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FITTING AN IGLAND WINCH TO A CLARK SKIDDER

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INTRODUCTION

Double-drum winches have been in use in New Zealand for some three years. To date,the only models readily available are those manufactured by Igland of Norway. These units come in a variety of sizes and models. The two which have found the greatest acceptance have been the Igland Perfect 3000/2 with manual controls, and the Igland Compact 5000/2H with servo hydraulic controls.

These winches have been mounted on a range of machines from agricultural tractors to purpose-built skidders. Traditionally, the mounting has closely followed the system used in Europe: the winch is mounted directly to the tractor and driven by the chain drive powered through the machine's PTO. A butt plate, as supplied by the manufacturer, is then mounted to the three-point linkage in the case of agricultural tractors, or used to replace the fairlead on a skidder.

This Technical Release reports on a different approach which has recently been taken by Lakeland Steel Products Ltd., of Rotorua, in mounting an Igland Compact 5000/2H to a Clark Ranger 664B skidder.

BACKGROUND

In an attempt to increase the productivity of his Clark 664B skidder, Wayne Lowe, a N.Z. Forest Products Limited contractor,operating in seventh-row outrow thinning in Lake Taupo Forest, fitted an Igland 5000/2H winch to his machine. The rationale behind Lowe's decision to fit the double-drum winch was that working in a piece size of approximately .20 tonnes, with 100 horsepower machine fitted with eight strops, meant that a maximum drag size of only 1.6 tonnes could be achieved. This is well under the machine's capacity of approximately 3 tonnes. Increasing the number of strops on a single mainrope would only serve to compound problems of breaking-out and unhooking at the landing. After working with a double-drum winch on a different machine, the benefits became immediately obvious. The ability to reduce the number of strops per rope to six, giving a total of 12, would increase the machine's load per drag to 2.4 tonnes, without a marked increase in break-out and unhook times. Working from outrows, and being able to break-out logs from either side, was simplyfied by using a double-drum winch.

SPECIFICATIONS

The specifications for the skidder and winch are listed below:

SKIDDER: Clark Ranger 664B

Power - 78 kW (105 hp) (increased power was due to advanced timing)

Steering - articulated frame

Drive - four-wheel drive, with four forward and four reverse gears

Travel Speed - 24.8 km per hour maximum

DOUBLE-DRUM WINCH: Igland Compact 5000/2H

Drive - driven from skidder winch drive shaft direct to winch (no chain drive)

Drum capacity - 2 x 100 metres of 12 mm

Line pull - 5000 kg bare drum (manufacturers specs)

