Envirotronics

Vibration Hammer Inspection and Cleaning 5/05

1.0 **SUBJECT**

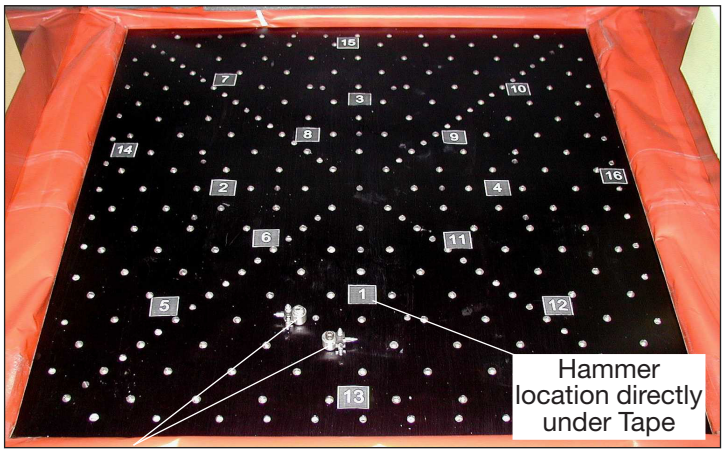
1.1 Establish procedure to evaluate/inspect the performance of the pneumatic hammers during Preventive maintenance.

2.0 **SCOPE**

2.1 The procedure will provide clear instructions to determine the condition of the pneumatic hammers. From parameter data collected, a determination can then be made to either remove and clean the pneumatic assembly or replace it with a new one.

3.0 **PROCEDURE**

3.1 Identify the piston mounting location by marking the table top with numbers 1 through 16. (See Fig. 1)



Triaxial accelerometer blocks

Fig.1

Hammer locations as viewed from below the table surface

3.2 Isolation of each hammer is accomplished by plugging manifolds or individual air lines feeding the hammers. (See Fig. 2)

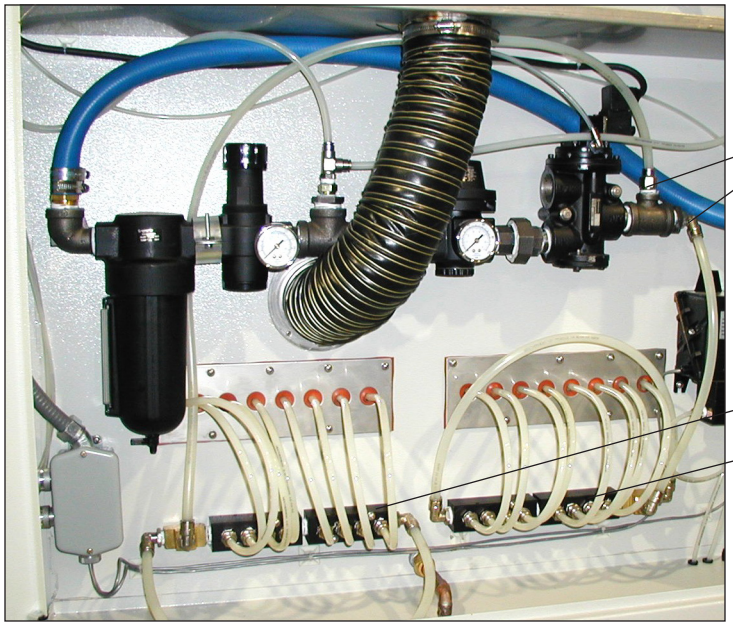


Fig.2

3.3 Label the individual air line out of the air manifold to the corresponding hammers. (See Fig. 2)

3.4 Locate the (2) two triaxial accelerometer blocks to be used for G/rms verification. The blocks will be located at a point on the table top nearest the mounting point of the hammer. Move the accelerometer blocks from location 1 through 16 to follow the hammer being checked.

3.5 Start at location #1 and enable the vibration system by turning on EVENT #2. Does the hammer start? Note this on the data sheet. If the hammer starts, also note the G/rms in the Z-axis and the manifold pressure.

3.6 Repeat steps 3.4 and 3.5 for all remaining hammers #2 through #16.

3.7 Input a setpoint of 5 G/rms and rerun data for all 16 hammers per steps 3.4 and 3.5.

3.8 Input a setpoint of 30 G/rms and rerun data for all 16 hammers per steps 3.4 and 3.5

3.9 Review data to determine what action will be taken for hammers 1 through 16. Any hammers which didn't fire will, at a minimum, have to be completely torn down and cleaned. Did any hammers use an excessive amount of air? Did any hammers need a higher than the normal 2A output to achieve setpoint?

