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FIRE TEST REPORT: 2-Hour Fire Resistance Rating Tested to UL 555

CLIENT/MFG: AFP Air Tech Ltd
Morden Lodge, Morden Hall Road
Morden SM4 5JD
United Kingdom

MODEL: DUX 700

STANDARD TESTED TO: UL 555-Fire Dampers

FIRE TEST BARRIER RATING: 2 Hours

TEST REPORT NO: GL-7-2-18-Z

TEST DATE: September 14, 2018

REPORT DATE: September 18, 2018

RESULTS: Passed for 2 hours without hose stream

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TEST REPORT HISTORY

Date	Report Number	Summary	Initials
09/18/18	GL7218Z	Original Issue	NJH

Preface

This report describes the successful results obtained when AFP Air Tech Ltd's DUX 700 damper was tested in accordance with UL 555-Fire Dampers without hose stream.

The louver/vent/fire damper active vent area was nominally 24-3/8 inches wide by 28-1/2 inches high, installed vertically in a two hour fire rated wall. The test met the test standard's criteria.

During the test no flaming or smoke came through the pressure vent damper.

The vent/louver met the fire endurance requirements of the UL 555 Test Standard.

The louver vanes did not warp during testing.

The vanes remained closed during the 2 hour test.

Product Selection

Guardian selected two test samples from amongst six test samples via video conferencing on June 26, 2018.

2. General

- 2.1 Units of measurement used in this test are in English: inches, feet and Fahrenheit.
- 2.2 The testing was conducted by Guardian Fire Testing Laboratories, Inc. with Guardian's testing equipment in their laboratory facilities with the test standard UL 555.

3. Performance

This report presents the results of a fire test of a fire damper conducted according to UL 555. This report contains a description of the material evaluated, procedures used and the test results. The results listed only apply to the specimen tested, in the manner tested.

3.1 Procedure:

The furnace test wall is 5 feet wide by 8 feet high. The 24-3/8 inch wide by 28-1/2 inch high fire damper was built into the middle of the wall.

The fire damper/louver is directional, with the horizontal vanes opening towards the fire.

The damper was installed in a through wall opening.

4. Construction

4.1 General:

The DUX 700 damper vanes are closed by gravity and activated by air pressure.

- Frame: 840mm x 840mm
- Blade: 697mm long by 113mm high, made from two sheets of 1.0mm galvanized mild steel in a tapering box section
- Axles: center bar is 15mm square mild steel with 1.5mm wall thickness, 697mm long

5. Heat Responsive Devices: None

6. Wall Sleeve: Damper is built with a wall sleeve, fastened to the wall frame.

7. Protection Against Corrosion

The steel vent has a galvanized finish.

8. Actuators: N/A

9. Application: The DUX 700 is a vertically mounted pressure vent damper that is designed to allow airflow one way (into the furnace as tested) and prevent reverse airflow (out of the furnace as tested).

10. Fire Endurance Test

10.1 Conditions of Acceptance

- 10.1.1.1 The damper assembly remained closed and in the opening during the fire endurance test.
- 10.1.1.2 The damper was tested in the closed position.
- 10.1.1.3 There are no latching mechanisms. The damper used gravity.
- 10.1.1.5 Actuator N/A
- 10.1.2.1 There was no warping of the vanes during the fire test.

10.2 Fire Assemblies

- 10.2.1.1 The fire damper was installed in a two hour fire rated wall assembly.

3-5/8" steel studs
3 inch mineral wool fiber insulation in stud cavity
2 layers of 5/8 Type X gypsum wallboard on exposed side. Finished with 1 coat of Durabond 90. Unexposed side: 1 layer of 5/8 Type X gypsum wallboard. Finished with 1 coat of Durabond 90.
- 10.2.3 The pressure damper was installed in the fire test wall with the downstream side to the test fire.

10.3 Control and Conduct of Fire Test

- 10.3.6 The accuracy of furnace control:
The temperatures followed the curve.

When the furnace temperature control does not meet the above, refer to UL 263, Section 4.4 furnace time/temperature corrections.
- 10.3.8 The fire test continued for two hours.
- 10.3.9 Hose Stream Test, not required, all the steel vanes remained in place, closed.

- 11. Cycling Test N/A
- 12. Salt Spray Test N/A
- 13. Spring Closing force Test N/A
- 14. Dynamic Closure Test N/A
- 15. Duct Impact Test N/A
- 16. Hydrostatic Strength Test for Pneumatic Actuators N/A

Fire Test Instrumentation:

Furnace Temperatures:

Thermocouples equally spaced in the furnace.

Test Observations and Test Photos are attached.

Conclusion:

AFP Air Tech Ltd's DUX 700 overpressure vent, installed vertically in a 2-hour fire rated wall construction, successfully withstood the 2 hour fire endurance test without hose stream as per the fire test standard, UL 555-Fire Dampers. The DUX 700 overpressure vent is eligible for product certification through Guardian Fire Test Laboratories, Inc.

