

# COMMON TERMS GLOSSARY

FOR TRAINING PURPOSES ONLY

**RAYMOND**



# THIS GLOSSARY PROVIDES DEFINITIONS FOR SOME TERMS USED TO DESCRIBE THE HARDWARE, SOFTWARE, SYSTEMS, PROCEDURES, AND OTHER ASPECTS OF THE MATERIALS HANDLING INDUSTRY.

---

## 0-9

---

### **4-D® (Four Directions of Travel)**

This type of truck is capable of travel in four directions: forward, reverse, left and right.

## A

---

### **AC**

See alternating current.

### **accessory**

Any supplemental device for a truck that is not classified as an attachment. Typical types are battery pullers and battery stands.

### **acid**

Generally sulfuric acid, which when diluted with water, becomes the battery electrolyte.

### **activity**

The number of transactions as measured by: # of picks in line items; amount shipped in dollars and so on.

### **activity report**

A report of the movement of product in a given period of time.

### **address**

An identification given to a specific location within a facility to which flow of material can be directed.

### **adjustability**

Operators come in all shapes and sizes. The more “adjustability” that can be built into the machine, the more productive and comfortable the operator will be.

### **AGV**

See Automated Guided Vehicle.

### **alloy**

A combination of two or more metals as a mixture, a solution, or a compound, (i.e. lead antimony or lead acid).

### **alternating current (AC)**

Where the positive and negative polarity alternate. The alternating period is called a cycle. In the U.S. and Canada, the average is 60 cycles per minute; overseas, 50 cycles per minute is common.

### **ambient temperature**

The temperature of the surrounding cooling medium, such as gas or liquid; usually refers to room or air temperature.

### **amp hour**

See ampere hour.

### **ampere (A or amp)**

A unit of electric current equal to the amount of electricity required to deposit 0.07060 grams of silver per minute in a silver nitrate solution under standard conditions. The current forced through a resistance of one ohm by a pressure of one volt is equal to one ampere.

### **ampere hour (Ah) capacity**

Refers to the volume of electricity that can be drawn from a battery, and is dependent on the number or the size of the plates within the individual battery cells (Amperes times hours).

### **ANSI/ITSDF B56.1**

Safety standard for low-lift and high-lift trucks, sponsored by the Industrial Truck Standards Development Foundation (formerly sponsored by the American Society of Mechanical Engineers (ASME)), and approved by the American National Standards Institute (ANSI). The standard defines safety requirements regarding the design, operation, and maintenance of forklift trucks.

### **anthropometry**

The application of scientific physical measurement methods to human subjects for the development of engineering design standards. It includes static and functional (dynamic) measurements of dimensions and physical characteristics of the body as they occupy space, move, and apply energy to physical objects, as a function of age, sex, occupation and other demographic variables.

### **application specific**

Configured to meet the needs of a particular situation.

### **application-specific option package**

An option available on Raymond® trucks that enables certain features to be added to the truck to meet specific customer requirements.

### **approved industrial trucks**

A truck listed or approved for fire safety purposes by a nationally recognized testing laboratory (for example, Underwriters Laboratories Inc.; Factory Mutual Engineering Corp.).

### **array**

A display of data representing the results of various input alternatives. 2. To arrange a display of alternative data.

### **at-risk movements**

Any motion required of an operator that exposes him/her to a potential disability. At-risk movements are characterized by four factors, alone or in combination: 1. Abnormal postures. 2. Excessive muscle force required. 3. High repetition of motion. 4. Extended distance of motion. For example, side stance on a lift truck, which forces the operator's head to be constantly turned 90° and up-and-down, is an at-risk movement because it exposes the neck muscles and spine to abnormal postures under frequent repetition.

### **attachment**

A device other than conventional forks or load backrest on the elevating mechanism of a truck used for handling a load. Popular types are fork extensions, clamps, rotating devices, sideshifters, load stabilizers, rams and booms.

### **Automated Guided Vehicle (AGV)**

A vehicle equipped with guidance equipment, either electro-magnetic or optical. Such a vehicle is capable of following prescribed guideways and may be equipped for vehicle programming and stop selection, blocking, and any other special functions required by the system.

### **automated warehouse system (AWS)**

A guidance system capable of automatically routing storage and retrieval vehicles to any position at any bin or rack located in an automated warehouse.

### **automatic identification (auto ID)**

See bar code.

### **automatic shelf selector**

A device which automatically stops the forks at an elevated height preset by the truck operator.

### **automatic vehicle control (AVC)**

A micro-processor system to control the travel, vertical and horizontal movements of the vehicle.

### **auxiliary controls**

Hydraulic controls that work in conjunction with the auxiliary pump motor (for example, reach, tilt, sideshift).

### **auxiliary motor**

The electric motor that drives the auxiliary pump which supplies oil to the power steering, reach and power tilt functions.

### **auxiliary platform**

A work platform carried on the forks or attached to the carriage of a high-lift (fork) truck.

### **auxiliary pump**

See auxiliary motor.

## B

---

### **B.C**

See battery compartment.

### **backup**

Generally used as backup stock for a primary or fixed location.

**bagging**

Putting parts or orders in bags for kitting operations or packaging operations. This keeps proper items together and provides some protection.

**banding**

The location of stock in bands at different rack or Carousel shelf levels depending on turnover in such a way as to minimize travel or queuing. The fastest movers are placed at the most convenient level for picking with slower moving items placed at floor or higher levels.

**bar code**

Machine-readable symbols consisting of black lines and white spaces that represent letters and numbers. The most common bar code format used in industry is Code 39. Universal Pricing Code (UPC) is also sometimes encountered. While formats are not interchangeable, most readers can be configured to read a number of different formats. Bar codes are read by either a direct contact wand or a laser scanner. Bar code input to a computer is done via a “wedge” device that plugs (wedges) between the keyboard and the CPU.

**baseleg**

A structural member of a high-lift truck, containing load wheel(s), that extend in front of the mast from both sides. Also referred to as outriggers.

**baseleg opening (BLO)**

The distance between the inside of the baselegs, measured at the narrowest point.

**baseleg overall width (OAW)**

The distance measured across the widest part of the outside of the baselegs.

**batch**

A process whereby the quantities of the same product number are summed together from multiple entries of bill of material model numbers, sub-assemblies, or customer orders, and the products are picked collectively.

**batch pick**

The act of making one pick and breaking that pick down for multiple orders.

**batch picking system**

System designed with operator prompting devices (see BPI) to support batching.

**batch put indicator (BPI)**

Device used to visually indicate item quantity picked for several orders at a given time (batch picking).

**batching**

A compilation of several orders zoned for optimum pick rate, which are sorted at a centralized location.

**battery compartment (BC)**

The space in which the battery is housed and secured.

**battery connector**

A device used for connection of battery to truck or charger, composed of either male and female halves or two halves that differ

only in method of mounting and polarity.

