

**AMERICAN , WARMING  
& VENTILATING**

**7301 International Drive  
Holland, Ohio 43528**

**TEL: (419) 865-5000 FAX: (419) 865-1375**

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**REV. A DATE: 6-4-96**

**ORIGINAL DATE: 4-25-96**

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TITLE:	Eastern Sheet Metal Fiberglass Duct Erosion Test Report
MATERIAL TYPE:	ESMI Duct Liner
CUSTOMER:	Eastern Sheet Metal 8959 Blue Ash Road Cincinnati, Ohio 45242
AWV PROD. NO:	63407
ESMI P. O. #:	20420

LAB REVIEW AND

ORIGINAL BY: John Lockmiller

DATE: 4-25-96

REV.	DATE	DESCRIPTION	BY	APPROVED BY
A	6-4-96	Revised summary comments per customer request	JIL	JIL

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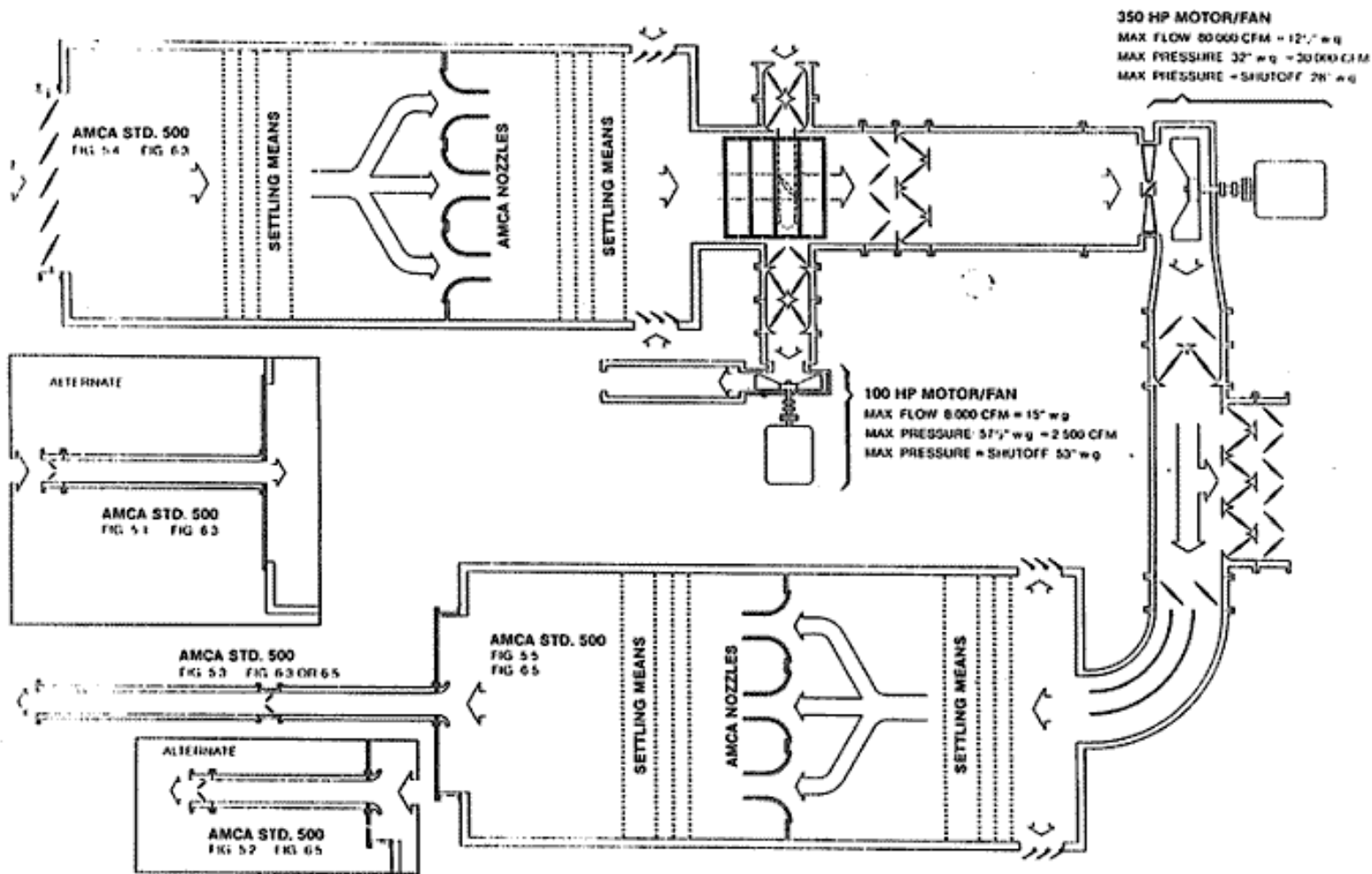
**1. Test Purpose:**

