

SHORTWAVE DIATHERMY

- The heating of tissues is carried out at a high frequency of 27.12 MHz and a wavelength of 11 m.
- This form of diathermy is able to warm large area of tissue and is used to treat large muscle problems.
- The output of R.F oscillator is applied to the pair of patient electrodes.
- The R.F energy heats the tissues and promotes the heating of injured tissues and inflammations.
- The power delivered is about 500w. The electrodes or pads are not directly contact with skin. Usually layers of towel are interposed between the metal and surface of body.
- The pads are forming capacitor plates and the body tissues between the pads act as dielectric. Thus the whole arrangement forms a capacitor.

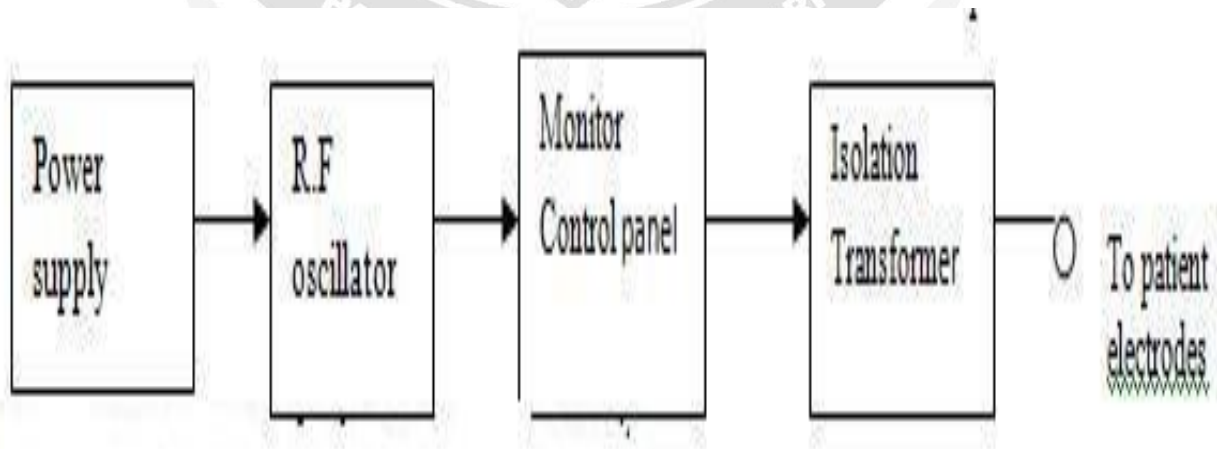


Fig: 5.2.1 Block diagram of short wave diathermy unit

[Source: Khandpur, R.S., —Handbook of Biomedical Instrumentation]



Fig:5.2.2 Short wave diathermy unit

[Source: Khandpur, R.S., —Handbook of Biomedical Instrumentation]

- When R.F current applied to the pads, the dielectric loss of the capacitor produces heat in the intervening tissues. This technique is called **condenser or capacitor method**.
- **In inductive method**, a flexible cable is coiled around the arm. When R.F current is passed through the cable.
- Deep heating in the tissue results from electrostatic field set up between its ends and heating in the superficial tissues is obtained by eddy currents set up by magnetic field around the cable.

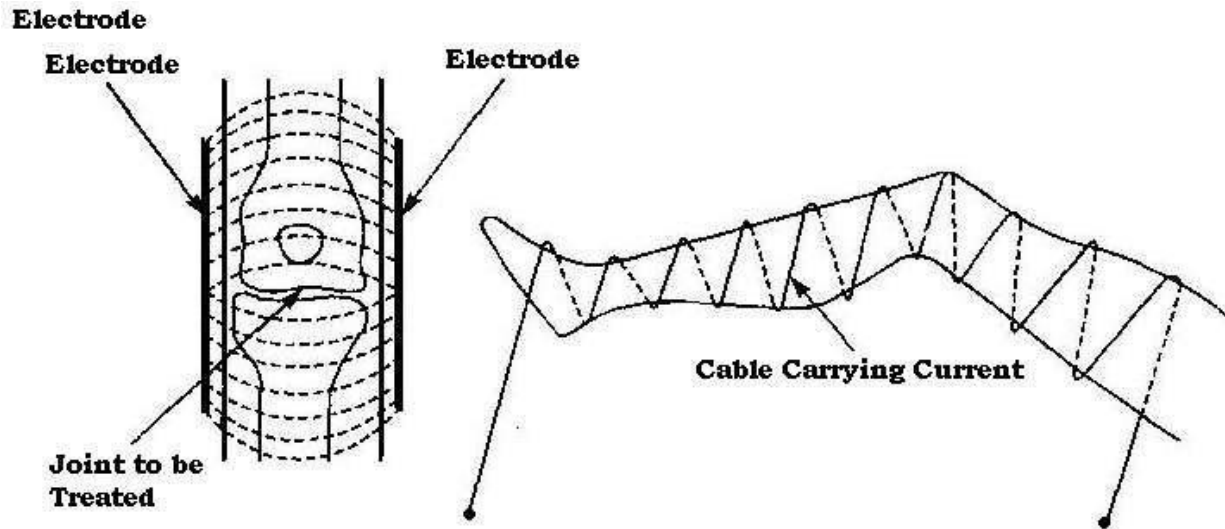


Fig: 5.2.3 short wave diathermy capacitive and inductive method

[Source: Khandpur, R.S., —Handbook of Biomedical Instrumentation]

- Instead of continuous R.F waves, R.F pulses of $65 \mu\text{s}$ with on interval between pulses of $1600 \mu\text{s}$ are also used. This is called Dia-pulse shortwave diathermy.
- The rate of pulsation is from 80 to 600 pulses/ sec with peak power of 293 to 975 w. By this methods the excess tissue fluid associated with Cellular damage is reduced, Heating rate is enhanced, No danger of burns, the depth of penetration is correctly adjusted.
- People with metal implants or pacemakers should not refer this treatment because metal might increase the amount of heat and cause burns.
- Also not recommended for patients with unstable BP, heart diseases or kidney disorder.
- Should not be apply to the patient who had open wounds, because burning might be occur.