

Installation Instructions

INTRODUCTION

This publication contains installation instructions for constant volume (CV) and variable air volume (VAV) control packages for 37HS Moduline® air terminals.

Package numbers for both CV and VAV controls are shown in Table 1. The components for CV control packages are shown in Fig. 1. The components for VAV control packages are shown in Fig. 2 (37HS2, 37HS4) and Fig. 3 (37HS1). Review contents of package and compare with items shown in Fig. 1, 2 or 3.

Note that for certain applications, additional control packages are required and must be ordered separately. These include wall thermostats, warm-up valves, changeover valves and electric warm-up valves. Separate installation instructions are provided in these packages.

Table 1 — Volume Control Package Numbers

UNIT	PACKAGE NUMBER	
	Variable Air Volume	Constant Air Volume or Wall Thermostat Applications
37HS1	37HS900001	37HS900003
37HS2	37HS900002	37HS900003
37HS4	37HS900004	37HS900003

NOTE: The same volume controller is used for all 37HS models; however, other components in the VAV control packages differ.

INSTALLATION

General — Controls may be installed in the unit before or after the unit is hung or placed in the ceiling grid. However, if warm-up switches or changeover valves are used, the controls should be installed before the unit is placed in the ceiling structure.

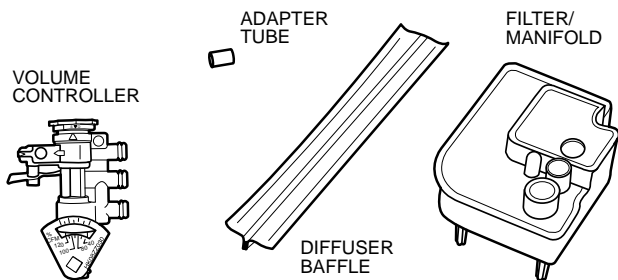


Fig. 1 — Control Components, Constant Volume Package — 37HS1, 37HS2 and 37HS4

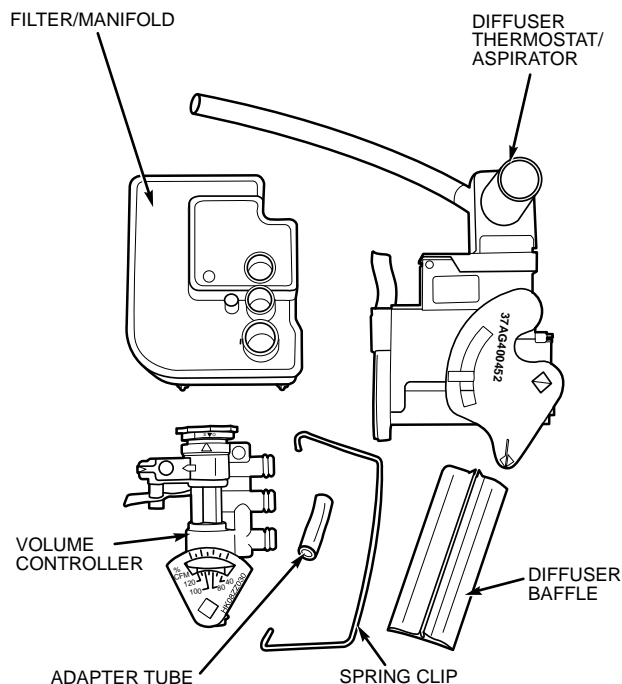


Fig. 2 — Control Components, Variable Air Volume Packages — 37HS2, 37HS4

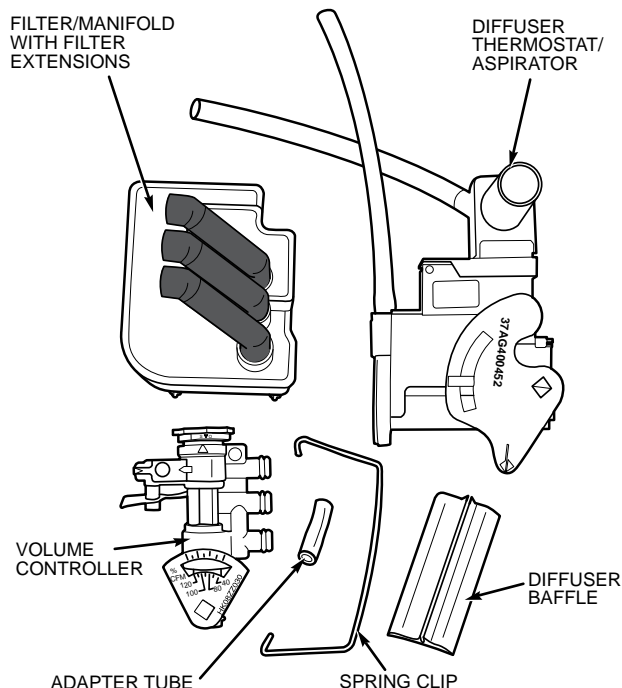


Fig. 3 — Control Components, Variable Air Volume Package — 37HS1

Constant Volume Applications

1. Remove the plugs from the high-pressure and low-pressure ports located at the control block of the unit.
