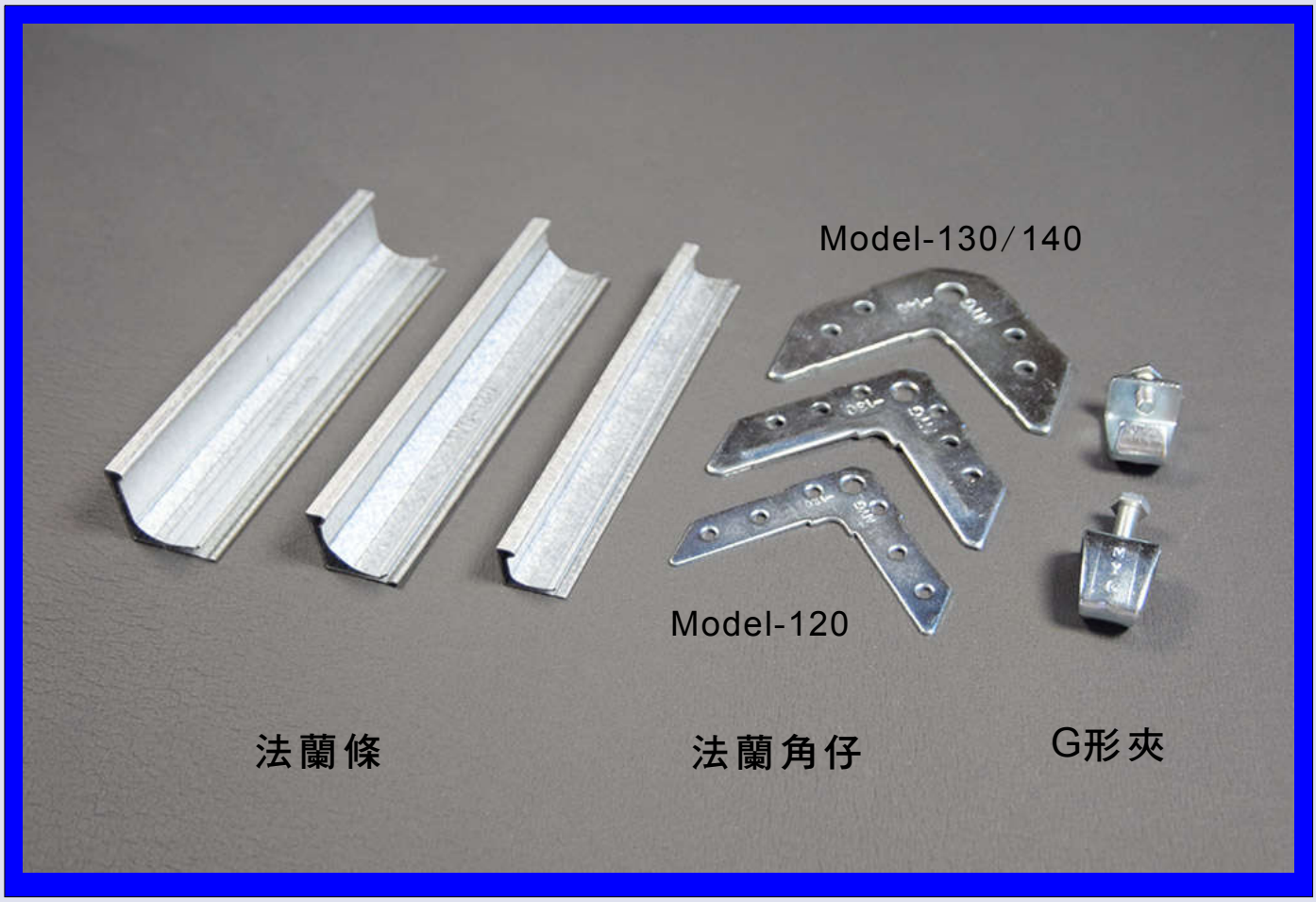
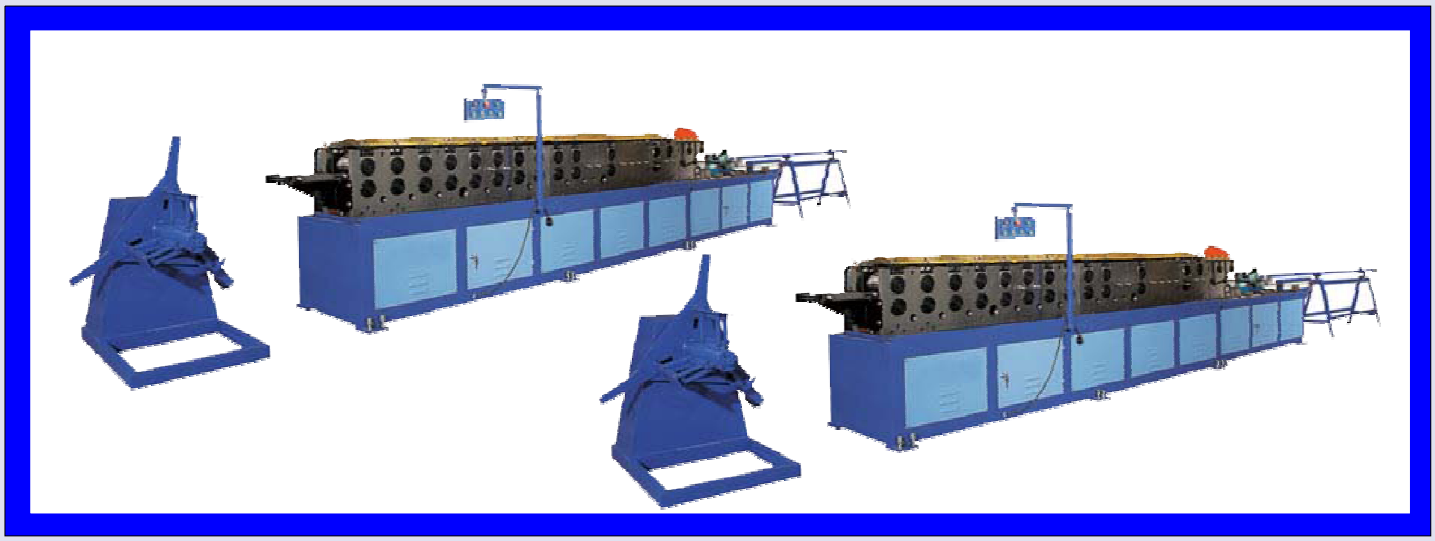
東莞漫亞
五金製品有限公司
Dongguan Manya
Hardware Products Company Limited

