

POWER TILLER:

A power tiller consists of the following main parts:

- Engine
- Transmission gears
- Clutch
- Brakes
- Rotary unit

All the power tillers are fitted with an I.C. engine. At present, most of the power tillers are fitted with diesel engine. Only Iseki make have used kerosene engine. Other makes like Kamco, Mitsubishi, Krishi, Yanmar and Satoh have used diesel engine in India.

Operation

- The main clutch is a lever on the handle.
- The lever can be shifted to on or off position while operating in the field.
- When the lever is shifted to on position, the power from the engine is transmitted through the main clutch to the various parts of power tiller.
- When the lever is shifted to off position, the power from the engine is cut-off from the rest of the transmission.

Power transmission in power tiller

- For operation of power tiller, the power is obtained from the I.C. engine, fitted on the power tiller.
- The engine power goes to the main clutch with the help of belt or chain.
- From main clutch, the power is divided in two routes, one goes to transmission gears, steering clutch and then to the wheel.
- The other component goes to the tilling clutch and then to the tilling attachment.

V-belt is usually used to transmit power from the engine to the main clutch, because V – belt has very high efficiency and it works as a shock absorber also.

Engine : Single cylinder, diesel, air/water cooled, 8-15 HP.

Main clutch

Power goes from the engine to the main clutch. Clutch may be:

- Friction clutch or
- V – belt tension clutch

Friction clutch is generally used for bigger power tiller. Usually it is a dry type multiple disc clutch. V – belt tension clutch is used for small power tillers.

The main function of clutch in a power tiller are:

- To transmit engine power to transmission gears and
- To make power transmission gradually and smooth

Trouble

The clutch slips continuously, the causes and remedies are

Causes	Remedy
Oil inside the clutch	Clean with gasoline and dry it
Worn lining	Replace the lining
Spring tension not sufficient	Replace the spring
Water inside the clutch	Dry it with heater etc.
Poor adjustment of clutch	Adjust the clutch
Poor contact of friction surface	Grind the surface

Transmission

gears

Transmission box consists of gears, shafts and bearings. The speed change device may be either Gear type or belt type.

Brakes

All power tillers have some braking arrangement for stopping the movement. Most of the power tillers use inner side expansion type brake.

Wheels

Usually 2 pneumatic tyres are used in power tillers. The pressure of the tyre ranges from 1.1 to 1.4 kg/cm².

Rotary

unit

Power tiller has a rotary unit for field operation which may be centre drive type or side drive type. The centre drive type has got transmission at the centre and the side drive type the transmission at one side.

The centre drive type has the following characteristics:

- Tilling width can be widened
- Rotary unit is light in weight
- Fixing of attachment is easy
- The tine shaft can be detached easily
- Mounting and dismounting of rotary unit is very easy
- It may leave some portion of the field untilled
- It has one point support on the ground

The side drive type has the following characteristics:

- (a) Deeper tilling is possible
(b) The arrangement is useful for hard soil
(c) It has two point support on the ground

Rotary

tines

Rotary tines are used in rotary unit for soil cutting and pulverization purpose. Rotary tines are of three types namely, straight tines, curved tines and sliding tines.

Steering clutch lever: Steering clutch is provided on the grip of the right and left handles. When the left side is gripped, power is cut-off on left side of the wheel and the power tiller turns to the left. Similarly when the right side is gripped, the power tiller turns to the right.