2. Remove cap from bellows fitting (see Fig. 4) and install $1\frac{1}{16}$ -in. piece of $\frac{1}{4}$ -in. OD pneumatic tubing onto the bellows fitting (push on full length of fitting).
3. Push the diffuser baffle into the space between side diffusers and down onto the center diffuser at the end away from the unit. Then push down the end close to the unit. The baffle will form around the legs of the diffuser spacer and lock onto the center diffuser. See Fig. 5.
4. To prepare the control filter for installation, be sure that the bellows chamber filter plug is pushed tightly into the correct connection. Figure 6 shows the connection ports on both sides of the filter. The lower bellows port on the unit side and the small slave bellows pressure connection on the control side should be capped or plugged before installation. Moisten the 2 O-rings with water, then push the filter into the unit end block until the standoffs rest on or close to the unit end plate. See Fig. 7.
5. Remove cap from thermostat port of volume controller. See Fig. 8. Pull shim down until released from thermostat port and then pull shim out from volume controller body. See Fig. 9. Discard shim. Reinstall cap on the thermostat port.
6. To complete installation, moisten the O-rings of the volume controller directly into the control filter. See Fig. 10 and 11.

NOTE: The thermostat port of the volume controller must be capped.

7. If more than one unit is being controlled by a single volume controller, attach interconnecting tubing as follows (refer to Fig. 12):
 - a. Use $\frac{1}{4}$ -in. OD FR (fire retardant) tubing. Connect tubing to the unit bellows connection on the end of the master unit *opposite* the control end. *Do not connect tubing to filter bellows connection.*
 - b. Using T-tap arrangement, connect the tubing from the master unit to the 2-slave units on each side of the master unit.
 - c. Attach interconnecting tubing from these 2 slave units to other slave units in the air series.

