

Walk Behind Trenching Machine

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Abstract— A trencher (machine) is a device used for digging trenches, used for laying pipes & cables, for setting up drainage or in preparation for trench warfare strategy. Also irrigation is very necessary for cultivation of crops. Usually rivers are far from agriculture-lands, which creates difficulty to irrigate. To overcome this problem of irrigation, pipeline have been developed which connects river with agriculture-lands. In present days, it has been followed manually with heavy machines, which results in high economic costs and time. Trenchless methods are attractive solutions in areas where difficult ground conditions exist, high groundwater table, or urban settings with highly congested infrastructure render open trench excavation highly undesirable. Such settings may include pipeline routings under a river, heavily travelled roadways, or railroad line.

Key words: Trencher

requires only 50% or less than that of man power. A portable trencher machine in operation.

Landscapers and lawn care specialist may use a portable trencher to install landscape edging and irrigation lines. These machines are lightweight (around 200 pounds) and are easily maneuverable compared to other types of trenchers. The cutting implement may be a chain or a blade similar to a rotary lawn mower blade oriented so that it rotates in a vertical plane. A trencher may be combined with a drainage pipe or geo textile feeder unit and back filler, so drain or textile may be placed and the trench filled in one pass. [1]

Trenches range in width from 130mm to 550mm and can be dug to an average depth of 900mm*. Trenches can be dug to a depth of 800mm (depending on soil conditions) A heavy duty machine built to handle the extreme demands of the contractor Operator, it boasts more „grunt“ and a larger safe working load enabling it to power heavier industrial attachments, while still maintaining the ability to go through a standard door way. In order to increase soil fertility, farmers acquire the aid of fertilizers. This process is done by digging up manually a trench in the land to embed the fertilizer then refilling it. This procedure is time consuming. The hand labor required to accomplish this work increases the expenses of cultivation for the farmers. Reducing time and cost are two main objectives of our study.

I. INTRODUCTION

Today trenching for pipelines in India or worldwide is continuous process, which asks for a huge man power as well as the money. In fact, trenching for pipelines in a farm or from water source to demand field requires approximately 30-40% of the total work expense. In order to minimize or reduce the trenching cost by 50% which we spend on man power, we should add opt a portable trenching machine which machine

ISO chain	Pitch P	Roller diameter D1	Width B1	Breaking load for Single stand chain
08 B	12.70	8.51	7.75	18.2

Table 1:

drive is used for transmission power generated by the engine to rear wheel is used for following reasons.

- 1) The efficiency of chain drive is high at times as high as 98%
- 2) A chain drive does not slip
- 3) Although they generate noise, they present no fire Hazards and are unaffected by high temperature or atmospheric condition.
- 4) Chain drive is more compact than Belt or Gear Drive.

The chain drives require proper maintenance particularly lubrication and slack adjustment. However, chain can be easily replaced.

Roller chain drives is used in two wheelers for transmission of power. There are five parts of roller chain.

- 1) Pin
- 2) Bushing
- 3) Roller
- 4) Inner plates, Outer plate

A. Construction of Chain

The pin is press fitted to two outer link plates while the bush is press to inner link plates. The bush and the pin form a swivel joint and the outer link are freely fitted on bushes and during engagement, turn with the teeth of the sprocket

wheels. This result is rolling friction instead of sliding friction between the roller and sprocket teeth and reduces wear. The pins bush and rollers are made of alloy Steel.

Usually in automobile 08b (ISO chain number) is used their dimensions are as follows

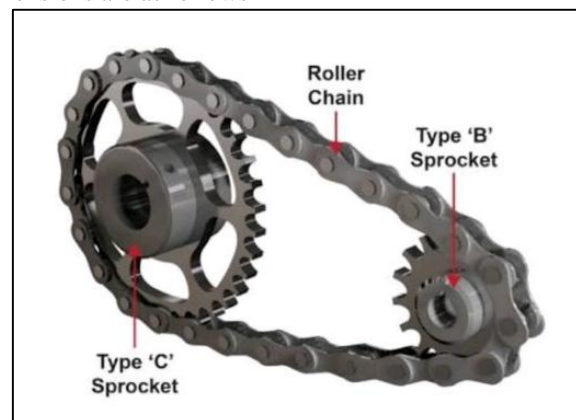


Fig. 2.6.1: Chain Sprocket

II. WORKING

The trenching machine consists of a frame, 4 stroke engines, cutting blades, chain, tires, bearing, and sprocket. The cutting

blade which is rotating with the axis perpendicular to the engine shaft is connected by means of a chain sprocket. the chains connected to the engine in order to remove the soil. The soil is removed by the cup which is attached to the chain and cup assembly which is direct driven by a chain sprocket Connected to main shaft which rotates at speed of 16.667RPM, thus runway of trencher is cleaned. When the engine is started, the main shaft rotates and we get a power output of 5000 RPM, 8HP which can be reduced to 1250 RPM using gear box. This power is transmitted to the main shaft which is fitted on the frame. The main shaft is carrying with chain gear. The speed of main shaft is 208 RPM. The secondary shaft is connected to cutting blade shaft by means of a chain drive.

III. ADVANTAGES

- 1) Easy Construction.
- 2) Easy Manufacturing.
- 3) Economical One.
- 4) Can be built up to various capacities easily.
- 5) For digging less time required.
- 6) Low maintenance cost.

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