REFRIGERATION SYSTEMS TERMS AND DEFINITIONS

ACCUMULATOR: A storage chamber for low-side liquid refrigerant; also known as surge drum, surge header and suction trap. Also, a pressure vessel whose volume is used in a refrigerant circuit to reduce pulsation.

ADIABATIC PROCESS: A thermodynamic process during which no heat is added to, or taken from, a substance or system.

AEROSOL: An assemblage of small particles, solid or liquid, suspended in air. The diameters of the particles may vary from 100 microns down to 0.01 micron or less e.g., dust, fog, smoke. Cigarette smoke is .03 microns.

AGITATOR: A device causing turbulent motion in a fluid confined in a tank.

AIR BLAST: Forced air circulation.

AIR CIRCULATION: Natural or imparted motion of air.

AMMONIA EQUIPMENT ROOM: A room designated Class T by ASHRAE requiring specific ventilation. It must be free from flame producing devices and surfaces above 8000 F. Gas/diesel engines, gas turbines, cigarette lighters and matches are acceptable in a Class T room.

BOILING POINT: The temperature at which the vapor pressure of a liquid equals the absolute external pressure at the liquid-vapor interface.

BRINE: Any liquid cooled by the refrigerant and used for the transmission of heat without a change in its state, having no flash point or a flash point above 1500 F as determined by American Society for Testing and Materials Method D93. Also called a secondary refrigerant.

BRITISH THERMAL UNIT (Btu): The Btu is defined as the heat required to raise the temperature of a pound of water one degree Fahrenheit.

BYPASS: A pipe or duct usually controlled by valve or damper, for conveying a fluid around an element of a system.

CAPACITY: The usable output-of a system or system component in which only losses occurring in the system or component are charged against it.

CAPACITY, ICE MELTING: Refrigeration equal to the latent heat of fusion of a stated weight of ice at 144 Btu per lb.

CAPACITY, ICE MELTING EQUIVALENT: the amount of heat absorbed by one lb. of ice at 32 F in liquefying to water at 32 F, 144 Btu.

CAPACITY, REFRIGERATING: The rate of heat removal from a medium or space to be cooled, at stated conditions. The term refrigerating effect is used to denote heat transfer to or

from the refrigerant itself in a refrigerating system, whereas the term refrigerating capacity is used to denote the rate of heat removal from a medium or space to be cooled.

CAPACITY, REFRIGERATING, GROSS: The total rate of heat removal from all sources by the evaporator of a refrigerating system at stated conditions. It is numerically equal to the System Refrigerating Effect.

CAPACITY, REFRIGERATING COMPRESSOR: The rate of heat removal by the refrigerant assigned to the compressor in a refrigerating system.

CAPACITY REDUCER: In a compressor, a device such as a clearance pocket, movable cylinder head, or suction bypass, by which compressor capacity can be adjusted without otherwise changing the operating conditions.

CARBONIZATION: Formation of carbonaceous deposits, which may be produced by decomposition of lubricating oil or other organic materials. These deposits are usually caused by high temperatures -- i.e., 2500 F to 3000 F discharge temperatures.

CENTIGRADE: A thermometric scale in which the freezing point of water is called 0 degrees and its boiling point 100 degrees at normal atmospheric pressure (14.696 psi).

CHANGE OF STATE: Change from one phase, such as solid, liquid, or gas to another.

CHILL: To apply refrigeration moderately, as to meats, without freezing.

CLEARANCE: Space in Cylinder not occupied by piston at end of compression stroke, or volume of gas remaining in cylinder at same point; measured in percentage of piston displacement.

COEFFICIENT OF EXPANSION: The change in length per unit length or the change in volume per unit volume, per degree change in temperature.

COEFFICIENT OF PERFORMANCE, COMPRESSOR, REFRIGERATING: The ratio of the compressor refrigerating effect to the rate of energy input to the shaft of the compressor, in consistent units, in a complete refrigerating plant, under designated operating conditions.

COIL: A cooling or heating element made of pipe or tubing.

COIL, DIRECT-EXPANSION: Coil using the direct method of refrigeration.

COLD STORAGE: A trade or process of preserving perishables on a large scale by refrigeration.

COMPRESSION: In a compression refrigeration system, a process by which the pressure of the refrigerant is increased.

COMPRESSION, COMPOUND: Compression by stages in two or more cylinders.

COMPRESSION, MULTISTAGE: Compression in two or more steps, as where the discharge of one compressor is connected with the suction of another.

COMPRESSION, RATIO OF: Ratio of absolute pressures after and before compression.

COMPRESSION,SINGLE-STAGE: Compression in one stage.

COMPRESSION, WET: A system of refrigeration in which some liquid refrigerant is mixed with vapor entering the compressor so as to cause the discharge vapors from the compressor to be saturated rather than superheated.

COMPRESSION EFFICIENCY: Ratio of work required to compress, adiabatically and reversibly, all the vapor delivered by a compressor (per stage) to the actual work delivered to the vapor by the piston or blades of the compressor.

COMPRESSION SYSTEM: Refrigerating system in which the pressure-imposing element is mechanically operated.

COMPRESSOR: A specific machine used to compress refrigerant.

COMPRESSOR, BOOSTER: A compressor for very low pressures, usually discharging into the suction line of another compressor after the discharge gas is de-superheated.

COMPRESSOR, CENTRIFUGAL: A non-positive displacement compressor which depends for pressure rise, at least in part, on centrifugal effect.

COMPRESSOR, COMPOUND: A compressor in which compression is accomplished by stages, as in two or more cylinders.

COMPRESSOR, DOUBLE-ACTING: one which has two compression strokes per revolution of the crankshaft per cylinder-i.e., both faces of the piston are working faces.

COMPRESSOR, DOUBLE SUCTION: split suction valve arrangement on compressors for carrying two suction pressures.

COMPRESSOR, HORIZONTAL: Compressor with horizontal cylinders.

COMPRESSOR, MOTOR, SEALED (HERMETIC TYPE): A mechanical compressor consisting *of* a compressor and a motor, both of which are enclosed in the same sealed housing, with no external shaft nor shaft seals, the motor operating in the refrigerant atmosphere.

COMPRESSOR, NON-POSITIVE DISPLACEMENT: Is a compressor which increases refrigeration pressure without changing the internal volume of the compressor, i.e., a centrifugal compressor.

COMPRESSOR, OPEN-TYPE: A refrigerant compressor with a shaft or other moving part extending through its casing to be driven by an outside source of power, thus requiring a shaft seal or equivalent rubbing contact between a fixed and moving part.

COMPRESSOR, POSITIVE DISPLACEMENT: A refrigerant compressor in which increase of refrigerant gas or vapor pressure is attained by changing the internal volume of the compression chamber.

COMPRESSOR, RECIPROCATING: A positive displacement compressor in which the change in internal volume of the compression chamber(s) is accomplished by the reciprocating motion of one or more pistons.