**battery roller**

Those rollers located in bottom of battery compartment and battery stands to facilitate easy battery installation and removal.

**bi-directional**

The term given to a vehicle which is equipped for forward and reverse travel.

**bin**

An enclosed space. Storage totes, storage areas, storage slots or storage containers as defined by physical parameters.

**bin reserve cards**

A card or document recording the location of excess or backup stock from which order picking slots are replenished.

**biomechanics**

A field related to anthropometry, biomechanics studies the physics of structure and behavior of the body.

**BLO**

See baseleg opening.

**BPI**

See batch put indicator.

**broken case**

A line item pick representing a quantity less than a full case.

**BSOC**

An acronym for battery state-of-charge.

**buffer**

A storage area used to collect data. Use of a buffer compensates for differences in rates of flow or times of occurrence of events when transmitting data from one device to another.

**buffer storage**

Back-up storage for fast moving items. Also a temporary holding area for small lots of product between production calls.

**bulk storage**

Floor stacking unit loads on top of unit loads. Typically used for high volume, high cube and/or seasonal products. Often uses nesting or stacking racks. Note: Not typically suitable with FIFO requirements. 2. An area within a facility where items are too large or throughput is too high to be placed in a storage bin. (See also, floor stacking.)

**C****C**

Counterbalanced model designator.

**cantilever rack**

A rack system with arms cantilevered off a vertical column and loads placed either directly on the arms or on shelves supported by them. Used extensively in steel, lumber and furniture warehousing, having the advantage of long unobstructed shelves with no uprights to restrict storage.

**capacity**

A truck's load capacity at a specified load center, stated in pounds at a specific fork height

**card cage**

A device in which printed circuit cards are housed.

**carousel**

Horizontal or vertical rotating bin unit to deliver parts to an operator in a fixed position or work station.

**carpal tunnel syndrome (CTS)**

The most commonly cited of the cumulative trauma disorders, CTS is characterized by painful hand and wrist motion leading to disability. It results from inflammation of the sheath in the wrist that contains many of the muscles, tendons, and nerves controlling hand and wrist movement. The inflammation results from frequent repetitive wrist movements under force.

**carriage**

A support structure for forks or attachments, generally roller mounted, which travels vertically within the mast of a fork truck

**carton clamp**

Hydraulically operated blade attachment which can be fitted to forklift trucks to enable unit loads of cartons to be handled without the use of pallets. Special thin-bladed types also allow order picking by “skimming” layers of cartons off stacked pallets.

**carts**

Used to hold and/or transmit items selected to fill an order requirement, often customized to meet specialized needs.

**case in/piece out**

Storage of a complete stored unit and picked from inventory as a separate individual unit.

**cathode ray tube (CRT)**

The visual or screen portion of a computer.

**cell**

One section of a battery.

**center of gravity**

The point at which the load mass is concentrated.

**central processing unit (CPU)**

The main processing box of a personal computer.

**CG**

See center of gravity.

**charging**

The process whereby a battery is returned, electrochemically, to its maximum ability to deliver current. This is accomplished via connecting the battery to an appropriately-sized charger.

**clamp arms**

Auxiliary members that are bolted or welded to clamp arm supports on the lifting carriage. Various types are available for specific loads, including bag, drum, carton, paper, roll, tire, and so on.

**clear aisle**

The dimension in a storage aisle, from rack to rack or from load to load (whichever is smaller), subtracting any pallet or load overhang. Also, see pallet and load overhang.

**clear stacking height**

Vertical space available for storing product.

**code 39**

See bar code.

**cold storage conditioning**

A preparatory process that allows the truck or Carousel to operate at levels of temperature that may cause condensation and/or freezing.

**computer simulation**

The operation of a mathematical model, representing the operation under study, for purposes of testing the implication of possible operations without having to implement them.

**congestion**

The overcrowding or obstruction of aisles or docks, for any reason. A situation that develops when people, lift trucks, or merchandise attempt to occupy the same space at the same time.

**connectors**

Molded strips of lead that connect the post over the top of the cover where multiple cells are used.

**contention**

Traffic interference or bottlenecks.

**context**

An important factor in evaluating a product for ergonomic design. Before designing a product, its operational context must be analyzed by determining what work needs to be done and how the product needs to support that work.

**control/display relationship**

This is a fundamental concept of ergonomic design. Displays on a machine should be designed and positioned so that the operator can receive appropriate feedback about the results of his/her actions concurrent with his/her manipulations of the machine's controls.

**control/response ratio**

The measure of how much force or distance, applied to a machine's controls, is required to achieve a desired response from the machine.

**controls**

The devices, including knobs, switches, handles, and so on, used by the operator to control the performance of the machine. One of the primary focuses of ergonomic design.

**counterbalanced truck**

A truck equipped to lift and transport the load in front of the load wheels.

**coupler**

A mechanical tow hitch.

**CPU**

See central processing unit.

**cross aisle**

See main aisle.

**CRT**

See cathode ray tube.

**cube capacity**

The amount of any given SKU that a defined storage address can accept. Usually expressed in cubic inches or cubic feet and related to the cube of the SKU.

**cube utilization**

The ratio of occupied space to total cubic space available, usually expressed as a percentage.

**cumulative trauma disorders (CTD)**

Also called cumulative trauma injuries and repetitive motion disorders. These disorders are

muscle, nerve, or joint-related problems caused by inappropriate movements over a period of time. They are caused by the same four factors characteristic of "at-risk movements"; often resulting from a combination of those factors where the stress of each factor taken alone would not necessarily be a problem.

**current**

The time rate of flow of electricity, normally expressed as amperes.

**cushion tire**

A solid tire that has a low cross section profile. Designed for indoor use.

**cycle count**

A periodic review (count) of a portion of the total SKU's stored. Frequency of count determined by value and/or movement.

**cycle time**

The time required to complete a unit of work, generally the total of travel time, plus load storage or retrieval time.

**cycle, battery**

The term used for one discharge and one charge of a cell or battery. Cycle life refers to the number of times a battery can be charged and discharged before it is no longer able to do the required work for which it is intended.

**D****day's supply**

1. Average amount of an SKU stored in a picking location required to support the day's activities.
2. Amount of product picked in a day.

**DC**

See direct current.

**deadman brake**

A brake that remains engaged until it is intentionally released by the truck's operator.

**dedicated aisle**

An aisle in a warehouse serving only one function. May be for storage or order selection.

**deep discharge**

Removal of up to 80% of the rated capacity of a cell or battery.

**density, control, utilization, productivity (D-CUP)**

Four controlling factors for an efficient order picking system.

**diagnostic procedure**

A tool for the detection and isolation of a malfunction of hardware, or the correct operation of the equipment.

**direct current (DC)**

Where the positive and negative polarity remains in the same relative position (does not reverse). This is characteristic of current delivered by batteries.

**discharge**

Conversion of the chemical energy of a storage battery into electrical energy by connecting a load (resistance) across the battery terminals.