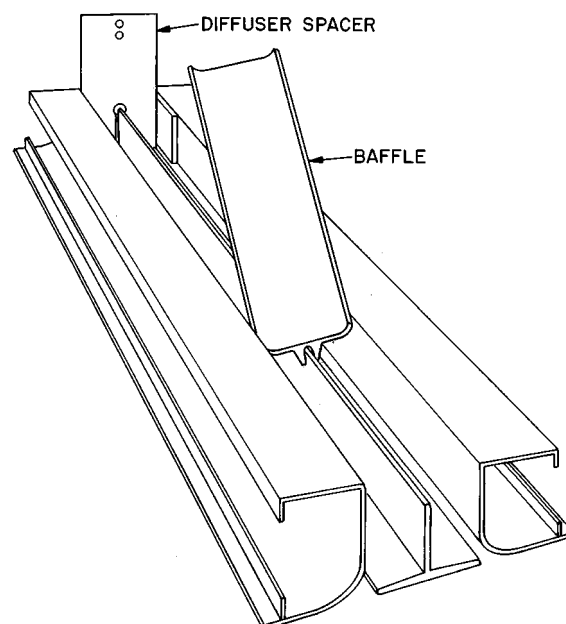


Fig. 5 — Diffuser Baffle Assembly

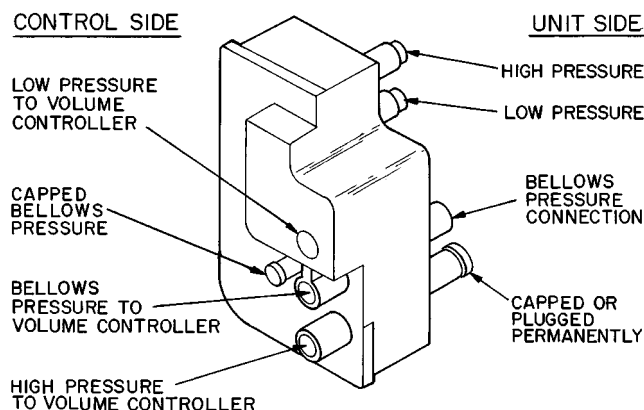


Fig. 6 — Filter/Manifold Connections

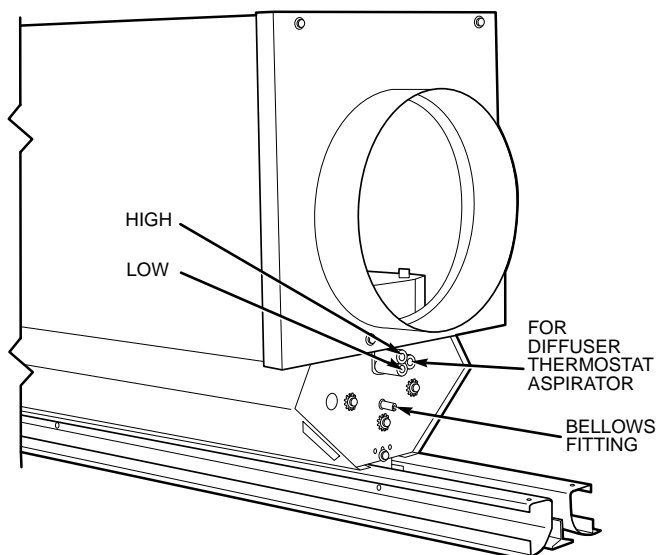


Fig. 4 — Typical 37HS Air Terminal Before Installation of Controls

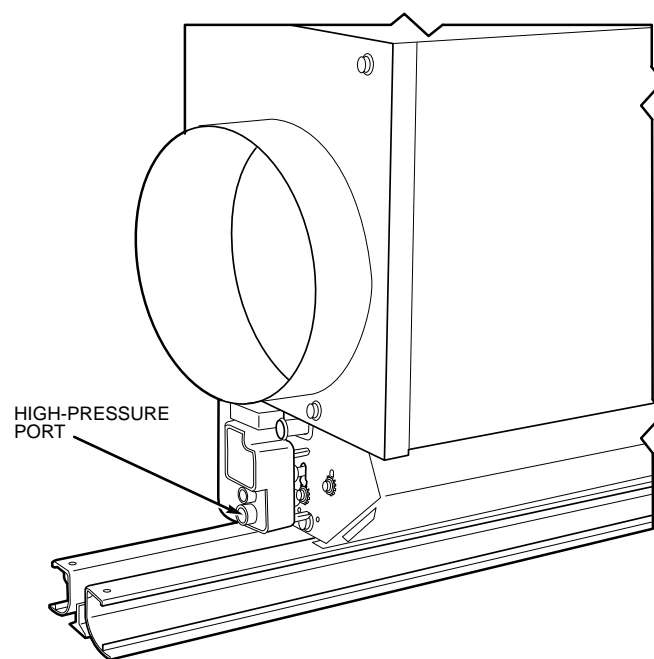


Fig. 7 — Control Filter Installed

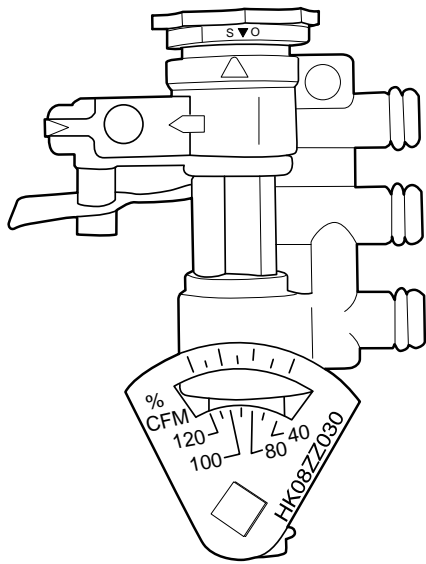


Fig. 8 — Setting Maximum Volume — 37HS Controller

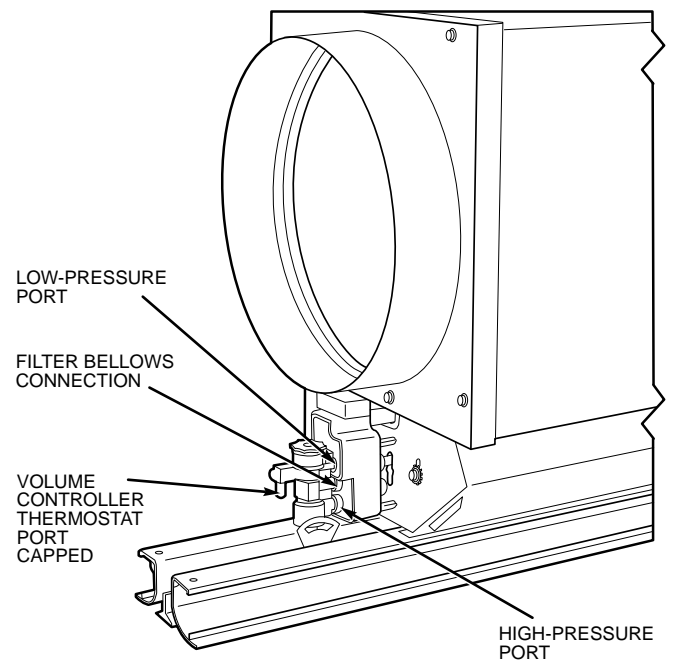


Fig. 10 — Constant Volume Control Installed on Unit

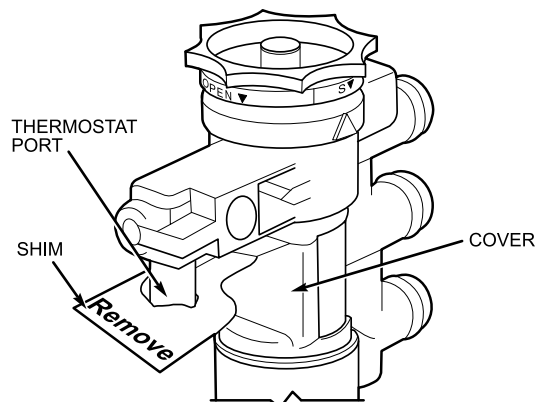


Fig. 9 — Shim Removal

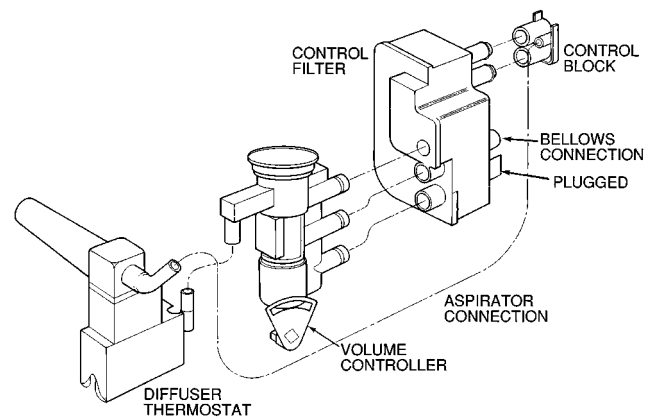
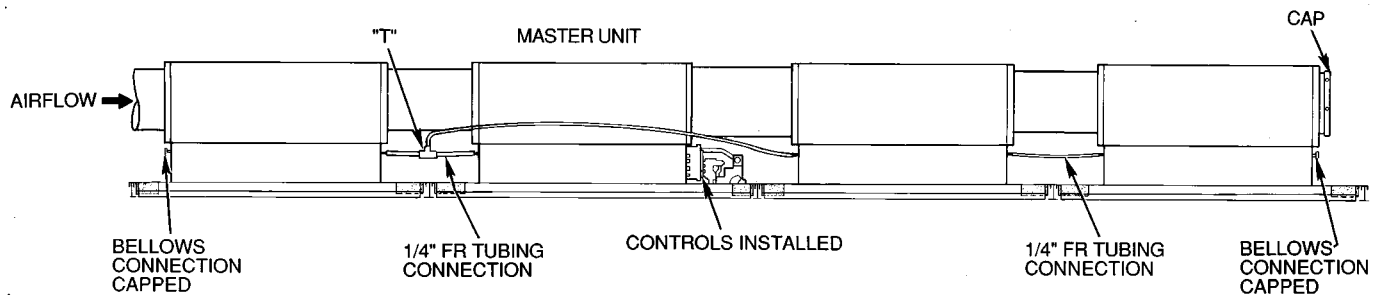


Fig. 11 — 37HS Control Connections



FR — Fire Retardant

Fig. 12 — Control Arrangements — Master Units with Slaves

Variable Air Volume Applications

1. Remove the plugs from the high-pressure and low-pressure ports located at the control block of the unit.