COMPRESSOR, REFRIGERANT: That component of a refrigerating system which increases the pressure of a compressible refrigerant fluid, and simultaneously reduces its volume, while moving the fluid through the device.

COMPRESSOR, REFRIGERANT, MECHANICAL: A mechanically operated component of a refrigerating system that draws in refrigerant in a gaseous state and discharges it at a higher pressure.

COMPRESSOR, ROTARY: A positive displacement compressor in which the change in internal volume of the compression chamber(s) is accomplished by the rotary motion of a positive displacement member(s).

COMPRESSOR, SINGLE-ACTING: One having one compression stroke per revolution of the crank for each cylinder.

COMPRESSOR UNIT: A compressor with a prime mover.

COMPRESSOR, VERTICAL: Compressor with vertical cylinder.

COMPRESSOR UNIT, REFRIGERANT: A refrigerating component designed to compress a specific refrigerant vapor, consisting of compressor, prime mover and regularly furnished accessories.

CONDENSATE: The liquid formed by condensation of a vapor. In steam heating, water condensed from steam; in air conditioning, water extracted from air, as by condensation on the cooling coil of a refrigerant machine.

CONDENSATION: The process of changing a vapor into liquid by the extraction of heat. Condensation of steam or water vapor is effected in either steam condensers or dehumidifying coils and the resulting water is called condensate.

CONDENSER (REFRIGERANT): A heat exchanger in which the refrigerant, compressed to a suitable pressure is condensed by rejection of heat to an appropriate external cooling medium.

CONDENSER, AIR-COOLED REFRIGERANT: A refrigerant condenser in which heat rejection is accomplished entirely by raising the temperature of the air used as a cooling medium.

CONDENSER, EVAPORATIVE REFRIGERANT: A refrigerant condenser in which part of the heat rejection may be accomplished by raising the temperature of an air stream passing

over a heat exchange surface and the remainder by evaporation of water sprayed or otherwise distributed over the heat exchange surface.

CONDENSER, OPEN-SHELL-AND-TUBE: One in which the water passes in a film over the inner surfaces of the tubes, which are open to the atmosphere.

CONDENSER, WATER-COOLED REFRIGERANT: A refrigerant condenser in which heat rejection is accomplished entirely by raising the temperature of the water used as a cooling medium.

CONDENSING UNIT: A machine combining the capabilities of a compressor unit, a condenser and a receiver.

CONDUCTANCE, THERMAL: The time rate of heat flow through a body (frequently per unit area) from one of its bounding surfaces to the other for a unit temperature difference between the two surfaces, under steady conditions.

CONDUCTIVITY, THERMAL: The time rate of heat flow through unit area and unit thickness of a homogeneous material under steady conditions when a unit temperature gradient is maintained in the direction perpendicular to area. Materials are considered homogeneous when the value of the thermal conductivity is not affected by variation in thickness or in size of sample within the range normally used in construction.

CONDUCTOR, THERMAL: A material that readily transmits heat by means of conduction.

CONNECTING ROD: A device connecting the piston to a crank and used to change rotating motion into reciprocating motion, or vice versa, as from rotating crankshaft to reciprocating piston.

CONNECTION IN PARALLEL: System whereby flow is divided among two or more Channels from a common starting point or header.

CONSERVATION OF ENERGY: The principle that assumes that energy can be neither created nor destroyed.

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 whose magnitude is to be regulated.

CONTROLLER, HIGH PRESSURE: A pressure-responsive device (usually an electric switch), actuated directly by the refrigerant vapor pressure on the high side of a refrigerating system (usually compressor condensing pressure).

CONTROLLER, LOW PRESSURE: A pressure responsive device (usually an electric switch), actuated directly by refrigerant vapor pressure in the low side of a refrigerating system.

CONTROLLER, PRESSURE: An automatic control device actuated by pressure designed to be responsive to pressure.

CONVECTION: Transfer of heat by movement of fluid.

CONVECTION, FORCED: Convection resulting from forced circulation of a fluid, as by a fan, jet or pump.

CONVECTION, NATURAL: Circulation of gas or liquid (usually air or water) due to differences in density resulting from temperature changes.

COOLER, BRINE (WATER): Evaporator for cooling brine in an indirect system.

COOLER, COLD STORAGE: An insulated room maintained at 30 F or above.

COOLER, OIL: Heat exchanger for the purpose of cooling oil in a lubrication system.

COOLING, EVAPORATIVE: Involves the adiabatic exchange of heat between air and a water spray or wetted surface. The water assumes the wet-bulb temperature of the air, which remains constant during its traverse of the exchanger.

COOLING COIL: An arrangement of pipe or tubing that transfers heat from air to a refrigerant or brine.

COOLING MEDIUM: Any substance whose temperature is such that it is used, with or without a change of stage, to lower the temperature of other bodies or substances.

COOLING RANGE: In a water cooling device, the difference between the average temperature of the water entering the device, and the average temperature of the water leaving it.

CRITICAL PRESSURE, TEMPERATURE, VOLUME: Terms given to state points of a substance at which liquid and vapor have identical properties.

CYCLE: A complete course of operation of working fluid back to a starting point, measured in thermodynamic terms (functions). Also used in general for any repeated process on any system.

CYCLE, CLOSED: Any cycle in which the primary medium is always enclosed and repeats the same sequence of events.

CYCLE, DEFROSTING: The portion of a refrigeration operation that permits the cooling unit to defrost.

CYCLE, REFRIGERATING, IDEAL BASIC VAPOR COMPRESSION: A closed refrigerating cycle in which the refrigerant vapor is compressed isentropically, desuperheated and condensed at constant pressure, expanded adiabatically, and evaporated at constant pressure.

CYCLE, REFRIGERATING: A sequence of thermodynamic processes through which a refrigerant passes, in a closed or open system, to absorb heat at a relatively low temperature level and reject heat at a higher temperature level.

DALTON'S LAW OF PARTIAL PRESSURE: Each constituent of a mixture of gases behaves thermodynamically as if it alone occupied the space. The sum of the individual pressures of the constituents equals the total pressure of the mixture.

DECIBEL: A unit used to express the relation between to amounts of sound power.

DEFROST, AUT0MATIC: An automatic defrost system is one in which the defrost cycle is automatically initiated and automatically terminated, with automatic resumption of normal refrigeration at the conclusion of the defrost operation. The defrost water is disposed of automatically.

DEFROST, MANUAL: Manual defrost is one in which defrosting of the refrigerated surface is accomplished by natural or manual means with manual initiation and manual termination of the overall defrost operation.

DEFROST, SEMI-AUTOMATIC: a semi-automatic defrost system is one in which the defrost cycle is manually initiated and automatically terminated, with automatic resumption of normal refrigeration at the conclusion of the defrost operation. Defrost water is disposed of automatically or collected in a container for subsequent manual removal.

