

# LABORATORY FUME HOODS

## RESETTING PRESSURE SWITCH FOR CORRECT RESPONSE FOR FUME HOOD ALARM

Prior to shipping a fume hood alarm system, the pressure switch has been set to trigger the alarm at a predetermined point. The following procedure is suitable for resetting the switch when the alarm has been totally installed. Resetting is required when fume hood classification (or face velocity) is changed.

**NOTE:** An alarm system cannot be used with two speed blowers or with extremely low face velocities.

1. Unless otherwise specified, the pressure switch should be set to activate the alarm when the face velocity falls to 70% of the specified velocity. Since the pressure switch operates on fume hood static pressure, it is necessary to verify the specified face velocity and the resulting static pressure. This can be accomplished by direct measurement using appropriate instruments and approved techniques. Through calculations and/or data table (Figure AA), determine the fume hood static pressure for a face velocity 70% of that which was specified.

**CAUTION:** Do not use fume hood catalog static pressure tables as these include built-in safety factors and rounded numbers.

2. To set switch, remove tubing from sensor and connect to the low pressure port of a magnehelic gauge using additional tubing and a "Y" or "T" connector. See Figures A and B.

3. Create a negative over pressure to verify that the system is properly connected and working. This can be done by sucking with mouth.

**CAUTION:** Limit over pressure to 2" or 3" water gauge (W.G.) to avoid damage to meter and/or switch.

Turn on alarm and allow pressure to fall (become less negative) until switch activates and alarm sounds. Note reading on magnehelic gauge.

4. Using a screw driver, adjust set screw on switch. See Figure C. Counter clockwise to lower activating point, clockwise to raise activating point. (**NOTE:** Approximately one-half turn for a change of .01" W.G.)

Raise pressure and allow it to fall. Note reading when alarm sounds. Repeat, with adjustment, until alarm sounds at selected pressure.

5. Gradually raise pressure until switch opens and alarm turns off. Verify that opening point falls within fume hood static pressure range.

6. Remove added tubing and connector and reconnect tubing to sensor. See Figure D. Record closing pressure reading on switch housing with date.