漫亞插式法蘭

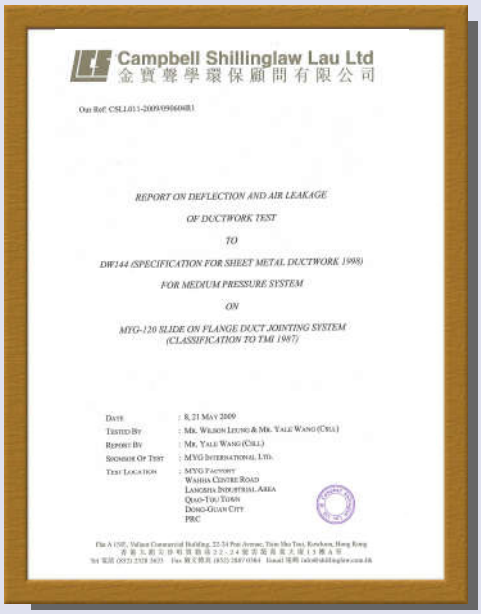




漫亞插式法蘭生產線

東莞漫亞
五金製品有限公司
Dongguan Manya
Hardware Products Company Limited

插式法蘭測試報告
Model:M-120

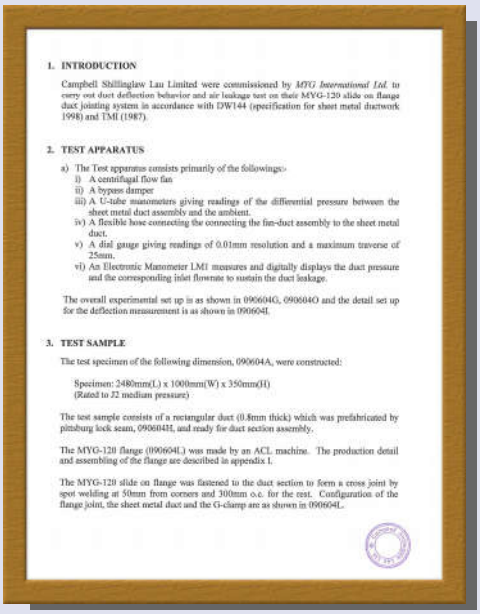


Campbell Shillinglaw Lau Ltd
金實聲學環保顧問有限公司

Our Ref: CSLL013-2009/090604R1

REPORT ON DEFLECTION AND AIR LEAKAGE
OF DUCTWORK TEST
TO
DW144 (SPECIFICATION FOR SHEET METAL DUCTWORK 1998)
FOR MEDIUM PRESSURE SYSTEM
ON
MYG-120 SLIDE ON FLANGE DUCT JOINTING SYSTEM
(CLASSIFICATION TO TMI 1987)