DEFROSTING: The process of removing unwanted ice or frost from a cooling surface

DEFROSTING, HOT GAS: Use of high pressure or condenser gas in the evaporator or low side to effect removal of frost.

DEHYDRATION: (1) The removal of water vapor from air by the use of absorbing or absorbing materials; (2) the removal of water from stored goods.

DENSITY: Is the weight per unit volume.

DESIGN WORKING PRESSURE: The maximum allowable working pressure, PSIG, for which a specific part of a system is designed.

DISPLACEMENT, ACTUAL: The actual volume of gas or vapor at compressor inlet conditions, moved by a compressor per revolution or per unit of time.

DISPLACEMENT, PISTON: The volume swept by a piston during its working strokes or stroke per revolution.

DISPLACEMENT, THEORETICAL: The total volume displaced by the working strokes of all the pistons of a compressor per revolution or per unit of time.

DISTRIBUTOR: Device for dividing flow of liquid fluid between parallel paths in an evaporator or in other types of heat transfer apparatus.

DRY ICE: Solid carbon dioxide, $C0_2$.

EFFECT, REFRIGERATING: The rate of heat removal by a refrigerant in a refrigerating system.

EFFECT, TOTAL COOLING: The difference between the total enthalpy of the dry air and water vapor mixture entering a unit per hour and the total enthalpy of the dry air and water vapor (and water) mixture leaving the unit per hour, expressed in Btu per hour.

EFFICIENCY, COMPRESSION: Ratio of horsepower required to compress adiabatically all the vapor delivered by compressor (in single stage) to the indicated horsepower.

EFFICIENCY, MECHANICAL: Ratio of the compression energy or work of a compressor to the energy or work input.

EFFICIENCY, VOLUMETRIC, APPARENT: Ratio of length of suction line, on indicator card, to stroke.

ENERGY, AVAILABLE: the portion of the total energy that can be converted to work in a perfect engine.

ENTHALPY: Thermodynamic property of a substance defined as the sum of itsinternal energy plus the quantity Pv/j, where P = pressure of the substance, v = its volume, and J = the mechanical equivalent of heat. Formerly called by the obsolescent names total heat and heat content.

ENTROPY: The ratio of the heat added to a substance to the absolute temperature at which it is added.

EQUALIZER: A piping arrangement to maintain a common liquid level or pressure between two or more chambers.

EQUALIZER, EXTERNAL: In a thermostatic expansion valve, a tube connection from a selected control point in the low-side circuit to the pressure sensing side of the control element such that the control-point pressure is transmitted to the actuating element (diaphragm or bellows). This connection provides a means for compensating for the pressure drop through accessories and the evaporator.

EQUALIZER, INTERNAL: In a thermostatic expansion valve, an integral internal part or passage which provides exposure of the actuating element (diaphragm or bellows) to pressure leaving the valve.

EUTECTIC MIXTURE (SOLUTION): A mixture that melts or freezes at constant temperature and with constant composition. Its melting point is usually the lowest possible for mixtures of the given substances.

EVAPORATION: Change of state from liquid to vapor.

EVAPORATOR: That part of a refrigerating system in which refrigerant is vaporized to produce refrigeration.

EVAPORATOR COIL: An evaporator constructed of pipe/tubing with or without fins (other than shell and tube or shell and coil type).

EVAPORATOR, DRY-TYPE: An evaporator of the continuous tube type where refrigerant from a pressure-reducing device is fed into the inlet end and the suction line connects to the outlet end.

EVAPORATOR, FLOODED: A refrigerant evaporator in which: (1) the heat transfer surface is immersed in the refrigerant being evaporated, or (2) an excess of refrigerant over that which can be evaporated is circulated through the surface.

EXPANSION, DRY: A process of heat removal by a refrigerant in an evaporator fed by a flow control, responsive to temperature or pressure or both at some point in the evaporator, or to the difference between high and low side pressures, and not to the liquid level in the evaporator; all entering refrigerant is evaporated before being recirculated.

EXPANSION, MULTISTAGE: Passing volatile refrigerant through two or more pressure reducing devices, connected in series, usually with an evaporator between them operating at one pressure and a second evaporator fed through both devices, at a lower pressure.

EXPANSION VALVE, PRESSURE CHANGE OF: The change in outlet pressure of a constant pressure expansion valve required to open the valve a predetermined amount.

EXPANSION VALVE SUPERHEAT: The difference between the temperature of the thermal bulb and the temperature corresponding to the pressure at the outlet, or at the equalizer connection, when provided, of a thermostatic expansion valve.

EXTENDED SURFACE: Heat transfer surface, one or both sides of which are increased in area by the addition of fins, discs, or other means.

FAHRENHEIT: A thermometric scale in which 32 degrees denotes freezing and 212 degrees the boiling point of water under normal pressure at sea level (14.696 psi).

FAN, PROPELLER: A propeller or disc type wheel within a mounting ring or plate and including driving mechanism supports for either belt drive or direct connection.

FAN, VANEAXIAL: A disc type wheel within a cylinder, a set of air guide vanes located either before or after the wheel and including driving mechanism supports for either belt drive or direct connection.

FIN: an extended surface to increase the heat transfer area, as metal sheets attached to tubes.

FLASH GAS: The gas resulting from the instantaneous evaporation of liquid refrigerant in a pressure-reducing device to cool the refrigerant to the evaporation temperature obtained at the reduced pressure.

FLASH POINT: Temperature of combustible material, as oil, at which there is a sufficient vaporization to ignite the vapor, but not sufficient vaporization to support combustion of the material.

FLOW, LAMINAR OR STREAMLINE: Fluid flow in which each fluid particle moves in a smooth path substantially parallel to the paths followed by all other particles.

FLOW, TURBULENT: Fluid flow in which the fluid moves transversely as well as in the direction of the tube or pipe axis, as opposed to streamline or viscous flow.

FLUID: Gas, vapor, or liquid.

FLUID, HEAT TRANSFER: Any gas, vapor or liquid used to absorb heat from a source at a high temperature and reject it to a lower temperature substance.

FLUID, REFRIGERATING: any fluid used to transfer heat between cold refrigerant and the substance or bodies to be cooled, by circulation of the fluid without change of state, or by *evaporation-condensation process* at essentially equal pressures.

FLUID, SECONDARY: Fluid cooled by the refrigerant in indirect method of refrigeration, sometime called brine.

FOAMING: The formation of a foam or froth of an oil-refrigerant mixture due to rapid boiling out of the refrigerant dissolved in the oil when the pressure is suddenly reduced. This occurs when the compressor starts operating and, if large quantities of refrigerant were dissolved, large quantities of oil may boil out and be carried through the refrigerant lines.

FORCE: The action on a body that tends to change its relative condition as to rest or motion.

FREEZER: In cold storage, an insulated room kept below 30 F. Any device for freezing perishables.

