DEFINITION OF HEATING, VENTILATING, AIR-CONDITIONING, AND REFRIGERATION TERMS

1. DEFINITION OF TERMS

1.01 The following terms, listed here for easy reference, are abstracted from the *1981 ASHRAE Handbook of Fundamentals.** A term may not be defined in its entirety; only that part pertaining to heating, ventilating, air-conditioning, and refrigeration is listed. Other terms which are not commonly used can also be found in the *Handbook of Fundamentals.*

1.02 Revision arrows are used to emphasize significant changes. The reasons for reissue are given below.

(a) To change title

(b) To define more terms.

Absolute Humidity See "Humidity, Absolute."

Absolute Pressure See "Pressure, Absolute."

Absolute Temperature See "Temperature, Absolute."

Absolute Zero Temperature See "Temperature, Absolute Zero."

Absorbent Substance that has the ability to extract fluids present in an atmosphere or a mixture of gases and liquids; is accompanied by physical change, chemical change, or both of the extracted fluid.

AC Abbreviation for alternating current.

Accumulator Storage tank that receives refrigerant from the evaporator, separates the vapor and liquid, and prevents the liquid from flowing into the suction line.

Acid Condition Condition in which a substance is mixed with another substance(s) and when combined are acid in nature. Substance pH number is less than 7 on the pH scale; corrosive to ferrous and some nonferrous metals.

Activated Alumina A form of aluminum oxide which absorbs moisture readily and is used as a drying agent in refrigerant dryers.

Activated Carbon Specially processed carbon used as a filter; commonly used to remove odors and other vapors from air.

Adiabatic Compression or Expansion Compression or expansion of a vapor or gas without changing the heat content.

Adsorbent Substance that has the ability to extract fluids without causing any physical or chemical change of the fluid.

Air, Ambient The air surrounding an object.

Air Changes A method of expressing the amount of air leakage into or out of a building or room in terms of the number of building volumes or room volumes exchanged.

Air Circulation Natural or imparted motion of air.

Air Conditioner An assembly of equipment for the control of at least the first three items listed in the definition of air-conditioning.

Air Conditioner, Room A room air conditioner is a factory-made encased assembly designed as a unit for mounting in a window through a wall, or as a console; designed for free delivery of conditioned air to an enclosed space without ducts.

Air Conditioner, Unitary A unitary air conditioner consists of one or more factory-made assemblies that normally include an evaporator or cooling coil, a compressor and condenser combination, and may include a heating function as well; where such equipment is provided in more than one assembly, the separated assemblies are designed to be used together.

Air-Conditioning The process of treating air so as to control its temperature, humidity, cleanliness, and

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distribution simultaneously to meet the requirements of the conditioned space.

Air-Conditioning System, Central Fan A mechanical indirect system of heating, ventilating, or air-conditioning in which the air is treated or handled by equipment located outside the rooms served, usually at a central location and conveyed to and from the rooms by means of a fan and a system of distributing ducts.

Air Diffuser A circular, square, or rectangular air distribution outlet, generally located in the ceiling and comprised of deflecting members discharging supply air in various directions and planes, and arranged to promote mixing of primary air with secondary room air.

Air, Outdoor Air taken from outdoors, and therefore, not previously circulated through the system.

Air, Recirculated Return air passed through the conditioner before being supplied again to the conditioned space.

Air, Return Air returned from conditioned or refrigerated space.

Air, Standard Air with a density of 0.075 pounds per cubic foot; air which is substantially equivalent to dry air at 68°F (20°C) and a barometric pressure of 29.92 inches of mercury.

Air, Supply The quantity of air delivered to each or any space in the system or the total delivered to all spaces in the system.

Air, Ventilation Quantity of supply air required to maintain the desired quality of air within a designated space.

Air Washer A water spray system or device for cleaning, humidifying, or dehumidifying the air.

Algorithm A procedure which solves a mathematical problem in a finite number of steps.

Alkaline Condition Condition in which a substance is nonacidic and has a pH number greater than 7; often referred to as a base.

Alternating Current (AC) Current flow that is constantly changing in amplitude and reversing its direction at regular intervals.

Ambient Temperature See "Temperature, Ambient."

Ampere A unit of intensity of electrical current produced in a conductor by an applied voltage; equal to 6.28×10^{18} electrons passing a point in one second.

Anemometer Instrument for measuring air velocities of duct openings; is moved across the entire duct area and timed.

Anhydrous Calcium Sulphate Dehydrated calcium sulphate; a substance used in refrigerant driers (see "Calcium Sulphate").

Annealing Process of heat-treating metal to obtain desired properties of softness and ductility.

Anode Positive terminal of an electrolytic cell or vacuum tube.

Armature Revolving part in an electric motor or generator.

A.S.A. Former abbreviation for an engineers society, American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE).

Atmospheric Pressure See "Pressure, Atmospheric."

Auxiliary Contacts See "Contacts, Auxiliary."

Auxiliary Switch See "Switch, Auxiliary."

Back Pressure Pressure in the refrigeration system; also known as suction pressure and low side pressure.

Back Seat Seat against which a valve button may seat when the valve is in the full open position; back seating prevents pressure from reaching the valve packing.

Back Seat Port (Gaugeport or Tapping) Port entering the service valve body behind the back seat; can be used for attaching test gauges or making other connections to the system while under pressure.

Ball-Check A device consisting of a ball and orifice; pressure on one side of the device will seat the ball across the orifice and stop flow, and pressure in opposite direction will lift ball permitting flow; used in

liquid level gauges to seal off gauge glass in case of breakage.

Bimetal Strip A temperature regulating or indicating device which works on the principle that two dissimilar metals with unequal expansion rates, welded together, will bend as temperature changes.◀

Blow (Throw) In air distribution, the distance an air stream travels from an outlet to a position at which air motion along the axis reduces to a velocity of 50 feet per minute.

▶Boiling The change of state from a liquid to a gas or vapor.

Boiling Point or Boiling Temperature The temperature at which a fluid will change from a liquid to a gas; depends upon pressure exerted on the surface of the liquid.

Bourdon Tube As used in pressure gauges, thin-walled tube of elastic metal flattened and bent into circular shape, which tends to straighten as pressure inside is increased.

Brazing Method of joining metals with nonferrous (without iron) filler which melts at temperatures between 800°F and melting point of base metals.

Brine Any liquid cooled by the refrigerant and used for the transmission of heat without a change of state; having no flash point or a flash point above 150°F; water strongly impregnated with salt.◀

British Thermal Unit (BTU) Quantity of heat equal to that which is required to raise the temperature of one pound of water one degree Fahrenheit.

▶BTU H Abbreviation for British thermal units per hour (MBH is one thousand BTUs per hour).

Bulb, Sensitive Part of sealed fluid device which reacts to temperature to be measured, or which will control a mechanism.

Bullseye Common term for oil level sight glass.◀

Bypass Means of circumventing an object; a pipe or duct, usually controlled by valve or damper, for conveying a fluid around an element of a system.