2. Remove cap from bellows fitting and install $\frac{1}{16}$ -in. long piece of $\frac{1}{4}$ -in. OD pneumatic adapter tubing onto the bellows fitting (push on full length of fitting). See Fig. 4.
3. Push the diffuser baffle into the space between side diffusers and down onto the center diffuser at the end away from the unit. Then push down the end close to the unit. The baffle will form around the legs of the diffuser spacer and lock onto the center diffuser. See Fig. 5.
4. To prepare the control filter for installation, be sure that the bellows chamber filter plug is pushed tightly into the correct connection. Figure 6 shows the connection ports on both sides of the filter. The lower bellows port on the unit side and the small slave bellows pressure connection on the control side should be capped or plugged before installation. Moisten the 2 O-rings with water, then push the filter into the unit end block until the standoffs rest on the unit end plate. See Fig. 7.
5. **37HS2 and 37HS4:** The VAV control packages are shipped with the diffuser thermostat and volume controller connected by a flexible offset connector tube. Verify that the offset is in the correct direction. See Fig. 13.
 - a. Remove cap from thermostat port of volume controller. See Fig. 8. Pull shim down until released from thermostat port and then pull shim out from volume controller body. See Fig. 9. Discard shim.
 - b. Refer to Fig. 11. Moisten the O-rings of the volume controller with water and push the controller directly into the filter.
 - c. Push the thermostat down onto the center diffuser.
 - d. Snap spring clip over thermostat and onto the side diffusers to hold thermostat in place. See Fig. 14. Make sure that thermostat lever will rotate.
 - e. Remove cap from the aspirator supply port on the unit end block. Connect the aspirator supply tube to the end block connection.

37HS1: Because of the limited space on the 23-in. 37HS1 unit, the 37HS1 VAV control has a different method of assembly.

