

# WEIGHT SORTING DUMBWAITER

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An electric dumbwaiter system can make lugging items an outdated task. It can be easily incorporated at the design stage to complement your factory and integrate with the décor. While taking all the hard work out of carrying heavy objects to your storage area. Imagine the ease and convenience of not having to rent a crane for heavy objects up flights of stairs load after load. With a dumbwaiter system, it can be as easy as placing your items into the carriage and waiting for 9 seconds. They will meet you in your storage area ready for unloading. Dumbwaiters used in industries provide superior labor savings and efficiencies. A range of needs will be achieved including the movement of raw materials, inventory, and work in progress. Not only will you find your items on the carrying palette like conventional elevators, but also I integrated a mechanical arm that does not take any additional space outside the cubicle, pushes the load outside the dumbwaiter then rolls back to the initial point waiting for another object to be placed. Also, I wanted to put something extra to classify objects between two floors, so I chose weight as a discrimination factor in the analogy of a having to separate two palettes carrying with two separate loads. The carriage size and design can vary depending on your requirements, but I chose industrial as my target.

## MAIN FEATURES

- 01 Automatic Mode**
  - Waits for objects at ground floor
  - Senses when a weight is in place
  - Decides to which level the object goes to a place
  - Pushes it using an arm implemented swiftly inside the main cabin
  - Goes back down
  - Rolls back the arm
- 02 Weight-sorting**
  - Converting a difference in the force to a difference in the voltage
  - Analog signal amplified
- 03 Manual Mode**
  - Commanded by remote control using UART communication
  - Operates as a regular dumbwaiter with each button on the remote takes it to a floor
- 04 Mechanical Arm**
  - Using a lead screw and a brass nut
  - A motor rotates the screw holding the pushing plane
  - Pushes object into the designated level instead of manually unloading them
- 05 Remotely Operated**
  - The forklift truck driver can call the dumbwaiter from far away
  - LED light switch
  - Auto/Manual mode decided via remote control



## OUTCOMES

In today's requirements of duplexing factories, this task still requires considerable effort. The most significant result of this project is in saving time and effort. This project aims to make it easy for a factory with more than two-floor levels to move loads around without having to exhaust labor. Not only this, but the pushing arm mechanism can help a lot with unloading without having to wait for unloading. Also, weight discrimination can make a difference as heavy loads can be automatically separated from light loads. All this done via remote control

