

2.3.3 Microwave Attenuators

- A device used to control the amount of microwave power transferred from one point to another on a microwave transmission system is called **microwave attenuator**.
- Microwave attenuators control the flow of microwave power either by reflecting it or absorbing it.

Attenuators can be classified as fixed or variable type.

2.3.3.1 Fixed Attenuator

- Fixed attenuator consists of a dissipative element called **pad** which is placed in a waveguide. The pad is placed in such a way that its plane is parallel to the electric field, for this two thin metal rods are used. The pad is tapered for providing a gradual transition from the waveguide medium to the absorbing medium of pad. This also reduces the reflections. Fig. 2.3.9 shows side view of fixed attenuator in a waveguide.

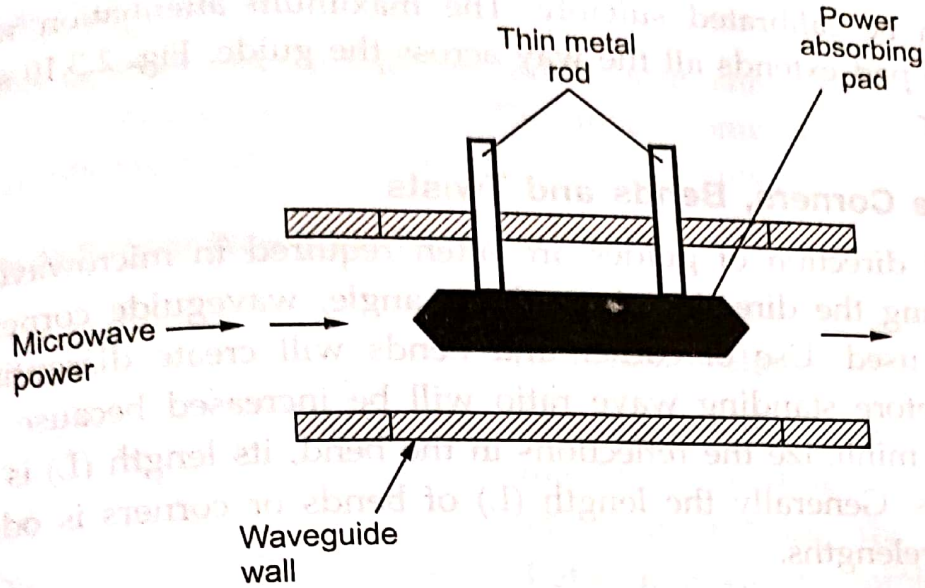


Fig. 2.3.9 Fixed attenuator

- The amount of power that a fixed attenuator can absorb depends on-
 - i) Strength of dielectric field.
 - ii) Location of pad within waveguide.
 - iii) Area of pad.
 - iv) Frequency of operation.
 - v) Pad material used for power absorption.

Fixed attenuators are used where fixed amount of attenuation is required.

3.3.2 Variable Attenuator

- Variable attenuator provides continuous attenuation. The amount of attenuation introduced is controlled by the depth of insertion of absorbing plate inside the waveguide. For this a knob and gear assembly is used. The

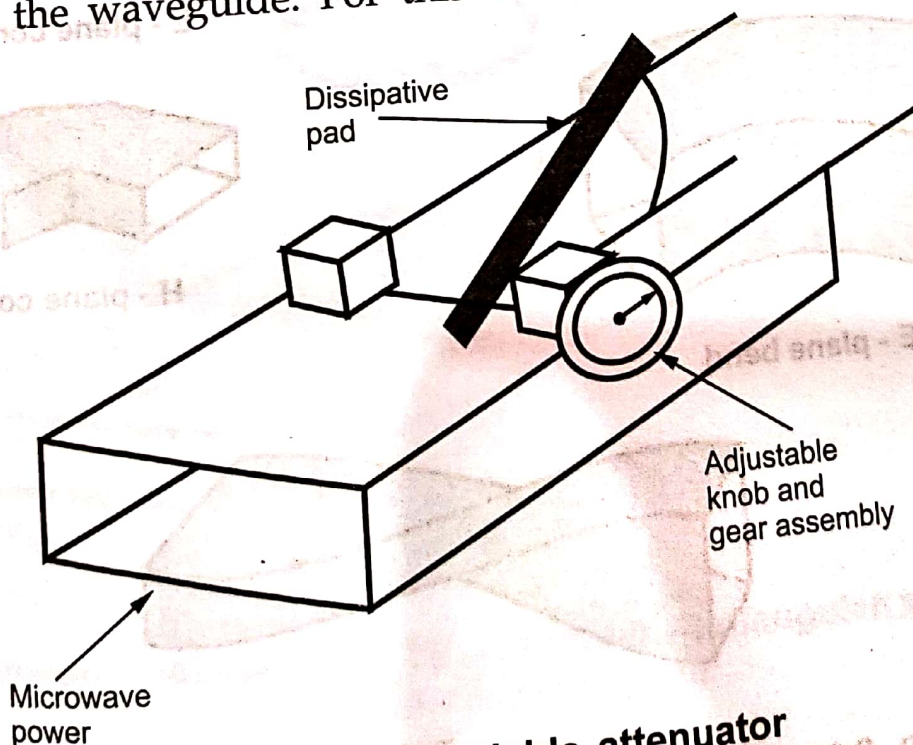


Fig. 2.3.10 Variable attenuator

knob can be calibrated suitably. The maximum attenuation will be offered when the pad extends all the way across the guide. Fig. 2.3.10 shows variable attenuator.

Bends and Twists