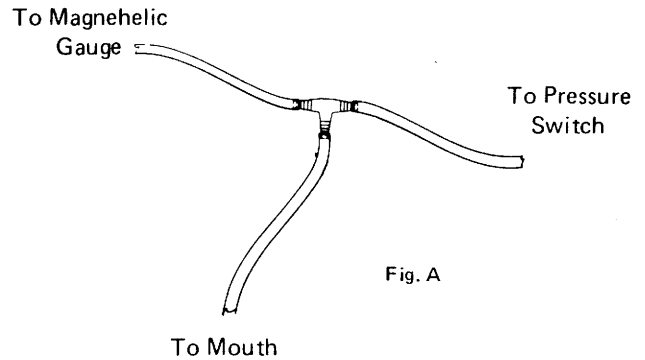


Fig. A

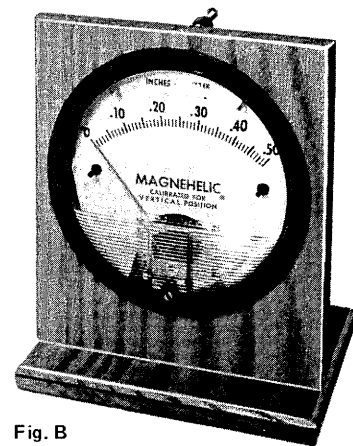


Fig. B

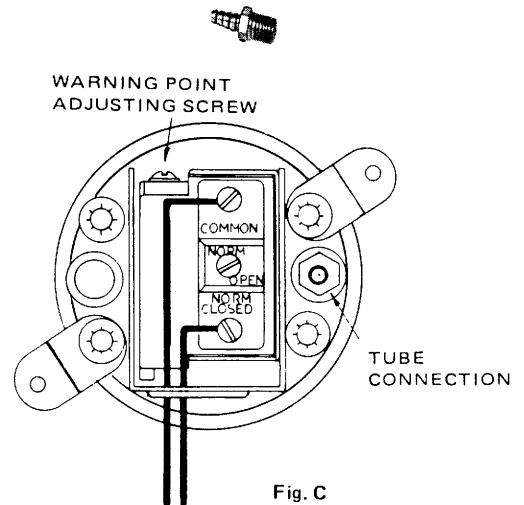


Fig. C

# LABORATORY FUME HOODS\*

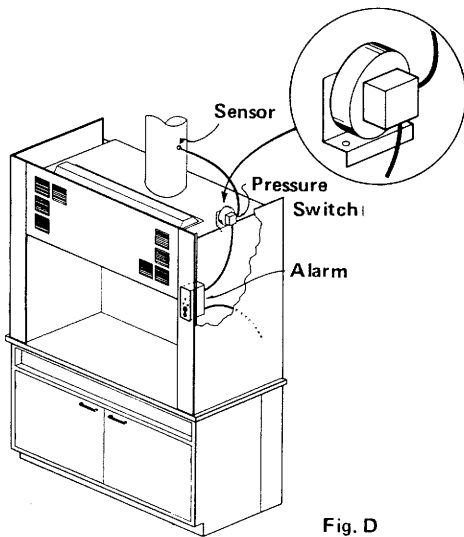


Fig. D

NOTE: Pressure differential switch must be mounted in a vertical mode.

SUGGESTED SETTINGS				
Hood Size	75 F.P.M.	100 F.P.M.	125 F.P.M.	150 F.P.M.
	S.P.	S.P.	S.P.	S.P.
4 Ft.	.105	.175	.266	.420
6 Ft.	.119	.287	.490	.770

Fig. AA

SUGGESTED WARNING POINT SETTINGS		
Fume Hood Usage	FACE VELOCITIES	
	Design	Warn At
Severe/Critical	125 to 150 F.P.M.	88 to 105 F.P.M.
Moderate	100 F.P.M.	70 F.P.M.
Minimum	75 F.P.M.	50 F.P.M.

Fig. BB

## TROUBLESHOOTING: HAMILTON FUME HOOD ALARMS 54L259 AND 54L260

1. Pilot light does not glow.
  - a. Obtain key and move switch to "ON". Pilot light should glow. If not, go to "b".
  - b. Turn on fume hood light. Alarm may be wired to light switch for convenience and control. If light does not glow, go to "c".
  - c. Verify that fume hood blower is operating. Alarm may be wired to blower circuit for night shutdown, energy saving, cycling.
  - d. Press test button. If red jewel glows and buzzer sounds, pilot light is defective. Replace.
2. Pilot light glows, but alarm does not sound when blower is turned off.
  - a. Verify that pilot light remains on when blower is turned off. Alarm may be wired to blower circuit.
  - b. Press test button. If alarm signals, problem is in wiring, pressure switch and/or sensor, repeat installation procedure, check system.
  - c. Adjust pressure switch per instructions.
  - d. If a, b and c do not result in correct operation, replace pressure switch.
  - e. Replace alarm.
3. Alarm signals all the time.
  - a. Verify that all mechanical and electrical connections are properly made. Pay particular attention to the pressure switch.
  - b. Measure fume hood face velocity and compare data with specified velocity and volume requirements. Correct as necessary and recheck.
  - c. Using a Monometer, verify that fume hood static pressure is within range of pressure switch. Adjust pressure switch per instructions.
  - d. Disconnect tubing from duct sensor and suck gently. Alarm should stop signaling. Using a "T" connector and a short piece of tubing, connect test set 54L328. Repeat sucking procedure until alarm stops. Allow vacuum to fall until alarm sounds. Repeat procedure until signal pressure reading is verified on dial of gauge. Compare with setting schedule on AL-845-1 or marked on switch. Adjust as required following procedure detailed in AL-854-1, or on these pages.
  - e. Reconnect tubing to sensor and check for correct operation.
  - f. Replace pressure switch.

## RESETTING PRESSURE SWITCH FOR REVISED RESPONSE POINT OF FUME HOOD ALARM.

Prior to shipping a fume hood alarm system, the pressure switch has been set to trigger the alarm at a predetermined point. The following procedure is suitable for resetting the switch when the alarm has been totally installed.

