



TRANSPORTATION.

Belt conveyor design for parcel handling

DESIGN OF A BELT CONVEYOR FOR PARCEL HANDLING



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1.- OBJECTIVE

The objective of this lab is to design a belt conveyor for parcel handling. In this lab, the student has to calculate and select from technical brochures the needed mechanical elements to design the belt conveyor: motors, belt, bearings, etc. taking into account certain design restrictions.

2.- INTRODUCTION

Nowadays, companies have belt conveyors to select and classify parcels. This belt conveyor has to meet certain requirements given by number of parcels transported by time, maximum supported load, etc.



Figure 1. Belt conveyor used for handling parcels

3.- DESIGN PARAMETERS

In Figure 2 the belt conveyor that has to be designed is shown. The technical features that has to complete are:

- Maximum parcel length 500 mm.
- The belt length has to be 1 m.
- Production of 2000 parcels/hour.
- For space reasons, the diameter of the pulley must be smaller than 100 mm and the width must not be bigger than 800 mm.
- The maximum weight of the parcels is 100 kg.
- Only one parcel will be on the belt.
- Due to operative conditions, no element must stick out of the dimensions of the belt conveyor.



TRANSPORTATION.

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- The belt conveyor is supported in a steel basement as depicted in Figure 2. Belt conveyor

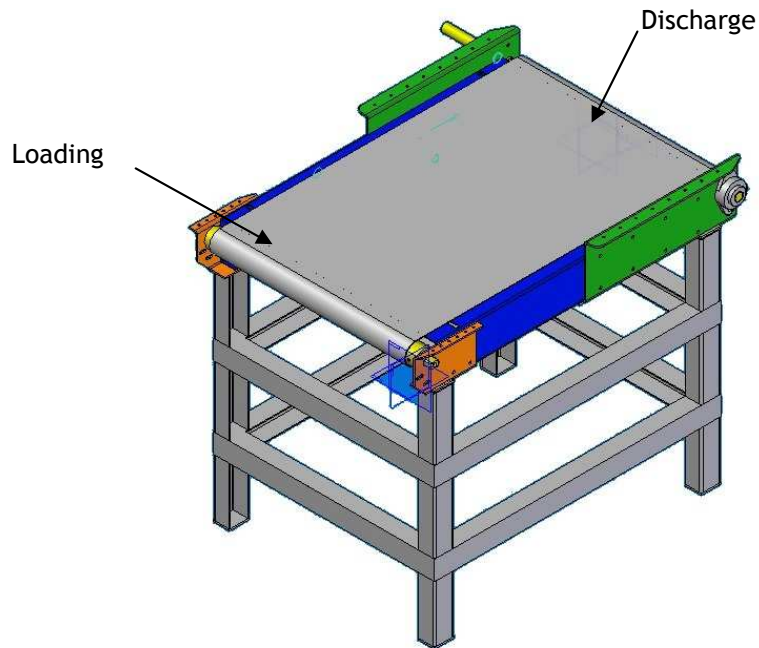


Figure 2. Belt conveyor

Due to design and space requirements the motor-reduction pulley is placed as shown in Figure 3.

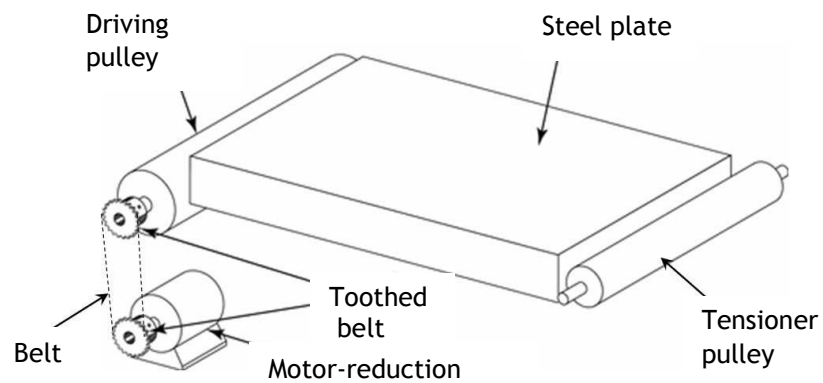


Figure 3. Motor-reduction position



TRANSPORTATION.

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4.- WORK

In this lab you will have to calculate justifying your calculations:

1. Speed.
2. Select a type of belt. Indicate the belt model selected in the brochure.
3. Type of motor/reduction. Indicate the selected model in the brochure.
4. Type of bearings used for the driving pulley selected in the given brochure.

5.- BROCHURES

In the web page of Transportation you have several brochures and webs to select the mechanical components you need to design the belt conveyor.