Date	: 8, 21 May 2009
Tested By	: Mr. Wilson Leung & Mr. Yale Wang (CSLL)
Report By	: Mr. Yale Wang (CSLL)
Sponsor Of Test	: MYG International Ltd.
Test Location	: MYG Factory Wanhua Centre Road Langsha Industrial Area Quao-Tau Town Dong-Guan City PRC



1. INTRODUCTION

Campbell Shillinglaw Lau Limited were commissioned by *MYG International Ltd.* to carry out duct deflection behavior and air leakage test on their MYG-120 slide on flange duct jointing system in accordance with DW144 (specification for sheet metal ductwork 1998) and TMI (1987).

2. TEST APPARATUS

a) The Test apparatus consists primarily of the followings:-
- i) A centrifugal flow fan
- ii) A bypass damper
- iii) A U-tube manometers giving readings of the differential pressure between the sheet metal duct assembly and the ambient.
- iv) A flexible hose connecting the connecting the fin-duct assembly to the sheet metal duct.
- v) A dial gauge giving readings of 0.01mm resolution and a maximum traverse of 25mm.
- vi) An Electronic Manometer LM1 measures and digitally displays the duct pressure and the corresponding inlet flowrate to sustain the duct leakage.

The overall experimental set up in as shown in 090604G, 090604O and the detail set up for the deflection measurement is as shown in 090604I.

3. TEST SAMPLE

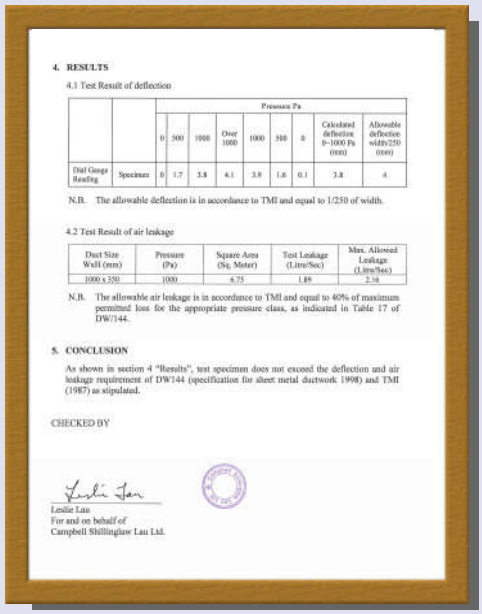
The test specimen of the following dimension, 090604A, were constructed:

Specimen: 2480mm(L) x 1000mm(W) x 350mm(H)
(Rated to J2 medium pressure)

The test sample consists of a rectangular duct (0.8mm thick) which was prefabricated by pittsburg lock seam, 090604H, and ready for duct section assembly.

The MYG-120 flange (090604L) was made by an ACL machine. The production detail and assembling of the flange are described in appendix I.

The MYG-120 slide on flange was fastened to the duct section to form a cross joint by spot welding at 50mm from corners and 300mm o.c. for the rest. Configuration of the flange joint, the sheet metal duct and the G-clamp are as shown in 090604L.



4. RESULTS

4.1 Test Result of deflection

		Pressure Pa								
		0	500	1000	Over 1000	1000	500	0	Calculated deflection @ 1000 Pa (mm)	Allowable deflection width/250 (mm)
Dial Gauge Reading	Specimen	0	1.7	3.8	4.1	3.9	1.6	0.1	3.8	4

N.B. The allowable deflection is in accordance to TMI and equal to 1/250 of width.

