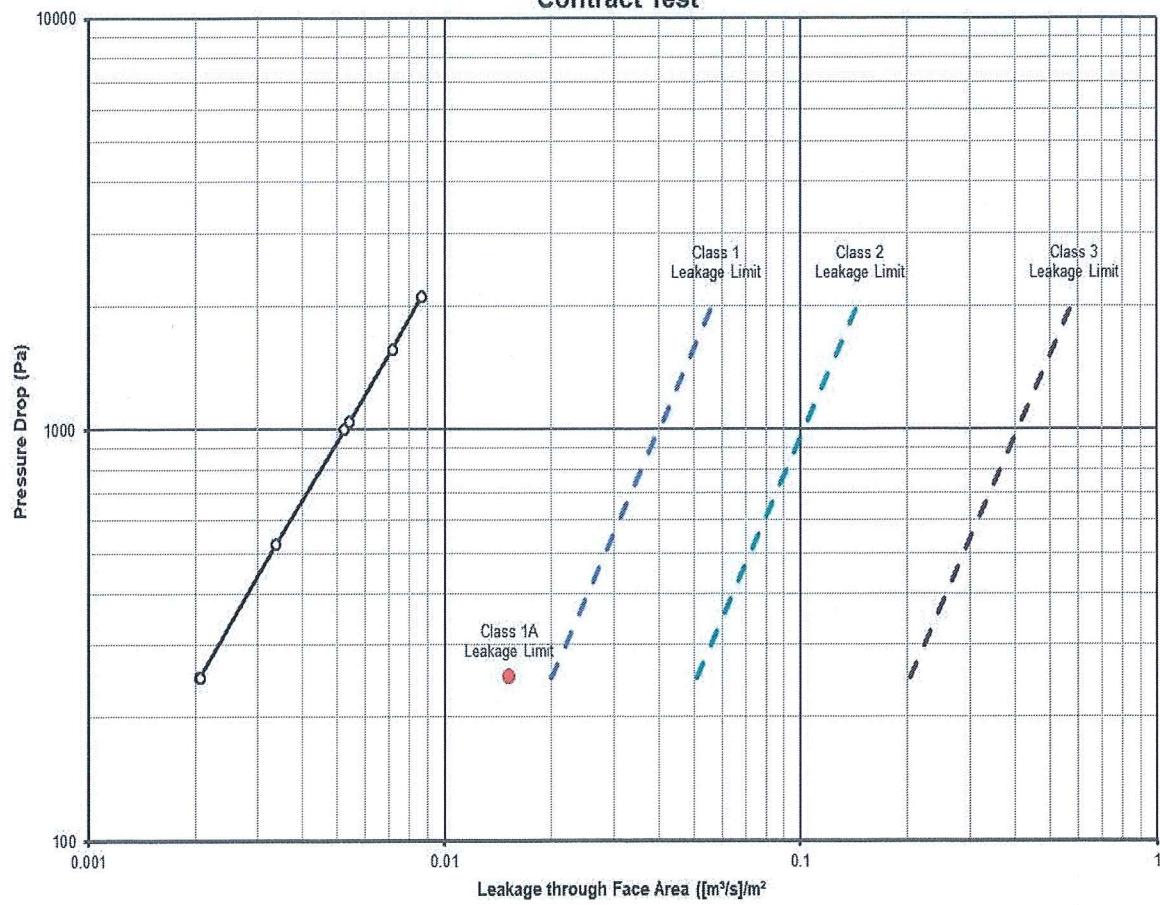
Appurtenances:

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Comments:

Unit tested in the reverse flow direction.

**Test No. AA00169-L4
Contract Test**



—○—Test Result



ASIA AMCA SDN BHD

No.7, Jalan SIlC 1/6, Kawasan Perindustrian SiLC Nusajaya, Mukim Jelutong, 79200 Nusajaya, Johor

TEST NO. AA00169-ID1/ED1

Date: 11 January 2019

To: Wong Brothers Pte Ltd
7 Toa Payoh Ind Park #01-1245
SINGAPORE 319059

Attn: Mr. Ng

SUBJECT: DAMPER TEST

MODEL No.: Volume Control Damper / DVCD 610x610 (Sample 2)

TYPE OF TEST: Pressure Drop Test, AMCA 500-D Fig.5.3

Attached are the test results of the subject model performed on 05 January 2019.

AA00169-ID1	Pressure Drop Test (intake)
AA00169-ED1	Pressure Drop Test (exhaust)

These tests were conducted in an AMCA Independent Accredited Laboratory for AMCA500-D testing. To pursue further for the AMCA Product Certification, manufacturer or seller has to submit the published performance rating for AMCA reviewed and approved in accordance with the requirements of the AMCA Certified Ratings Program (CRP).

Should you have any questions concerning these data, please let us know.