FREEZE-UP: Failure of a refrigerating unit to operate normally due to formation of ice at the expansion device. A valve may freeze shut or open, causing improper refrigeration in either case. on a coil, frost formation to the extent that air flow stops or is severely restricted.

FREEZING POINT: Temperature at which a given liquid substance will solidify or freeze upon removal of heat. Freezing point for water is 32 F.

FREEZING, QUICK: The freezing of a food or other commodity at a rapid rate of temperature reduction to produce a desired crystalline structure in the frozen product.

FREEZING TIME: Time for any complete freezing process to take place.

FROST BACK: The flooding of liquid from an evaporator into the suction line accompanied by frost formation on suction line in most cases.

FUSIBLE PLUG: A device having a predetermined temperature fusible member for relief of pressure.

GAGE (GAUGE): Instrument for measuring pressure or liquid level. Also arbitrary scale of measurement for sheet metal thickness, wires and drill diameters, etc.

GAGE GLASS: Device for showing a liquid level.

GAS: Usually a highly superheated vapor which, within acceptable limits of accuracy, satisfies the perfect gas laws.

GAS, FLASH: The gas resulting from the instantaneous evaporation of refrigerant in a pressure reducing device to cool the refrigerant to the evaporation temperature obtained at the reduced pressure.

GAS, FOUL (NONCONDENSABLE GAS): Gas in a refrigerating system which does not condense at the temperature and partial pressure at which it exists in the condenser, and therefore imposes a higher head pressure on the system.

GAS, INERT: A gas that neither experiences nor causes chemical reaction nor undergoes a change of state in a system or process; e.g., nitrogen or helium mixed with a volatile refrigerant.

GLASS, GAGE: Device for showing a liquid level.

GLASS, SIGHT: Glass tube used to indicate the liquid level in tanks, bearings, and similar equipment.

GLAZING, OF FOODS: Freezing a coat of ice on frozen foods by dipping in water, the latent heat of the coat being absorbed inwards.

GRAVITY, SPECIFIC: Density compared to density of standard material; reference usually to water or to air.

HEAD, DYNAMIC OR TOTAL: In flowing fluid, the sum of the static and velocity heads at the point of measurement.

HEAD, STATIC: The static pressure of fluid expressed in terms of the height of a column of the fluid, or of some manometric fluid, which it would support.

HEAD, VELOCITY: In a flowing fluid, the height of the fluid or of some manometric fluid equivalent to its velocity pressure.

HEAT: The form of energy that is transferred by virtue of a temperature difference.

HEAT, LATENT: Change of enthalpy during a change of state, usually expressed in Btu per lb. With pure substances, latent heat is absorbed or rejected-at constant pressure.

HEAT, LATENT, OF CONDENSATION OR EVAPORATION (SPECIFIC): Thermodynamically the difference in the specific enthalpies of a pure condensable fluid between its dry saturated vapor state and its saturated (not subcooled) liquid state at the same pressure.

HEAT, SENSIBLE: Heat which is associated with a change in temperature; specific heat exchange of temperature; in contrast to a heat interchange in which a change of state (latent heat)occurs.

HEAT, SPECIFIC: The ratio of the quantity of heat required to raise the temperature of a given mass of any substance one degree to the quantity required to raise the temperature of an equal mass of a standard substance (usually water at 59 F) one degree.

HEAT CONDUCTOR: A material capable of readily conducting heat. The opposite of an insulator or insulation.

HEAT EXCHANGER: A device specifically designed to transfer heat between two physically separated fluids.

HEAT EXCHANGER, DOUBLE-PIPE: One in which two pipes are arranged concentrically, one within the other, and in which one fluid flows through the inner pipe and the other through the annulus between them.

HEAT OF FUSION: Latent heat involved in the change between liquid and vapor states.

HEAT OF REACTION: Heat per unit mass or per mol of one of the reagents or products of reaction in a chemical reaction; exothermal if given off, endothermal if absorbed.

HEAT OF THE LIQUID: Enthalpy of a mass of liquid above an arbitrary zero.

HEAT OF VAPORIZATION: Latent heat involved in the change between liquid and vapor states.

HEAT PUMP: A refrigerating system employed to transfer heat into a space or substance. The condenser provides the heat while the evaporator is arranged to pick up heat from air, water, etc. By shifting the flow of air or other fluid, a heat pump system may also be used to cool the space.

HEAT TRANSMISSION: Any time-rate of heat flow; usually refers to conduction, convection and radiation combined.

HEAT TRANSMISSION COEFFICIENT: Any one of a number of coefficients used in the calculation of heat transmission by conduction, convection, and radiation, through various materials and structures.

HIGH SIDE (HIGH PRESSURE SIDE): Parts of a refrigerating system subjected to condenser pressure or higher.

HORSEPOWER: Unit of power in foot-pound-second system, work done at the rate of 550 ft. lb. per second, or 33,000 ft. lb. per minute.

HOT GAS LINE: Line used to convey discharge gas from the compressor.

HUMIDITY, RELATIVE: The ratio of the mol fraction of water vapor present in the air, to the mol fraction of water vapor present in saturated air at the same temperature and barometric pressure.

HUMIDITY, SPECIFIC: Weight of water vapor (steam) associated with one lb. weight of dry air, also called humidity ratio.

HYDROMETER: An instrument which, by the extent of its submergence, indicates the specific gravity of the liquid in which it floats.

ICE BANK: A thermal accumulator in which during off-peak periods of refrigeration demand, ice is formed, and in which, during peak periods of refrigeration demand, compressor capacity is supplemented by melting ice.

INCH OF WATER: A unit of pressure equal to the pressure exerted by a column of liquid water 1 inch high at a temperature of 40 C or 39.20 F.

INSULATION (THERMAL): A material having a relatively high resistance to heat flow, and used principally to retard the flow of heat.

INTERCOOLING: Removal of heat from compressed gas between compression stages.

ISENTROPIC: An adjective describing a reversible adiabatic process; a change taking place at constant entropy.

ISOTHERMAL: An adjective used to indicate a change taking place at constant temperature.

JACKETING: Surrounding by a confined bath or stream of fluid for temperature control or heat absorption.

JOINT, WELDED: A gas-tight joint obtained by the joining of metal parts in the plastic or molten state.

LEAK DETECTOR: Device used to detect refrigerant leaks in a refrigerating system.

LIMITED (FIXED) CHARGE SYSTEM: A system in which with the compressor idle the internal volume and total refrigerant charge are such that the design pressure will not be exceeded during shutdown.

LIQUEFACTION: Change of state to liquid, generally used instead of condensation in case of substances ordinarily gaseous.

LIQUID RECEIVER (RECEIVER): A vessel permanently connected to the system by, inlet and outlet pipes for storage of liquid refrigerant.

LIQUID, VOLATILE: One which evaporates readily at atmospheric pressure and room temperatures.

