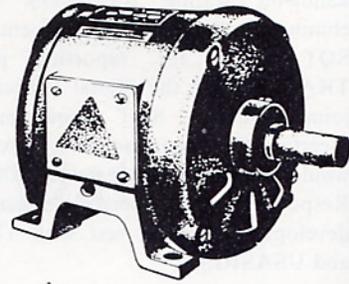


Tuner's Topics

The AC Motor



by
SP4 Tuner Tropo

Signal operators and repairmen work with alternating current (ac) and direct current (dc) equipment. Let's take a close look at ac motors, and see what makes them tick . . . uh, what makes them go whirr!

An ac motor is easy to explain. There are two basic parts to an ac motor—the *stator* and the *rotor*.

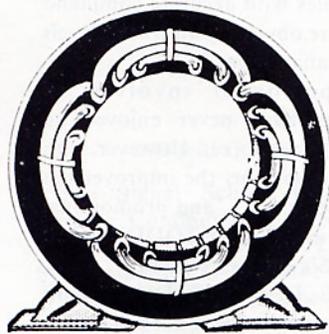
The stator stays still. A simplified stator is two coils of wire wound around a core.

The rotor rotates. A simplified rotor is two connected bars.

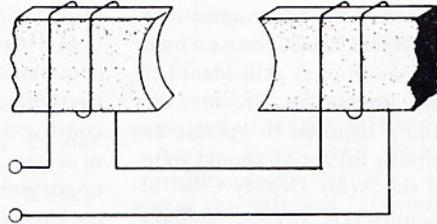
Put the stator and the rotor together, and you've got an ac motor.

When you connect the stator to an ac voltage source, the coils set up a magnetic field. This makes a current flow through the rotor and sets up another magnetic field around the rotor bars. The rotor field repels the stator field, and the rotor turns. Presto!

The pictures and steps below tell the whole story. See you next time.



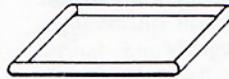
ACTUAL STATOR



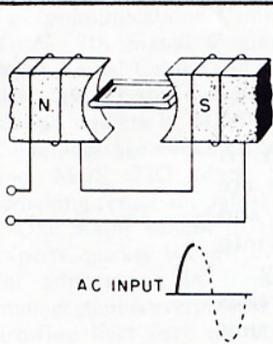
SIMPLIFIED STATOR



ACTUAL ROTOR

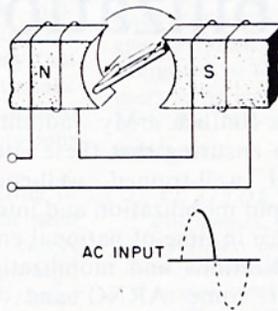


SIMPLIFIED ROTOR



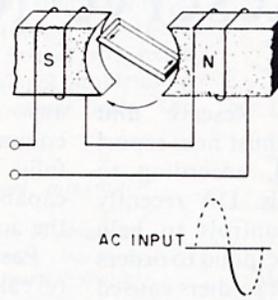
1.

Current flows through the stator coils and sets up a magnetic field between the coils. One becomes a **north** pole, and one becomes a **south** pole. The field induces current into the rotor (notice the direction of the current in the rotor). This current sets up a second field, around the rotor bars. The rotor field repels the stator field, and the rotor turns.



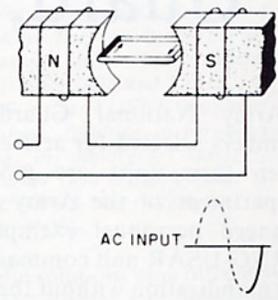
2.

The rotor bars turn to the opposite coils, completing one half of an ac cycle.



3.

Now the ac current in the stator coils reverses direction. This also reverses the fields around the coils. Voltage is induced again into the rotor. The rotor current still flows in the same direction. Magnetic fields set up again, and the repelling action causes the rotor to continue turning in the same direction.



4.

As the rotor bars return to their original positions, the ac cycle is completed. A new ac cycle begins, the fields set up, and the rotor keeps turning.