

Example of a  
VAPOR INTRUSION  
MITIGATION DESIGN

*For a*

Customer

*By*

WPB Enterprises  
Bill Brodhead  
2844 Slifer Valley Rd.  
Riegelsville, PA 18077  
610 346-8004

[Bill@wpb-radon.com](mailto:Bill@wpb-radon.com)

<http://wpb-radon.com>

# Example of Soil Gas Intrusion Mitigation Report

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## 1.0 GENERAL BUILDING INFORMATION

The facility in .... consists of two buildings, ..... The site has been a commercial manufacturing location for over a hundred years. See aerial photo of the site in Figure 1 below.

### Pictures of facility

#### 1.1 Main Manufacturing Building and Offices

The main building is composed of multiple additions made over the last 60 years.....

## 2.0 PRINCIPLES OF CONTAMINANT ENTRY

2.1 There are three prerequisites for soil borne contaminant entry into a building.....

#### 2.2 Temperature Driven Transport

When it is colder outside than inside, the warmer inside air is lighter; it rises and escapes the building through openings around upper windows and roof flanges.....

#### 2.3 Wind Driven Transport

Wind creates a complex pressure field around a building.....

#### 2.4 Mechanically-Driven Transport

Commercial buildings have varying numbers and sizes of exhaust fans, outdoor make-up air and passive relief dampers

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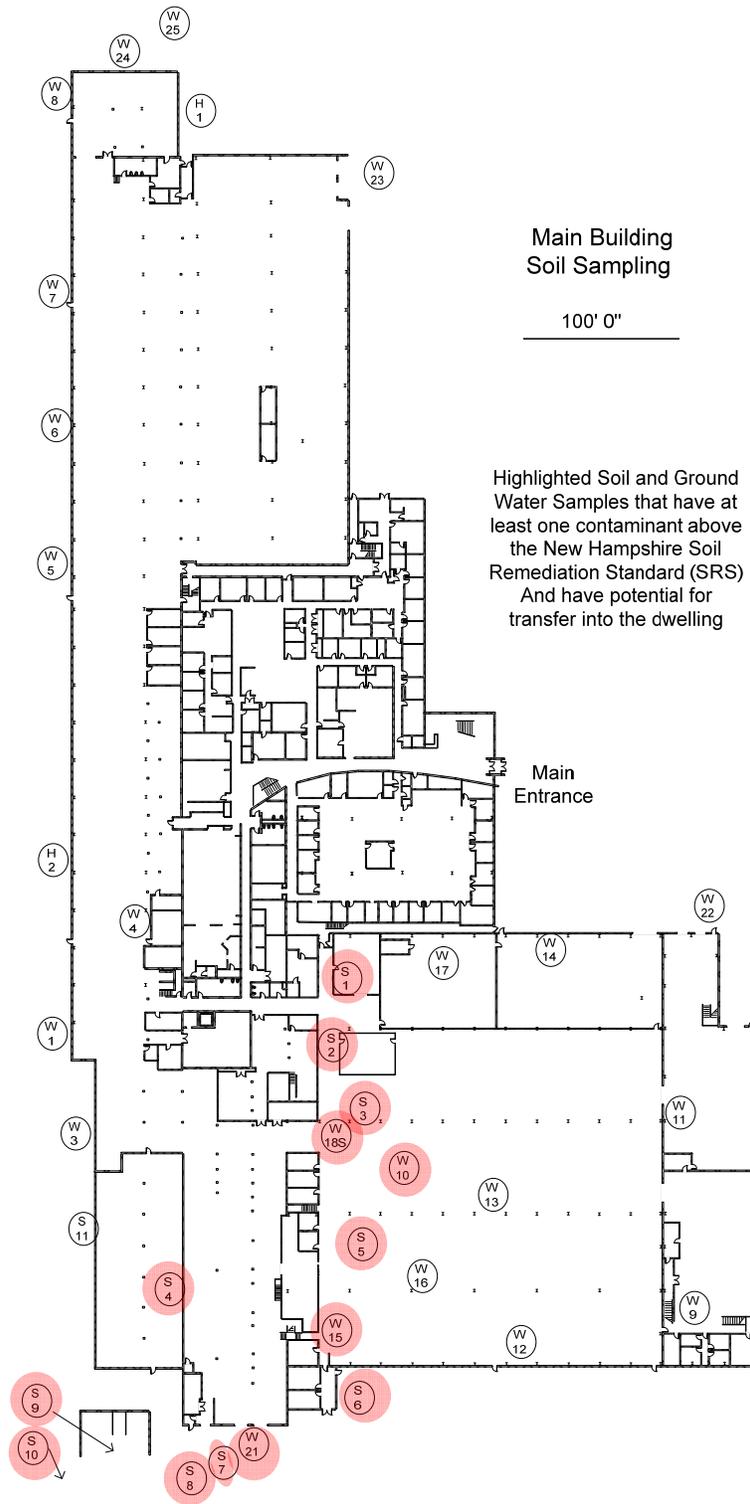


Figure 6 Elevated soil and ground water samples

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## 2.5 Predicting Interior Contaminant Levels

All of these entry influences make it ....

