Internal Expanding Brake

An internal expanding brake consists of two shoes S 1and S2 as shown in Fig.

The outer surface of the shoes are lined with some friction material (usually with Ferodo) to increase the coefficient of friction and to prevent wearing away of the metal.

Each shoe is pivoted at one end about a fixed fulcrum O1 and O2 and made to contact a cam at the other end. When the cam rotates, the shoes are pushed outwards against the rim of the drum.

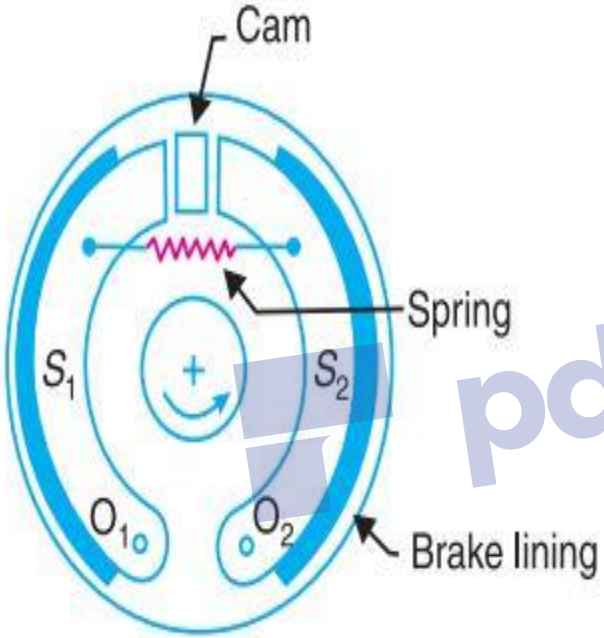
The friction between the shoes and the drum produces the braking torque and hence reduces the speed of the drum.

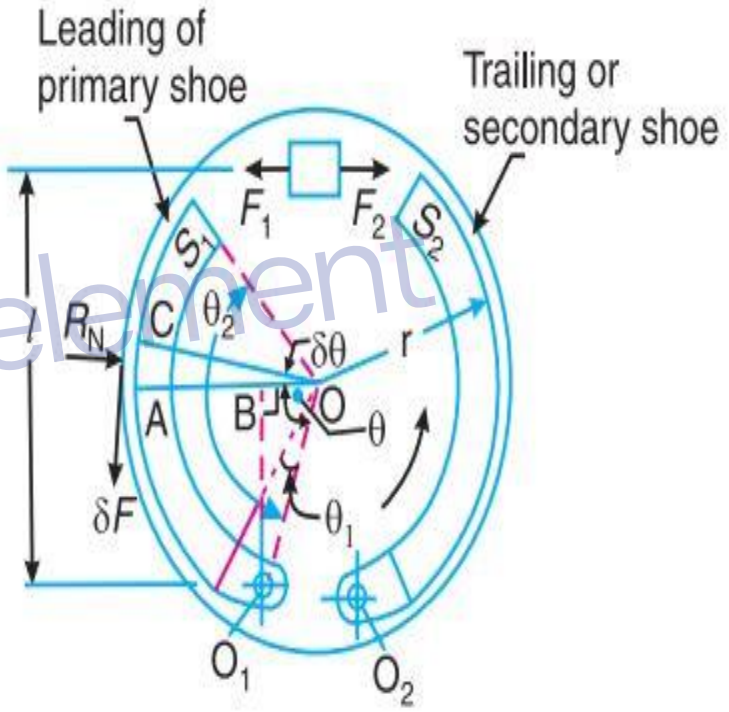
The shoes are normally held in off position by a spring as shown in Fig.. The drum encloses the entire mechanism to keep out dust and moisture. This type of brake is commonly used in motor cars and light trucks.

We shall now consider the forces acting on such a brake, when the drum rotates in the anticlockwise direction as shown in Fig.

It may be noted that for the anticlockwise direction,

the left hand shoe is known as leading or primary shoe while the right hand shoe is known as trailing or secondary shoe.





