

Clarification 09012020 of HVI Publication 920:2020
HVI PRODUCT PERFORMANCE CERTIFICATION PROCEDURE INCLUDING
VERIFICATION AND CHALLENGE

Date Approved: 9/3/2020

Request From: Mike Moore, Newport Partners LLC

Reference: HVI Publication 920:2020 Table AII1. Nominal Duct System Characteristics for Kitchen Range Hoods; Friction Factor & Airflow; D_h = hydraulic diameter, Calculated in accordance with HVI Publication 916, inches

Background: Table AII1, Nominal Duct System Characteristics for Kitchen Range Hoods, was added to HVI Publication 920 at the 2020 HVI Spring Meeting (2/26-2/28/2020). The table notes that the hydraulic diameter should be calculated in accordance with HVI Publication 916. However, HVI Publication 916 only references hydraulic diameter with respect to airflow measurement chambers and not with respect to ducts, suggesting that the application of the HVI Publication 916 3.6.2 formula for hydraulic diameter is not appropriate when complying with Publication HVI 920:2020 Table AII1. After a review of this issue, HVI staff confirmed that the hydraulic diameter formula identified in HVI Publication 916 3.6.2 is only applicable to the construction of the air test chamber and not to the hydraulic diameter of ducting.

In the absence of a relevant formula within HVI Publication 916 for calculating the hydraulic diameter of ducts, we can look to ASHRAE 62.2-2019 Table 5.3 footnote a and the 2017 ASHRAE Handbook of Fundamentals, Chapter 21 Equation 24, which provide the following formula:

$D_h = 4A/P$ for noncircular ducts, where
 D_h = duct hydraulic diameter (in.)
 A = duct cross-sectional area (in.²)
 P = duct perimeter (in.)

This interpretation request is being submitted to determine if the ASHRAE equation for hydraulic diameter should be used when complying with HVI Publication 920:2020 Table AII1.

Clarification #1: For circular ducts, the value of D_h that should be used when complying with Table AII1 of HVI Publication 920:2020 is the duct diameter. When calculating D_h for noncircular ducts, the reference to HVI Publication 916 in Table AII1 of HVI Publication 920:2020 should be replaced with the following equation:

$D_h = 4A/P$ for noncircular ducts, where
 D_h = duct hydraulic diameter (in.)
 A = duct cross-sectional area (in.²)
 P = duct perimeter (in.)

Question: Is this Clarification #1 correct?

Answer: Yes

Clarification #2: The exponent on the Haaland Equation All1 has a typographical error. Exponent should be -2 and not 2 as shown.

Question: Is Clarification #2 correct?

Answer: Yes

Comments: HVI to determine method and timing to remove reference to HVI Publication 916 in HVI 920:2020 Table All1.