▶Bypass, Hot Gas A connection from the discharge directly to the low side of the system, sometimes used as a means of capacity control.

Bypass Relief A connection from the discharge directly to the suction side of the compressor, made either internally or externally; a port which opens at a set point and relieves abnormally high discharge pressure to the suction side of the compressor.

Calcium Sulphate ($CaSO_4$) Chemical compound which is used as a drying agent or desiccant liquid line driers; absorbs water or water vapor in a refrigeration system.

Capacitance Property of nonconductor (condenser or capacitor) that permits storage of electrical energy in an electrostatic field.

Capacitor Type of electrical storage device used in starting and/or running cirucits on many electric motors.

Capillary Tube Refrigerant control consisting of a tube having a small internal and external diameter; referred to as refrigerant metering device.

Carbon Tetrachloride (CCl_4) Colorless, nonflammable liquid used as a solvent and in fire extinguishers; ***very toxic***; should never inhale fumes or allow to touch skin.

Carrene Trade name for refrigerant R-11.

Cascade System Arrangement in which two or more refrigerating systems are used in series; uses cooling coil of one machine to cool condenser of the other machine.

Casehardened Heat-treating ferrous metals (iron) so surface layer is harder than interior.

Cathode Negative terminal of an electrical device; electrons leave the device of this terminal.

Celsius International word for centrigrade; the metric system temperature scale.

Centigrade Scale Temperature scale used in metric system; freezing point of water is 0°, boiling point is 100°.

Centimeter Metric unit of linear measurement which equals 0.3937 inches; one hundredth of a meter.

Change of State Change in the physical characteristic of a substance, eg, the change from a liquid to

a solid upon freezing, or the change from a liquid to a gas upon boiling.

Charge Amount of fluid forced or drawn into a closed system such as the refrigerant in a refrigerating system, the fluid in the bulb and power element of a thermostatic expansion valve, or the oil in the crankcase of a compressor.

Charging Board Specially designed panel or cabinet fitted with gauges, valves, and refrigerant cylinders used for charging refrigerant and oil into refrigerating mechanisms.

Chart, Temperature and Pressure Chart of the boiling temperatures of a substance at different pressures.

Chiller, Dry Expansion Device designed to utilize the evaporation of refrigerant within a tube bundle; the refrigerant being metered to the inside of the tubes by means of one or more thermostatic expansion valves; liquid to be chilled passes through the chiller between the shell and tubes.

Chiller, Flooded Device designed to utilize the evaporation of refrigerant on the outside surface of a tube bundle; liquid to be chilled passes through the tubes of the chiller; evaporator will be relatively full of liquid refrigerant.

Circuit, Refrigerating Course followed by the refrigerant in passing through the evaporator, compressor, condenser, and back to the evaporator.

Clearance, Piston Space between the top face of piston and valve assembly when the piston is at the top of its stroke.

Clearance Pocket In a compressor, a space of controlled volume to give the effect of greater or less cylinder clearance, thereby changing compressor capacity.

Coefficient of Conductivity Measure of the relative rate at which different materials conduct heat; copper is a good conductor of heat, and therefore has a high coefficient of conductivity.

Coil, Holding That part of a magnetic starter or relay that causes the contacts to change position when energized.

Cold The absence of heat; a temperature considerably below normal.

Comfort Chart Chart used in air-conditioning to show the dry bulb temperature and humidity for human comfort conditions.

Comfort Zone That portion of a chart having the range of effective temperatures with which the majority (50 percent or more) of adults feel comfortable.

Commutator Part of electric motor rotor which conveys electric current to rotor windings.

Compound Refrigerating System System which has several compressors or compressor cylinders in series where one compressor or cylinder discharges into the suction of another.

Compression Ratio Ratio determined by dividing the discharge pressures in pounds per square inch absolute by the suction pressure in pounds per square inch absolute.

Compressor Machine designed to pump a gas from a low pressure space to a high pressure space.

Compressor, Centrifugal Compressor which imparts motion, and therefore pressure, to a gas by means of high speed impellers; not a positive displacement machine.

Compressor Drive Device used to turn the shaft of a compressor; it may be an electric motor, engine, or turbine.

Compressor, Hermetic Sealed compressor and motor combination with no external coupling.

Compressor, Open Compressor coupled externally to an outside source of power.

Compressor, Reciprocating Compressor which imparts motion and pressure to a gas by means of reciprocating pistons; a positive displacement compressor.

Compressor, Rotary Compressor which imparts motion and pressure to a gas by means of a rotating impeller usually sealed with a sliding blade; a positive displacement compressor.

Compressor Seal Leakproof seal between crankshaft and compressor body.

Condensate Liquid formed from condensed liquid vapor.

Condensate Pump Device used to remove liquid condensate.

Condensation Liquid or droplets which form when a gas or vapor is cooled below its dew point.

Condense Action of changing a gas or vapor to a liquid.◀

Condenser The part of refrigeration mechanism which receives hot, high pressure refrigerant gas from the compressor and cools gaseous refrigerant until it returns to liquid state.

▶Condenser, Air-Cooled A heat exchanger which transfers heat to surrounding air.

Condenser Comb Comb-like device (metal or plastic) that is used to straighten the metal fins on condensers or evaporators.

Condenser, Double Pipe Consists of one or more assemblies of two pipes, one within the other, in which the refrigerant vapor is condensed either in the annular space or in the inner tube.

Condenser, Shell and Coil Condenser in which the refrigerant vapor is condensed in a closed shell, with the cooling water circulated through one or more continuous or assembled coils contained within the shell.

Condenser, Shell and Tube Condenser in which the refrigerant vapor is condensed either on the inside or the outside of a group of straight parallel tubes within a closed shell, with the tubes terminating in a tube sheet.

Condenser, Water-Cooled Heat exchanger which is designed to transfer heat from hot, gaseous refrigerant to water.◀

Condensing Unit That part of refrigerating mechanism which pumps vaporized refrigerant from the evaporator, compresses it, liquefies it in the condenser, and returns the liquid refrigerant to refrigerant control.

▶Contact, Auxiliary Pilot or auxiliary contact that is operated whenever the main contact(s) are closed, such as the holding cirucit contact in a magnetic starter; also an interlock contact.◀

Control Any device for regulation of a system or component in normal operation (manual or automatic); if automatic, the implication is that it is responsive to changes of pressure, temperature, or other property in which the magnitude is to be regulated.

Control, High-Pressure Pressure-responsive device (usually an electric switch) actuated directly by the refrigerant vapor pressure on the high side of a refrigerating system (usually on compressor discharge pressure).

▶Control, Humidity Control sensitive to changes in humidity.◀

Control, Limit Device that shuts down unit when safe operating limit is exceeded.

▶Control, Low Oil Pressure Cutout Device that acts to shut off a compressor whenever the oil pressure falls below a predetermined set point.◀

Control, Low Pressure A pressure-responsive device (usually an electric switch) actuated directly by refrigerant vapor pressure in the low side of a refrigerating system.