- A) To document the air duct erosion test results of Eastern Sheet Metal dual wall rectangular duct.

**2. Comments:**

- A) Tests were performed at the American Warming and Ventilating Test Laboratory (located in Bradner, Ohio) by AWV Lab Manager, John Lockmiller.
  
- B) Tests were witnessed by Mr. Bill Stout Jr. of Eastern Sheet Metal.

# AMV TEST FACILITY BRADNER, OHIO



APPROVED TO CONDUCT PERFORMANCE RATING TESTS IN ACCORDANCE WITH AMCA STANDARD 500

## DUCT EROSION TEST

One air duct erosion test was performed, per the requirements of ASTM C-1071 on 24" X 24" ESMI dual wall duct. The test was performed at the American Warming & Ventilating test laboratory in Bradner, Ohio.

Tests were performed in compliance with UL 181 and ASTM C-1071. The tests consisted of duct free blow of 10,000 feet/minute for one hour, and a four hour test at 10,000 fet/minute.

The duct liner sections were assembled and connected to the AMCA (fig. 5.5) test setup and (fig. 6.5) flow measurement apparatus, on the downstream end of the tapered transition. Air flow was increased from zero (0) until a center line velocity of not less than 10,000 feet/minute was obtained. Velocity was measured by means of a Pitot Tube (at the end of the duct) connected to a portable manometer. We ran a duct free blow for one (1) hour checking velocity periodically. At the end of the hour, we positioned a cheesecloth collector approximately 1 foot downstream of the end of the duct. We then ran a 4 hour test checking for anomalies at one (1) hour intervals. (At each hour interval, velocity was checked to be sure a 10,000 feet/minute minimum was maintained.) Every hour during the test the collector was inspected for erosion, using tape. No noticeable anomaly on the tape determined a successful completion of the test. Following on the next page is a list of materials and duct construction used in the test.

## SUMMARY

Upon completion of the testing, there was no constant or increasing rate of erosion. There was no visual evidence of flaking or delamination of the air stream surface.

The test was deemed successful based on the criterion designated in UL181 and ASTM C-1071.

### MATERIAL AND DUCT DESCRIPTION

Duct Construction: 24" X 24" O.D. Dual Wall rectangular duct.

1. Outside Skin - 22 ga. galvanized sheet metal.
2. Inside Skin - 22 ga. perforated sheet metal; 3/32" holes on 3/16" staggered centers for a free area of 23% (pipe) or 22 ga. galvanized sheet metal (fittings).
3. Connections - TDF, and integral flanged 4-bolt connection.
4. Elbow - 90 Deg. full radius elbow; inside and outside sheet metal, 22 ga. galv. (no perforated sheet metal).

#### Material:

1. Insulation Knauf **KN 1"** thick pcf unfac-2d fiberglass.
2. Cheesecloth type - Double layer (14 to 15 sq. yds/lbs.)  
Trade name count of 32" X 38"