- a. Remove cap from thermostat port of volume controller. See Fig. 8. Pull shim down until released from thermostat port and then pull shim out from volume controller body. See Fig. 9. Discard shim.
 - b. Refer to Fig. 11. Moisten the O-rings of the volume controller with water and push the controller directly into the filter extensions.
 - c. Install the thermostat on the center diffuser, then snap spring clip over thermostat and onto the side diffusers to hold thermostat in place. See Fig. 15. Make sure that thermostat lever will rotate.
 - d. Connect the thermostat to the volume controller with the $\frac{3}{16}$ -in. ID rubber tube with spring.
 - e. Remove cap from the aspirator supply port on the unit control block. Connect the aspirator supply tube to the control block connection.
6. If more than one unit is being controlled by a single volume controller, attach interconnecting tubing as follows (refer to Fig. 12):
 - a. Use $\frac{1}{4}$ -in. OD FR tubing. Connect tubing to the unit bellows connection on end of the master unit *opposite* the control end. *Do not connect tubing to capped filter bellows connection.*

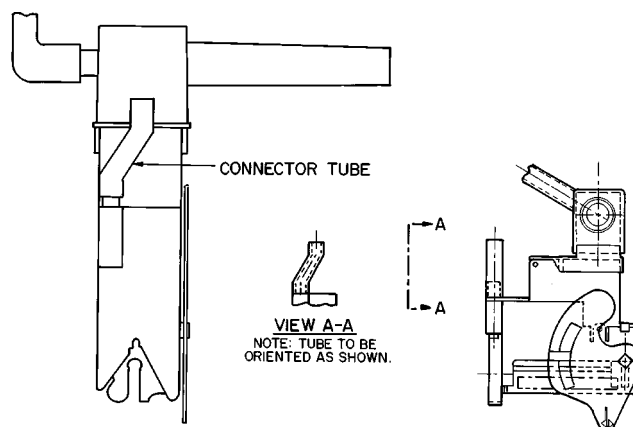


Fig. 13 — Correct Orientation of Connector Tube

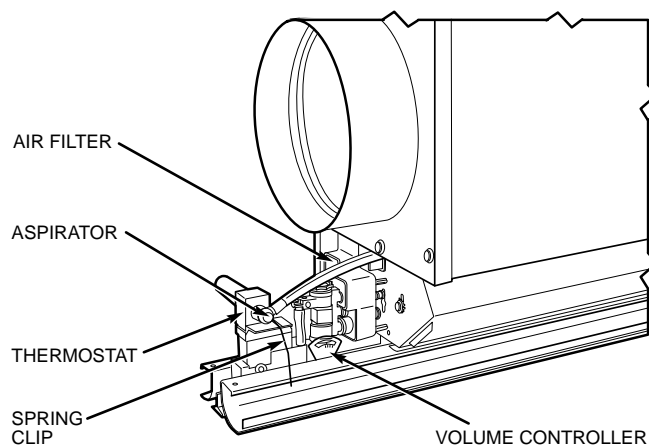


Fig. 14 — 37HS2 and 37HS4 Variable Air Volume Control Installation

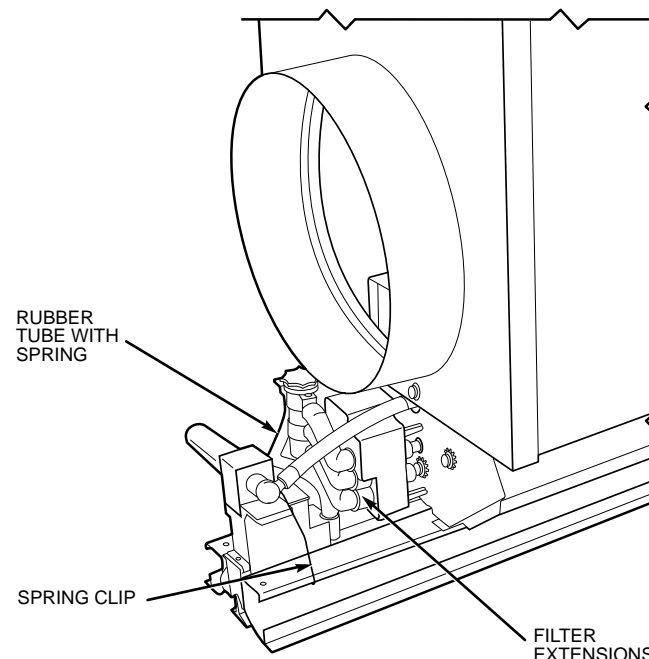


Fig. 15 — 37HS1 Variable Air Volume Control Installation

- b. Using T-tap arrangement, connect the tubing from the master unit to the 2 slave units on each side of the master unit.
- c. Attach interconnecting tubing from these 2 slave units in the air series.