▶Control, Low Temperature (Freezestat) Device that acts to shut off a unit whenever the temperature reaches its set point to protect the unit from freezing.

Control, Pressure Control sensitive to changes in pressure.

Control, Temperature Control sensitive to changes in temperature; a thermostat.

Control, Thermostatic See "Control, Temperature."

Controller, Dual Pressure Control consisting of two pressure bellows which operate a switch within a single, enclosed case; when applied to compressor control, one bellows functions on a change in suction pressure, the other bellows on a change in discharge pressure.◀

▶Cooler Evaporator portion of a water chiller.

Cooling Tower Device for cooling water by evaporation in air; the water is usually sprayed into an airstream where part of the water evaporates, thus reducing the temperature of the remaining water.

Cracking a Valve Opening valve a small amount.

Critical Pressure Pressure of refrigerant at which liquid and gas have same properties; at pressures above that point, refrigerant will not condense with a reduction in temperature.

Critical Temperature Temperature of refrigerant at which vapor and liquid have same properties; at tem-

peratures above this point refrigerant will not condense with a reduction of pressure.

Cross Charged Process in which a sealed container containing two fluids which together create a desired pressure/temperature curve.

Cryogenics Refrigeration which deals with producing temperatures of −250°F and lower.

Current (I) Transfer of electrical energy in conductor by means of electrons changing position.

Current Relay Device which opens or closes a circuit based on change of current flow.

Cutin Point Temperature or pressure at which a controller will function to start the equipment controlled.

Cutout Point Temperature or pressure at which a controller will function to stop the equipment controlled.

Cycle Series of events that have a tendency to repeat the same events in the same order.

Cycle, Control Sequence of operations under automatic control intended to maintain the desired conditions at all times.

Cylinder Chamber in a reciprocating compressor in which a piston is impelled by the crankshaft to compress the refrigerant gas.◀

Damper A device used to vary the volume of air passing through an air outlet, inlet, or duct.

▶Dampers, Face and Bypass A set of coordinated dampers arranged to direct the air through an evaporator, around an evaporator, or partly through and partly around an evaporator in any desired proportion in response to control demand.

DC Abbreviation for direct current.

Degree Day Unit that represents one degree of difference from a given point in average outdoor temperature of one day and is often used in estimating fuel requirements; for any one day, when the average temperature is less than 65°F, there exists as many degree days as there are Fahrenheit degrees difference in temperature between the average temperature for the day and 65°F.◀

Dehumidification The condensation of water vapor from air by cooling below the dew point or removal of water vapor from air by chemical or physical methods.

▶Dehydrator A device containing a desiccant for the purpose of removing moisture from the refrigerant.

Demand Meter An instrument used to measure maximum kilowatt-hour consumption or a particular circuit or group of circuits.

Density Closeness of texture or consistency of a substance; ratio of the mass of a specimen of a substance to the volume of a specimen.

Desiccant Any absorbent or adsorbent liquid or solid that will remove water or water vapor from a material.◀

Dew Point See "Temperature, Dew Point."

Diaphragm Flexible membrane usually made of thin metal, rubber, or plastic.

Dichlorodifluormethane (CCl_2F_2) Refrigerant commonly known as R-12.

Differential (of a Control) The difference between cutin and cutout temperatures or pressures.

▶Diode Electronic device in a circuit that allows more electron flow in one direction than in the other direction.

Direct Current (DC) Electron flow that moves continuously in one direction in a circuit.

Discharge Line See "Line, Discharge."

Draft Gauge Instrument used to measure air movement.

Drier A substance or device used to remove moisture from a refrigeration system.

Dry Bulb Temperature See "Temperature, Dry Bulb."

Economizer Device used to regulate refrigerant flow on a centrifugal refrigeration system, consisting of two metering devices and a flash chamber.◀

Effective Area Net area of an outlet or inlet device through which air can pass; is equal to the free area of the device.

Effective Temperature Overall effect of air temperature, humidity, air movement, and radiated heat on a human.

Efficiency, Volumetic The ratio obtained by dividing the actual volume of gas delivered by the displacement of the compressor.

End Play Small longitudinal movement as of a shaft.

Enthalpy Total heat in one pound of a substance starting from an acceptable base temperature; 32°F is the accepted base temperature for water and water vapor.

Entropy Thermodynamic property of a substance which measures its degree of disorder or the degree to which its energy is unavailable; is considered as an indicator of the degree of energy degradation in a thermodynamic process.

Equalizer, External A tube that connects the chamber under the diaphragm of the power element of an expansion valve to the low pressure side of an evaporator to eliminate the effect of pressure drop through the evaporator on superheat response.

Equalizer, Internal The port that connects the chamber under the diaphragm of the power element of a thermostatic expansion valve to the suction side of the valve passage.

Equalizer Line A line that equalizes the gas or oil pressure in two or more pieces of equipment.

Evaporation The process of converting a substance into a vapor.

Evaporative Condenser A device that uses air and water spray or spill water to cool a condenser.

Evaporative Cooling The exchange of heat between air and a water spray or wetted surface where the water will approach the wet bulb temperature of the air.

Evaporator Any device that evaporates a refrigerant for the purpose of extracting heat from the surrounding medium.

Evaporator, Direct Expansion An evaporator designed to cool a medium in direct contact with the evaporator.

Evaporator, Dry Expansion An evaporator designed to evaporate liquid refrigerant as rapidly as it is fed by the expansion valve; refrigerant flow must be so regulated that no liquid enters the evaporator unless there is sufficient heat (load) available for evaporation.

Evaporator, Flooded An evaporator that is relatively full of liquid refrigerant at all times.

Exfiltration Air flow outward through a wall, ceiling, leak, membrane, etc.

Expansion Valve A valve designed to meter the flow of liquid refrigerant to an evaporator.

Expansion Valve, Automatic An expansion valve designed to maintain a constant pressure in the evaporator regardless of superheat; seldom used in air-conditioning where loads generally fluctuate; cannot be used on systems with multiple valve installations.

Expansion Valve, Float A valve designed to maintain a constant liquid level in a flooded evaporator.

Expansion Valve, Thermostatic (TEV) An expansion valve designed to meter the flow of liquid to a dry expansion evaporator at a rate sufficient to maintain a constant superheat in gas leaving the evaporator.

Face-and-Bypass Type of Control Device, usually a valve or damper, to divert the flow of air over the face of an extended surface evaporator or through a passage around the evaporator.

Fahrenheit Temperature scale in which (under standard atmospheric conditions) +32° and +212° are the freezing point and boiling point of water, respectively.

Farad Unit of electrical capacity; capacity of a condenser which, when charged with one coulomb of electricity, gives difference of potential of one volt.

Field Pole Part of stator or motor which concentrates magnetic field of field winding.

Filter, Air Device used to remove dust and other undesirable solids from the air.

Filter, Electrostatic Electrical filtering device for removing smoke and other particles from air; particles are forced to adhere to collector plates because of the electric charges imparted by the filter.