**displays**

Used to provide feedback to the operator. Important issues are appropriate placement, control/display relationship, readability, and use of symbols, colors, and so on.

**double deep**

Two pallet deep storage where one storage unit (a pallet, for example) is stored behind another. Accessible from front position only. Works well on high volume-low variation.

**DR**

Deep-Reach® model designator.

**drawbar pull**

Maximum: Pounds of pull force a vehicle is capable of attaining for an abbreviated time period. Generally equals 5 to 6% of load and trailing weight. Continuous: Pounds of pull force a vehicle is capable of sustaining for an extended time period. Drawbar pull normally equals 2 to 3% of load and trailing weight.

**drive tire**

The tire that furnishes the tractive force to move the truck.

**drive-in rack**

A rack configuration that permits a vehicle to enter the structure from one side to pick up or deposit pallets on a continuous rail. The structure dictates first-in, last-out storage.

**drive-through rack**

Drive-in type racks allow both the pallet and fork truck to enter the rack structure. Drive-through racks allow for total penetration of the racks through the depth of the rack since there is no obstructive back bracing.

**dual command combined cycle**

A single run on which a fork truck or storage/retrieval machine places a load into storage and also retrieves a load from storage.

**dump and run**

Drop loads for picking.

**dwelt time**

Total stop time spent at pick front.

**E****EL. HT**

See elevated height.

**electrolyte**

Battery fluid, the most common being sulfuric acid. It should be a clear, colorless, odorless, and high-purity liquid. The specific gravity as purchased is about 1.830. On dilution with water, always add the concentrated acid carefully, as a considerable amount of heat is generated. Always check the fluid level and fill, if necessary, to battery manufacturers' recommended levels.

**elevated height (EL. HT.)**

The vertical distance from the floor to the load carrying surface adjacent to the heel of the forks with mast vertical, and in the case of reach trucks, with the forks extended.

**elevating section**

The assembly of mast, telescopes and lift ram(s).

**emergency power disconnect**

A plunger activated safety mechanism located within easy reach of the driver that, when activated, immediately cuts off all current to the power circuit and, therefore, immobilizes the movement of the truck.

**energy density**

The ratio of battery energy content in watt hours to battery weight or volume.

**EPROM**

Erasable Programmable Read Only Memory.

**EPROM programmer**

The device used in conjunction with a personal computer for use in field programming.

**equalizing charge**

An extended charge given to a storage battery to insure the complete restoration of active materials in all the plates of all the cells.

**ergonomics**

The study of work organization, and the human/machine interface in particular. Not to be confused with mere appearance, ergonomic design is a science devoted to helping the machine operator be more productive by allowing him/her to operate more efficiently, comfortably, and safely.

**ergonomist**

A professional in the science of ergonomics.

**EX. HT**

See extended height.

**extended "M"**

An extended turret on a Swing-Reach® truck which accommodates wide pallets.

**extended height (EX. HT.)**

The vertical distance from the floor to the top of the uppermost structure of the truck (mast, carriage, load handler) in the maximum height position.

**F****F**

Fork. Used in the model designator for the low-lift fork trucks.

**fatigue**

A primary cause of disability, loss of productivity, and worker dissatisfaction, fatigue can be minimized by good ergonomic design. This is done through intelligent use of limb and body supports, adjustability, ergonomic materials, and efficient layout.

**feedback**

Providing the operator with information about the results of his/her actions so that he/she can perform optimally. This feedback can be visual, tactile, or audible. See also control/display relationship. FFL

**FLO**

See full free lift.

**FIFO**

First-in/first-out method of maintaining product rotation by always picking the oldest first. Also an accounting method that is based upon valuing inventory or picking inventory from the oldest to the newest. The first product put away is the first product picked.

**FILO**

First-in/last-out storage system where inventory first stored is last removed. Generally other than single deep, that allows minimal selectivity.

**FISHS**

First-in, still here somewhere! Lost or buried inventory items.

**fitness for use**

One of the rationales for ergonomic design. If the product does not support the operator, half of the human/machine interface, it is not fit for use.

**fixed location**

A dedicated storage slot for a specific item.

**fixed slot**

An addressed location of cubic space for a specific SKU.

**FL**

See free lift.

**flat plate**

A general battery term referring to lead plates with flat surfaces. (See also tubular plate.)

**floating slot**

Random storage locations. A storage location which can, when emptied, be restocked with a variety of different SKU's.

**floor guidance system**

A wire embedded in the floor carrying an alternating current, low voltage signal which will normally create a field around the wire that a vehicle, with appropriate sensing device, will follow causing it to steer an accurate course over the wire. No contact is necessary between the wire and the vehicle or its sensing device.

**floor slot**

A storage slot at floor level.

**floor space utilization**

Cubic density of storage obtained using least amount of actual square footage.

**floor stacking**

Usually referring to the storage of pallets (one on top of the other) on the floor; could also be cartons or any type of product. (See also Bulk Storage.)

**flow**

The path(s) taken to pick, package and ship an order. The processing blueprint to accomplish the order picking process

**flow rack**

Non-powered conveyer lanes with rollers pitched at a slight angle so that two or more loads can be stored in one lane with gravity providing the means of movement within that lane via FIFO basis (for case or pallet loads).

**force**

The amount of energy required to perform some operation. Force is important in the context of the muscles required to

perform an operation. Use of force beyond the capability of a muscle can cause injury, and use of even partial muscle force in combination with other factors can cause cumulative trauma disorders.

**fork adjustment**

The minimum and maximum overall width to which the carriage forks may be adjusted.

**fork extensions**

A fork attachment that increases the load-carrying surface of the forks.

**fork height**

See elevated height.

**forks**

Horizontal tine-like projections, normally suspended from the carriage, for engaging and supporting loads.

**forward pick area**

Referring to the location of high turnover products for greatest availability.

**forward steer**

On those trucks having a steering option, it is the type of steering that results in the truck turning to the right when steering wheel is turned clockwise and operator is facing forks.

**four-directional**

See 4-D®.

**FPM**

Feet per minute, a measure of speed.

**FRC**

Fork, Rider Center Control Model designator.

**FRE**

Fork, Rider End Control Model designator.

**free lift (FL)**

The attainable lift from the extreme lowered position of the carriage before the stated overall collapsed height of the mast is exceeded by any standard part of the forks, mast or carriage assemblies. (See also Nominal Free Lift and Full Free Lift.)

**free on board (F.O.B.)**

Point determining the location that merchandise becomes property of the customer. Freight expenses, damage liability, and so on, become the responsibility of the customer beyond F.O.B. point.

**freedom of movement**

An important factor in the design of the operator envelope, particularly with respect to operator comfort. Particularly important in reducing fatigue by allowing free circulation of blood through the legs and feet.

**frequency**

Number of complete cycles per second in alternating current direction, the standard unit of frequency being the hertz (Hz)

**full case**

Picking a full case (box) at one time.