4.2 Test Result of air leakage

Duct Size Wall (mm)	Pressure (Pa)	Square Area (Sq. Meter)	Test Leakage (Litre/Sec)	Max. Allowed Leakage (Litre/Sec)
1000 x 350	1000	6.75	1.89	2.16

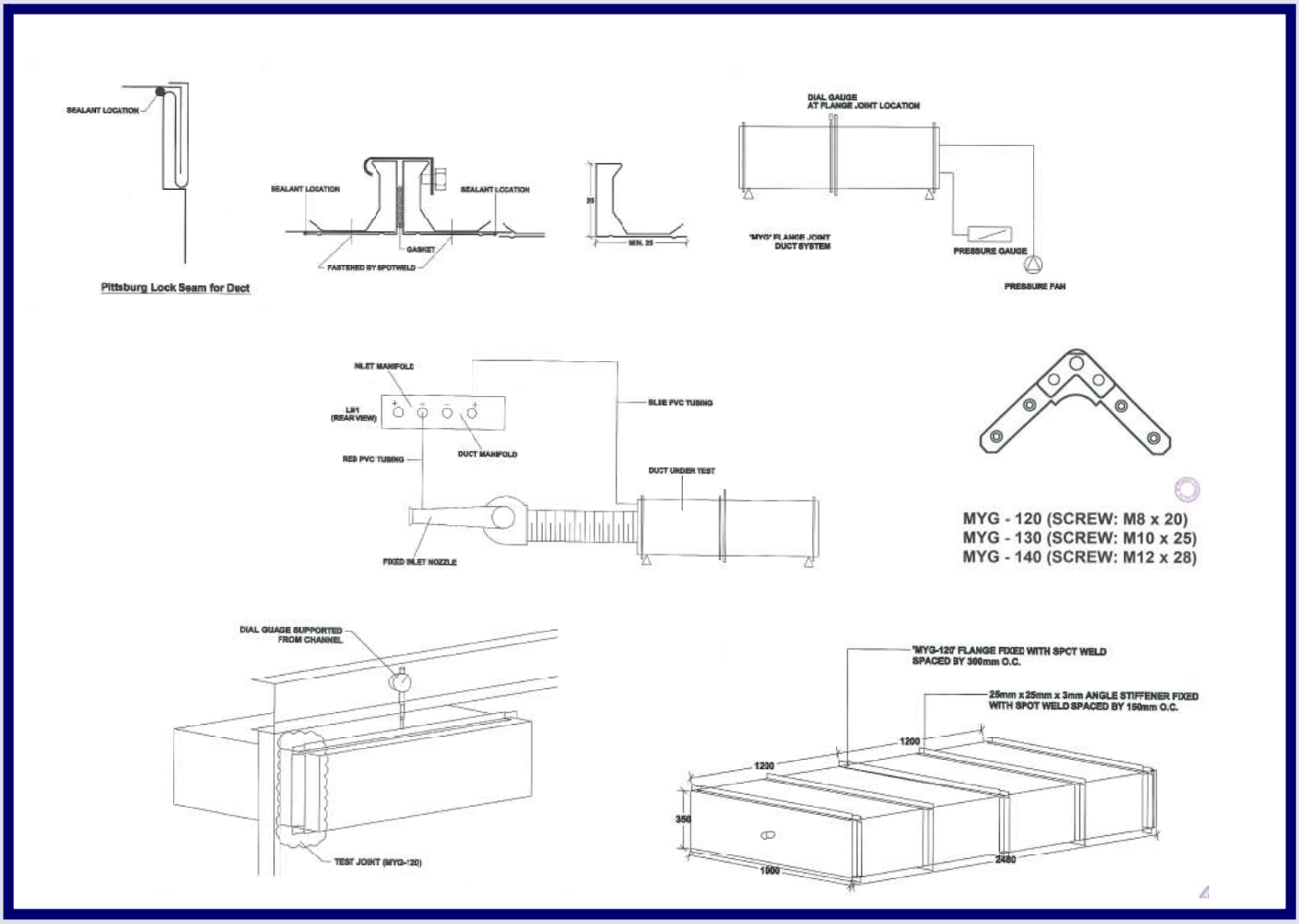
N.B. The allowable air leakage is in accordance to TMI and equal to 40% of maximum permitted loss for the appropriate pressure class, as indicated in Table 17 of DW144.

5. CONCLUSION

As shown in section 4 "Results", test specimen does not exceed the deflection and air leakage requirement of DW144 (specification for sheet metal ductwork 1998) and TMI (1987) as stipulated.

CHECKED BY

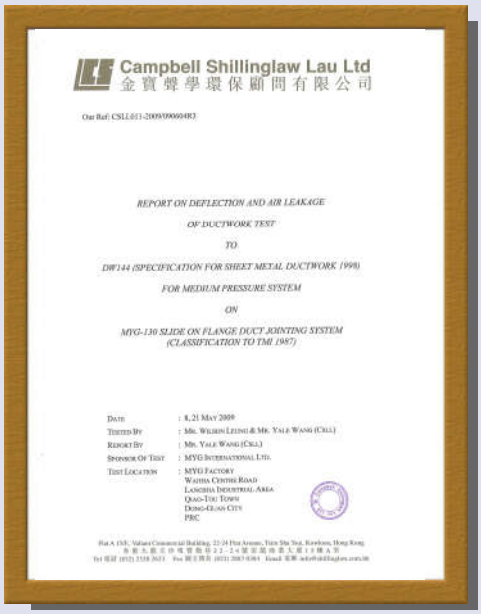
Leslie Lau
For and on behalf of
Campbell Shillinglaw Lau Ltd.