Filter, Refrigerant Very fine strainer for removing foreign matter and dirt from the refrigerant.

Flare Tubing is often connected to parts of system by use of flared fittings; fittings require that the end of tube be expanded at a 37½- or 45-degree angle which is firmly gripped by fittings to make a strong leakproof seal.

Flared Double Thickness Connection Tubing end which has been formed into two-wall thickness flare.

Flared Single Thickness Connection Tube ending formed into 37½- or 45-degree flare.

Flash Gas Gas formed by the instantaneous evaporation of some liquid refrigerant in evaporator which cools remaining liquid refrigerant to desired evaporation temperature.

Flash Point Temperature at which a substance will give off sufficient vapor to support a flash flame but will not support continuous combustion.

Float, High Side See "High Side Float."

Float, Low Side See "Low Side Float."

Float Valve Type of valve which is operated by sphere or pan which floats on liquid surface and controls level of liquid.

Flood Back Carry-over of liquid refrigerant from the evaporator to the suction line or compressor.

Flooded System Type of refrigerating system in which liquid refrigerant fills evaporator.

Flow Meter Instrument used to measure velocity or volume of fluid movement.

Fluid Any substance which, in its normal state, is a liquid or gas.

Flush An operation to remove any materials or fluids from refrigeration system parts by purging them out using refrigerant or other fluids.

Foaming Formation of a foam in an oil refrigerant mixture due to rapid evaporation of refrigerant dissolved in the oil; most likely to occur when the compressor starts and the pressure is suddenly reduced.

Foot Pound Unit of work; the amount of work done in lifting one pound one foot.

Fouling Factor Factor that determines loss of heat transfer due to deposits of foreign material in the water side of the tubing in refrigeration condensers or chillers.

Freezing Point Temperature at which a liquid will solidify upon removal of heat; freezing point of water is 32°F at atmospheric pressure.

FREON* A family of synthetic chemical refrigerants.

Fused (or Fusible) Disconnect Switch An electric switch designed to isolate part of the system when required; is provided with fuses for the protection of the equipment.

Fusible Plug A safety device having an insert of low melting point alloy; at excessive temperature, the alloy will melt and release the refrigerant.

Galvanic Action Corrosive action between two metals of different electronic activity; action increases in presence of moisture.

Gas A fluid (as air) that will expand to take the shape of its container; a highly superheated, vapor-like fluid which (within acceptable limits of accuracy) satisfies the perfect gas laws.

Gas, Flash See "Flash Gas."

Gas, Noncondensable Gas in a refrigeration system that does not condense at the temperature and pressure existing in the condenser, and therefore imposes a higher high side pressure.

Gas, Saturated Gas at its condensing temperature and pressure.

Gas, Suction Gas entering the suction side of the compressor.

Gauge, Compound Device used to measure pressures both above and below atmospheric pressure with the zero point being at atmospheric pressure.

Gauge, Liquid Level Device mounted on or in a vessel to indicate the liquid level within the vessel.

Gauge Manifold Assembly An assembly used by refrigeration servicemen to service refrigeration

* Registered trademark of E. I. Du Pont de Nemours & Co., Inc.

equipment; assembly consists of a manifold attached to two gauges, two valves, and three hoses.

Gauge Port Taping in a service valve, used to attach a gauge or refrigeration service equipment, which is valved off when the service valve is back seated.

Grain Unit of weight equaling 0.002285 ounces or 0.0648 grams that is commonly used for measuring moisture in air; one pound equals approximately 7000 grains.

Grille Louvered or perforated covering for an air passage opening.

Halide Refrigerant Refrigerants containing chemicals from the halogen family.

Halide Torch A flame tester used to sense the presence of halogen refrigerants; commonly used to detect refrigerant leaks.

Head Pressure Same as "Pressure, High Side."

Head, Static Pressure from the weight of a column of fluid; usually expressed in terms of height of a column of the fluid, such as water or mercury.

Heat Form of energy that is transferred by virtue of a temperature difference.

Heat Exchanger Device specifically designed to transfer heat between two physically separated fluids.

Heat, Latent Heat added or removed to change the state of a substance which does not change the temperature.

Heat Load Amount of heat, in BTUs, which is removed by a refrigeration system or added by a heating device over a 24-hour period.

Heat of Compression Heat energy that is tranferred from mechanical energy during the compression of a gas.

Heat Pump A refrigeration system used to supply heat to a temperature-controlled space by extracting it from another space or substance, such as outside air, which can also remove heat from the same temperature-controlled space.

Heat Sensible Heat associated with a change in temperature, in contrast to heat associated with a change of state.

Hermetic System Refrigeration system that has a compressor driven by a motor contained in the same housing.

Hg Chemical symbol for mercury.

High Side Parts of a refrigeration system subjected to condensing or high side pressure.

High Side Float Refrigerant flow control mechanism which regulates the liquid level in the high pressure side of the mechanism.

Hone Fine-grit stone used for precision grinding of metal.

Humidifier Device used to add ~~humidity~~ to a confined space.

Humidistat A~~n electrical~~ control which is operated by changes in humidity.

Humidity Water vapor within a space.

Humidity, Absolute Water vapor weight per unit volume.

Humidity, Relative Amount of moisture in the air stated in terms of percentage of total saturation at the existing dry bulb temperature.

Humidity, Specific Weight of water vapor associated with one pound of dry air, also known as humidity ratio.

Hunting The fluctuation caused by a control atempting to establish an equilibrium

Hydrometer An instrument which indicates the specific gravity of a liquid in which it is floated.

Hydronic Type of heating system that uses a heated fluid as the means of transferring the heat from the heating plant to a heat exchanger.

Idler Pulley used on some belt drives to provide proper belt tension and to reduce belt vibration.

Impeller A rotating part inside a centrifugal pump.

I.M.E. Abbreviation for ice melting equivalent, which is an older measurement of refrigeration ca-

pacity equivalent to melting one pound of ice in one hour or 144 BTU H.

Induction Motor See "Motor, Induction."

Interlock The means used to prevent certain parts of a system from operating when other parts of that system are not operating.

Isothermal Changes of volume or pressure under conditions of constant temperature.

Kelvin Scale Thermometric scale that has a unit of measurement equal to the Celsius degree and according to which absolute zero is 0° which is equivalent to - 273.16°C; abbreviated as "K".

Kilometer Metric unit of linear measurement equal to 1000 meters or 3281 feet.

Kilowatt Unit of electrical power equal to 1000 watts.

King Valve Valve in a refrigeration system located at the discharge of the receiver which when front seated will close off this discharge.

Latent Heat See "Heat, Latent."

Leak Test A test made in various manners to determine the existence and location of refrigerant leaks in a refrigeration system.

Liquid Indicator Device located in liquid line which provides a glass-covered port through which liquid flow may be observed.◀

Liquid Line The tube carrying liquid refrigerant from the condenser or liquid receiver to the metering device.

▶Liter Metric unit of volume measurement equivalent to 1000 cubic centimeters or 1.06 quarts.

