

For special considerations which apply to insulation of ducts in marine installations see Chapter 49.

MAINTENANCE

Ducts should be designed in such a manner as to enable easy maintenance.²² They should have enough access doors, not only to enable inspection, but also to facilitate cleaning of the ducts.²³ The periodic cleaning of the ducts should be part of the regular maintenance schedule. It should be done efficiently and competently to avoid difficulties or hazards in the operation of the system.^{24,25}

LETTER SYMBOLS USED IN CHAPTER 41

- α = coefficient of contraction.
- ϵ = absolute roughness, feet.
- ρ_o = density of air under actual (operating) conditions, any consistent units.
- ρ_s = density of air under standard conditions, any consistent units.
- ρ_v = density at which V_m is measured, pounds per cubic foot.
- A = cross-section area of duct, square feet.
- A_1 = area of smaller duct.
- A_2 = area of larger duct.
- a = length of one side of rectangular duct, feet or inches. (Other side is b .)
- b = length of one side of rectangular duct, feet or inches. (Other side is a .)
- C = shock loss coefficient for standard air.
- c = shock loss coefficient.
- D = inside diameter of conduit, feet.
- D_o = circular equivalent of a rectangular duct for equal friction and capacity, inches.
- d = equivalent diameter, feet or inches.
- e = Napierian base of logarithms = 2.718.
- f = non-dimensional friction coefficient.
- f_i = surface conductance (inside) Btu per (hour) (square foot) (Fahrenheit degree).
- f_o = surface conductance (outside) Btu per (hour) (square foot) (Fahrenheit degree).
- g = acceleration due to gravity, 32.17, feet per (second) (second).
- H_s = pressure loss due to sudden enlargement, based on standard air, inches of water.
- H_o = pressure loss due to sudden enlargement, based on standard air, inches of water.
- H_v = total shock pressure loss for standard air, inches of water.
- h_1 and h_2 = static pressure head at given points (1) and (2).
- h_o = friction loss under actual (operating) conditions, any consistent units.
- h_s = pressure loss due to sudden contraction, inches of water.
- h_e = pressure loss due to sudden enlargement, inches of water.
- h_f = friction loss, feet of fluid flowing.
- h_r = regain in static pressure, feet of fluid flowing.
- h_s = friction loss under standard conditions, any consistent units.
- h_v = total shock pressure loss, inches of water.
- k = conductivity, Btu per (hour) (sq ft) (Fahrenheit degree per inch).
- l = length of conduit, feet.
- P = perimeter of duct, feet.
- Q_w = heat loss through duct walls, Btu per hour.
- t_1 = temperature of air entering duct, Fahrenheit degrees.
- t_2 = temperature of air leaving duct, Fahrenheit degrees.
- t_s = temperature of air surrounding duct, Fahrenheit degrees.
- U = thermal transmittance coefficient, Btu per (hour) (square foot), (Fahrenheit degree).
- V = fluid or air velocity, feet per second.
- V_s = velocity of air in duct, feet per second.
- V_m = velocity of air or fluid, feet per minute.
- V_1 = velocity in smaller duct, feet per minute.
- V_2 = velocity in larger duct, feet per minute.

- v = velocity of air, feet per second.
- v_1 = mean velocity in smaller duct section, feet per second.
- v_2 = mean velocity in larger duct section, feet per second.
- W = weight of air through duct, pounds per hour.
- x = thickness, inches.

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