R1

東莞漫亞
五金製品有限公司
Dongguan Manya
Hardware Products Company Limited

插式法蘭測試報告
Model:M-130



Campbell Shillinglaw Lau Ltd
金寶聲學環保顧問有限公司

Our Ref: CSLL011-2009090604R3

REPORT ON DEFLECTION AND AIR LEAKAGE

OF DUCTWORK TEST

TO

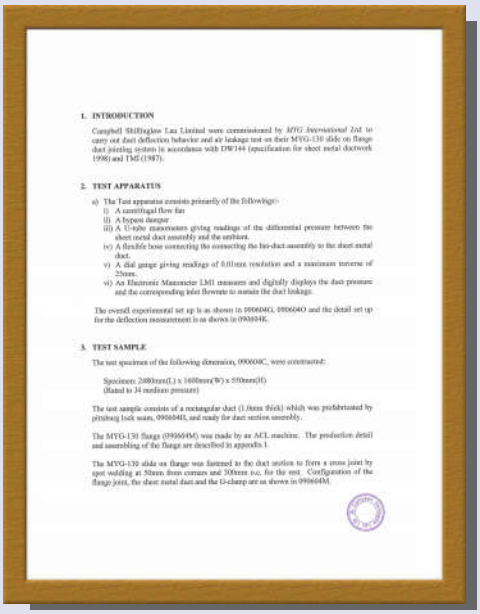
DW144 (SPECIFICATION FOR SHEET METAL DUCTWORK 1998)

FOR MEDIUM PRESSURE SYSTEM

ON

MYG-130 SLIDE ON FLANGE DUCT JOINTING SYSTEM
(CLASSIFICATION TO TMI 1987)

DATE	: 8, 21 MAY 2009
TESTED BY	: MR. WILSON LEUNG & MR. YALE WANG (CSLL)
REPORT BY	: MR. YALE WANG (CSLL)
SPONSOR OF TEST	: MYG INTERNATIONAL LTD.
TEST LOCATION	: MYG FACTORY WAITSA CENTRE ROAD LANGSHA INDUSTRIAL AREA QIAO-TOU TOWN DONG-GUAN CITY PRC



1. INTRODUCTION

Campbell Shillinglaw Lau Limited were commissioned by *MYG International Ltd.* to carry out duct deflection behavior and air leakage test on their MYG-130 slide on flange duct jointing system in accordance with DW144 (specification for sheet metal ductwork 1998) and TMI (1987).

2. TEST APPARATUS

a) The Test apparatus consists primarily of the followings:-
i) A centrifugal flow fan
ii) A bypass damper
iii) A U-tube manometers giving readings of the differential pressure between the sheet metal duct assembly and the ambient.
iv) A flexible hose connecting the connecting the fan-duct assembly to the sheet metal duct.
v) A dial gauge giving readings of 0.01mm resolution and a maximum traverse of 25mm.
vi) An Electronic Manometer LM1 measures and digitally displays the duct pressure and the corresponding inlet flowrate to sustain the duct leakage.

The overall experimental set up is as shown in 090604G, 090604O and the detail set up for the deflection measurement is as shown in 090604K.

3. TEST SAMPLE

The test specimen of the following dimension, 090604C, were constructed:

Specimen: 2480mm(L) x 1600mm(W) x 550mm(H)
(Rated to 3# medium pressure)

The test sample consists of a rectangular duct (1.0mm thick) which was prefabricated by pittsburg lock seam, 090604H, and ready for duct section assembly.

The MYG-130 flange (09066450) was made by an ACL machine. The production detail and assembling of the flange are described in appendix I.

The MYG-130 slide on flange was fastened to the duct section to form a cross joint by spot welding at 50mm from corners and 300mm c.c. for the rest. Configuration of the flange joint, the sheet metal duct and the G-clamp are as shown in 090604M.