**full free lift (FFL)**

The maximum amount of free lift available either as standard or option. (See also Free Lift and Nominal Free Lift.)

**G****gallons per minute (GPM)**

A unit of liquid flow measurement.

**gassing**

The discharge of relatively low levels of hydrogen gas from one or more of the battery electrodes during the charging process.

**golden zone**

Fastest moving items grouped in the most accessible order picking area. By placing product into the appropriate golden zone, truck or Carousel movement is minimized and operator ergonomics is improved (less climbing and bending, etc.).

**gradability**

The percent (%) of grade that a truck can ascend or descend.

**grade**

The measure of the rate of ascent of a ramp numerically equal to the vertical rise divided by the horizontal length, multiplied by 100, and stated in percent (%).

**grade clearance percentage**

The maximum slope whose crest can be negotiated due to the structural limitations imposed by the under clearance and

wheelbase of a truck.

**gravity storage**

1. A storage method that allows pallets, boxes or cases to flow from rear to front in a storage system. 2. Storage involving flow to move pallets or cases for automatic replenishment of pick slot.

**guidepath**

The path of wire in the floor that wire guided vehicles track.

**H****head length**

The dimension from the rear bumper of the truck to the vertical face of the fork carriage.

**hi-rise picking**

A method of picking orders from storage levels above the normal pick height (above 18 feet) which requires either operator aboard or automatic storage/retrieval system equipment.

**high lift platform truck**

A truck equipped with an elevating mechanism designed to permit tiering.

**holding area**

A defined temporary area for staging of products during various warehouse functions.

**honeycombing**

Creation of unoccupied space resulting from withdrawal of unit loads. Empty slots created by removal of unit loads.

**horizontal transport**

A category of industrial truck designed to effectively transport material in the horizontal direction. The Model 19, Walkie and 40 Low Lift are The Raymond Corporation products in this category.

**hot pick**

An incoming order that takes priority over all orders presently being worked, ideally without disrupting the existing orders.

**housekeeping**

Maintaining uniformity of unit loads, appropriate load clearances, clear aisles and general maintenance. Maintaining a clean facility.

**human factors engineering**

Another name for ergonomics, used mainly in the United States.

**human/machine interface**

The main focus of ergonomics. Describes all aspects of how an operator works with a machine to leverage its productive potential.

**hydrometer**

A device used to measure density or specific gravity of the sulfuric acid-water electrolyte solution.

**I****identify and sort**

Separation of goods by their identification formats. Placing the proper items with the appropriate order.

**idle time**

Represents the amount of time that the key is on without the deadman pedal being depressed (with no work being done).

**industrial battery**

General term used to differentiate between batteries for heavy-duty industrial applications and those for automotive Starting-Lighting-Ignition (SLI). (See also motive power batteries)

## **Industrial Truck Association (I.T.A.)**

An organization of industrial truck manufacturers and suppliers that formalizes and publishes industry statistics. Also forms committees to address issues such as safe truck use.

## **intellidrive®**

Advanced state-of-the-art microprocessor based control system by The Raymond Corporation that enhances truck performance, productivity and reliability beyond all established standards.

## **intelliguide™**

Wire guidance system by The Raymond Corporation. (See also wire guidance)

## **intellispeed™**

A system that automatically regulates the maximum allowable travel speed at which the truck can operate given the elevated fork height, heading angle, direction of travel and operator speed request. Because this information is monitored by a microprocessor, the travel speed is greater than conventional limit-switch regulated trucks.

## **inventory levels**

Current level of each SKU in stock. 2. Average amount of a given SKU in stock at any time. 3. Optimum amount of a specific product maintained in inventory.

## **inventory provisions**

Proper and necessary inventory on hand.

## **inventory turns**

Accounting principle based on the number of times the entire inventory is used up and replenished in a given period of time.

## **ISO**

International Organization for Standardization, a worldwide federation of national standards bodies from some 100 countries.

## **J**

## **just-in-time (JIT)**

Controlling incoming merchandise so as to minimize inventory required to support production.

## **K**

### **key, electronic password**

Allows the operation of an EASi™ truck to be password-protected. This option means only authorized, password accessed, drivers can operate the vehicle. The start-up of a vehicle with this option requires both the mechanical key along with knowledge and ability to enter the appropriate password.

### **kilowatt (KW)**

One thousand watts.

### **kilowatt hour (KWH) capacity**

The total amount of power (volts x amps x hours divided by 1,000) that can be drawn from a battery. A battery's kilowatt hour rating is a direct measure of how much work the battery is capable of performing.

### **kit**

A designation given to parts that are assembled or grouped together. 2. To bring together different units that have to be merged together.

### **kitting**

Order selection of parts from a build list that, when assembled, will produce an assembly or sub-assembly, most commonly handled as one order.

## **L**

### **L**

Low-lift truck model designation.

### **layout**

The physical arrangement of the warehouse facility designed to maximize efficiency.

### **LC**

See load center.

### **lead oxide**

Any of the finely divided lead chemicals used to produce paste for storage batteries.

### **lead time**

The period of time elapsing between when an order is placed and the order is fulfilled.

## **lead, battery**

Cable assembly that connects battery and battery electric connector.

## **LEAP**

Four key determinants of an order picking application: Layout, Equipment, Activity, People. These aspects control the type of order picking application.

## **LED**

Light Emitting Diode.

## **length of a fork truck**

The dimension that is measured in the direction of fork length. As an industry standard, the length direction for forks and pallets coincide.

## **length of load**

That dimension of the load measured parallel to the forks.

## **level of activity**

The frequency of line items picked of any given SKU relative to other SKU's in the system.

## **LH**

See lowered height.

## **LIFO**

The last-in/first-out accounting method of inventory control which results in the most recently received items pulled first, picking inventory from the newest to the oldest.

## **lift speed**

The average velocity in feet-per-minute when raising the load carriage throughout its operating range, specified for empty and

loaded conditions.

## **LIFO**

The last-in/last-out method used in random and forward storage systems. Also, with products that do not have a shelf life, inventory last stored is last removed.

## **line**

A single transaction part number. It represents a line on an invoice or one stop at a bin front.

## **line driver**

An oscillator, amplifier, and associated circuitry, that supplies the guidance signal to the guide wire in an electro-magnetic wire guided system.

## **line item**

Single line on an order to be selected. 1. A location and a quantity to be selected. 2. One part number.

## **line item sequence**

The order in which parts are picked.

## **line of sight**

A description of angles of visibility, which is a key ergonomic design factor.

## **line restock**

Replenishment of a specific SKU. May be done by location.

## **list price**

Suggested selling price to the end user.

## **live storage**

An active part or usage item, generally located in a specific storage slot.

## **LLC**

See lost load center.

## **load backrest**

The portion of the carriage and forks which supports the load when it is tilted rearward, upward or elevated.

## **load backrest extension**

A device extending vertically from the fork carriage frame (load backrest).