**NOTE:** An alarm system cannot be used with two speed blowers or with extremely low face velocities.

1. Unless otherwise specified, the pressure switch should be set to activate the alarm when the face velocity falls to 70% of the specified velocity. Since the pressure switch operates on fume hood static pressure, it is necessary to verify the specified face velocity and the resulting static pressure. This can be accomplished by direct measurement using appropriate instruments and approved techniques. Through calculations and/or data table (see below), determine the fume hood static pressure for a face velocity 70% of that which was specified.
2. To set switch, remove tubing from sensor and connect to the low pressure port of a Test Set 54L328 using additional
3. Create a negative over pressure to verify that the system is properly connected and working. This can be done by sucking with mouth.

**CAUTION:** Limit over pressure to 2" or 3" water gauge (W.G.) to avoid damage to meter and/or switch.

Turn on alarm and allow pressure to fall (become less negative) until switch activates and alarm sounds. Note reading on magnehelic gauge.

4. Using a screw driver, adjust setscrew on switch. See Figure B. Counterclockwise to lower activating point, clockwise to raise activating point. (NOTE: Approximately one-half turn for a change of .01" W.G.)  
Raise pressure and allow it to fall. Note reading when alarm sounds. Repeat, with adjustment, until alarm sounds at selected pressure.
5. Gradually raise pressure until switch opens and alarm turns off. Verify that opening point falls within fume hood static pressure range.
6. Remove added tubing and connector and reconnect tubing to sensor. See Figure D. Record closing pressure reading on switch housing with date.
7. Cycle hood to verify function of alarm system. tubing and a "Y" or "T" connector. See Figure E.

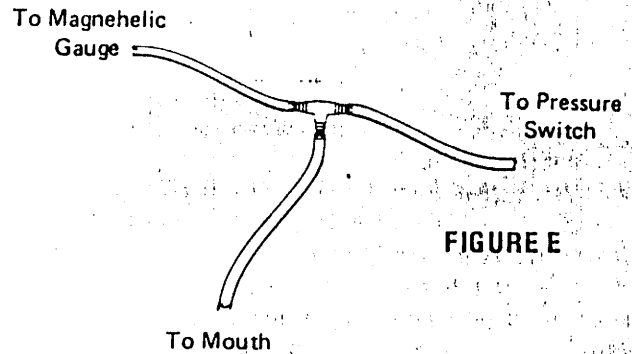


FIGURE E

SUGGESTED WARNING POINT SETTINGS		
	FACE VELOCITIES	
FUME HOOD USAGE	DESIGN	WARN AT
SEVERE/CRITICAL	125 to 150 F. P. M.	88 to 105 F. P. M.
MODERATE	100 F.P.M.	70 F.P.M.
MINIMUM	75 to 80 F.P.M.	52 to 56 F.P.M.

### DATA TABLE FOR FUME HOODS WITH VERTICAL RISING SASHES

Static pressure setting points for face velocity 70% of specified figure.

Hood Size	FACE VELOCITIES			
	75 F.P.M. S.P.	100 F.P.M. S.P.	125 F.P.M. S.P.	150 F.P.M. S.P.
3 Ft.	.085	.15	.215	.33
4 Ft.	.07	.145	.235	.325
5 Ft.	.055	.135	.215	.30
6 Ft.	.115	.20	.31	.385
8 Ft.	.085	.16	.235	.34

### DATA TABLE FOR VECTAMATIC FUME HOODS OR OTHER HOODS WITH HORIZONTAL SLIDING SASHES

Static pressure setting points for face velocity 70% of specified figure.

Hood Size	FACE VELOCITIES			
	75 F.P.M. S.P.	100 F.P.M. S.P.	125 F.P.M. S.P.	150 F.P.M. S.P.
4 Ft.	.07	.085	.115	.17
5 Ft.	.04	.07	.105	.155
6 Ft.	.035	.07	.095	.165
8 Ft.	.025	.04	.065	.09

For hood sizes not listed or for special and unusual conditions, request data from Hamilton Technical Services Department.