Best Rgds

Tin Tin
Asia AMCA Sdn Bhd
Approved Signatory

TEST REPORT



Asia AMCA Sdn. Bhd.

No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number

AA00169-ID1

Manufacturer: Wong Brothers Pte Ltd
Trade Name: Volume Control Damper
Model Number: DVCD 610x610 (Sample 2)
Size: 24" x 24" inch square
Face Area: 0.3721 m²

Damper Type: Volume Control Damper
Blade Orientation: Horizontal
Blade Action: Opposed

Test Purpose: Contract Test
Date of Test: 05 Jan 2019
Client: Wong Brothers Pte Ltd
Witness: No
Personnel: TBL

Blade Position: Open
Flow Direction: Intake
Mounting Position: Vertical

Test Method per ANSI / AMCA Standard 500-D-07 (Pressure Drop), Figure 5.3

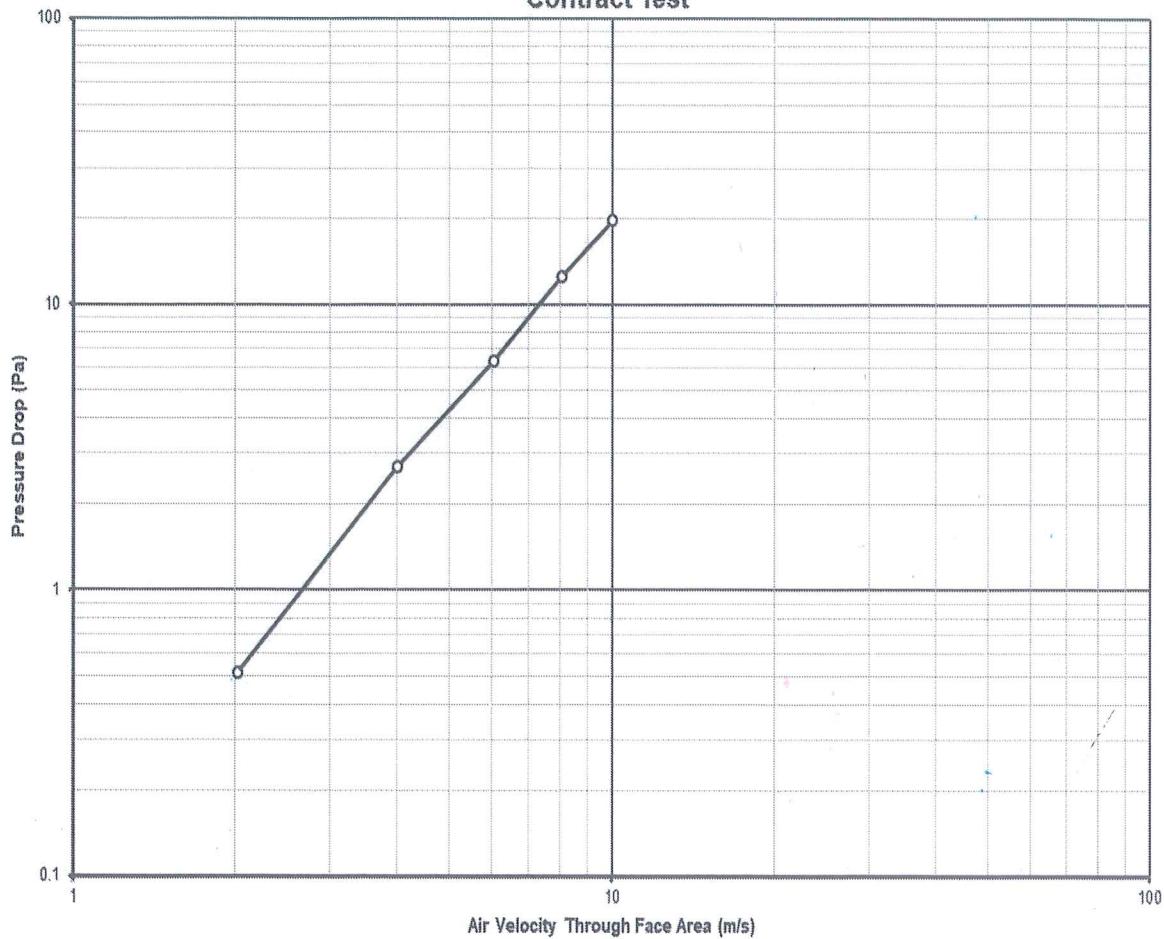
Appurtenances:

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Comments:

Unit tested in the forward flow direction.

Test No. AA00169-ID1
Contract Test



—○— Test Pressure Drop - Device Only

TEST REPORT



Asia AMCA Sdn. Bhd.