## 3.0 MITIGATION APPROACHES

It is a basic concept that the safest approach to reducing exposure to an indoor containment is to.....

## 4.0 MITIGATION DIAGNOSTICS

It is very difficult to project the level of effort required to depressurize the soil without quantifying the amount of leakage through the slab openings and the permeability of the underlying fill material

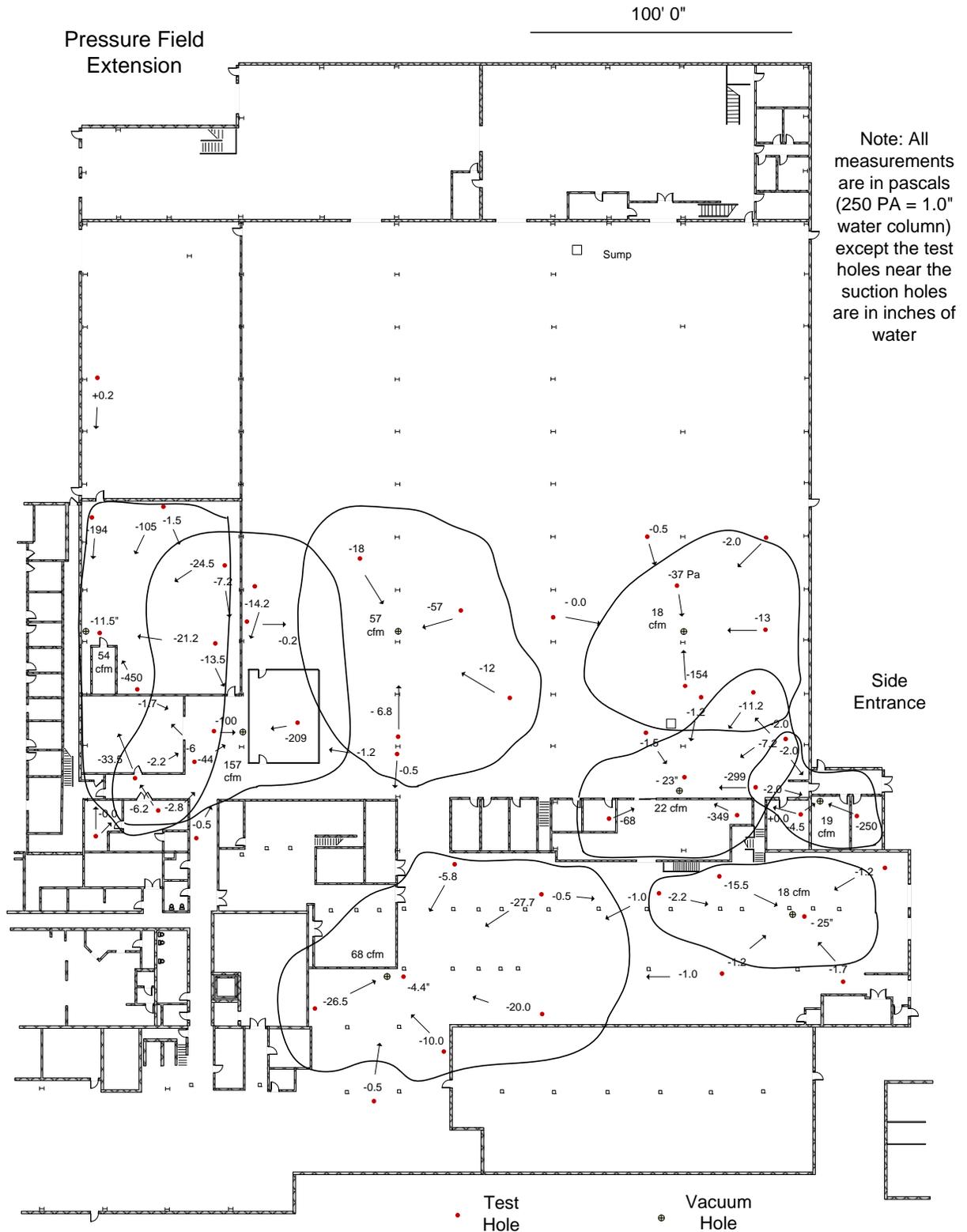


Figure 8 Sub-Slab Communication Test

## 5.0 SUB-SLAB COMMUNICATION TESTING METHOD

WPB made two separate site evaluations at the facility. The first evaluation was performed....

