

TECH TALK

TT-05

May 2004



Throw, Blow, Flow, Oh No!

by Dave Feters

Everyone has thrown a ball of some kind in their lifetime, and we generally pay attention to how far it traveled as a measure of our strength, accuracy, or overall abilities. We can see the result of our effort. Similarly, when air flows out of a supply register, we'd like to know the result. Since we cannot see what is happening (although we might be able to feel it), we use *throw* as one indicator of a register's abilities. Throw is a measure of how far the supply air stream is blown into the room.

Throw is measured in feet from the face of the register along the primary direction of flow. However, a throw distance is meaningless unless given a point of reference. By that I mean, "What is the air doing at the end of the designated throw?" Is it successfully mixing with room air to make the occupied space comfortable? To be mixing it has to be moving, but how fast?

We use the term *terminal velocity* in conjunction with throw to describe what the air is doing at the end (or *terminus*) of the designated throw. A typical terminal velocity is 75 feet per minute (FPM). This means that no matter how fast the air is blown out of the register, the throw tells us, at that distance, that the air has slowed to 75 FPM.

The supply air velocity measured at the register face determines how far the throw will be. The faster the air exits the face, the farther the air will travel into the room. The resistance of room air to the supplied air will cause the supply air to slow down. Eventually, the supply air will slow enough to become ineffective in mixing with room air. The point that air velocity becomes ineffective is called the *terminal velocity*. It is somewhat arbitrary, but generally ranges from 150 down to 50 FPM.

(continued on reverse side)

The distance from the face to where this terminal velocity occurs is the throw.

Example: The engineering data for a sidewall supply register states that all throws are at a terminal velocity of 100 FPM. No matter what the face velocity is or how much air is being delivered, each throw is measured at the point where the supply air stream has slowed down to 100 FPM. If we would have used 75 FPM as the terminal velocity, the throws would have all been longer (farther from the face). At the register face where the throw is “0,” the velocity of the supplied air is highest. No matter what distance we choose to stop moving away from the face, there will always be a corresponding velocity that becomes less and less the farther away we move.

Always look for the stated terminal velocity in the engineering data when discussing throws. Terminal velocities will change depending on the type of product and the intended use. We may even show two or three throws for the same size product corresponding to different terminal velocities.

As always, if you have questions, call us toll-free at **800.433.6341**, check out our web site at **www.hartandcooley.com**, or send us an e-mail at **info@hartcool.com**.



Hart & Cooley, Inc. 800.433.6341 *toll-free*
500 East Eighth Street 616.392.7855 *phone*
Holland, MI 49423 800.223.8461 *toll-free fax*
info@hartcool.com 616.392.7971 *fax*
www.hartandcooley.com