## **load bed**

The portion of the sideloader truck dedicated to carrying the load.

## **load center, horizontal (LC)**

The horizontal distance from the intersection of the fork face and fork heel (or equivalent load positioning structure) to the center of gravity of the load.

## **load center, vertical**

The vertical distance from the carrying surface of the fork (or equivalent load carrying structure) to the center of gravity of the load.

**load overhang**

The portion of the load which projects beyond the front, back or sides of the pallet, skid and/or load beam (See also Pallet Overhang.)

**load wheel**

As pertaining to reach and straddle trucks, those wheels that are located in the baselegs.

**loaded**

The condition when the truck is handling the equivalent of a symmetrical maximum capacity load.

**location**

A stock-keeping address consisting of aisle, aisle side, rack bay, shelf level, slot, subslot

**lost load center (LLC)**

The amount of horizontal distance, measured from the carriage forward, that is lost from the standard 24" load center when an attachment is added.

**lot number**

A number identifying a group of products that were manufactured and/or processed at the same time and place.

**low lift truck (L)**

A truck equipped with an elevating mechanism designed to raise the load only enough to permit horizontal movement.

**low lift, platform truck (L,P)**

A truck designed and built to handle a customer's particular type of skid.

**low voltage circuit breaker (LVCB)**

A device that electrically prevents lifting of forks when the battery voltage drops below a predetermined level.

**low-maintenance battery**

The preferred term for what is commonly referred to as a "maintenance-free battery." Regardless of construction, all batteries require at least a minimum of maintenance to perform at optimum levels. The term "reduced-maintenance" is also appropriate to describe these newer-generation batteries.

**lowered height (LH)**

The vertical dimension to the top surface of the forks when the carriage is at its lowest position, but not dragging on the floor.

**LOWERING SPEED**

The average velocity in FPM when lowering the load carriage throughout its operating range, as specified for empty and loaded conditions.

**LQI**

An acronym for Location/Quantity Indicator

**lumbar support**

An important aspect of postural support. The lumbar region of the lower spine has a concave shape that, if supported, minimizes pressure on the vertebrae. This should be considered in the design of an operator backrest.

**LVCB**

See low voltage circuit breaker.

## M

**main controls**

Those controls on a fork truck that control travel, lift and lower. Main hydraulic controls are generally associated with the lift pump and motor.

**mainframe**

A company's main computer, usually a large machine from IBM, DEC., Hewlett Packard, or Unisys.

**maintenance-free batteries**

Really a misnomer (See low-maintenance battery) when referring to industrial batteries; somewhat more accurate when referring to automotive SLI batteries.

**man-down**

See operator down.

**man-up**

See operator up.

**mapping**

A fundamental concept of ergonomic design, mapping means that a control's operation flows logically from its function. For example, if buttons for up and down are needed, they should be arranged vertically, not horizontally, so the operator knows intuitively which is which.

**marshalling**

Sorting of batch picks for individual orders. Verification of product and count after the order picking function.

**mast**

The support member that provides a structure to permit vertical movement of the carriage. It is usually constructed out of C-Channel uprights that provide the supporting pathway for the carriage rollers.

**mast elevated height**

See elevated height

**mast, telescoping**

See telescoping mast

**maximum usable compartment**

Same as maximum battery dimension that will fit the battery compartment.

**MCD**

Multiple control device. (See expansion board)

**MCU**

Motor control unit.

**mean**

Average number of orders picked in a given time period.

**microcomputer**

See personal computer

**microprocessor**

A one chip central processing unit.

**minimum storage aisle width**

The minimum aisle required to operate the proposed equipment.

**model designator**

An alphanumeric description of power unit and elevating section of Raymond® trucks.

**modem**

An acronym for modulator-demodulator; a device used for communicating between computers by phone line.

**module**

The device or container material is deposited in or on by the picker. (See also pick container.)

 **motive power batteries**

Batteries employed primarily to propel, or drive, a vehicle such as a car, truck, or boat.

**movement report**

Number of items picked in a given time. How fast items move through the system. The report generated to track the activity or the number of times an individual item is picked.

**MPH**

A measure of truck speed as miles per hour.

**multi-B.O.M. (Bill of Materials)**

The task of selecting and grouping a large number of items needed in the assembly and/or manufacture of a product.

**multi-paks**

A number of items in a container picked as a unit of goods. Picking multiple orders at one time, then breaking down into separate orders at final destination.

## N

**narrow aisle lift truck**

An electric lift truck that can operate in aisles smaller than counterbalanced trucks, typically 8 to 10 feet clear.

**nominal free lift (TN)**

A limited fixed free lift. Two stage mast only. (See also Free Lift and Full Free Lift.)

## O

**O&M**

Operation and Maintenance manual.

**OACH**

See overall collapsed height.

**OAL**

See overall length.

**OAW**

See overall width.

**Occupational Safety & Health Administration (OSHA)**

Federal agency which establishes and enforces standards established to maintain a safe and healthy work environment.

**occupied slot**

A storage location presently occupied by a unit load. A given order picking item in a given space.

**OHG**

See overhead guard.

**OP**

Orderpicker model designator.

**open case**

Refers to a less than case lot picking operation where individual items are picked out of an open case used as a container.

**open-circuit voltage**

The no-load voltage of a cell or battery at full charge. This may vary slightly with temperature.

**operator compartment**

The area within which the operator normally works. This area is a primary focus of ergonomic design and, in addition to allowing the operator and equipment to accomplish their assigned work, it must be designed to be safe, efficient, and comfortable. Also referred to as operator envelope.

**operator down**

Vehicle operation where carriage elevates and operator remains on ground during storage/retrieval process.

**operator up**

Vehicle operation where carriage and operator go up together during storage/retrieval process.

**options**

Enhancements or additions that may be done to or added to Raymond® equipment.

**order assembly**

A warehouse area dedicated to order consolidation, where products picked in different areas are combined.

**order batch**

Accumulation of a group of orders to be released for picking during a time frame, and from a picking zone. Individual items on pick lists that are grouped together for a logical and efficient picking scheme. (See also batching.)

**order picker**

A person or equipment assigned the function of selecting material required for orders from storage.

**order prioritization**

Ranking of orders by their urgency or importance. May be done by computer system or warehouse control group.

**orderpicker truck, high-lift (OP)**

A high lift truck controlled by the operator standing on a platform that moves up and down and intended for manual stock selection.

**OTC**

See other-than-core.

**outrigger**

See baseleg (preferred term).

**overall collapsed height (OACH)**

The maximum vertical dimension from the floor to the extreme top point of the mast with the fork carriage in the fully lowered position and unloaded.

**overall length (OAL)**

Length of fork truck extremities measured in direction of fork length.

**overall width (OAW)**

Width of fork truck extremities measured in direction of fork width.

**overcharge**

The continued charge of a battery after it has been fully charged. This can damage the battery and severely reduce its service life; however, present-day automatic charger technology has greatly minimized the chances of overcharging industrial batteries.

