

Vapor: The gaseous form of substances which are normally in the solid or liquid state, and which can be changed to these states either by increasing the pressure or decreasing the temperature. Vapors diffuse. (*ASA definition.*)

Vapor Heating System: A steam heating system which operates under pressures at or near atmospheric and which returns the condensate to the boiler or receiver by gravity. Vapor systems have thermostatic traps or other means of resistance on the return ends of the heating units for preventing steam from entering the return mains; they also have a pressure-equalizing and air-eliminating device at the end of the dry-return.

Velocity: A vector quantity which denotes at once the time rate and the direction of a linear motion. $V = \frac{ds}{dt}$. For uniform linear motion $V = \frac{s}{t}$. Common units are: feet per second.

Ventilation: The process of supplying or removing air, by natural or mechanical means, to or from any space. Such air may or may not have been conditioned. (See *Air Conditioning.*)

Volume, Specific: The volume of a substance per unit mass; the reciprocal of density. Units: cubic feet per pound, cubic centimeters per gram, etc.

Warm Air Heating System: A warm air heating plant consists of a heating unit (fuel-burning furnace) enclosed in a casing, from which the heated air is distributed to the various rooms of the building through ducts.

Warm Air Heating System, Gravity: A warm air heating system in which the motive head producing flow depends on the difference in weight between the heated air leaving the casing and the cooler air entering the bottom of the casing.

Warm Air Heating System, Mechanical: A warm air heating system in which circulation of air is effected by a fan. Such a system may include air cleaning devices.

CHAPTER 2

ABBREVIATIONS AND SYMBOLS

Standard Abbreviations; Standard Symbols; Greek Alphabet; Conversion Equations; Graphical Symbols for Piping, Ductwork, Heating and Ventilating, Refrigerating; Identification of Piping by Color

THIS chapter contains information regarding abbreviations, symbols, and conversion equations, which are of particular interest to the engineer engaged in heating, ventilating, and air conditioning.

ABBREVIATIONS

Abbreviations are shortened forms of names and expressions employed in texts and tabulations, and should not generally be used as symbols in equations. Most of the following abbreviations have been compiled from a list of approved standards.¹ In general, the period has been omitted in all abbreviations, except where the omission results in the formation of an English word. Additional abbreviations applying to individual chapters will be found at the end of Chapters 3, 4, 5, 12, 31, 35, and 36.

Absolute.....	abs
Air horsepower.....	air hp
Alternating-current (as adjective).....	a-c
Ampere.....	amp
Ampere-hour.....	amp-hr
Atmosphere.....	atm
Average.....	avg
Avoirdupois.....	avdp
Barometer.....	bar
Boiling point.....	bp
Brake horsepower.....	bhp
Brake horsepower-hour.....	bhp-hr
British thermal unit.....	Btu
British thermal units per hour.....	Btuh
Calorie.....	cal
Centigram.....	cg
Centimeter.....	cm
Centimeter-gram-second (system).....	cgs
Cubic.....	cu
Cubic centimeter.....	cu cm or cc
Cubic foot.....	cu ft
Cubic feet per minute.....	cfm
Cubic feet per second.....	cfs
Decibel.....	db
Degree.....	deg or °
Degree, Centigrade.....	C
Degree, Fahrenheit.....	F
Degree, Kelvin.....	K
Degree, Réaumur.....	R
Diameter.....	diam

¹ Abbreviations for Scientific and Engineering Terms, Z10.1-1941 (*American Standards Association*).

² It is recommended that the abbreviation for the temperature scale, F, C, K, R, be included in expressions for numerical temperatures but, wherever feasible, the abbreviation for degree be omitted, e.g., 68 F.