Airflow Adjustment — Each 37HS volume controller is equipped with a maximum cfm lever for setting the required unit airflow in the field. The lever is located at the bottom of the controller. See Fig. 16. The controller has a star wheel located at the top of the controller for setting the minimum airflow. The star wheel is also shown in Fig. 16.

MAXIMUM AIRFLOW (CFM) ADJUSTMENT — The 37HS maximum airflow adjustment lever is common to all sizes and is divided into levels of percent cfm. Table 2 shows the approximate unit airflow that will be obtained by each lever setting for each unit size.

Table 2 — Maximum Airflow Settings

LEVER SETTING (% CFM)	UNIT AIRFLOW (CFM)		
	37HS1	37HS2	37HS4
120	120	240	480
100	100	200	400
80	80	160	320
40	40	80	160

The maximum cfm is the unit airflow obtained when the thermostat is calling for full cooling in a VAV system; it is the design cfm for the space conditioned by the unit or units regulated by one controller.

The variation in maximum airflow for a given setting of the lever is a function of the unit plenum size, the model and the number of units in an air series on one controller. See Tables 3 and 4.

Table 3 — Maximum Cfm Through the Inlet Collar of a Single Unit or of Units in Air Series

MODEL	PLENUM SIZE (in.)	INLET COLLAR DIAM (in.)	MAXIMUM TOTAL AIRFLOW (Cfm)
37HS1	5 x 7	4	110
	7 x 7	6	400
	9 x 9	8	800
	11 x 11	10	1100
37HS2	7 x 7	6	400
	9 x 9	8	800
	11 x 11	10	1100
37HS4	9 x 9	8	800
	11 x 11	10	1100
	13 x 13	12	1600

Table 4 — Maximum Number of Units in an Air Series on One Control

MODEL	PLENUM SIZE (in.) FIRST UNIT IN AIR SERIES	NUMBER OF UNITS ON ONE CONTROLLER				
		Single Unit	Units in Air Series			
			2	3	4	5
37HS1	5 x 7*	X	—	—	—	—
	7 x 7	X	X	X	X	—
	9 x 9	X	X	X	X	X
	11 x 11	X	X	X	X	X
37HS2	7 x 7	X	—	—	—	—
	9 x 9	X	X	X	X	—
	11 x 11	X	X	X	X	—
37HS4	9 x 9	X	—	—	—	—
	11 x 11	X	X	X	X	—
	13 x 13	X	X	X	X	—

*The 37HS1 unit with 5 x 7 size plenum is available with blank end only; multiple units of this size would not be used on one control.

NOTE: The conditions stated in Table 3 must be included in evaluations for selecting the number of units in an air series.

To set maximum cfm with zero minimum cfm:

1. Set diffuser or wall thermostat for maximum cooling.
2. Turn the minimum cfm star wheel counterclockwise until the internal stop is reached. Do not attempt to override stop. (Minimum cfm has been set at zero, and the unit will turn off when required.)
3. Adjust maximum cfm lever to desired percent cfm.

MINIMUM AIRFLOW (CFM) ADJUSTMENT — Some applications require both a design maximum cfm and a minimum cfm. The 37HS controller can be set to provide both airflow requirements.

To set maximum and minimum cfm:

1. Set diffuser or wall thermostat for maximum cooling.
2. Turn the minimum cfm star wheel counterclockwise until the internal stop is reached. Do not attempt to override stop.
3. Shut off unit by adjusting thermostat to zero cooling, or disconnect tube from volume controller to thermostat.
4. Place a standard airflow hood against the outlet of the master unit and slowly turn the minimum cfm star wheel on the controller clockwise until the desired minimum cfm is reached.
5. Return the thermostat to the desired setting and/or reconnect tube between volume controller and thermostat.
6. Adjust maximum cfm lever to desired percent cfm.

