

NEUROMUSCULAR ELECTRICAL STIMULATOR

The aim of the project is to create a neuromuscular electrical stimulator, the device which transmits an electrical impulse to the skin over selected muscle groups by way of electrodes. They are also known as electronic shock unit. it causes muscle to contract as a form of exercise or physical therapy. They strengthen or maintain muscle mass during or following periods of enforced inactivity, maintain or gain range of motion and facilitate voluntary muscle control. It stimulates the nerves of that part of the body where the electrodes are attached.

The machine works at conducting electrical current from the machine to the muscle at a safer rate. The process starts by placing self adhesive electrodes to the motor points of desired muscle system. It allows the muscle to contract or relax by adjusting the dial or switch control. It also provides vibration effect and heating effect. It has a great resemblance to the TENS units used in physiotherapy.

On further explain the project, it consist of stimulator and timer units. The stimulator unit provides the current and timer unit regulates the length of stimulation. The circuit uses NE555 IC in both astable and monostable mode. The stimulator unit make use of the astable mode of operation of 555. Astable multivibrators are unstable and are used in stimulators because they are oscillators that can create pulse trains. The timer unit make use of the monostable mode of operation of 555. Monostable multivibrators have a stable and unstable state. The unstable sate can be triggered and it returns to its stable state after a certain amount of time. We have been successful in providing stimulations for a predetermined duration of time.