LIQUID LINE: The tube or pipe carrying the refrigerant liquid from the condenser or receiver of a refrigerating system to a pressure-reducing device.

LIQUID REFRIGERANT RECEIVER: A vessel in refrigerating system designed to insure the availability of adequate liquid refrigerant for proper functioning of the system and to store the liquid refrigerant when the system is pumped down.

LOAD: The amount of heat per unit time imposed on a refrigerating system, or the required rate of heat removal.

LOW SIDE (LOW PRESSURE SIDE): That part of a refrigerating system operating at approximately the evaporator pressure.

MACHINERY, REFRIGERATING: The equipment comprising the refrigerating system including its associated prime movers.

MACHINERY ROOM: A room in which is permanently installed and operated a refrigerating system but not *including evaporators* located in a cold storage room, refrigerator box, air-cooled space, or other enclosed space. Closets solely contained within and *opening only* into a room shall be considered a part of such room and not as a machinery room.

MAIN: Pipe or duct for distributing to or collecting from various branches.

MECHANICAL EQUIVALENT OF HEAT: An energy conversion ratio of 778.177 ft. lb = 1 Btu.

MELTING POINT: For a given pressure, the temperature at which the solid and liquid phases of a substance are in equilibrium.

NATURAL CONVECTION AIR COOLER: An air cooler depending upon natural convection for air circulation.

OUTPUT: Capacity; duty; performance; net refrigeration produced by system.

OVERALL COEFFICIENT OF HEAT TRANSFER (THERMAL TRANSMITTANCE): The time rate of heat flow through a body per unit area, under steady conditions, for a unit temperature difference between the fluids on the two sides of the body.

PIPING: The pipe/tube used in interconnecting various parts of a refrigeration system including pipes, flanges, bolting, gaskets, stop valves, fittings, expansion joints, strainers, control valves, snubbers, metering devices and pipe supports.

POWER: The rate of performing work. Common units are horsepower, Btu per hour and watts.

POWER CONSUMPTION: Power used multiplied by time, measured in kw hr, hp hr, etc. (Power is the rate of work; power consumption is work.)

PRECOOLER: Cooler for the removal of sensible heat before shipping, storing, or processing. Device for cooling a fluid before it enters some piece of apparatus.

PRESSURE: The normal force exerted by a homogeneous liquid or gas, per unit of area, on the wall of its container.

PRESSURE, ABSOLUTE: Pressure referred to that of a perfect vacuum. It is the sum of gage pressure and atmospheric pressure.

PRESSURE, ATMOSPHERIC: The pressure due to the weight of the atmosphere.

PRESSURE, BACK (SUCTION): Operating pressure measured in the suction line at the compressor inlet.

PRESSURE, CRITICAL: Vapor pressure corresponding to the critical state of the substance at which the liquid and vapor have identical properties.

PRESSURE, DISCHARGE: An operating pressure in a refrigerating system measured in the discharge line at the compressor outlet.

PRESSURE, GAGE: Pressure above atmospheric as registered on a gauge.

PRESSURE, OPERATING: The pressure occurring at a reference point in a refrigerating system when the system is in operation.

PRESSURE, PARTIAL: Portion of total gas pressure of a mixture attributable to one component.

PRESSURE, SUCTION (BACK): Operating pressure measured in the suction line at a compressor inlet.

PRESSURE, TOTAL: In the theory of the flow of fluids, the sum of the static pressure and the velocity pressure at the point of measurement. Also called dynamic pressure.

PRESSURE, VAPOR: The pressure exerted by a vapor. If a vapor is kept in confinement over its liquid so that the vapor can accumulate above the liquid, the temperature being held constant, the vapor pressure approaches a fixed limit called the maximum, or saturated, vapor pressure, dependent only on the temperature and the liquid. The term vapor pressure is sometimes used as synonymous with saturated vapor pressure.

PRESSURE, VELOCITY: In moving fluid, the pressure capable of causing an equivalent velocity, if applied to move the same fluid through an orifice such that all pressure energy expended is converted into kinetic energy.

PRESSURE DROP: Static pressure loss in fluid pressure, as from one end of duct to the other, due to friction, etc.

PRESSURE EQUALIZING: Allowing high and low side pressures to equalize or nearly equalize during idle periods as by use of an unloading valve or a vapor lock liquid control; or nearly equalizing inlet and discharge pressures on the compressors. In either case, to reduce starting torque load.

PRESSURE IMPOSING ELEMENT: Any device or portion of the equipment used for the purpose of increasing the pressure upon the refrigerant.

PRESSURE-LIMITING DEVICE: A pressure-responsive mechanism designed to stop automatically the operation of the pressure imposing element at a predetermined pressure.

PRESSURE REGULATOR, EVAPORATOR (BACK-PRESSURE VALVE): An automatic valve located between the evaporator outlet and compressor inlet that is responsive to its own inlet pressure or to the evaporator or refrigerator temperature and functions to throttle the vapor flow when necessary to prevent the evaporator pressure from falling below a selected value.

PRESSURE-RELIEF DEVICE: A valve or rupture member designed to relieve excessive pressure automatically.

PRESSURE VESSEL: Any refrigerant-containing receptacle of a refrigerating system.

PROPERTIES, THERMODYNAMIC: Basic qualities used in defining the condition of a substance, such as temperature, pressure, volume-enthalpy, entropy.

PSYCHROMETRIC CHART: A graphical representation of the thermodynamic properties of moist air.

PUMP DOWN (REFRIGERATION SYSTEM): The operation by which the refrigerant in a charged system is pumped into the liquid receiver.

PURGER: Device for removing non-condensable gas from refrigerant condensers or for removing low concentration liquor from absorption system evaporators.

PURGING: The act of blowing out gas from a refrigerant containing vessel, usually for the purpose of removing non-condensables.

RADIATION, THERMAL: The transmission of heat through space by wave motion; the passage of heat from one object to another without warming the space between.

RANGE (COOLING RANGE): In a cooling device, the difference between the average temperature entering the device, and the average temperature leaving it.

REDUCER, PRESSURE, LIQUID REFRIGERANT: A device or devices, in a refrigerating system, in which the pressure of the fluid is reduced from that of condensed liquid to that of the evaporator.

REFRIGERANT: The fluid used for heat transfer in a refrigerating system, which absorbs heat at a low temperature and a low pressure of the fluid and rejects heat at a higher temperature and a higher pressure of the fluid, usually involving changes of state of the fluid.

REFRIGERANT, FLAMMABLE: Any refrigerant which will burn when mixed with air, such as ethyl chloride, methyl chloride, and the hydrocarbons.

REFRIGERANT, SECONDARY: Any volatile or nonvolatile substance in an indirect refrigerating system that absorbs heat from a substance or space to be refrigerated and rejects this heat to the evaporator of the refrigerating system.