No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number

AA00169-ID1

Manufacturer: Wong Brothers Pte Ltd
 Trade Name: Volume Control Damper
 Model Number: DVCD 610x610 (Sample 2)
 Size: 24" x 24" inch square
 Face Area: 0.3721 m²

Damper Type: Volume Control Damper
 Blade Orientation: Horizontal
 Blade Action: Opposed

Test Purpose: Contract Test
 Date of Test: 05 Jan 2019
 Client: Wong Brothers Pte Ltd
 Witness:
 Personnel: TBL

Blade Position: Open
 Flow Direction: Intake
 Mounting Position: Vertical

Test Method per ANSI / AMCA Standard 500-D-07 (Pressure Drop), Figure 5.3

Appurtenances:

Comments: Unit tested in the forward flow direction.

Device Only Test Results at Standard Air:

Det. No.	Q (m ³ /s)	V (m/s)	ΔP_{DS} (Pa)	ΔP_s (Pa)	ΔP_D (Pa)
1	3.73	10.02	30	10	20
2	3.00	8.06	20	7	13
3	2.24	6.03	11	5	6
4	1.49	4.00	5	3	3
5	0.75	2.02	1	1	1

TEST REPORT



Asia AMCA Sdn. Bhd.

No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number

AA00169-ED1

Manufacturer: Wong Brothers Pte Ltd
 Trade Name: Volume Control Damper
 Model Number: DVCD 610x610 (Sample 2)
 Size: 24" x 24" inch square
 Face Area: 0.3721 m²

Damper Type: Volume Control Damper
 Blade Orientation: Horizontal
 Blade Action: Opposed

Test Purpose: Contract Test
 Date of Test: 05 Jan 2019
 Client: Wong Brothers Pte Ltd
 Witness: No
 Personnel: TBL

Blade Position: Open
 Flow Direction: Exhaust
 Mounting Position: Vertical

Test Method per ANSI / AMCA Standard 500-D-07 (Pressure Drop), Figure 5.3

Appurtenances:

Comments: Unit tested in the reverse flow direction.

Device Only Test Results at Standard Air:

Det. No.	Q (m ³ /s)	V (m/s)	ΔP_{DS} (Pa)	ΔP_s (Pa)	ΔP_d (Pa)
1	3.73	10.04	30	11	20
2	3.00	8.05	19	7	12
3	2.26	6.07	11	5	6
4	1.51	4.05	5	3	2
5	0.74	1.99	1	1	0

TEST REPORT



Asia AMCA Sdn. Bhd.
No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number

AA00169-ED1

Manufacturer: Wong Brothers Pte Ltd
 Trade Name: Volume Control Damper
 Model Number: DVCD 610x610 (Sample 2)
 Size: 24" x 24" inch square
 Face Area: 0.3721 m²

Damper Type: Volume Control Damper
 Blade Orientation: Horizontal
 Blade Action: Opposed

Test Purpose: Contract Test
 Date of Test: 05 Jan 2019
 Client: Wong Brothers Pte Ltd
 Witness: No
 Personnel: TBL

