② Construction- The schematic diagram of a 2ϕ AC servomotor.

The stator has two distributed winding which are displace from each other by 90° electrical degree.

Torque speed characteristics:-

A high rotor resistance ensures a negative slop for the torque speed characteristics over its entire operating rang & thereby furnishes the motor with positive damping for good stability.

The torque-speed chart" for various control voltage are almost linear.

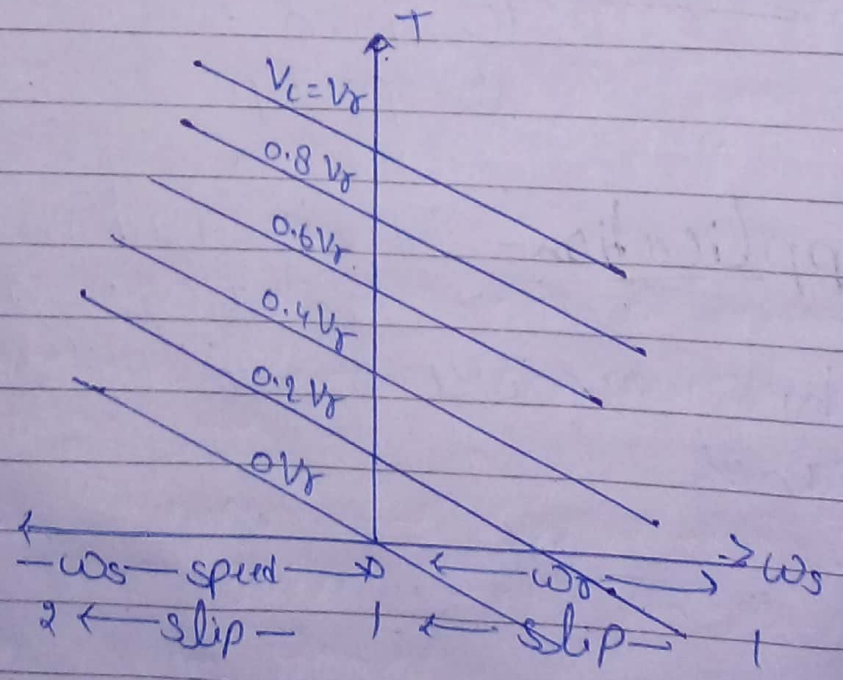

Fig:- Torque speed char" of 2ϕ AC Servo-motor.

From the torque speed char^{n} the dynamic eq^{n} relating the motor torque and the speed is formed as,

$$T_M = m\omega_m + KV_c$$

when the speed is zero, the torque is T_0 is proportional to the control voltage V_c.

Therefore, $T_0 = KV_c$

$$K = \frac{T_0}{V_c}$$

The slope of the torque speed characteristic is

$$m = -\frac{T_0}{\omega_0}$$

$$\therefore \quad \omega_m = \frac{d\theta_m}{dt}$$

the torque eq^{n} can be expressed as

$$\boxed{T_M = m\frac{d\theta_m}{dt} + KV_c}$$