REFRIGERANT CHARGE: The designated amount of refrigerant required for proper functioning of a closed refrigerating system.

REFRIGERATING EFFECT, NET WATER (BRINE) COOLER: The product of the weight rate of water or brine flow and the difference in enthalpy of the entering and leaving water or brine expressed in heat units per unit of time. It is expressed also by the total refrigeration effect less the heat leakage losses.

REFRIGERATING EFFECT, SUBCOOLING: The additional refrigeration effect made available by subcooling the refrigerant liquid in the condenser.

REFRIGERATING EFFECT, TOTAL WATER (BRINE) COOLER: The product of the weight rate of refrigerant flow and the difference in enthalpy of the entering and leaving refrigerant fluid, expressed in heat units per unit of time.

REFRIGERATING ENGINEERING: Technique of design, manufacture, application, and operation of refrigerating machinery and its primary equipment. Refrigeration (except as exact measure in heat units) refers here to a more general science, more concerned with the use of coldness for commercial and other useful purposes.

REFRIGERATING MEDIUM: Any substance whose temperature is such that it is used, with or without a change of state, to lower the temperature of other bodies or substances below the ambient temperature.

REFRIGERATING PLANT: A complete refrigerating system and all accessories, controls and other apparatus required for its utilization, and its enclosing structure.

ROOM DRY BULB (DEWPOINT, ETC.): The dry-bulb (dewpoint, etc.) temperature of the conditioned room or space.

SAFETY HEAD: In a compressor, a cylinder head held in place by a spring of such strength that it will not be compressed during normal operation, but will be moved by solid or liquid matter or abnormal gas pressure between it and the piston, thereby protecting the compressor.

SATURATION: The condition for coexistence in stable equilibrium of a vapor and liquid or a vapor and solid phase of the same substance. Example: Steam over the water from which it is being generated.

SEAL, BELLOWS: Metal bellows used in a shaft seal, or in place of packing for valves. Also used in long pipe lines instead of gaskets to compensate for expansion of the line with temperature.

SEAL, SHAFT: A rubbing seal or stuffing box used to prevent fluid leakage between the shaft and bearing of a compressor or other fluid-moving device.

SHELL AND TUBE: Pertaining to heat exchangers in which a nest of tubes or pipes, or a coil of tube or pipe, is contained in a. shell or container. The pipe (or pipes) carries a fluid through it while the shell is also provided with an inlet and outlet for a fluid flow.

SIGHT GLASS: Glass tube used to indicate the liquid level in pipes, tanks, bearings and similar equipment.

SLUDGE: A product of decomposition of oil resulting from impurities, moisture or chemical reactions, and favored by excessive temperature. Sludge may be mushy, gummy, or hard.

SOLUBILITY: The quantity of dissolved substance (solute) which is contained in a unit quantity of saturated solution at a given temperature and pressure.

SOLUTION, EUTECTIC: A mixture which melts or freezes normally at a constant temperature and with constant composition. Its' melting point is usually the lowest possible for mixtures of the given substances.

STATE, GASEOUS: One of three states or phases of matter characterized by greatest freedom of molecules and lack of any inherent fixed shape or volume.

STATE, LIQUID: One of three states or phases of matter characterized by limited freedom of molecules and by substantial incompressibility.

STATE, SOLID: One of the three states or Phases of matter, characterized-by stability of dimensions, relative, incompressibility, and molecular motion held to limited oscillation.
STRAINER: A device for withholding foreign matter from a flowing liquid or gas.

STROKE: Of a piston, length of travel (twice its crank radius).

STUFFING BOX: A packing gland surrounding a shaft, steam or rod to prevent leakage.

SUBCOOLING: Process of cooling refrigerant below condensing temperature, for a given pressure. Also cooling a liquid below its freezing point, where it can exist only in a state of unstable equilibrium.

SUBCOOLING, BEAT OF (SPECIFIC): The difference in specific enthalpies of a pure condensable fluid between the saturated (not subcooled) liquid state and the cooled liquid at a given temperature below its condensation temperature, at the same pressure.

SUBLIMATION: Change of state directly from solid to gas without appearance of liquid.

SUCTION INLET: Port through which gas enters compressor.

SUCTION LINE: The tube or pipe that carries the refrigerant vapor from the evaporator to the compressor inlet.

SUPERHEAT,(SPECIFIC): The difference in specific enthalpies of a pure condensable fluid between vapor at a given temperature above saturation and vapor at the dry saturated state, at the same pressure.

SUPERHEATER: A heat exchanger used on flooded evaporators, wherein hot liquid on its way to enter the evaporator is cooled by supplying heat to dry and superheat the wet vapor leaving the evaporator.

SUPPLY MAINS: The pipes through which the heating or cooling medium of a system flows from the source of heat or refrigeration to the runouts and risers leading to the heating or cooling units.

SURFACE COOLING: A method of cooling air or other gas by passing over cold surfaces.

SYSTEM, BRINE-SPRAY: Refrigerating scheme for cooling by a mist or spray of brine.

SYSTEM, CASCADE: One having two or more refrigerant circuits, each with a pressure imposing element, condenser, and evaporator, where the evaporator of one circuit cools the condenser of another (lower temperature) circuit.

SYSTEM, COMPRESSION: Refrigerating system in which the pressure imposing element is mechanically operated.

SYSTEM, DIRECT EXPANSION: Refrigerating system in which the evaporator is in direct contact with the refrigerated material or space or is located in air circulating passages communicating with such spaces.

SYSTEM, DOWN-FEED: A piping arrangement for a heating, air conditioning, or refrigerating system, in which the heating or cooling fluid is circulated through supply mains which are above the levels of the heating or cooling units which they serve.

SYSTEM, FLOODED: System in which only part of the refrigerant passing over the heat transfer surface is evaporated, and the, portion not evaporated is separated from the vapor and recirculated.

SYSTEM, GRAVITY CIRCULATION: A heating or refrigerating system in which the heating or cooling fluid circulation is effected by the motive head due to difference in densities of cooler and warmer fluids in the two sides of the system.

SYSTEM, INDUSTRIAL: A system used in the manufacture or processing of materials, such as ice making plants, cold storage warehouses, ice cream plants, dairy plants, packing houses, chemical plants, and other places of similar industrial enterprise.

SYSTEM, MECHANICAL REFRIGERATING: A refrigerating system employing a mechanical compression device to remove the low pressure refrigerant enclosed in the low pressure side and deliver it to the high pressure side of the system.

SYSTEM, NO-FROST: A no-frost system is one in which all the refrigerated surfaces in the cabinet are defrosted by an automatic defrost system. Characteristics of a no-frost system are:

A. The system is automatically operated to prevent formation of frost on all refrigerated surfaces.

B. No accumulation of ice or frost forms on the stared food.

C. Nominal refrigerated food temperatures are maintained during operation of the automatic defrost system(s).

D. The water from defrosting is disposed of automatically.

SYSTEM, REFRIGERATING: Any system which, operation between a heat source and a heat sink (in the thermodynamic sense) at two difference temperatures, able to absorb heat from the heat source at the lower temperature and reject heat to the heat sink at the higher temperature.

