MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE GWALIOR

Department of Mechanical Engineering

REPORT OF SKILL BASED MINI PROJECT

Theory of Machine

4- Bar Mechanism

Introduction: n the study of mechanisms, a **four-bar linkage**, also called a **four-bar**, is the simplest closed-chain movable linkage. It consists of four bodies, called *bars* or *links*, connected in a loop by four joints. Generally, the joints are configured so the links move in parallel planes, and the assembly is called a *planar four-bar linkage*. Spherical and spatial four-bar linkages also exist and are used in practice.

Description of Model

Grasshof's Theorem

The motion characteristics of a four-bar mechanism will depend on the ratio of the link length dimensions. The links that are connected to the fixed link can possibly have two different types of motion:

i) The link may have a full rotation about the fixed axis (we call this type of link *crank)*

The link may oscillate (swing) between two limiting angles (we call this type of link *rocker*).

Let us identify the link lengths in a four-bar chain as:

l= length of the longest link
s= length of the shortest link
p,q = length of the two intermediate links

The following statements are valid (stated without proof. One can prove these statements by using the input-output equation of a four-bar See Appendix AIII for the proof of the theorem).
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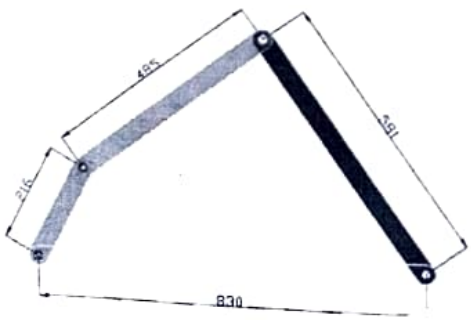
1. If *l* + s < p + q (if the sum of the lengths of the shortest and the longest links is less than the sum of the two intermediate links)



What I Learned Through Project:

How the 4-bar Mechanism work

What are different type of 4- bar

Mechanis are there

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