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## **6.0 SUB-SLAB COMMUNICATION TEST RESULTS**

### **6.1 Machine Shop Sub-Slab Communication Test Results**

The sub-slab communication suction holes are located in the center of each circled area of influence in Figure 9 through Figure 12 above. Each suction hole was made by drilling a 2.5” hole through the slab....

Three of the suction holes had moderate airflows of 54 cfm to 68 cfm....

## **7.0 VAPOR INTRUSION MITIGATION SYSTEM LAYOUT**

There is adequate sub-slab communication testing to design an optimized system layout. In Figure 13 and Figure 14 below....

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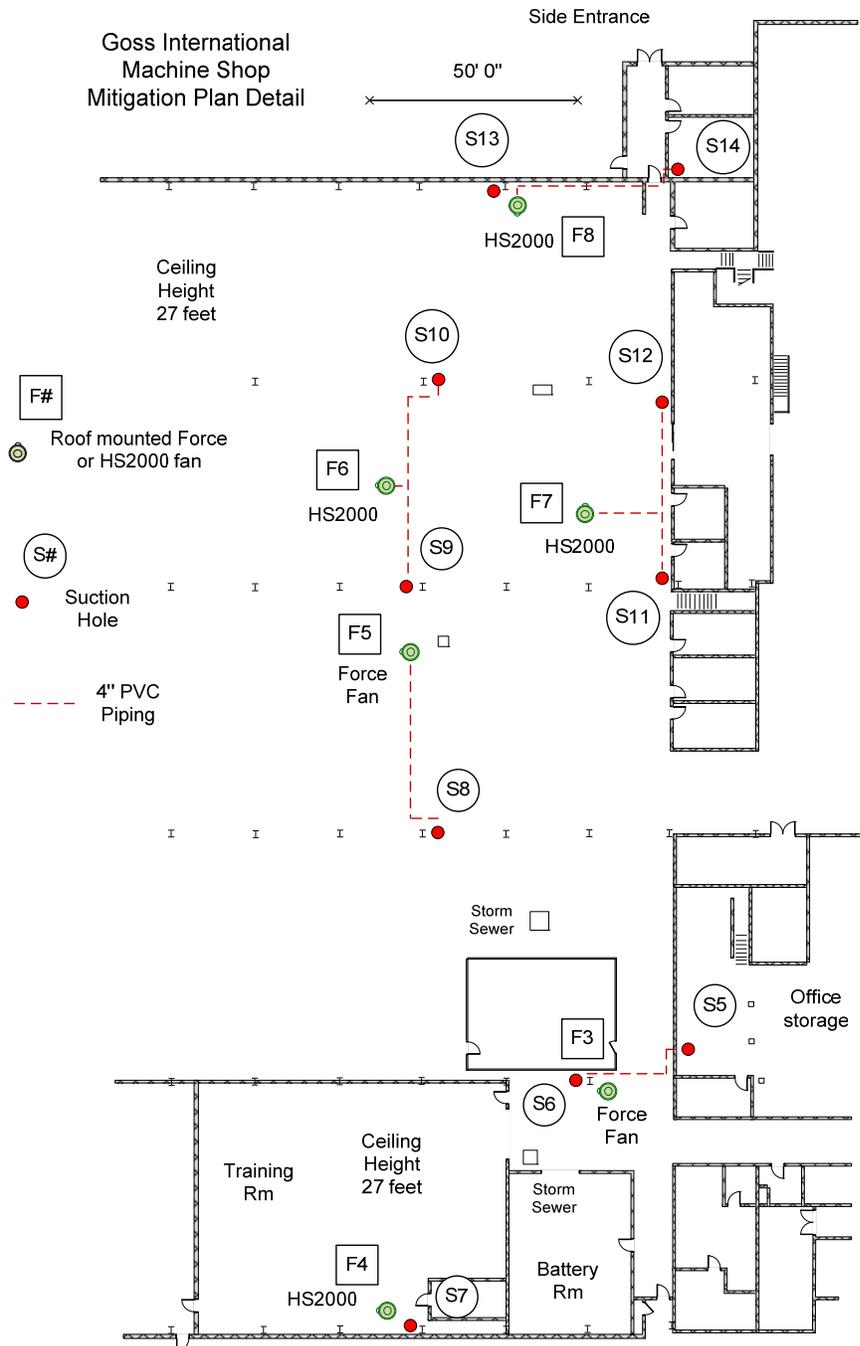