Litharge A pipe thread joint sealer commonly used at one time; consists of lead powder mixed with glycerine.

Low Side Part of a refrigeration system in which the refrigerant pressure corresponds to the evaporator or suction pressure.

Low Side Float Refrigerant flow control mechanism which regulates the level of liquid refrigerant in the low side of the system.◀

Louver An opening provided with one or more slanted, fixed, or movable fins to allow flow of air and to restrict rain or sun or to provide privacy.

▶Manifold Portion of a main in which branch lines are joined together; may also be a single piece in which there are several fluid paths.

Manometer Instrument for measuring pressures of gases and vapors, that in effect measures the difference between the pressure of the gas or vapor connected to one end and the atmospheric pressure on the other end of a "U" tube.

Mass A measure of the quantity of matter in a body; equal to the weight of an object divided by the acceleration due to gravity.

Master Controller Controller which measures conditions at one point and resets the control point of another controller.

MBH Abbreviation for 1000 BTUs per hour.

Megger Tester Instrument used for measuring electrical insulation resistance.

Megohm Unit of electrical resistance equal to one million ohms.

Meter Metric unit of linear measurement equal to 39.37 inches.

Metering Device Device in a refrigeration system which controls the flow of refrigerant into the evaporator.

Metric System A decimal system of measures and weights based on the meter, liter, and gram.

- 1 meter = 39.37 inches
- 1 liter = 1.06 quarts or 1000 cubic centimeters
- 1 gram = 0.035 ounce

Micro One millionth part of the unit specified.

Micron Unit of length in the metric system equal to one thousandth part of one millimeter.

Milli One thousandth part of the unit specified.

Moisture Indicator Device used to measure the moisture content of a refrigerant.◀

Mollier Diagram Graph of refrigerant pressure, heat, and temperature properties.

Monochlorodifluoromethane ($CHClF_2$) Refrigerant commonly known as R-22.

Motor Burnout Condition of an electric motor in which the wire insulation has deteriorated by overheating.

Motor, Capacitor Start Induction motor having a separate starting winding which has a capacitor connected to it for added starting torque.

Motor, Capacitor Start and Run Induction motor similar to the capacitor start motor except that the capacitor and the starting winding are designed to remain in the circuit at all times.

Motor Control Device to start and/or stop a motor at certain temperature or pressure conditions.

Motor, Hermetic Compressor drive motor that is sealed within the compressor casing.

Motor, Open Compressor drive motor in which the motor and compressor are two separate components connected by a coupling or belt drive.

Motor, Repulsion Induction Motor with a winding in the armature and a centrifugal mechanism that shorts out the armature winding when the motor approaches full running speed.

Motor, Semihermetic Compressor drive motor that is sealed within the compressor casing and that has removable covers or components for inspecting and repairing the motor or compressor.

Motor, Shaded Pole Small induction motor that has a shaded pole for the purpose of starting and that has very low starting torque.

Motor, Sleeve Bearing A motor with a sleeve-type babbitt or bronze bearing that requires oil lubrication.

Motor, Splashproof A motor protected against splashing water or against rain when exposed to the weather.

Motor, Split Phase An induction motor having a separate winding for starting.

Motor, Squirrel Cage A straight induction motor.

Motor Starter, Across-the-Line A motor starter or switch which when engaged impresses full-line voltage on the motor windings.

Motor Starter, Magnetic A motor switch operated by a magnetic power unit or holding coil and equipped with overload relays for protection of the motor.

Motor Starter, Manual A motor switch operated by hand and equipped with an overload trip mechanism.

Motor Starter, Reduced Voltage A motor starter, either magnetic or manual, having a means for reducing the voltage temporarily at starting. Usually equipped with a timing device to increase the voltage to full-line value as the motor approaches full speed.

Muffler Device installed in a hot gas line to silence discharge surges.

Multiple Compressors Two or more compressors installed in parallel.

Natural Convection Movement of a fluid caused by temperature differences which causes a density change of the fluid.

Nonrecycling Control Relay An electrical device installed in the control circuit to prevent the refrigeration system from operating when temperature controls are not calling for cooling.

Nominal Size Tubing Tubing measurement that has an inside diameter the same as a pipe of the same stated size.

Nonferrous Metals and metal alloys of a group that contains no iron.

Off-Cycle That period when equipment, specifically a refrigeration system, is not in operation.

Ohm (R) Unit of measurement of electrical resistance equivalent to the resistance requiring one volt to cause a flow of one ampere.

Ohmmeter An instrument for measuring resistance in ohms.

Ohm's Law Mathematical relationship between voltage, current, and resistance in an electrical circuit; is stated as, Voltage (E) = Amperage (I) × Ohms (R).

Oil, Compressor Lubricating A highly refined lubricant made especially for refrigeration compressors.

Oil, Entrained Oil droplets carried by high velocity refrigerant gas.

Oil Filter A device in the compressor to remove foreign matter from the crankcase oil before it reaches the bearing surfaces.

Oil Level That level in a compressor crankcase at which oil must be carried for proper lubrication.

Oil Loop A loop placed at the bottom of a riser for the purpose of forcing oil to travel up the riser.

Oil Pressure Cutout Control See "Control, Oil Pressure Cutout."

Oil Pressure Gauge A device to show pressure of oil developed by the pump within a refrigeration compressor.

Oil Pump A device that provides the source of power for forcefeed lubrication systems in reciprocating compressors.

Oil Return Line The line carrying the oil collected by an oil separator back to the compressor crankcase.

Oil Separator A device for separating oil out of the compressor discharge gas and returning it to the compressor crankcase.

On-Cycle That period when equipment is in operation.

Orifice Accurate sized hole used for controlling fluid flow.

Overload A load greater than that for which the system or machine is intended.

Overload Protection A device designed to stop the machine or open a circuit should a dangerous overload occur.

Packing A resilient, impervious material placed around shafts that are capable of rotating (such as pump shafts or valve stems) to prevent leakage.

pH An indicator of a substance's base strength; the pH scale consists of 1 to 14, with 1 as a strong acid base, 7 as neutral, and 14 a strong alkaline base.

Photoelectricity Action whereby electrical flow is generated by light waves.

Pilot Control Valve arrangement in a control valve whereby pressure from the main line is used to operate the main valve.

Pilot Control, External Method by which the internal connection of the pilot is plugged and an external connection is provided to obtain pilot pressure from another source.

Pinch-Off Tool Device used to stop fluid flow by pressing the walls of the tubing together.

Pitot Tube Tube used for measuring air duct pressure.

Plenum Chamber Air compartment connected to one or more distributing ducts.

Pneumatic Operation or regulation by air pressure.

Potential Relay Electrical switch that is operated by an electromagnet that is sensitive to voltage changes.

Potentiometer Variable electrical resistor that has three terminals, one on each end of the resistor and one that can be adjusted between the ends. It is used for measuring and controlling electrical potential.

Power Rate at which work is done or energy is emitted; source or means of supplying energy.

