

This worksheet shows Tamco running the AMCA 5.4 and 5.5 test with and without their damper to show the pressure drop is more a function of the test and not by adding the damper.

Possible specification verbiage: Effect of adding backdraft damper to fan inlet shall have a total system effect of no more than .05" static pressure vs same airhandler without damper.

VELOCITY VS. PRESSURE DROP

SIZE inches	VELOCITY fpm	PRESSURE DROP (inches w.g.)					
		AMCA Fig. 5.4 (Intake)			AMCA Fig. 5.5 (Exhaust)		
		DAMPER & SYSTEM	SYSTEM ONLY	DAMPER ONLY	DAMPER & SYSTEM	SYSTEM ONLY	DAMPER ONLY
12 X 48	1000	0.157	0.166	-0.008	0.143	0.155	-0.012
	2000	0.625	0.654	-0.029	0.596	0.638	-0.042
	3000	1.388	1.482	-0.094	1.332	1.458	-0.126
24 X 24	1000	0.154	0.164	-0.010	0.155	0.159	-0.004
	2000	0.615	0.658	-0.043	0.650	0.653	-0.003
	3000	1.408	1.478	-0.069	1.459	1.471	-0.012
36 X 36	1000	0.157	0.172	-0.015	0.152	0.157	-0.005
	2000	0.628	0.685	-0.057	0.614	0.634	-0.020
	3000	1.401	1.547	-0.146	1.382	1.427	-0.045
48 X 12	1000	0.140	0.166	-0.025	0.133	0.155	-0.023
	2000	0.547	0.654	-0.107	0.546	0.638	-0.092
	3000	1.211	1.482	-0.271	1.233	1.458	-0.225
48 X 48	1000	0.163	0.169	-0.006	0.146	0.155	-0.009
	2000	0.646	0.673	-0.027	0.588	0.613	-0.025
	3000	1.461	1.520	-0.058	1.296	1.394	-0.098

FIG. 5.4 Test damper is located at the entrance of a plenum.

FIG. 5.5 Test damper is located at the exit of a plenum.

Air Performance testing was conducted in accordance with ANSI/AMCA Standard 500-D.

Pressure drop values are based on Flanged to Duct install type. Pressure drop will be greater for In Duct install type dampers.

The table above shows AMCA Figure 5.4 (intake) and Figure 5.5 (exhaust) pressure drop test results for a range of opening sizes. Pressure drop tests were conducted for each of the following:

- > System Only. (No damper installed in the opening.)
- > Damper & System. (TAMCO damper installed in the opening.)

The third column (Damper Only) under each AMCA Figure shows what effect the TAMCO WP dampers have on the airflow through each opening size. This is calculated by subtracting the Damper and System results from the System Only results. The pressure drop for WP TAMCO dampers is less than the pressure drop of the opening alone.

Typical of a 400 fpm tunnel reduced to a fan inlet

Application Guidelines

Terry, please verify with Twin City, I believe that the fan performance data is tested per an amca standard that already includes the pressure drop of moving the air from a larger tunnel to the smaller fan inlet as shown in part below.

- The oversized bearing in the inlet will block some air in smaller fans (above the losses that are already included in the EPF/EPQ ratings).

Location and Placement of Fans in Air Handlers

- Center the fan inlets in both the horizontal and vertical planes.
- For inlet clearance, see Figure 1. The flow should converge at an angle not greater than 45° when approaching the opening for the fan inlet. A minimum of one fan wheel diameter clearance is recommended.
- In the fan outlet plenum, a minimum wall clearance of one-half fan wheel diameter to the periphery of the fan wheel is recommended.
- Figure 1 shows that the minimum clearance between the back of the fan wheel and the nearest component downstream (Dim. E) should be one wheel diameter. Small clearances do not allow the flow to equalize behind the fan wheel and the pressure drop of the downstream component is increased.

Figure 1. Recommended Location of Fan in Plenum

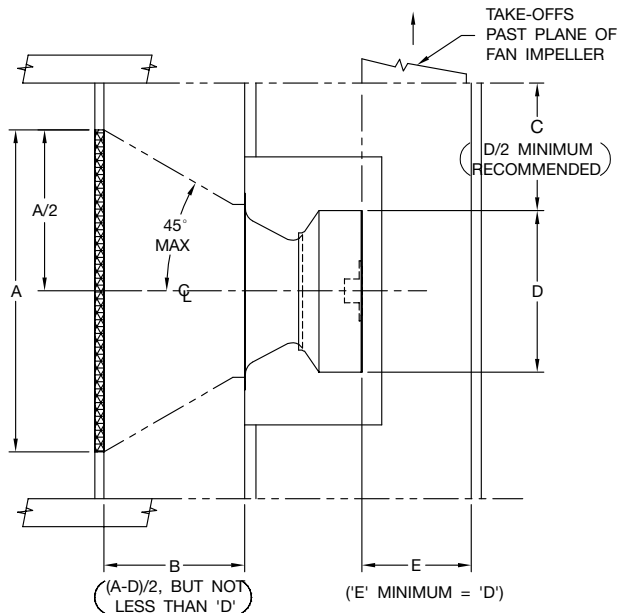
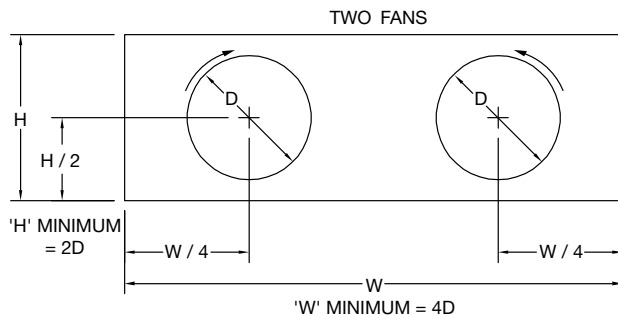


Figure 3. Location of Counter-Rotating Fans



NOTE: 'D' = Wheel diameter

can occur. See Figure 2 for a recommended flow baffle or a vortex breaker that may help preserve rated fan performance.

- When two or more fans are installed in a plenum, divide the plenum into imaginary cells of equal area. Center the fan inlets on each cell. See Figure 3.

Installation Recommendations

- Install the fan so the flexible connector on the inlet remains uncollapsed during operation.
- Install thrust restraints (snubbers) to maintain the axial position of the fan when it is generating pressure.
- Peripheral equipment, such as electrical components, inverters, control panels, etc., should be positioned away from the high velocity air entering or leaving the fan.
- Adjust springs on the isolation base so that spring deflection is approximately equal for all isolators.
- Follow safety, installation, start-up, and maintenance instructions supplied with each fan.

Figure 2. Flow Baffle and Vortex Spin Breaker Location