Figure 17 Machine Shop Mitigation piping, suction holes & fan locations

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## 8.0 GENERAL SYSTEM DESIGN INFORMATION

Throughout these specifications the ...

## 9.0 GENERAL INSTALLATION REQUIREMENTS

All portions of the contaminant system will abide by...

9.1 The vapor mitigation system installation shall be done so as to ...

9.2 The Contractor shall take every possible precaution to ...

9.3 The Owner will be responsible for enclosing ...

9.4 The Contractor shall ensure that any foreign materials..

9.5 The entire system shall have UL...

## 10.0 SYSTEM MATERIALS

Vapor Vent Piping

PVC schedule ...

No Hub Cast Iron pipe ... (ASTM A888)...

Piping Supports

Swivel ring or....

Double Drop...

3/8" ...

Vapor Blowers

RadonAway .....

AMG Force ....

3" to 3" rubber boots ...

Sealing Materials

Urethane sealant shall comply with Federal Specification ....

Fire Protection

Fire collars.... (

Visual Pressure Indicator

Checkpoint Pressure Switch.....

Low Pressure light Indicator....

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## 11.0 SUCTION HOLE INSTALLATION

11.1 There are a total of .....

11.2 The specific location of each suction hole .... Each suction hole will be cut approximately .....

11.3 The Sub-Contractor shall remove a minimum of .....

11.4 Any suction points located .....

11.5 Disposing of soil .....

## 12.0 PVC PIPE INSTALLATION

12.1 All horizontal pipe runs between the fan and ....

12.2 The PVC pipe will be supported at least every ....

12.3 All support straps and anchors installed outdoors ....

12.4 The pipe diameters and blowers have been sized according to airflow measurements

12.5 It is anticipated that there will be a greater volume of soil gas yield from ....

## 13.0 BLOWER INSTALLATION

13.1 There will be total of ... roof mounted blowers. The blowers .....

13.2 All roof-mounted blowers shall be fitted with ....

13.3 Blowers are specified based on diagnostic .... If an ... blower is maintaining less than ...

13.4 Blower exhaust shall be located as far as possible and at least 20 feet from .....

## 14.0 ROOF PENETRATIONS

14.1 All roof penetrations must be coordinated with the ....

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## 15.0 SEALING

### 15.1 Slab Crack and Expansion Joint Sealing

Any visible expansion joints or slab cracks in the areas being mitigated that have ....

### 15.2 Expansion Joints

Any expansion strips in the concrete slab area being mitigated that are accessible shall be .....

### 15.3 Storm Drain Openings

There are two iron-clad storm drain covers that are noted on the print ....

### 15.4 Plumbing Clean-Out

In the old machine shop area, there is a storm drain pipe clean-out that is covered by .....

## 16.0 INTERIOR VERTICAL PIPE ENCLOSURES

16.1 The Owner may ..... (See Technical Drawings Section 25, Pipe Enclosure-Detail 7).

## 17.0 BLOWER WIRING

17.1 A dedicated breaker should be used for .....

17.2 The Owner's Electrician is responsible for ....

17.3 The AMG Blowers have a maximum amperage draw of ....

## 18.0 LOW PRESSURE INDICATOR PANEL

18.1 A low pressure vacuum switch sensitive to .... "W.C. will be installed for each ....

18.2 The Owner's Electrician is responsible for wiring the air switch, indicator .....

18.3 Each individual fan powered system will also include a magnehelic .....

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## **19.0 FIRE PROTECTION**

**19.1** Pipes that penetrate fire-rated walls or ceilings .....

**19.2** Note that PVC piping is not allowed to be installed inside ....

## **20.0 SYSTEM LABELING**

**20.1** A label will be installed at the disconnect .....

**20.2** At least every ... feet of exposed vent pipe length shall have ....

**20.3** The Contractors name .....

## **21.0 PERMITS**

**21.1** It is the responsibility of .....

**21.2** The Owner shall arrange and secure building ...

## **22.0 WARRANTIES**

**22.1** The Contractor will warranty all .....

**22.2** Repairing system damage done by others shall ....

## **23.0 FINAL PROJECT REPORT**

**23.1** The Contractor shall measure the pressure field extension .....

**23.2** The Contractor shall prepare a final report summarizing ....

**23.3** The As Built Print shall be a modification of the original .....

**23.4** Photo documentation shall include at least one example of each blower ....

**23.5** Warranties and Submittals shall include: all blower ....

**23.6** The Operations and Maintenance Section shall include directions on how to .....

**23.7** MSDS shall be provided for all ...

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**23.8** A copy of the final report will be maintained by the ...