**overhead guard (OHG)**

A framework fitted to a truck over the head of the operator's compartment.

**P****P**

Platform Truck model designator.

**P.O.D.**

See primary operator display.

**P/D station**

Usually at the end of a rack row and used as a temporary drop station to hold pallets for movement into a rack system or retrieve pallets out of the rack system. Pick up and delivery point for incoming and outgoing loads into a rack system. Positioned to maximize vehicle efficiency.

**packaging**

All tasks associated with the "make ready" of an item or items for shipment. May include weighing, wrapping, labeling for shipment, and so on.

**packing**

Placing small cartons comprising different lines into an outer case to protect them during subsequent handling.

**packing list**

An itemized listing of parts, objects or products which makes up an order included in a shipping container and describes what is in the container.  
2. A review of an order showing which items are shipped or on back order plus any special instructions.

**packing locations**

Area into which picked products are consolidated into shipping containers.

**pallet**

A load supporting structure usually built with wooden front-to-back stringers and top and bottom decks with openings that allow pick up and transportation by a fork truck. Pallet specifications should be stated as length (stringer) x width.

**pallet flow**

A type of storage rack that uses gravity conveyers to achieve high density storage.

**pallet opening**

Generally used in conjunction with a rack system. A space where one fully loaded pallet may be stored.

**pallet overhang**

That portion of the pallet which projects beyond the front and rear pallet rack load beams. (See also Load Overhang.)

**pallet picker simulation**

A software program designed to calculate forced productivity comparisons of the Raymond EASI™ reach truck vs. competitive reach trucks.

**pallet truck**

Basic unit load handlers, sometimes called "pallet jacks." Can be customized with options such as skid adapters.

**palletized**

A unit load built on a pallet.

**Pareto's law**

The premise that 20% of the inventory will require 80% of the picking activity as it pertains to materials handling.

**parking brake**

A device to prevent the movement of a stationary, unmanned vehicle.

**part number sequence**

A system of item storage where identification numbers flow sequentially from one end of the system to the other. A way to order pick so that after a sequence is selected, the parts can be assembled to make a whole.

**path**

The pre-determined direction taken to pick the order.

**PC**

See personal computer.

**percentiles**

In anthropometric tables, the percentile is the percent of the target population that falls below that point on that particular measure.

**personal computer (PC)**

Now often exceeding the power of the much larger, more expensive mini-computers that preceded them, PCs have become standard equipment in the workplace. A PC system typically includes a CPU, keyboard, monitor (screen), and, sometimes, one or more printers.

**PHC**

See portable hand controller.

**pick**

The physical process of locating, counting and retrieving an item(s).

**pick aisle**

See aisle storage.

**pick and assemble**

The process whereby an item is picked and an individual order is assembled simultaneously.

**pick banding**

Grouping of picks by type of merchandise, velocity, or use.

**pick container**

Container which is used to carry objects or products through a picking cycle. Container that order selectors use to fill orders. It could also be a container for shipping merchandise.

**pick face**

Area facing order picker containing the items to be picked.

**pick line**

An arrangement of SKU's in some orderly system to facilitate selection to satisfy orders.

**pick process**

Picking from stock items required to fill a given order or group of orders and governed by an operating discipline imposed on the picking task and defined by the picking method and the organization of the work assignment.

**picking ratio**

Ratio of full pallet pick, to case pick, to split case.

**pieces**

The number of units of a specific SKU or line item on an order or the total number contained on an order of all SKU's picked.

**platen**

An integral part of a Push-Pull attachment. The platen is approximately 1" thick at the heel and has a full taper to the tip. There are usually two platens required per attachment each being approximately 15" wide x 48" long. The platen supports loads that are transported on slip-sheets rather than pallets.

**platform truck (P)**

A (high-lift or low-lift) truck with a load handling platform designed to pick up and deposit a customer's particular type of skid.

**poly**

Polyurethane (used for tires, wheels, guide rollers).

**posture**

Normal posture defines the relative positions of the human musculoskeletal structure. Ergonomic design tries to avoid putting the operator into at-risk positions, which include abnormal postures, because of the risk of disability and fatigue.

**power unit**

That portion of a fork truck that contains batteries, drive wheel(s), lift pump and motor/auxiliary pump and motor.

**pressure relief valve**

A safety device that protects the hydraulic system from excess pressures that might damage components. Most all of these react automatically. The oil is not lost, but returned to the reservoir.

**primary operator display**

A graphic display on the Model 537 that provides the operator with information on battery state-of-charge, travel-ready orientation of load handler, load height/weight, overload, service required, speed and thermal overload.

**prime**

1. The best of a category, i.e. prime location, meaning first location to check. 2. To load the computer with the known orders that will need to be picked so that a pick list or automated instructions can be generated.

**priority valve**

A device that ensures a constant supply of oil to the steering system on some trucks. It also regulates the flow to the rest of the system.

**process optimization**

Making a process as efficient as possible, maximizing time. Increasing the efficiency of a given operation, as in maximizing space utilization and minimizing labor requirements = improved work/product flow. Eliminates unnecessary functions.

**productivity intersection**

The point at which the number of personnel and equipment maximizes productivity.

**proportional plugging**

Enables the operator to control slow-down, direction change and acceleration in direct proportion to control handle movement.

## Q

---

**queuing**

The optimum arrangement of orders for filling, either chronologically or to maximize picking efficiency throughout the warehouse.

**quick disconnect**

See emergency power disconnect.

## R

---

**R**

Reach-Fork® truck designator.

**radio frequency (RF)**

Wireless communications used to communicate information to/from mobile stations throughout the warehouse. These stations are often attached to forklift trucks and sometimes hand carried.

**rail guidance**

A mechanical system that maintains the alignment of a fork truck in a storage aisle.

**RAM**

An acronym for Random Access Memory.

**ram attachment**

An attachment comprised of a cantilever member, extending horizontally forward from the lift truck carriage, used to handle hollow core, cylindrical, or similar loads, such as rugs, coils, pipe, and so on.

**rated capacity**

The ampere hours of discharge that can be removed from a fully charged secondary cell or battery at a specific constant discharge rate, at a specified discharge temperature, and at a given cut-off voltage.

**ratio**

The relative size of two quantities. Examples: orders/pallet, lines/order, full pallet load/partial pallet load.

**Raymond Leasing**

The Raymond Corporation's leasing company.

**reach truck**

Trucks operate in narrow aisles, storing and retrieving pallets in racks. Some are equipped with a pantograph mechanism and can shelve pallets two-deep.

**Reach Truck Selector Guide (RTSG)**

A software program used by Raymond Dealers to select the best Reach-Fork® truck for a particular application.

**Reach-Fork®**

Truck family of The Raymond Corporation, including reach, straddle, and Deep-Reach® trucks.

**receiving**

The process of handling inbound product to the warehouse for stock replenishment and eventual picking.