4. RESULTS

4.1 Test Result of deflection

		Pressure Pa								
		0	500	1600	Over 1600	1600	500	0	Calculated deflection 0~1600 Pa (mm)	Allowable deflection min(L/150 (mm)
Dial Gauge Reading	Specimen	0	2.4	5.0	6.4	5.0	2.6	0.2	4.8	6.4

N.B. The allowable deflection is in accordance to TMI and equal to 1/250 of width.

4.2 Test Result of air leakage

Duct Size Wall (mm)	Pressure (Pa)	Square Area (Sq. Meter)	Test Leakage (Liter/Sec)	Max. Allowed Leakage (Liter/Sec)
1808 x 550	3080	10.75	1.06	1.61

N.B. The allowable air leakage is in accordance to TMI and equal to 40% of maximum permitted loss for the appropriate pressure class, as indicated in Table 17 of DW/144.

5. CONCLUSION

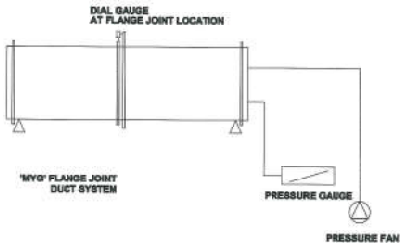
As shown in section 4 "Results", test specimen does not exceed the deflection and air leakage requirement of DW144 (specification for sheet metal ductwork 1998) and TMI (1987) as stipulated.

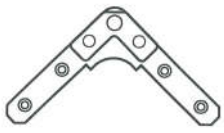
CHECKED BY

Leslie Lau
For and on behalf of
Campbell Shillinglaw Lau Ltd.

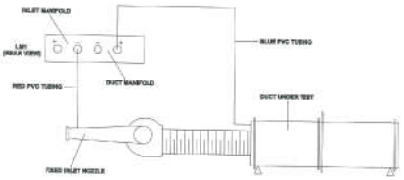
APPENDIX I

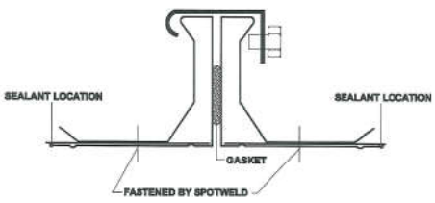
Pittsburg Lock Seam for Duct

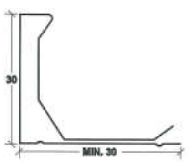


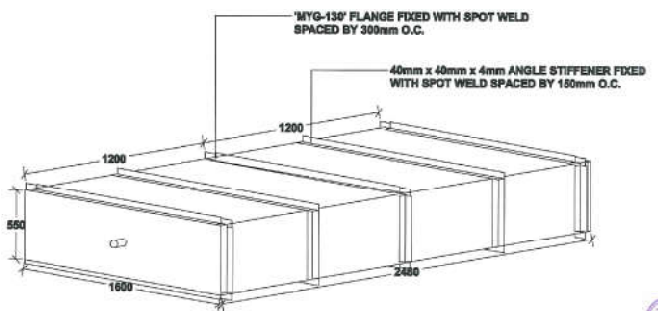


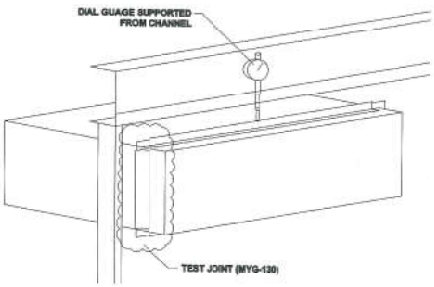
MYG - 120 (SCREW: M8 x 20)
MYG - 130 (SCREW: M10 x 25)
MYG - 140 (SCREW: M12 x 28)