Blade Position: Open
 Flow Direction: Exhaust
 Mounting Position: Vertical

Test Method per ANSI / AMCA Standard 500-D-07 (Pressure Drop), Figure 5.3

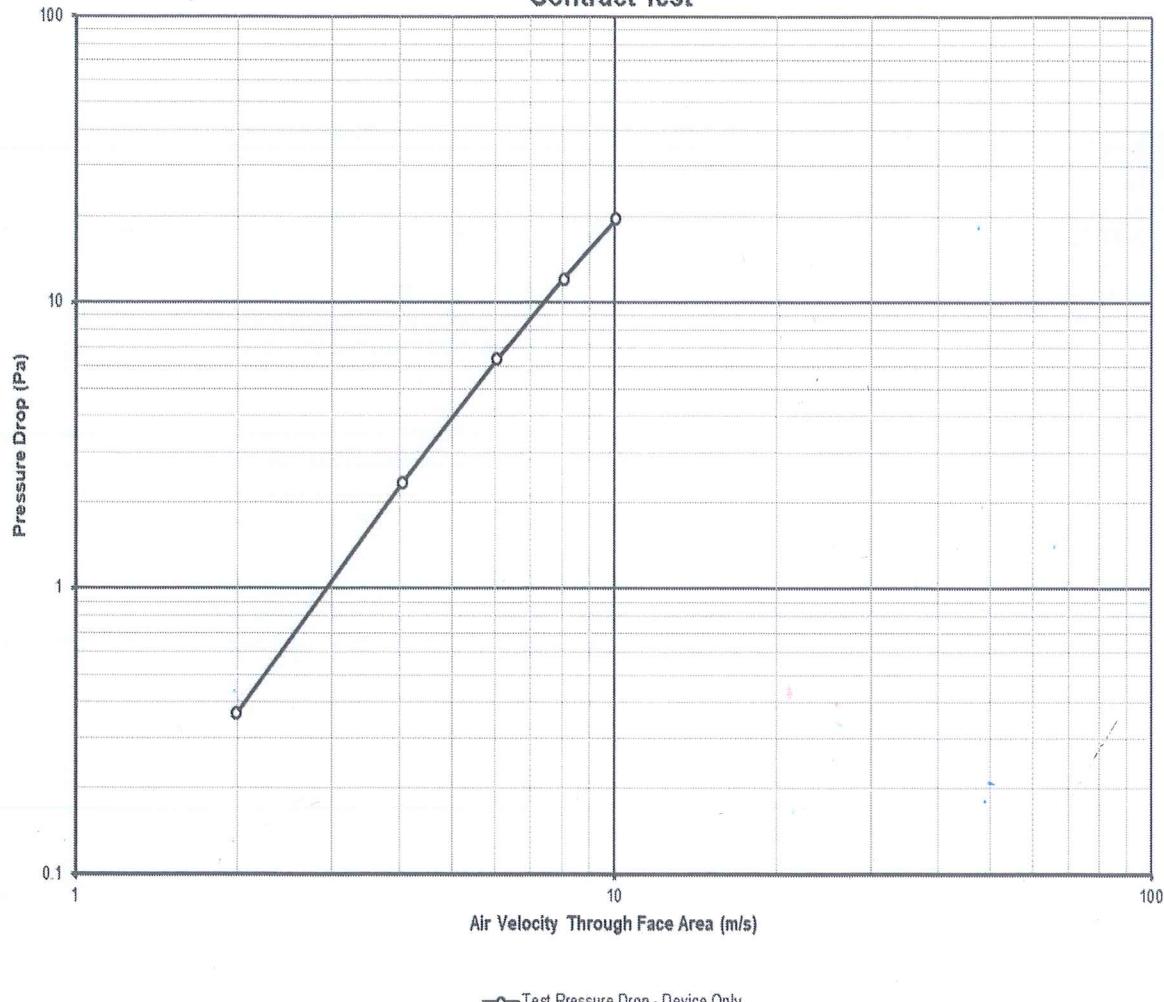
Appurtenances:

-

Comments:

Unit tested in the reverse flow direction.

Test No. AA00169-ED1
Contract Test



TEST REPORT**Asia AMCA Sdn. Bhd.**

No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number**AA00169-ID1**

Manufacturer: Wong Brothers Pte Ltd
Trade Name: Volume Control Damper
Model Number: DVCD 610x610 (Sample 2)
Size: 24" x 24" inch square
Face Area: 0.3721 m²

Damper Type: Volume Control Damper
Blade Orientation: Horizontal
Blade Action: Opposed

Test Purpose: Contract Test
Date of Test: 05 Jan 2019
Client: Wong Brothers Pte Ltd
Witness:
Personnel: TBL

Blade Position: Open
Flow Direction: Intake
Mounting Position: Vertical

Test Method per ANSI / AMCA Standard 500-D-07 (Pressure Drop), Figure 5.3

Appurtenances:

Comments:

Unit tested in the forward flow direction.



TEST REPORT**Asia AMCA Sdn. Bhd.**

No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number**AA00169-ID1**

Manufacturer: Wong Brothers Pte Ltd
Trade Name: Volume Control Damper
Model Number: DVCD 610x610 (Sample 2)
Size: 24" x 24" inch square
Face Area: 0.3721 m²

Damper Type: Volume Control Damper
Blade Orientation: Horizontal
Blade Action: Opposed

Test Purpose: Contract Test
Date of Test: 05 Jan 2019
Client: Wong Brothers Pte Ltd
Witness:
Personnel: No TBL

Blade Position: Open
Flow Direction: Intake
Mounting Position: Vertical

Test Method per ANSI / AMCA Standard 500-D-07 (Pressure Drop), Figure 5.3

Appurtenances:

Comments: Unit tested in the forward flow direction.



TEST REPORT



Asia AMCA Sdn. Bhd.

No. 7, Jalan SiLC 1/6, Kawasan Perindustrian SiLC Nusajaya, 79200 Nusajaya, Johor, Malaysia.

Test Number

AA00169-ID1

Manufacturer: Wong Brothers Pte Ltd
Trade Name: Volume Control Damper
Model Number: DVCD 610x610 (Sample 2)
Size: 24" x 24" inch square
Face Area: 0.3721 m²

Damper Type: Volume Control Damper
Blade Orientation: Horizontal
Blade Action: Opposed

Test Purpose: Contract Test
Date of Test: 05 Jan 2019
Client: Wong Brothers Pte Ltd
Witness: No
Personnel: TBL

Blade Position: Open
Flow Direction: Intake
Mounting Position: Vertical

Test Method per ANSI / AMCA Standard 500-D-07 (Pressure Drop), Figure 5.3

Appurtenances:

-

Comments:

Unit tested in the forward flow direction.