**remote lift/lower**

An optional feature that allows an operator to lift and lower the carriage from an approved platform attached to the carriage and supported on the forks of a lift truck.

**repetitive motion disorders**

Another name for cumulative trauma disorders. This is the term generally used by the U.S. government.

**replenish**

To take stock from a storage location and transfer it to a primary pick unit location which has become empty.

**reserve**

Backup stock.

**restock**

1. The physical replenishment of stock in its designated storage location. 2. A period of time set aside for this process.

**retractable tether**

A self-rewinding component that attaches the safety belt to the operator's work platform.

**retrieve**

To bring product from its storage location to a disbursement point.

**reverse steer**

On those trucks having a steering option, it is the type of steering that results in the truck turning to the right when steering wheel is turned counterclockwise and the operator is facing opposite direction of forks.

**RF**

See Radio Frequency.

**right angle stacking**

Loads, typically stored in racks, stacked by a fork truck at right angles (90o) to the path of travel in a storage aisle.

**ROM**

An acronym for Read Only Memory.

**rotate the queue**

When the top item in the queue is moved to the bottom, all others are moved up by one.

**rotation**

The alternation or redistribution of product in a storage system based on their seasonal demand.

**S****S**

Straddle Fork Truck model designator or standard lift system designator.

**S.O.D.**

See Secondary Operator Display.

**safety belt**

A device usually worn around the waist which, when attached to a lanyard and lifeline or a structure, will prevent a worker from falling.

**Safety On The Move®**

A multi-step training program for each major Raymond® truck product line, with specifics on proper operation and load handling for that model.

**SCR**

Silicon Controlled Rectifier. A component of a smooth operating, proportional-speed control system. SCR's generally replaced resistor controls beginning in the 1960's.

**seasonal**

An item which is of varying demand depending on time of year, but follows the same pattern annually. Refers to time when more of certain inventory is demanded requiring that provision be made for their storage & retrieval as extra product.

**secondary operator display**

A second graphic display on the Model 537 that provides information on hours used, battery state-of-charge, instructional information and systems faults, wire guidance proximity, locked-on wire and drive unit direction.

**selection line**

A series of pick faces which allows an operator to optimally pick products. 2. Generic location for a grouping of pick faces where order picking takes place.

**selective racks**

Storage rack used to store pallet loads of material.

**selectivity**

The amount or percentage of product in a warehouse which is accessible to the aisle for picking.

**self-discharge**

The loss in capacity of a battery standing idle. Increases in temperature tend to accelerate the rate of self-discharge. Impurities in the electrolyte or plates also contribute to loss of battery capacity

**sequential zone system**

A system of item storage where products are divided into classes. Within each class, items are arranged by part number sequence. Orders are split into two or more segments, the first zone logically being merged with the second zone and so on until the entire order is assembled in the right sequence.

**sequential/simultaneous**

Goes beyond the sequence-of-use principle of arrangement to suggest that, whenever possible, simultaneous control and performance is more efficient than sequential control and performance. This concept suggests the desirability of simultaneous multi-function controls and was important to the design of the EASi™ control handle.

**shelf height indicator (SHI)**

A vertical light tree used to visually indicate shelf level and display some combination of quantity and slot for order picking.

**sideloader**

A high lift industrial truck able to work in very narrow aisles and equipped to reach forward to pick up or deposit long, heavy loads (such as steel bars) or pallets. Also sometimes used in reference to sidereach vehicles like the Raymond Swing-Reach®.

**simultaneous functions**

Multiple functions occurring at the same time, i.e. travel, lift and reach.

**single deep**

A storage system designed to give maximum selectivity, generally using single deep-type pallet storage racks.

**single location system**

Each SKU has a permanent location that picks are made from. Replenishment is made from back-up stock.

**single order pick**

The process of completely picking the items on one list before starting another.

**skid**

A load supporting structure with top deck and front-to-back legs that requires a platform truck for pick-up and transport. Specifications are stated as Width x Length.

**SKU**

See Stockkeeping Unit

**slipsheets**

Available in three (3) types: corrugated, solid fiber and plastic. These are used in place of pallets and require a push-pull attachment with platens.

**slot**

A warehouse location with a specific address, or the front-to-back or side-to-side positioning of product on a carousel shelf.

**SLR**

Sideloader Reach-Fork® Truck model designator.

**software**

A collection of programs, routines and subroutines that facilitate the programming and operation of a computer.

**specific gravity**

The weight of the sulfuric acid-water electrolyte mixture compared to an equal volume of water alone. Pure water has a specific gravity of 1.000. A battery's specific gravity reading affords an approximate indication of its state-of-charge.

**SR**

Side Reach-Fork® Truck model designator.

**stability**

A truck's resistance to overturning.

**staging**

The temporary storage of goods while awaiting the next step in the warehousing operation.

### **Standard Industrial Classification (SIC)**

The classification system developed by the United States Department of Commerce for business activities. There are eleven primary divisions classified by two digit codes. Further divisions occur within the primary categories and can reach up to seven digits for the most specialized categories of business activity.

### **steering, forward**

See forward steering.

### **steering, reverse**

See reverse steering.

### **stockkeeping address**

Location of a particular part, component or line item. May be a numeric or alphanumeric part number or location

### **stockkeeping unit (SKU)**

Represents one unique inventory item.

### **storage aisle**

An aisle used to stack loads or pick materials.

### **storage costs**

The sum total of all costs associated with storage. It includes inventory costs, warehouse costs, administrative costs, deterioration costs, insurance, and taxes.

### **storage efficiency**

The measurement of quantity of product which can be stored on a fixed amount of space.

### **storage slot**

The "envelope" or cubic space available for storage or a unit load.

### **straddle truck (S)**

A high-lift truck with a wide enough BLO to straddle a pallet and engage the load.

### **Swing-Reach® Truck (CSR)**

Raymond truck family that includes operator-up turret trucks that provide high-level orderpicking and load handling versatility.

### **symmetrical**

Affecting corresponding parts simultaneously and similarly.

### **system**

A set of interrelated processes and procedures, including equipment, required to organize a work flow. 2. Process by which specific tasks are accomplished - planned method in a controlled environment with enforced disciplines.

T \_\_\_\_\_

### **T**

Two-stage mast designator with one fixed stage and one telescoping stage.

### **tactile awareness**

The ergonomic concept of designing controls that are different enough in shape and form that touch alone may be used to differentiate one from another.

### **telescoping mast**

A multiple mast which permits maximum lifts substantially greater than the OACH. This is accomplished with one stationary member and other members which move vertically with respect to the stationary member and support the fork carriage in its vertical movement.

### **tendonitis**

A cumulative trauma disorder resulting in temporary disability due to inflammation of one or more tendons.

### **terminal emulation**

By adding a special card and software to a PC, it can communicate with a mainframe computer. In warehousing, this is usually done to allow the warehouse PC's to receive orders from the company's mainframe order entry system.