SYSTEM, REFRIGERATING, COMPRESSION TYPE: A refrigerating system in which the temperature and pressure of gaseous refrigerant are increased by a mechanically operated component. In most cases, the refrigerant undergoes changes of state in the system.

SYSTEM, UNITARY REFRIGERATING: A complete factory-assembled and factory-tested refrigerating system comprising one or more assemblies which may be shipped as one unit or separately but which are designed to be used together.

TANK, BRINE: (1) In an ice plant: the main freezing tank in which the cans are immersed while ice is being produced; (2) in a brine circulating system: a storage tank or balance tank for brine; (3) in domestic and commercial fields: a container surrounding the evaporator and filled with brine for storing refrigeration or for equalizing temperature at various points of the evaporator, especially in ice cream cabinets.

TANK, BRINE EXPANSION: A vented reservoir in a closed circulating brine system for the accommodation of volume expansion of brine due to temperature change.

TANK, BRINE RETURN: A reservoir in an open circulating brine system for the storage of brine at the pump suction and for inspection of the condition and flow of brine.

TANK, FREEZING: A container kept at low temperatures for storing foodstuffs or for freezing foodstuffs.

TEMPERATURE: The thermal state of matter with reference to its tendency to communicate heat to matter in contact with it. If no heat flows upon contact, there is no difference in temperature.

TEMPERATURE, ABSOLUTE: Temperature expressed in degrees above absolute zero.

TEMPERATURE, ABSOLUTE ZERO: The zero point on the absolute temperature scale, 459.69 degrees below the zero of the Fahrenheit scale; 273.16 degrees below the zero of the Centigrade scale.

TEMPERATURE, CRITICAL: The saturation temperature corresponding to the critical state of the substance at which the properties of the liquid and vapor are identical.

TEMPERATURE, DEWPOINT: The temperature at which the condensation of water vapor in a space begins for a given state of humidity and pressure as the temperature of the vapor is reduced. The temperature corresponding to saturation (100 percent relative humidity) for a given absolute humidity at constant pressure.

TEMPERATURE, DRY-BULB: The temperature of a gas or mixture of gases indicated by an accurate thermometer after correction for radiation.

TEMPERATURE, SATURATION: For a fluid, the boiling point corresponding to a given pressure; evaporation temperature; condensation temperature.

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.

TEMPERATURE DIFFERENCE, DIFFUSION: The temperature difference between the air temperature at supply opening and design indoor temperature.

TEMPERATURE DIFFERENCE, EFFECTIVE: The difference between the room air temperature and the supply air temperature at the outlet to the room.

TEMPERATURE DIFFERENCE, MEAN: Mean of differences between temperatures of a fluid receiving and a fluid yielding heat.

THERM: A quantity of heat equivalent to 100,000 Btu.

THERMOCOUPLE: Device for measuring temperature utilizing the fact that an electromotive force is generated whenever two junctions of two dissimilar metals in an electric circuit are at difference temperature levels.

THERMODYNAMICS, LAWS OF: Two laws upon which rest the classical theory of thermodynamics. These laws have been stated in many different, but equivalent ways. THE FIRST LAW: (1) When work is expended in generating heat, the quantity of heat produced is proportional to the work expended; and conversely, when heat is employed in the performance of work, the quantity of heat which disappears is proportional to the work done (Joule); (2) If a system is caused to change from an initial state to a final state by adiabatic means only, the work done is the same for all adiabatic paths connecting the two states (Zemansky); (3) in any power cycle or refrigeration cycle the net heat absorbed by the working substance is exactly equal to the net work done. THE SECOND LAW: (1) it is impossible for a self-acting machine, unaided by any external agency, to convey heat from a body of lower temperature to one of higher temperature (Clausius); (2) it is impossible to derive mechanical work from heat taken from a body unless there is available a body of lower temperature into which the residue not so used may be discharged (Kelvin); (3) it which is impossible to construct an engine that, operating in a cycle, will produce no effect other than the extraction of heat from a reservoir and the performance of an equivalent amount of work (Zemansky).

THERMOMETER: An instrument for measuring temperature.

THERMOSTAT: An instrument which responds to changes in temperature, and which directly or indirectly controls temperature.

THERMOSTAT, DIRECT-ACTING: An instrument for activating a control circuit upon sensing a predetermined low temperature.

THERMOSTAT, REVERSE-ACTING: An instrument for activating a control circuit upon sensing a predetermined high temperature.

THERMOSTAT, ROOM: A thermostat properly located in a room so as to respond to representative room temperature and thereby control heating or cooling devices.

THROTTLING: Of a fluid, an irreversible adiabatic process which consists of lowering pressure by an expansion without work.

THROW: The horizontal or vertical axial distance an air stream travels after leaving an air outlet before the maximum stream velocity is reduced to a specified terminal level, e.g., 200, 150, 100, or 50 fpm.

TON OF REFRIGERATION: A useful refrigerating effect equal to 12,000 Btu per hr; 200 Btu per min.

TOTAL HEAT (SEE ENTHALPY): A thermodynamic property of a substance defined as the sum of its internal energy plus the quantity Pv/J, where P = pressure of the substance, v = its

volume, and j = the mechanical equivalent of heat. Now called enthalpy, formerly called by the obsolescent names total heat and heat content.

TOWER, WATER-COOLING: An enclosed device for evaporatively cooling water by contact with air.

TOWER, WATER-COOLING, ATMOSPHERIC: One in which the air movement through the tower is dependent only upon atmospheric conditions. Also known as natural draft cooling tower.

TOWER, WATER-COOLING, FORCED-DRAFT: A mechanical draft water cooling tower having one or more fans located in the air entering the tower.

TOWER, WATER-COOLING, INDUCED-DRAFT: A mechanical draft water cooling tower having one or more fans located in the air leaving the tower.

TOWER, WATER-COOLING, MECHANICAL-DRAFT: One utilizing one or more fans to move the air through the tower, the fans being an integral part of the tower.

TRANSMISSION: In thermodynamics, a general term for heat travel; properly, heat transferred per unit of time.

TRANSMISSION, HEAT, COEFFICIENT OF: Any one of a number of coefficients used in the calculation of heat transmission by conduction, convection, and radiation, through various materials and structures.

TRANSMITTANCE, THERMAL (U FACTOR): The time rate of heat flow per unit area under steady conditions from the fluid on the warm side of a barrier to the fluid on the cold side, per unit temperature difference between the two fluids.

TRIPLE POINT: State point at which three phases of given substance (i.e., solid, liquid and gas) exist in equilibrium.

TUBE: In refrigeration, a hollow product of round cross section, having a continuous periphery.