Power Element Actuating mechanism of a temperature control or thermostatic expansion valve.

Power Factor Percentage of efficiency for an ac electrical circuit indicates that portion of delivered current which is used to do work. Ratio of total watts to total volt-amperes.

Preheating Heating of fluid in advance of other processes.

Pressure Force or thrust exerted on a unit area or on a surface.

Pressure, Absolute Pressure measured above absolute vacuum.

Pressure, Atmospheric Pressure exerted by the earth's atmosphere, which under standard conditions

(at sea level) is equal to 14.7 pounds per square inch absolute or 0 pounds per square inch gauge.

Pressure, Gauge Pressure exerted above atmospheric pressure.

Pressure, High Side or Head Pressure which exists in that part of the refrigeration system between compressor discharge in the condenser and receiver and up to the refrigerant metering device.◀

Pressure-Limiting Device A pressure-responsive mechanism designed to stop automatically the operation of the pressure imposing element, such as compressor or boiler, at a predetermined pressure.

▶Pressure, Low Side or Suction Pressure which exists in that part of the refrigeration system between the metering device, through the evaporator, and up to the suction valves on the compressor.◀

Pressure Regulator, Evaporator An automatic pressure regulating valve that is mounted in the suction line between evaporator outlet and compressor inlet; responsive to its own inlet pressure or to the evaporator or space temperature and functions to throttle the vapor flow (when necessary) to prevent the evaporator pressure from falling below a set value.

Pressure Relief Device Valve or rupture member designed to relieve excessive pressure automatically.

▶Pressure, Static Force per unit area that would be exerted by a fluid on a small body immersed in the fluid; the force per unit area that a fluid exerts on the surface of a tube or duct at a point where there is no turbulence.

Pressure, Velocity Pressure created by the speed and weight of the fluid in moving fluids.

Primary Control Device directly controlling operation of a heating system.

Process Tube Length of tubing connected into a hermetic compressor used for servicing unit.

PSI Abbreviation for pounds per square inch; a unit of force.

PSIA Abbreviation for pounds per square inch absolute; a measure of pressure on a scale starting with a perfect vacuum as the zero point and that indicates atmospheric pressure as 14.7 pounds per square inch absolute.

PSIG Abbreviation for pounds per square inch gauge; the normal scale used to measure pressure with the zero point starting at atmospheric pressure and pressures below atmospheric pressure expressed as inches of vacuum; 1-inch vacuum is equivalent to 0.49 pounds per square inch.◀

Psychrometer Device used to measure relative humidity of atmospheric air; normally contains a wet bulb thermometer and a dry bulb thermometer.

Psychrometric Chart A graphical representation of thermodynamic properties of air; normally used for finding temperatures, moisture content, heat content, and volume of air.

Pumping Down (Refrigeration System) Operation in which refrigerant in a charged system is pumped into another part of the system, normally into the receiver.

Purge Unit Device for removing noncondensable gases from a refrigeration system or for removing low concentration liquid from absorption system evaporators.

Purging Release of noncondensable gases from a system, usually through a purge valve placed on top of condenser.

▶Quick Connect Coupling Device which permits fast and easy disconnection or connection of two fluid lines.

R-11, Refrigerant 11 Trichloromonofluoromethane (CCl_3F), a low pressure refrigerant used in centrifugal compressor systems; used also as a cleaning fluid; also known as Carrene No. 2.

R-12, Refrigerant 12 Dichlorodifluoromethane (CCl_2F_2), a popular refrigerant used in many air-conditioning and refrigeration applications; also known as FREON 12.

R-22, Refrigerant 22 Monochlorodifluoromethane ($CHClF_2$), a popular low temperature and air-conditioning system refrigerant.

R-113, Refrigerant 113 (FREON) Trichlorotrifluoroethane ($C_2Cl_3F_3$), a low pressure refrigerant used in centrifugal compressor systems.

R-500, Refrigerant 500 ($CCl_2F_2 + CH_3CHF_2$), a refrigerant which is an azeotropic mixture of R-12 and R-152a (Difluoroethane).

R-502, Refrigerant 502 ($CHClF_2 + CClF_2CF_3$), A refrigerant which is an azeotropic mixture of R-22 and R-115.

R-717, Refrigerant 717 Ammonia (NH_3), a toxic refrigerant used in many industrial refrigeration systems.

Radiant Heating Heating system in which heating surfaces radiate heat into the space to heat objects that heat rays strike.

Radiation, Thermal Transmission of heat through space by waves; passage of heat from object to object without heating the space in between.

Range, Controller Difference between minimum and maximum operating points in which a control will function accurately.

Rankine Scale Absolute Fahrenheit temperature scale having zero equal to −460°F.

Reactance Impedance of an AC circuit caused by capacitance or inductance or both.

Receiver Vessel in a refrigeration system used to store liquid refrigerant until it is needed by the evaporator.

Reed Value A thin, flat tempered steel plate that is fastened at one end; the other end moves up and down opening and closing a valve port.

Reciprocating Back and forth straight line motion.

Refrigerant Fluid used for heat tranfer in a refrigerating system that absorbs heat at a low temperature and pressure and rejects heat at a higher temperature and pressure; usually involves a change of state.

Refrigerant Tables Tables that show the properties of saturated refrigerants at various temperatures.

Refrigerating Effect Amount of heat a quantity of refrigerant will absorb in changing from a liquid to a gas at a given evaporating pressure.

Register Combination grille and damper assembly covering an air opening.

Regulator, Back Pressure An automatic valve or control device designed to maintain the pressure in an evaporator above a preset minimum.

Regulator, Evaporator See "Regulator, Back Pressure."

Regulator, Suction Pressure See "Regulator, Back Pressure."

Regulator Valve, Water See "Valve, Regulator."

Relative Humidity Amount of moisture in the air compared to the amount the air could contain expressed as a percentage.

Relay Device operative by a variation in the condition of one electric or pneumatic circuit to affect operation of other devices in the same or another electric or pneumatic cirucit.

Relief, Bypass See "Bypass Relief."

Relief Valve See "Valve, Relief."

Remote Bulb The sensing element for an expansion valve, thermostat, or other temperature sensing device in which the sensing bulb is connected to the control by a capillary tube.

Resistance, Electrical (R) Opposition to current flow in an electrical circuit; expressed in ohms.

Reversing Valve Device used to reverse refrigerant flow in a heat pump.

Riser A vertical tube or pipe that carries fluid from a lower to a higher level.

Rotor Rotating or turning part of a motor or generator.

SI Units International System of units.

Saddle Valve See "Valve, Saddle."

Safety Head A cylinder head in a compressor that is held in place by a spring so that it can move if a solid object, liquid, or abnormal gas pressure is between the moveable head and cylinder.

Scale A deposit formed from solution directly upon a surface, usually consists of insoluble carbonates of calcium and magnesium.

Schrader Valve See "Valve, Schrader."

Seal, Compressor or Shaft A rubbing seal or stuffing box used to prevent leakage between shaft and compressor housing where the shaft penetrates through the housing.