### **tether**

A component that attaches the safety belt to the operator's work platform.

### **TF**

Two-stage mast with full free lift designator.

### **three-stage mast**

A fork truck mast assembly comprised of (1) stationary mainframe and (2) moving telescopics.

### **throughput**

1. The rate at which incoming orders arrive at the warehouse. 2. Rate at which lines represented by cards or as line data are picked and shipped. 3. Level of workload activity measured in loads per unit of time, normally loads per day or loads per hour.

### **tier**

A single layer of packages forming part of a unit load.

### **tiering**

The process of placing one load on or above another (See also Bulk Storage).

### **tilt**

The function of altering the angle of the forks or the mast of a lift truck, to cradle the load or facilitate its deposit.

### **TM**

Top Mount, pallet truck model designator

### **TN**

Two-stage mast with nominal free lift designator.

### **tote**

Portable container for storing & transporting merchandise.

### **TOW**

Tow tractor model designator.

### **tow tractor**

A powered industrial truck designed primarily to draw one or more trailers or other mobile loads.

### **tractor**

See Power Unit.

### **transistor**

Regulates current or voltage flow and acts as a switch or gate for electronic signals (See SCR).

### **Transtacker™**

Battery powered storage and retrieval turret trucks that perform required warehousing functions.

### **TT**

Three-stage mast designator with one fixed stage and two telescoping stages.

### **tubular plate**

A positive battery plate made from a cast spine and porous tubes which are filled with paste or dry oxide (See also Flat Plate).

### **turning radius (outside)**

Half the diameter of the largest circle described by the outermost projection of a truck when driving slowly with the steering mechanism at the optimum steering angle.

### **turnover**

The frequency with which the total inventory of an item is shipped. Turnover is usually expressed as the number of turns per year.

### **turret truck**

See Swing-Reach® Truck.

### **two-stage mast**

A fork truck mast assembly comprised of (1) stationary main frame and (1) moving telescopic assembly

U \_\_\_\_\_

### **UL rating**

See Underwriters Laboratories Inc.® listing.

### **UL rating, Type EE**

Electrically powered trucks that have, in addition to all of the requirements for the E and ES units, the electric motors and all other electric components completely enclosed.

### **UL rating, Type ES**

Electrically powered trucks that, in addition to all of the requirements of the E units, are provided with additional safeguards to the electrical system to prevent emission of hazardous sparks and to limit surface temperatures.

### **UL rating, Type E**

Electrically powered trucks that have minimal acceptable safeguards against inherent fire hazards.

### **underclearance**

The distance, in inches, from floor to the underside of the truck.

#### **Underwriters Laboratories listing (UL)**

A list of truck models complying with the requirements of Underwriters Laboratories Inc.®, an independent testing agency. Used by insurance companies to determine the premium rate for insurance coverage for various areas of operation.

#### **uni-directional**

This term is given to a vehicle which is equipped only for forward travel.

#### **unit load**

An assembly of unit or units that can be transported or stored in a single move.

#### **unit load size**

Description of load including length, width and height dimensions.

#### **unit load weight**

The overall weight of the unit load including the weight of the pallet or container.

#### **universal price code (UPC)**

See Bar Code

#### **upright**

Section of the elevating section that pertains to the outside main frame and telescopic(s).

#### **utilization**

A measure of space, usually related by percentage, incorporating labor and equipment.

## V

#### **vent plugs**

Pieces used to seal the vent and filling well of a cell or battery cover except for a small hole in the plug itself to permit the escape of gas.

#### **very narrow aisle lift truck (VNA)**

Trucks that typically operate in clear aisles of approximately 5 feet.

#### **visibility**

This is the number one priority in ergonomic work space design due to its contribution to efficient operation and operator safety.

## VNA

Very Narrow Aisle model designation.

#### **volt**

A unit of electromotive force or difference of potential which, when steadily applied to a conductor whose resistance is one ohm, will produce a current of one ampere. The voltage of a battery is a factor of the number of cells it contains. Each lead acid cell has two volts. Thus, a six-cell battery has 12 volts and an 18-cell battery has 36 volts.

#### **voltage**

A measure of battery potential, stated in volts.

## W

#### **walkie**

A category of (low-lift and high-lift) trucks controlled by a walking operator, more commonly referred to as a pallet truck.

#### **Walkie High-Lift**

Pedestrian-controlled reach and straddle lift trucks.

#### **Walkie Rider**

Same as a Walkie, but equipped for rider-operation as well as pedestrian control. Very popular for ground-level orderpicking off pallets.

#### **watt**

A unit of power (volts x amps). A battery's total power is measured in watts.

#### **watt hour**

A measure of energy or work accomplished; (rate of work in watts x time in hours, or ampere hours x the average voltage).

#### **wheel base**

The dimension between the center line of the axle of the wheels located to the rear of the truck and the center line of the axle of the wheels located on the front of the truck.

## wheel loading

The measurement used to determine the effect the truck axle loading has on the floor on which it operates. There are two types of measurement: Force is the concentrated reaction per tire, in pounds, exerted by wheel on the floor. P.S.I. is the wheel loading, in pounds, divided by the wheel contact area in square inches.

#### **wheel track**

The overall width dimension of the widest pair of wheels on a vehicle.

#### **wire guidance**

An electromechanical system that controls vehicle steering while tracking an energized guidewire secured in the floor.

#### **wire guide**

An electronic control system that provides automatic steering of a vehicle while it is being used in a storage aisle.

#### **work flow**

The logical and efficient progression of the order assembly process.

#### **work in process (WIP)**

Products that are in the process of being manufactured; incomplete products.

#### **work platform**

A platform intended to provide safe working conditions that is designed to be mounted on a high-lift fork truck or other elevating device. Provides a safe work area in elevated situations.

#### **workstation**

The area where the worker waits for the pick face to arrive in order to perform the order picking task (Carousels). A mobile work station would deliver the worker to the pick face (order picking vehicle).

## Z

#### **Z pick**

Picking slots are numbered so that the order picker's walk pattern, if he/she was picking from every slot, would be ahead four locations, across the aisle and back two locations, ahead four, across the aisle and back two — and so on. In many operation this arrangement yields an optimum actual walk pattern for the order picker.

#### **zone**

A designated area; defined location. A systematic division of a storage or pick area.

#### **zone pick**

The picking of products from a given area by a worker or order picker. 2. Method used to pick product by dividing warehouse into segments with order picking personnel confined to each segment.

#### **zone system**

A given set of aisles, usually adjacent, defined to serve some common purpose.

#### **zones**

Areas that are picked by a given number of order pickers.

#### **zoning**

Organization of product by family and size, or by activity.

# RAYMOND

PO Box 130  
Greene, New York 13778-0130

Toll free 1-800-235-7200  
Fax 1-607-656-9005

[www.raymondcorp.com](http://www.raymondcorp.com)

©2015 The Raymond Corporation  
Printed in USA