3.10 Any suspect hammer from step 3.9 will now be isolated to check air consumption in SCFM.

3.11 Isolate hammer from system using an external air supply or dry nitrogen. A low pressure regulator, air gauge, ¼ turn ball valve, and SCFM flow meter will be needed. (See Fig. 3)

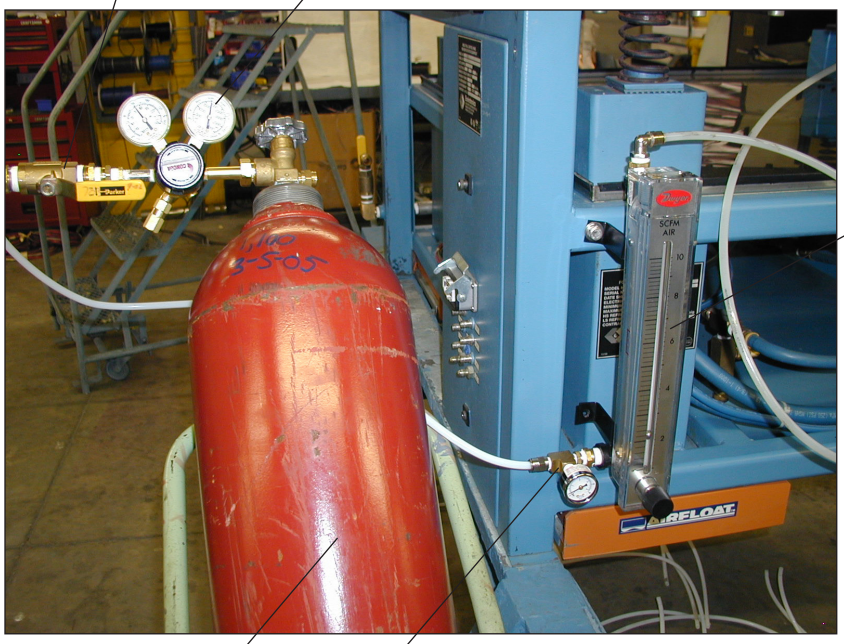


Fig.3

3.12 From the source (air/dry nitrogen), pipe in the regulator, gauge, ¼ turn ball valve, and SCFM flow meter. (See Fig. 4)

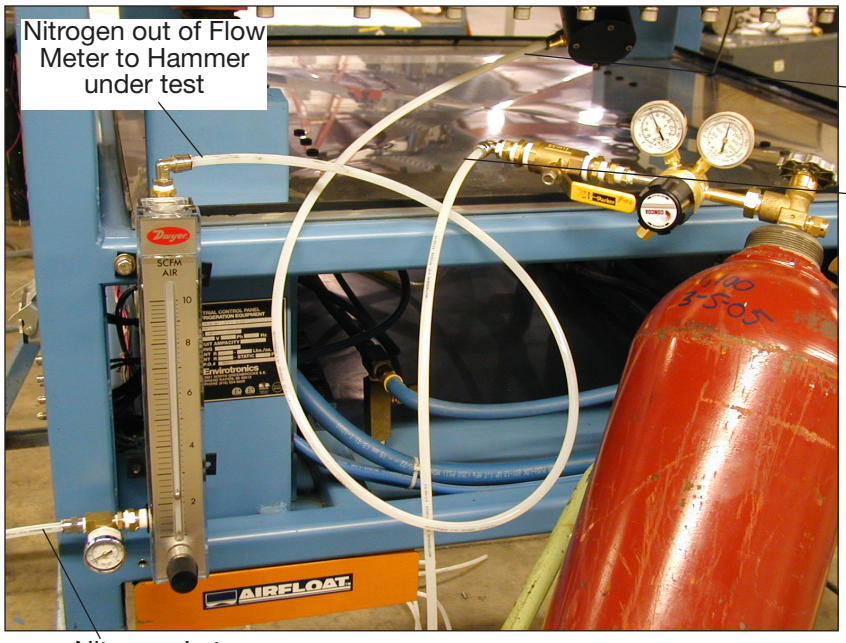


Fig.4

3.13 Open source (air/dry nitrogen) and adjust regulator to 10 PSIg. Open hand valve. Observe reading on SCFM flow meter. (See Fig. 5)