Sealed Unit Also known as sealed hermetic unit; motor and compressor assemblies which are enclosed together in a sealed dome or housing.

Sensible Heat See "Heat, Sensible."

Sensor Material or device used to sense changes in temperature, pressure, or humidity.

Serviceable Hermetic A bolted-together housing or dome containing the compressor and motor together; also known as a semihermetic compressor.

Service Valve See "Valve, Service."

Shading Coefficient The ratio of total solar heat gain through a specific glazing system to the total solar gain through a single clear 1/8-inch sheet of double-strength glass.

Short Cycling Operation of a device which starts and stops too frequently.

Sight Glass A glass mounted in a tube, pipe, or housing for observers to see the condition of fluid inside; may also be known as a bullseye when mounted on a housing.

Silica Gel Colloidal silica resembling coarse white sand in appearance that is used as a drying agent because of its ability to absorb moisture.

Silver Brazing or Silver Soldering Process of joining two materials together by melting a material that has a melting point above 800°F but below the melting point of the joined materials.

Sling Psychrometer Measuring device with wet and dry bulb thermometers that is used for measuring relative humidity.

Slugging Process in which liquid has entered the compressor cylinder causing a hammering when the liquid is compressed.

SOL-AIR Temperature That temperature of the outdoor air which (in the absence of all radiation exchanges) would give the same rate of heat entry into the surface as would exist with the actual combination of incident solar radiation, radiant energy exchanges with the sky and other outdoor surroundings, and convective heat exchange with the outdoor air.

Solar Altitude The angle of the sun above the horizon, measured in a vertical plane.

Solar Heat Heat of visible and invisible energy waves from the sun.

Specific Gravity Weight of a substance compared to an equal volume of water or air which in water or air is assigned the value of 1.0.

Specific Heat Quantity of heat, in BTUs, required to change one pound of a substance one degree Fahrenheit; also quantity of heat (in calories) required to change one gram of a substance one degree Celsius.

Specific Volume Volume per unit of weight or mass which is the reciprocal of density.

Standard Atmosphere Condition when air pressure is 14.7 pounds per square inch absolute and 68°F (20°C) and has a relative humidity of 36 percent.

Starter, Magnetic Motor See "Motor Starter, Magnetic."

Starting Relay Electrical switch that is operated by a magnetic coil, that connects and diconnects the motor starter winding.

Static Pressure See "Pressure, Static."

Static Head Pressure due to the weight of a fluid in a vertical column or, more generally, resistance due to lift.

Strainer Device having a screen-type material used to retain solid particles while liquid passes through.

Stratification of Air Condition in which air is divided into temperature layers; it may either be moving air or still air.

Subcooling Process of cooling a liquid below its condensing temperature.

Sublimation Process of a solid melting directly into the gaseous state without passing through the liquid state.

Submaster Controller Controller that is automatically reset by a master controller according to a predetermined setting as conditions change at the master controller.

Suction Line Piping or tubing connecting the evaporator to the compressor; carries refrigerant gas from the evaporator to the compressor.

Suction Pressure See "Pressure, Low Side."

Superheat Heat added to a gas to raise its temperature above boiling temperature.

Surge Point Condition when fluid flow is unstable causing pulsating fluid flow; may also cause reverse flow.

Swaging Process of enlarging one tube end so that the end of another tube of the same size will fit inside to be soldered together.

Sweet Water Name sometimes given to tap water or clean, chilled water.

Switch, Auxiliary An accessory switch sometimes used on damper motors or control operators that may be used to open or close a circuit whenever the motor reaches a certain position.

Switch Disconnect Switch normally provided on an electrical circuit of a motor that will completely disconnect the motor from the electrical power source.

Temperature Thermal state of matter which indicates its tendency to communicate heat to matter in contact with it; also known as heat intensity.

Temperature, Absolute Zero Zero point of the absolute temperature scale which is equal to −459.69°C.

Temperature, Ambient Temperature of the air surrounding the object under consideration.

Temperature, Boiling See "Boiling Point."

Temperature, Condensing Temperature of fluid in the condenser when it condenses.

Temperature, Dew Point Temperature at which condensation of water vapor in air begins; will change for different air pressures and quantities of moisture in the air.

Temperature, Dry Bulb Temperature of an ordinary thermometer after correction for radiation.

Temperature, Effective An arbitrary value indicating the sensation of warmth or cold felt by the human body from the combined effect of temperature, humidity, and air movement; this value represents the temperature of still saturated air having the same sensation.

Temperature, Mean Radiant (MRT) An arbitrary value indicating the effect surface temperatures of surrounding objects have on an object with regard to radiant heat transfer.

Temperature, Saturation Boiling point of a fluid for a corresponding pressure; also known as evaporation temperature, condensing temperature, or boiling point.

Temperature, Wet Bulb Thermodynamic wet bulb temperature is the temperature at which liquid or solid water, by evaporating into air, can bring the air to saturation adiabatically at the same temperature. Wet bulb temperature (without qualification) is the temperature indicated by a wet bulb psychrometer constructed and used according to specifications.

Therm Quantity of heat equal to 100,000 BTUs.

Thermistor Electrical device having resistance which varies inversely with its temperature.

Thermocouple Device that generates electricity using the principle that two unlike metals with their ends welded together will produce a voltage at the unwelded ends when the welded end is heated.

Thermometer Device used for measuring temperature.

Thermometer Well A cylindrical compartment, with one closed end that is attached through the wall of a pipe, tube, or vessel containing a substance having its temperature measured; this compartment facilitates the installation and removal of a thermometer or temperature sensor without loss of the substance being measured.

Thermopile A combination of a number of thermocouples connected in series to produce a higher voltage.

Thermostat Device that responds to temperature change to control another device.

Throw, Air See "Blow."

Ton of Refrigeration Useful refrigerating effect of a device that equals 12,000 BTUs per hour or 200 BTUs per minute.

Torque Force which tends to produce rotation or torsion.

Torque Wrench Device used to tighten fasteners to a certain torque.

Transducer A device that receives a power signal from one system and transfers it to a signal in another system which uses a different form of energy; examples are the electric-pneumatic relay and fluidic-pneumatic transducer.

Transformer Electromagnetic device that transfers power of one circuit into power of various voltages for another circuit.

Transformer-Rectifier A combined transformer and rectifier which transfers ac power into dc power of a different voltage.

Transistor Electron device used similarly to an electron tube for amplification; depends on conducting properties of semiconductors in which electrons moving in one direction are considered as leaving holes that are filled with positive electricity flowing in the opposite direction.

Trichlorotrifluoroethane See "R-113."

Triple Point Pressure/temperature condition in which a substance exists in the solid, liquid, and gaseous state at the same time.

Tubing Fluid-carrying vessel that has a thin wall.

Tube, Capillary See "Capillary Tube."

Tube, Soft Copper Tubing made of seamless soft copper which may be easily bent with a tube bender; for refrigerant use, it must be deoxidized and dehydrated.

