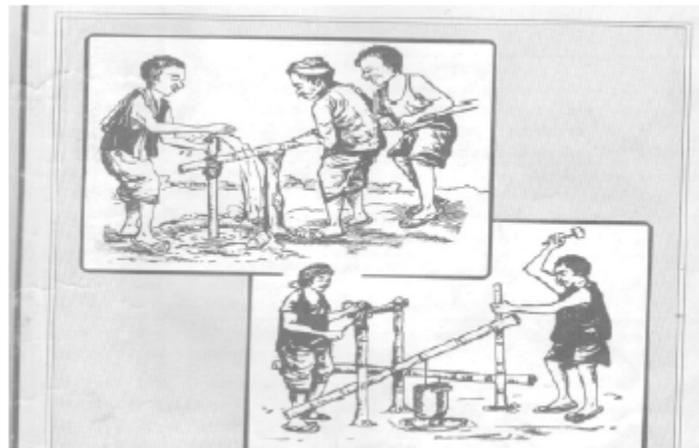




USAID | **NEPAL**
FROM THE AMERICAN PEOPLE

Treadle Pump Installation and Maintenance Manual



Developed for
USAID/Nepal's
Education For Income Generation Program
(EIG)

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About This Booklet

Treadle pump is an appropriate technology to small farmers for irrigation. The history of its development and promotion is not long in Nepal but the significance is growing rapidly since last few years. Most of the areas of Terai districts of Nepal have the maximum possibility of using treadle pump. IDE Nepal is promoting and institutionalizing this technology so far. Several government, non-government and private organizations and institutions have shown their interest and involvement in the promotion and development of this technology since last few years. IDE Nepal takes this interest as its success. In the situation of growing demands, there emerge the urgent need of training to local technicians on fitting and maintenance of treadle pump. Similarly the pump users should have the knowledge of proper maintenance, protection and use of this technology. By considering this fact, this book has been developed. This book is used in the following situations.

- 1) Technician's Training on Treadle Pump organizing by IDE Nepal.
- 2) For Treadle pump users to have the knowledge of maintenance, use and protection.
1. Technical Trainings given to the professionals of concerned organizations who have the interest on this technology.
2. Guideline book for all the people working on treadle pump programs.
3. Reference book for technology information and other technical parts to donors, educational institutions and others.

Most of the part of this book is related to technical practical knowledge so maximum pictures and maps are used. The book is presented in simple language by using colloquial and/or frequently used technical words. These technical words are defined with their meanings. On the basis of use, this book is divided in three parts.

Part 1: Technology introduction and required equipments and materials

Part 2: Treadle Pump Fitting

Part 3: Maintenance and protection of Treadle Pump

Hope this book will be useful to meet projected objectives and expect the valuable suggestions from all to make more effective.

I would like to extend my heartfelt gratitude to Nepal Country Director Mr. Radhe Shyam Bista who has initiated to develop this book. I would also like to give thanks to IDE Nepal for their financial support. I am indebted to all the staffs of IDE Nepal for sharing their valuable knowledge and experience. Finally the credit goes to graphic designer Mr. Mohan Shrestha and draft person Ms. Sarita Shrestha who has designed all the pictures and maps used in this book. Many thanks to media vision also.

Some Used Word Meanings

Treadle Pump

A device used for lifting water by alternate up and down movements of the legs on the bamboo treadle.

Cylinder

Barrels used near in water fall point in the treadle pump head. One head have two cylinders.

Washer

It is bowl like object having a hole in the centre, made up of soft PVC like rubber and moving up and down in cylinder while using the pump.

Check Valve

It is a device made up of rubber and kit iron weight used in bottom of cylinder. It looks like a tube with opening and closing mouth. It is set in pump by knitting with nut bolt.

Plunger Set

It is an object made of approximately 15 inch in diameter rod having two pieces of round tin plate in one corner and washer in the centre.

Eye

It is a half inch round hole made by bending rod by the side of plunger rod.

Axle Rod, Pulley

An iron rod used to support treadle frame. It is horizontally placed to connect bamboo stick and paddle. Bamboo pulley is used in-between axle rod so that paddles couldn't clash to each other.

Cutter Pin

It is a device used to support to stand axle rod, made of iron plate.

Treadle Frame or Superstructure

It includes all the bamboo and wooden devices required for installing the treadle pump i.e. paddle, pole, pulley, guide etc.

Paddle

It is a bamboo device used for leg movements (up and down). Two bamboo stick with approximately 6 ft. long has been placed horizontally.

Pole

Pole is used to support paddle. It is made of bamboo/wooden.

Guide

It is placed vertically at the front of the pump especially to prevent the possible clashing of front parts of the paddle. It is made of nearly 4 ft. long bamboo or wooden stick.

Handle

A bamboo piece to make treadle pump more strong and to take support during paddling and used in-between two poles horizontally.

Stopper

A bamboo/wooden piece placed beneath the paddles so that plunder set would not deviate from the cylinder during paddling.

Tube well

A device used to lift underground water by putting/placing pipe and filter in the whole made by boring.

Tube well Pipe

A pipe buried to the ground after boring which is linked to filter at the bottom and pump head at the top.

Boring or Drilling

An act of lifting water by keeping tube well in the whole made during boring. This booklet mentions about only 1.5 inch boring that is easily done.

Vacuum

Vacuum is used to clear the soil and sand produced during boring. It is done through opening and closing the palm.

Hand Boring

A process of making a hole to place the tube well pipe by taking the muddy soil and sand out with the vacuum by hand.

Boring Pipe

G. I. Pipe is used for making whole while drilling and boring. After making the whole G. I. Pipe is unplugged and placed the tube well pipe.

Boring Treadle

A temporary device used for having vacuum while making hand boring. In this device one pole is buried and placed a bamboo stick horizontally and tightened the boring pipe in one corner.

Horizontal Bamboo

A bamboo stick placed in manual boring (Dhekuli) horizontally.

Layer

A level of medium or large size (concrete) sand in underground with full of water

Technicians

The persons who are capable to place different water uplifting devices by fitting tube well or digging well. Terai area has many technicians having this quality.

Assistant

The persons assisting the technicians in hand boring, pouring water etc.

House Owner

Owner of the home in which the treadle pump is going to be installed.

Pump Head

Head of treadle pump and other entities (plunger set with washer, pin and axle rod)

Filter or Screen

The pipe with small holes so that water comes from the underground through filtering automatically.

Hand Pump

A device used for uplifting water by making up and down through hand.

Gravel Pack

An act of keeping the small gravel around filter.

Stand Tap

A part of the pipe especially for accumulating the filtered soil and sand coming in tube well pipe beneath the filter. It has the length of 1-3 ft by considering the situation

End Cap

A wooden device used for closing the hole in the lower part of tube well. Sometimes the corner of the pipe has been bent by heating to close the mouth of HDP pipe.

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Part: One

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