東莞漫亞
五金製品有限公司
Dongguan Manya
Hardware Products Company Limited

插式法蘭測試報告
Model:M-140

Campbell Shillinglaw Lau Ltd
金寶聲學環保顧問有限公司

Our Ref: CSLL019-2010/100901R_1a

REPORT ON DEFLECTION OF DUCTWORK TEST

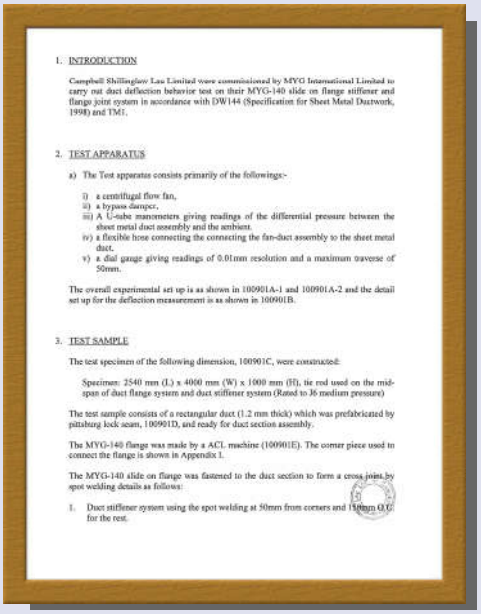
TO

DW144 (SPECIFICATION FOR SHEET METAL DUCTWORK 1998)
FOR MEDIUM PRESSURE SYSTEM

ON

MYG-140 SLIDE ON FLANGE SYSTEM & STIFFENER SYSTEM
(CLASSIFICATION TO TM1)

DATE : 1ST SEPTEMBER 2010
TESTED BY : MR. WILSON LEUNG (CSLL)
REPORT BY : MR. LESLIE LAU (CSLL)
SPONSOR OF TEST : MYG INTERNATIONAL LIMITED
TEST LOCATION : MYG FACTORY
WAIHA CENTRE ROAD
LANGSHA INDUSTRIAL AREA
QIAO TOU TOWN
DONG GUAN CITY
PRC



1. INTRODUCTION

Campbell Shillinglaw Lau Limited were commissioned by MYG International Limited to carry out duct deflection behavior test on their MYG-140 slide on flange stiffener and flange joint system in accordance with DW144 (Specification for Sheet Metal Ductwork, 1998) and TM1.

2. TEST APPARATUS

a) The Test apparatus consists primarily of the followings:-

i) a centrifugal flow fan,
ii) a bypass damper,
iii) A U-tube manometers giving readings of the differential pressure between the sheet metal duct assembly and the ambient.
iv) a flexible hose connecting the connecting the fan-duct assembly to the sheet metal duct,
v) a dial gauge giving readings of 0.01mm resolution and a maximum traverse of 50mm.

The overall experimental set up is as shown in 100901A-1 and 100901A-2 and the detail set up for the deflection measurement is as shown in 100901B.

3. TEST SAMPLE

The test specimen of the following dimension, 100901C, were constructed:

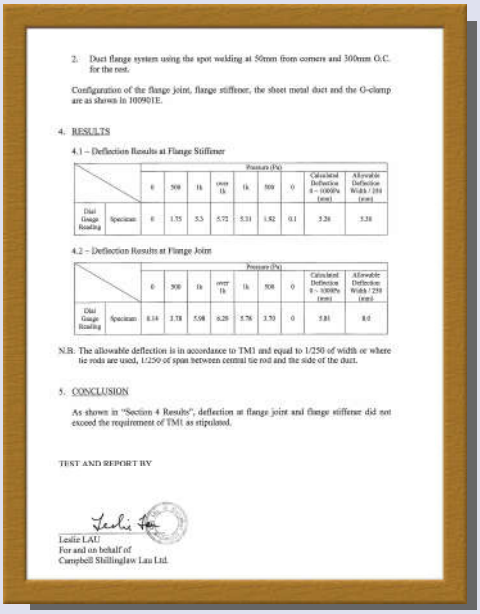
Specimen: 2540 mm (L) x 4000 mm (W) x 1000 mm (H), tie rod used on the mid-span of duct flange system and duct stiffener system (Rated to J6 medium pressure)

The test sample consists of a rectangular duct (1.2 mm thick) which was prefabricated by pittsburg lock seam, 100901D, and ready for duct section assembly.

The MYG-140 flange was made by a ACL machine (100901E). The corner piece used to connect the flange is shown in Appendix I.

The MYG-140 slide on flange was fastened to the duct section to form a cross joint by spot welding details as follows:

1. Duct stiffener system using the spot welding at 50mm from corners and 150mm O.C. for the rest.



2. Duct flange system using the spot welding at 50mm from corners and 300mm O.C. for the rest.

Configuration of the flange joint, flange stiffener, the sheet metal duct and the G-clamp are as shown In 100901E.