Test Conducted by:

Test Conducted By and Reviewed by:



T. R. Drew Pearson
Fire Testing Engineer



Neil Hamilton
Assistant Lab Manager

Per ASTM E2536, clause 1.4, "Uncertainty" is not applicable to pass/fail or indices test results. The results reported are qualitative rather than quantitative.

This test is accredited and meets the requirements of ISO/IEC 17025 as verified by ANAB. Refer to certificate and the scope of accreditation Report AT1247.

Guardian is accredited as a Third Party Inspection Agency per ISO 17020 through ANAB Report 1547.

N.B.: ANAB is a signatory member of the International Laboratory Accreditation Cooperation's (ILAC) Mutual Recognition Arrangement (MRA) and the Asian Pacific Laboratory Accreditation Cooperation's (APLAC) MRA. ANAB's accreditation of Guardian ensures global recognition for the Guardian mark.

Guardian is accredited as a Product Certification Body (Product Listing & Labeling) per ISO 17065 by ANSI, Accreditation ID# 1028. ANSI is a signatory member of the International Accreditation Forum's Mutual Lateral Arrangement (MLA)

Accreditations by ANAB/ ANSI ensure global recognition of the Guardian mark.

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Overpressure Vent Construction Drawings:

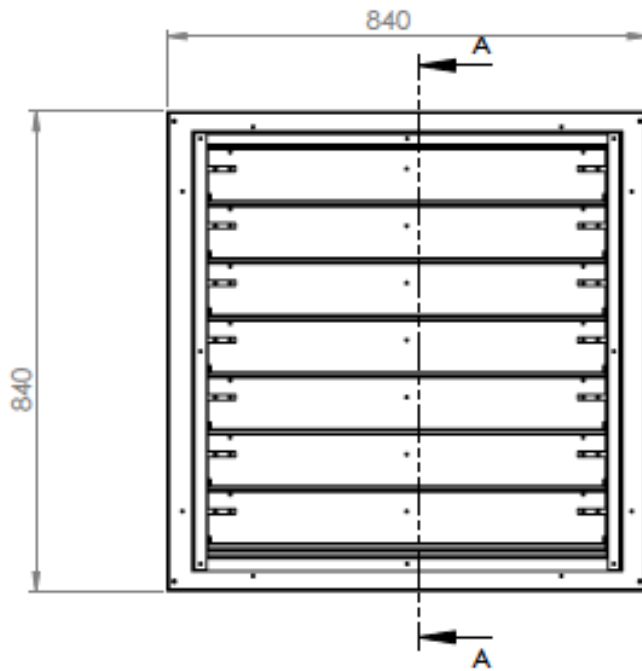


Fig 1: Overall front view of DUX 700

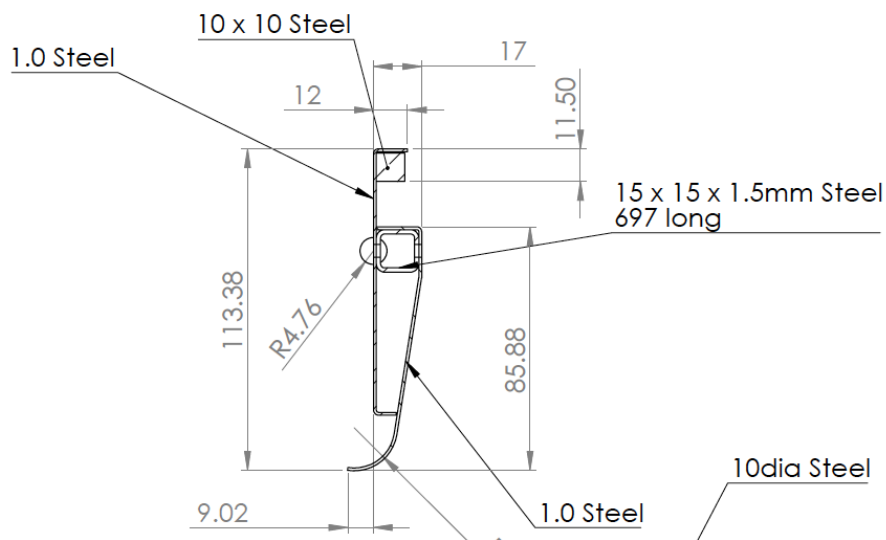


Fig. 2: Section of one blade

Height: 840 mm
Width: 840 mm
Weight: 33 kg

Test Observations

Unexposed Side:

Minutes

30	No change to sample
45	No change to sample
60	No change to sample
75	No change to sample
90	No change to sample
105	No change to sample
119	No change to sample
120	No change to sample

Exposed Side:

Vanes were red hot during testing.

After Test Notes:

Except for heat discoloration, the DUX 700 overpressure vent is unchanged from the 2 hours of fire endurance testing.



Wall construction, exposed side



Wall construction, unexposed side



Exposed side: Sample installed



Unexposed side: Sample installed



@00:00; Start of test



@00:30; No change to sample



@00:45; No change to sample



@01:00; No change to sample



@01:15; No change to sample



@01:30; No change to sample



@01:59; No change to sample



@02:00 Gas off; No change to sample



Post test: Exposed side of test sample



Post test: Unexposed side of test sample