MSIV Leakage Calculations

Reference: Crane Technical Paper No. 410

W = 1891 * Y * d*d * C * SQRT(dP * Rho1) (Crane Page 3-24)

Where: W is flow rate in 1000 pounds per hour
Y is the net expansiuon factor (A-21)
d is the orfice internal diameter (inches)
C is flow Coefficient (A-20)
dP is differential pressure across the orifice (psi)
Rho1 is the weight density in pounds per cubic foot (= 0.07528 from A-8)

q'h = W / (.0764 * Sg) (Crane B-2)

Where: q'h is the flow rate in scfh
Sg is the specific gravity of air (= 1 from A-8)

q'h = (1891/.0764) * Y * d*d * C * SQRT(0.07528 * dP) | 1891 / 0.0764 = 24751.308 |

d*d = q'h / (24751.3 * Y * C * SQRT(0.07528 * dP))

d = SQRT(q'h / (24751.3 * Y * C * SQRT(0.07528 * dP))

Find hole diameter:

q'h =	1,000	scfh
Y =	0.81	
C =	0.65	
dP =	25	psi

Find flow rate (scfh):

d =	0.23651	inches
Y =	0.81	
C =	0.65	
dP =	25	psi

d = 0.2365085 inches	0.0439322	Sq inches	q'h =	1,000.0 scfh
0.6007316 cm	0.2834333	Sq cm		
6.0073168 mm	28.343335	Sq mm		
0.0060073 m	0.000028	Sq m <-SAREA		

SHYD= 0.0060073 m

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