4. RESULTS

4.1 – Deflection Results at Flange Stiffener

		Pressure (Pa)								
		0	500	1k	over 1k	1k	500	0	Calculated Deflection @ – 1000Pa (mm)	Allowable Deflection Width / 250 (mm)
Dial Gauge Reading	Specimen	0	1.75	5.3	5.72	5.31	1.82	0.1	3.26	5.16

4.2 – Deflection Results at Flange Joint

		Pressure (Pa)								
		0	500	1k	over 1k	1k	500	0	Calculated Deflection @ – 1000Pa (mm)	Allowable Deflection Width / 250 (mm)
Dial Gauge Reading	Specimen	0.14	3.78	5.98	6.28	5.78	3.70	0	5.81	8.0

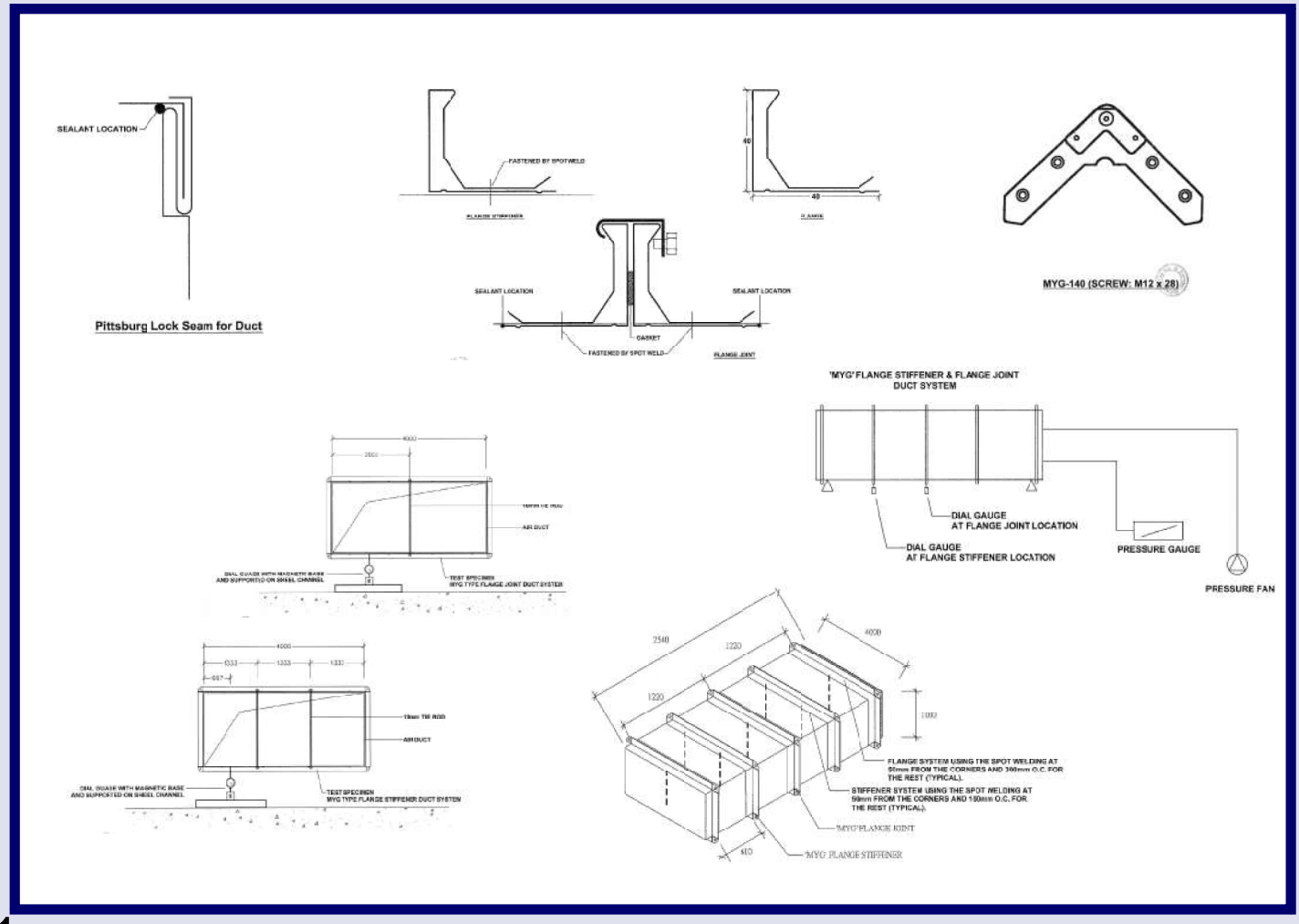
N.B. The allowable deflection is in accordance to TM1 and equal to 1/250 of width or where tie rods are used, 1/250 of span between central tie rod and the side of the duct.

5. CONCLUSION

As shown in "Section 4 Results", deflection at flange joint and flange stiffener did not exceed the requirement of TM1 as stipulated.

TEST AND REPORT BY

Leslie LAU
For and on behalf of
Campbell Shillinglaw Lau Ltd.



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