

FIGHT OF FORKLIFT TRUCKS

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A crane is a lifting machine equipped with a winder, wire ropes or chains and sheaves that can be used both to lift and lower materials and to move them horizontally. It uses one or more simple machines to create mechanical advantage and thus move loads beyond the normal capability of a human. Cranes are commonly employed in the transport industry for the loading and unloading of freight; in the construction industry for the movement of materials; and in the manufacturing industry for the assembling of heavy equipment.

Cranes exist in an enormous variety of forms – each tailored to a specific use. Sizes range from the smallest jib cranes, used inside workshops, to the tallest tower cranes, used for constructing high buildings.

Industrial equipment of electronics is known to play a very important role today.

Hundreds of electronic equipments are now available to science and various industries help to do jobs better or more economically or to take over jobs that could not be done otherwise.

The application, use, and proper maintenance of the many electronic types of equipment now in industrial use demand certain knowledge to be of the fundamentals of various standard electronic equipments.

We already know that in motors, incandescent lamps, transformers, etc., the electricity always flows in the copper wire or other metal parts. But consider lightning, where electricity seems to jump through space. The great electric pressure of lightning forces the electric current to pass through the air. In the same way, inside any radio tube, tiny electric currents are made to pass through the space separating a certain parts in the tube. Such action — where electricity appears to flow through space instead to being confined to metal conductors or circuits — is said to be electronic.

Why is it called electronic? Years ago, scientists who were trying explaining how electricity passed through space, imagined such an electric current to be a steady stream of tiny electrical particles. They called these particles electrons. Today, any electric current is believed to consist of countless number of electrons. Only when electricity passed through space, when the stream of electrons comes out of the metal into the open, is such action said to be electronic. A device is called electronic; electricity must flow across the space inside the device and be controlled by that device.

In ordinary air, electrons can be made be jump through space only by pressure of high voltage. But if it enclosed in a tube from which the air has been removed, the electrons flow across the space more easily. All tubes must be carefully sealed for the desired conditions to be maintained inside the tube. Most of the small tubes are vacuum tubes, the large ones usually containing mercury or other vapor.

Some electric lights are electronic. The common incandescent light bulb is not considered as electronic though it is enclosed like a radio tube, for the electric current flows entirely within the metal filament. In contrast, the fluorescent lamp is electronic, its light is produced by the action of electric current flowing through the space between the two ends of the lamp.

Electronics as a science is not new, for radio, sound picture, fluorescent light, etc. are known to depend upon electronics.

A forklift (also called a lift truck, a high/low, a stacker-truck, or a side loader) is a powered industrial truck used to lift and transport materials. The modern forklift was developed in the 1920s by various companies including the transmission manufacturing company Clark

and the hoist company Yale & Towne Manufacturing. The forklift has since become an indispensable piece of equipment in manufacturing and warehousing operations.

The middle 19th century through the early 20th century saw the developments that led to today's modern forklifts. The Pennsylvania Railroad in 1906 introduced battery powered platform trucks for moving luggage at their Altoona, Pennsylvania train station. World War I saw the development of different types of material handling equipment in the United Kingdom by Ransoms, Sims and Jeffries of Ipswich. This was in part due to the labor shortages caused by the war. In 1917 Clark in the United States began developing and using powered tractor and powered lift tractors in their factories. In 1919 the Tow motor Company and Yale & Towne Manufacturing in 1920 entered the lift truck market in the United States.

Continuing development and expanded use of the forklift continued through the 1920s and 1930s. World War II, like World War I before, spurred the use of forklift trucks in the war effort. Following the war, more efficient methods for storing products in warehouses were being implemented. Warehouses needed more maneuverable forklift trucks that could reach greater heights. New forklift models were made that filled this need.

A typical counterbalanced forklift contains the following components:

The Truck Frame - is the base of the machine to which the mast, axles, wheels, counterweight, overhead guard and power source are attached. The frame may have fuel and hydraulic fluid tanks constructed as part of the frame assembly.

The Counterweight - is a heavy cast iron mass attached to the rear of the forklift truck frame. The purpose of the counterweight is to counterbalance the load being lifted. In an electric forklift the large lead-acid battery itself may serve as part of the counterweight.

The Cab - is the area that contains a seat for the operator along with the control pedals, steering wheel, levers, switches and a dashboard containing operator readouts. The cab area may be open air or enclosed, but it is covered by the cage-like overhead guard assembly.

The Overhead Guard - is a metal roof supported by posts at each corner of the cab that helps protect the operator from any falling objects. On some forklifts, the overhead guard is part of the frame assembly.

The Power Source - may consist of an internal combustion engine that can be powered by LP gas, CNG gas, and gasoline or diesel fuel. Electric forklifts are powered by either a battery or fuel cells that provide power to electric motors. The motors may be either DC or AC types.

Tilt Cylinders - are hydraulic cylinders that are mounted to the truck frame and the mast. The tilt cylinders pivot the mast to assist in engaging a load.

The Mast - is the vertical assembly that does the work of raising and lowering the load. It is made up of interlocking rails that also provide lateral stability. The interlocking rails may either have rollers or bushings as guides. The mast is either hydraulically operated by one or more hydraulic cylinders or it may be chain operated with a hydraulic motor providing motive power. It may be mounted to the front axle or the frame of the forklift.

The Carriage - is the component to which the forks or other attachments mount. It is mounted into and moves up and down the mast rails by means of chains or by being directly attached to the hydraulic cylinder. Like the mast, the carriage may have either rollers or bushings to guide it in the interlocking mast rails.

The Load Back Rest - is a rack-like extension that is either bolted or welded to the carriage in order to prevent the load from shifting backward when the carriage is lifted to full height.

Attachments - may consist of forks or tines that are the L-shaped members that engage the load. A variety of other types of material handling attachments are available. These include side shifters, slip-sheet attachments, carton clamps, multipurpose clamps, rotators, fork positioners, pole handlers, container handlers, roll clamps and many others.