Braking of a Vehicle

In a four wheeled moving vehicle, the brakes may be applied to

1. the rear wheels only,

2.the front wheels only, and

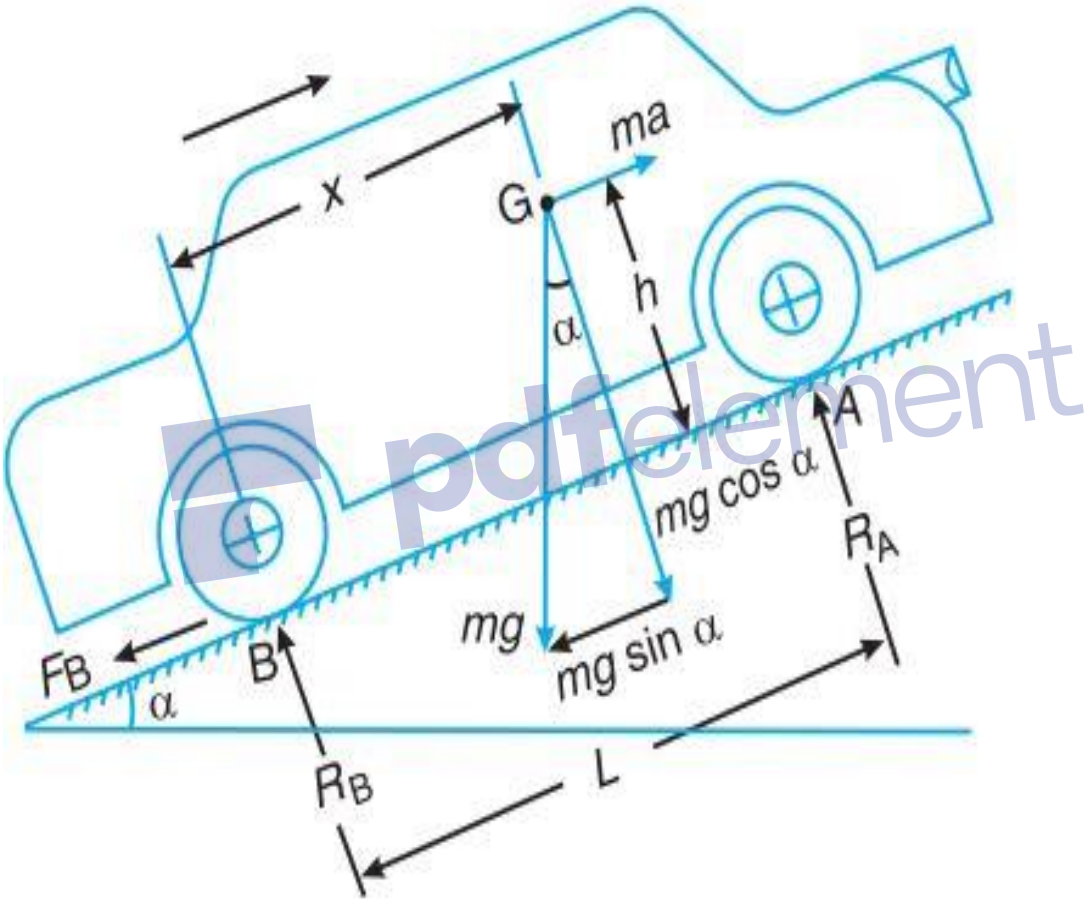
3. all the four wheels.

In all the above mentioned three types of braking, it is required to determine the retardation of the vehicle when brakes are applied. Since the vehicle retards, therefore it is a problem of dynamics.

But it may be reduced to an equivalent

problem of statics by including the inertia force in the system of forces actually applied to the vehicle.

The inertia force is equal and opposite to the braking force causing retardation.



RAMA UNIVERSITY

www.ramauniversity.ac.in

FACULTY OF ENGINEERING & TECHNOLOGY