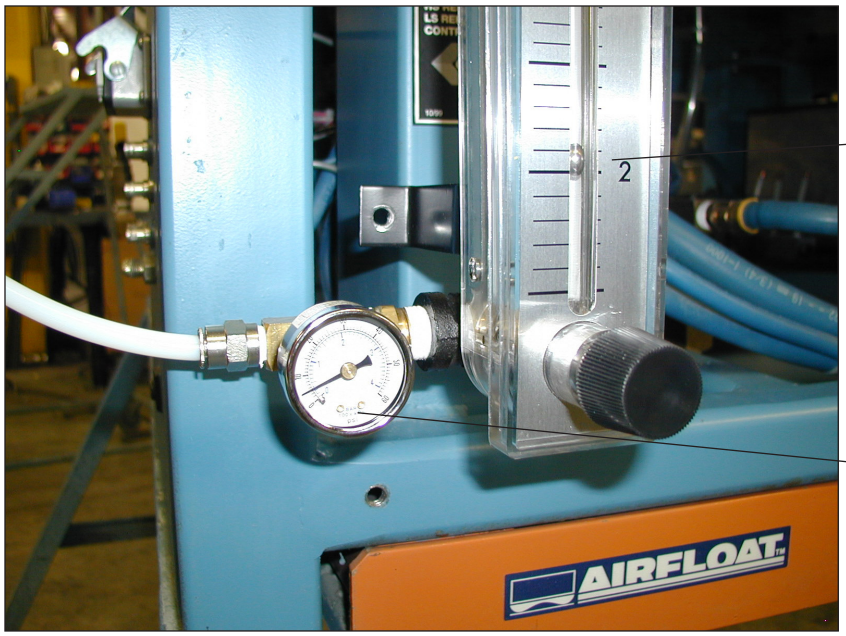


Fig.5

3.14 The hammer should fire and continue to run between 5 and 10 PSIg. At 7 PSIg the flow meter should read approximately 2.25 SCFM. (See Fig. 5). If it takes over 10 PSIg to fire the hammer, it must be replaced.

4.0 CLEANING AND INSPECTION OF HAMMERS

4.1 Remove the hammer from the table. This is done by first removing the flexible air line. You will need a 5/8" hex-head socket and a breaker bar. A single ¾" bolt holds the hammer to the table.

4.2 Remove the (4) four 10-32 cap screws.

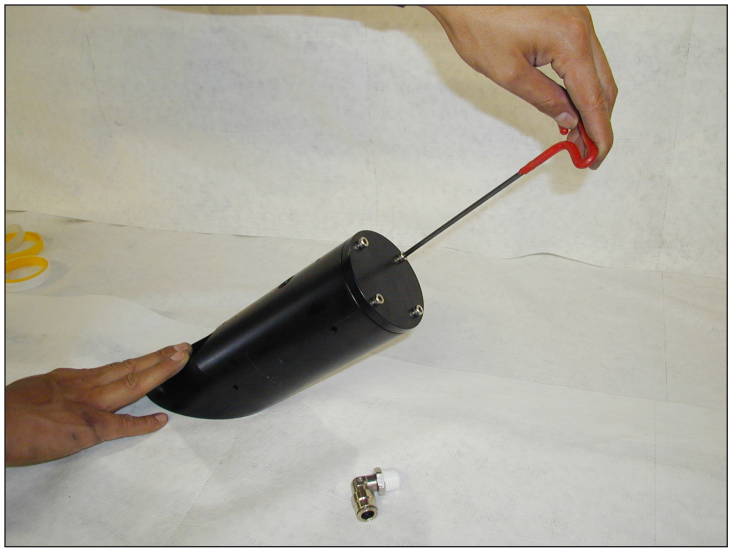


Fig.6

4.3 Remove piston/programmer

Fig.7

4.4 Observe the inside of the hammer housing. Check for abnormal housing wear and corrosion.

Fig.8

4.5 Observe the piston/programmer finish. Check for abnormal piston/programmer wear and corrosion.

Programmer end

Fig.9

4.6 Clean both the housing and the piston with alcohol and a clean cloth.

4.7 Blow the housing (inside and out) and piston off with clean dry shop air or dry nitrogen.

4.8 At this time of final inspection we can determine if a replacement hammer will be necessary or if the hammer is ready for installation. We will pay very close attention to this, especially if we have had hammers not fire during check out.

5.0 RE-ASSEMBLY OF THE PNEUMATIC HAMMERS

5.1 Re-assemble the hammer making sure the programmer end (See Fig. 9) is assembled facing away from the cap (PEEK SIDE DOWN).

5.2 Install (4) four 10-32 cap screws to secure hammer housing cover. Using a 5/32 hex-head socket, torque screws to 8 ft.-lbs.

5.3 Install hammer into the exact position on the table from which it was removed using ¾" bolt. With a 5/8 hex-head socket, torque bolt to 100 ft.-lbs.

5.4 Connect air line between hammer and manifold. (See Fig 2)

5.5 Make sure the supply line feeding air to the hammers downstream of the control solenoid (Fig. 2) is hooked up.

5.6 In some instances a hammer may appear good upon inspection and cleaning and still perform poorly after re-assembly. For this reason, on hammers which were suspect, possibly didn't fire, or G/rms levels were low, run these hammers through steps 3.4 through 3.8 as necessary.