TUBE, CONDENSER (HEAT EXCHANGER): Tube manufactured to special requirements as to tolerances, finish and temper.

TUBE, FINNED: Heat transfer tube or pipe with extended surface in the form of fins, discs or ribs.

TUBE, SEAMLESS: Tube produced with an initially continuous periphery.

TUBE, WELDED: Tube made from plate, sheet or strip with welded longitudinal or helical joint.

UNIT COOLER: A direct-cooling, factory-made, encased assembly including a cooling element, fan and motor (usually) and directional outlet.

UNLOADER: A device on or in a compressor for equalizing the high and low side pressure for a brief period during starting, in order to decrease the starting load on the motor; also a device for controlling compressor capacity by rendering one or more cylinders ineffective.

VALVE, BACK PRESSURE (EVAPORATOR PRESSURE REGULATOR): An automatic valve located between the evaporator outlet and compressor inlet that is responsive to its own inlet pressure or to the vapor flow when necessary to prevent the evaporator pressure from falling below a selected value.

VALVE, CHARGING: A valve used to charge or add refrigerant to the system, or add oil to the compressor crankcase.

VALVE, CHECK: A valve allowing (fluid) flow in one direction only.

VALVE, CONSTANT PRESSURE EXPANSION: A controlling device for regulating the flow of volatile refrigerant into a cooling unit, actuated by changes in pressure of the low side.

VALVE, DIAPHRAGM: A form of packless valve, manually or mechanically actuated. Also a valve actuated by pressure of a motivating fluid on one side of the diaphragm which seals the motivating fluid from the flowing fluid controlled by the valve. Flowing and motivating fluids may, but need not, be the sane.

VALVE, DIRECT-ACTING DIAPHRAGM: One which closes with the admission of fluid pressure to a diaphragm and opens when pressure is released.

VALVE, DISCHARGE: On a compressor, the valve which allows compressed refrigerant to flow from the cylinder to the discharge main.

VALVE, EMERGENCY RELIEF: A manually operated valve for the discharge of refrigerant in case of fire or other emergency.

VALVE, EXPANSION: Valve for controlling the flow of refrigerant to the cooling element.

VALVE, EXPANSION, AUTOMATIC: A device which regulates the flow of refrigerant from the liquid line into the evaporator to maintain a constant evaporator pressure.

VALVE, EXPANSION, HAND: A manually operated needle-type valve for controlling the flow of liquid refrigerant to an evaporator.

VALVE, EXPANSION, THERMOSTATIC: A controlling device for regulating the flow of volatile refrigerant into a cooling unit, actuated by changes in evaporator pressure and superheat of the refrigerant leaving the cooling unit. The basic response is to superheat.

VALVE, FLOAT: (1): Regulating valve controlled by liquid level; (2) valve actuated by float in a liquid container.

VALVE, KING: Stop valve between receiver and liquid main.

VALVE, LOW SIDE FLOAT: A float valve operating by changes in level of low pressure liquid, opens at low level and closes at high.

VALVE, PACKLESS: A valve which does not use packing to prevent leaks around the valve stem. Flexible material is generally used to seal against leaks and still permit valve movement.

VALVE, PRESSURE REDUCING: An air distribution device consisting of a factory-made assembly with either manual or automatic volume control operating at static pressures above 0.40 in. water.

VALVE, PRESSURE RELIEF: A valve held closed by a spring or other means and designed to relieve automatically pressure in excess of its setting. Also called safety valve.

VALVE, PURGE: Device to allow fluid to flow out of system, particularly non-condensable gases. Also called a drain valve.

VALVE, REDUCING: A valve which maintains a uniform pressure on its outlet side, irrespective of how the pressure on its inlet side may vary above the pressure to be maintained.

VALVE, SERVICE: A valve intended to help isolate an apparatus from the rest of the system; may be a stop valve.

VALVE, SOLENOID: A valve which is closed by gravity, pressure, or spring action and opened by the movement of a plunger due to the magnetic action of an electrically energized coil, or vi cc versa.

VALVE, STOP: A shutoff valve other than a valve for controlling the flow of refrigerant.

VALVE, SUCTION: In a compressor, the valve which allows refrigerant to enter the cylinder from the suction line and prevents return flow.

VALVE, SUCTION PRESSURE REGULATING: An automatic valve located between the evaporator outlet and compressor inlet that is responsive to its own outlet pressure and functions to throttle the vapor flow so as to prevent the suction pressure at the compressor inlet from exceeding a selected value. It is used primarily to prevent overload on compressor motors.

VALVE, THERMAL: A valve controlled by a thermally responsive element; for example, a thermostatic expansion valve which is usually responsive to suction or evaporator temperature.

VALVE, WATER REGULATOR: An automatic valve to control the flow of cooling water through a condenser.

VALVE SEAT: The stationary portion of the valve which, when in contact with the movable portion, stops flow completely.

VAPOR: A gas, particularly one near to equilibrium with the liquid phase of the substance and which does not follow the gas laws. Usually used instead of gas for a refrigerant, and in general for any gas below the critical temperature.

VAPOR SATURATED: Vapor in equilibrium with its liquid; that is, when the numbers, per unit time, of molecules passing in two directions through the surface dividing the two phases are equal.

VAPOR, SUPERHEATED: Vapor at a temperature that is higher than the saturation temperature (i.e., boiling point) at the existing pressure.

VAPOR BARRIER: A moisture-impervious layer applied to the surfaces enclosing a humid space to prevent moisture travel to a point where it may condense due to lower temperature.

VAPOR LOCK: Formation of some vapor or all vapor in a liquid line, reducing weight flow as compared to weight flow in fluid phase with the same pressure differential.

VELOCITY: A vector quantity which denotes at once the time rate and the direction of a linear motion.

VISCOSITY: That property of semi-fluids, fluids, and gases by virtue of which they resist an instantaneous change of shape or arrangement of parts. It is the cause of fluid friction whenever adjacent layers of fluid move with relation to each other.

VISCOSITY, ABSOLUTE: The force per unit area required to produce unit relative velocity between two parallel areas of fluid unit distance apart.

VOLATILE LIQUID: One that evaporates readily at atmospheric pressure and room temperatures.

VOLUME, SPECIFIC: The volume of a substance per unit mass; the reciprocal of density.

WATER, COOLING: Water used for condensation of refrigerant; condenser water.

WATER, JACKET: In a compressor, the water used for cooling the cylinder heat and/or walls.

WATER, MAKEUP: Water supplied to replenish, as water replacing that lost by evaporation.

WAX: A solid material which may separate on cooling of oil refrigerant mixtures.

WET-BULB DEPRESSION: Difference between dry-bulb and wet-bulb temperatures.

WIRE-DRAWING: Restriction of area for a flowing fluid, causing a loss in pressure by (internal and external) friction without loss of heat or performance of work; throttling.