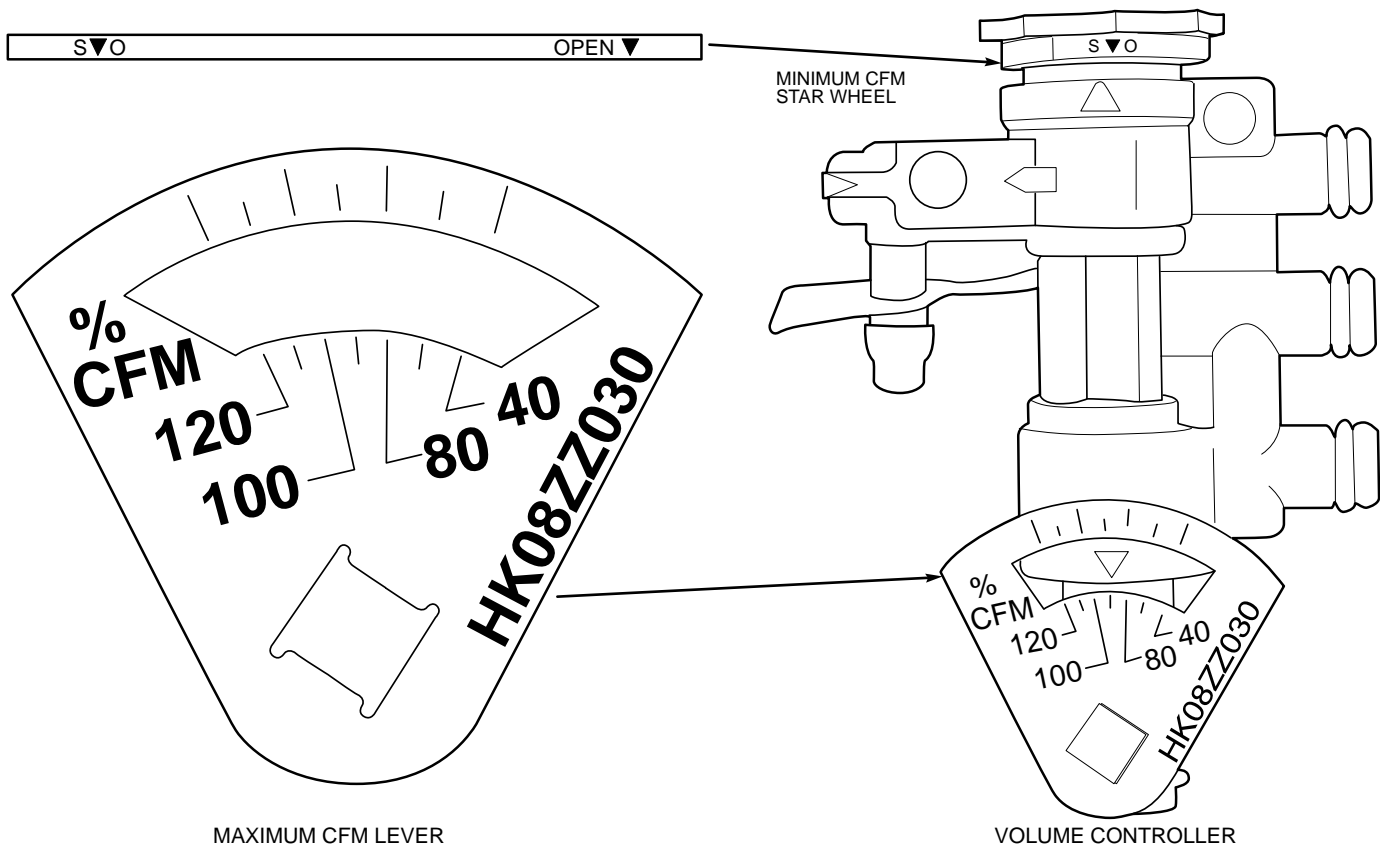


Fig. 16 — Minimum and Maximum Airflow Adjustments, 37HS Controller