Ultimate Strength Highest stress level that a component can tolerate without rupture.

Ultraviolet Invisible radiation waves having frequencies shorter than waves of visible light and longer than x-ray.

Unit, Air-Conditioning Device that provides a means for moving, heating, cooling, humidifying, and filtering the air.

Unit, Compressor Device consisting of a compressor, motor, drive coupling, and frequently, the essential compressor controls and valves that are mounted on a common base.

Unit, Condensing A specific refrigerating machine combination consisting of one or more power-driven compressor units, condensers, liquid receivers (when required) and the regularly furnished accessories.

Vacuum Reduction in pressure below atmospheric pressure; usually stated in inches of mercury or inches of vacuum.

Vacuum Pump Pump for exhausting a system or that produces a vacuum in a closed system.

Valve, Charging Valve usually located on the liquid line near the receiver through which refrigerant may be charged into the system.

Valve, Check Valve designed to permit flow in one direction only and that closes against back flow.

Valve, Discharge Service Valve in the discharge passage of a compressor that is frequently mounted directly on the compressor body or discharge manifold.

Valve, Expansion Valve designed to control the flow of refrigerant to the cooling element.

Valve, Float Valve designed to automatically maintain a constant liquid level; valve operation is governed by a float mechanism.

Valve, Liquid Shutoff Valve in the liquid line usually located immediately at the condenser or receiver outlet.

Valve, Low Side Float A type of expansion valve designed to regulate flow of refrigerant to flooded evaporators by maintaining a relatively constant liquid level in the evaporator.

Valve, Motor-Operated Valve and motor combination in which the motor operates to open and close the valve.

Valve, N.C. Normally closed valve.

Valve, N.O. Normally open valve.

Valve, Oil Check Check valve installed between the suction manifold and the crankcase of a compressor;

intended to permit oil return to the crankcase but to prevent exit of the oil from the crankcase when starting the compressor.

Valve Plate Assembly upon which the compressor, suction, and/or discharge valves are mounted.

Valve, Purge Valve through which non-condensables may be purged from the condenser or receiver.

Valve, Reed See "Reed Valve."

Valve, Relief Valve designed to relieve the excess pressure from a vessel or system whenever the pressure exceeds the setting of the valve.

Valve, Receiver Shutoff Valve in the line that connects the condenser to the receiver; usually located at inlet to the receiver; also called the Queen valve.

Valve, Reversing Valve used to reverse the direction of refrigerant flow depending upon whether heating or cooling is required.

Valve, Riser Valve designed to allow manual control of the flow of refrigerant in vertical piping.

Valve, Saddle (Line Tap Valve) Valve body shaped so it may be silver brazed or clamped onto a refrigerant tubing surface.

Valve, Schrader Same device used in bicycle tires to let air in; a spring loaded valve which permits fluid flow in one direction when a center pin is depressed and in the other direction when a pressure difference exists.

Valve, Service A manually operated valve mounted on refrigeration systems; used for service operations.

Valve, Solenoid A magnetically operated valve generally used to control the flow of a liquid or gas whenever on/off control is required.

Valve, Suction Service A manually operated valve located at the inlet of the compressor that is used to control suction gas flow and to service the system.

Valve, Water Regulating Pressure operated valve used to control flow of condenser water in proportion to condenser requirements as reflected by the condensing pressure.

Vanes, Inlet Guide A device used to control amount and direction of refrigerant flow into the centrifugal compressor; consists of a number of wedge-shaped, center-pivoted dampers that divide the vapor stream into several segments.

Vapor Fluid in gaseous state near its condensing temperature that does not obey gas laws; used in general for a fluid that normally exists as a liquid at atmospheric temperature and pressures.◀

Vapor Barrier Layer of material used to prevent water vapor from penetrating insulating material.

▶Vapor Lock Condition when vapor is trapped in a line; prevents liquid flow.

Vapor, Saturated Vapor at its condensing point for an existing pressure.

Vapor, Superheated Vapor heated above the saturated vapor condition.

Vapor, Wet Vapor mixed with droplets of liquid.

V-Belt Rubber and fabric belt on grooved pulleys with a V-shaped cross section for use as a drive belt.

Velocity A straight-line movement quantity that denotes instantaneous time rate; is indicative of quickness, rapidity of motion, swiftness, and speed.

Velocity Chart Diagrams constructed for a fluid to show velocity in feet per minute through various size tubing for certain conditions.◀

Velocity, Outlet Average discharge velocity of primary air being discharged from the outlet; normally measured in the plane of the opening.

Velocity, Room Average sustained residual air velocity level in an occupied zone of the conditioned space (eg, 65, 50, and 85 feet per minute).

Velocity, Terminal Highest sustained airstream velocity existing in the mixed air path at the end of the throw.

Ventilation Process of supplying or removing air, by natural or mechanical means, to or from a space.

▶Vibration Arrestors Soft or flexible substances or devices which are used to reduce the transmission of a vibration.

Viscosity Property of a fluid in which internal friction influences its rate of flow or exhibits resistance

to change of form; measured as the length of time required for a measured quantity of fluid at a given temperature to flow through a standard orifice.

Volatile Liquid Liquid that evaporates readily at atmospheric pressure and temperature.

Volt (Symbol E or V) Unit of measurement of electromotive force or potential difference in electric circuits.

Volt-Ampere Unit of measurement of apparent power.

Voltmeter Instrument used to measure voltage in electric circuits.

Volume, Specific See "Specific Volume."

Volumetric Efficiency Ratio obtained by dividing the actual volume of gas delivered from the compressor by the displacement ratio of effective stroke of a compressor to the actual stroke.

VOM Abbreviation for volt-ohm-milliammeter; common test instrument that is a combined voltmeter, Ohmmeter, and milliammeter in one case.

VTVM Abbreviation for vacuum-tube voltmeter.

Water, Chilled Water that has been cooled in an evaporator and is circulated to cooling coils for cooling other substances; sometimes referred to as a secondary refrigerant, brine, or sweet water.

Water, Condensing Water supplied to cool a water-cooled condenser or condensing unit.

Water, Entrained Water, in small particles, carried along by a rapidly moving airstream.◀

Water Makeup Water added to a cooling tower or evaporative condenser to replace that lost through evaporation and other causes.

▶Water Regulating Valve See "Valve, Water Regulating."

Water, Spray Water sprayed over the coils of an evaporative condenser or the packing of a cooling tower.

Water Treatment Treatment of water with chemicals to reduce its scale-forming properties or to change other undersirable characteristics.

Watt Unit of electrical power equal to 3.414 BTUs.

Wet Bulb Thermometer Device used in measurement of relative humidity; a wet bulb thermometer's temperature is lowered below that of a dry bulb thermometer by the evaporation of moisture from a wick fastened around the bulb.

Window Unit Air conditioner which is normally mounted in a window.

Woodruff Key A semicircular piece of metal serving the same purpose as a flat key to keep a pulley or gear from turning on a shaft.◀