## **24.0 SITE PHOTOS**

The following photographs ...



Figure 46, Example of AMG Force Installation

## **25.0 Technical Drawings**

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## Roof Mounted HS Series Blower & Support Detail

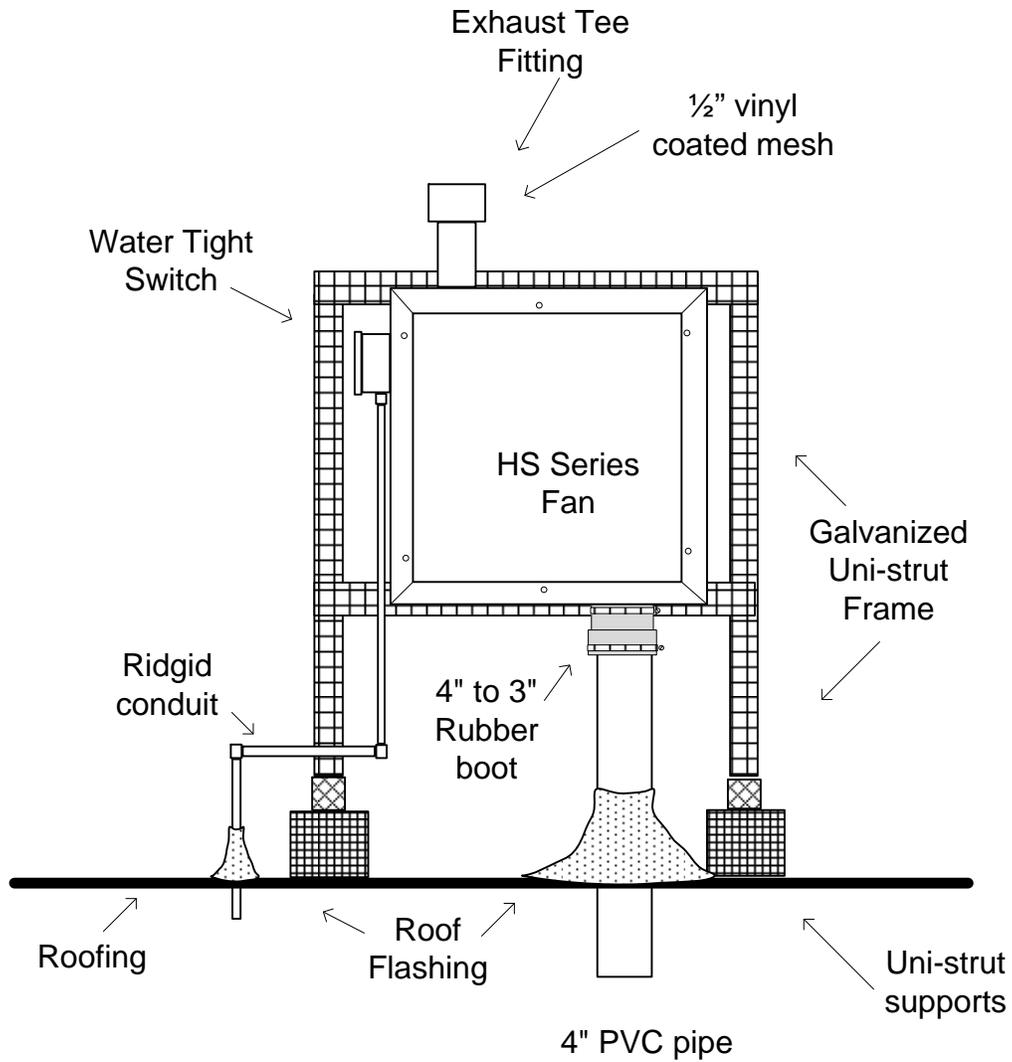


Figure 49, Roof Top Installation Detail of HS Blower