Line speeds at 540 rpm in metres per second - 1.2 maximum, 0.6 minimum

Clutch - single friction plate

Brake - external brake bands

Control - servo hydraulic one lever per drum

Gear ratio - 1:9.7 worm drive

Weight - (without rope) 300 kg

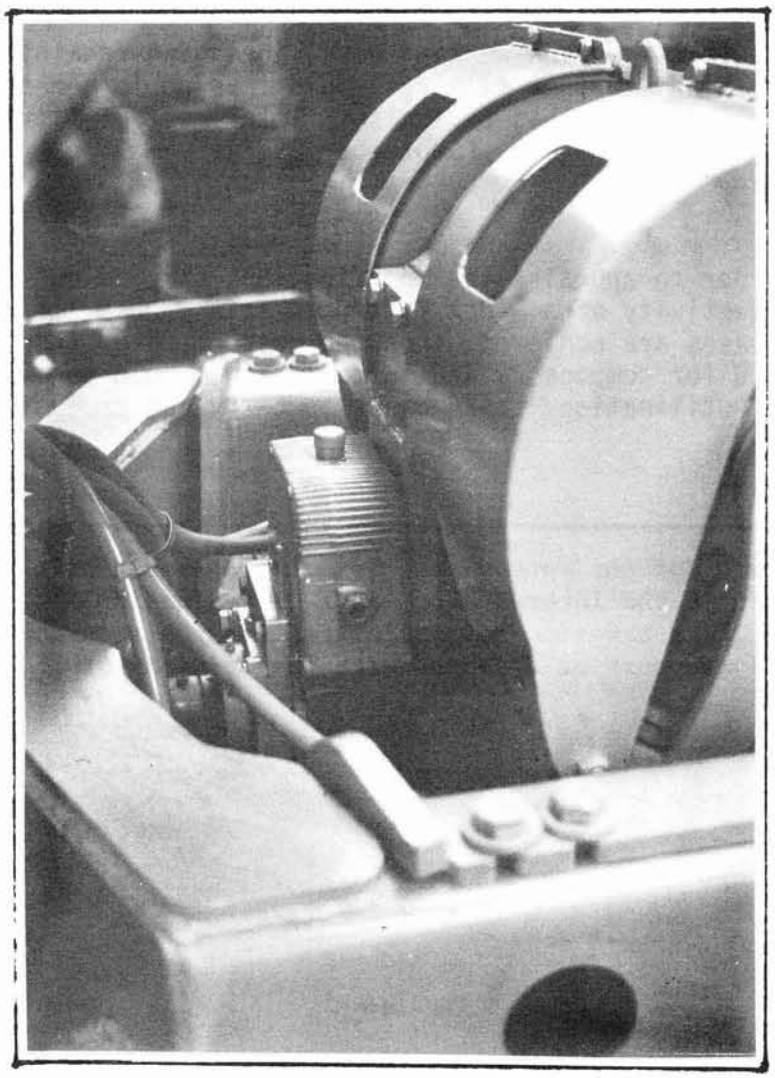
Cost - $8,000 (September 1982)

INSTALLATION OF WINCH

FAIRLEAD

Previous fitting of double-drum winches to skidder have dispensed with the purpose-built fairlead arrangement and substituted the manufacturer's butt plate. This has led to a decrease in the amount of lift available.

On this machine it was decided to make use of the existing fairlead, thus fully utilising the lift available. The fairlead was modified by removing and straightening the two outer uprights. These were then welded back onto the skidder with new roller mounting plates made up for it. The effective width of the fairlead was then 0.85 m with an effective ground clearance of 1.95 m (from top of roller to ground). The fairlead was split with the old top roller being used as the centre roller and a new main roller and lengthened top roller were fitted. Fairlead bearings and rollers were kept standard for ease of future replacement or repair.



Geared drop box arrangement

WINCH MOUNTING

The winch was mounted in the same fashion as for a standard Clark winch. The mounting plate was modified by cutting the bottom out and re-welding it so it was not so deep. This effectively raised the winch 85 mm from the standard Clark winch location, which gave better operator visibility of the winch. The mounting plate had to be further modified by cutting out a 'U' shape to accommodate the winch drive box. The winch was attached to this plate with four bolts. In addition, for warranty purposes, a brace was also fitted from the winch back to the fairlead. This reduced the chance of the winch pulling off the mounting block.

WINCH POWERING

The chain drive, which has in the past been standard on these winches, was replaced by a straight geared drop box. A fixed shaft drive was machined to suit this and the unit adapted to the Igland. The standard Clark drive-shaft to the winch was therefore able to be retained.

HYDRAULIC CONTROL

The servo hydraulic control was mounted on the left-hand side of the operator's seat, in the same position as the normal Clark winch control. This then reduced the time required for the operator to familiarise himself with the new controls. Fluid power to this unit came from an extra hydraulic pump mounted on the torque convertor.

DISCUSSION

The mounting of the winch in this manner, with the modified fairlead, aimed to overcome some of the problem areas so far experienced with double-drum winches, such as insufficient lift and lack of room in the butt plate.

The retention of the fairlead height meant that 12 butts were able to be adequately accommodated on the machine's butt pan, without any slewing to the side. This has been a problem with the smaller butt plates previously installed. The additional clearance offered by the height of the fairlead rollers allowed the drag to be lifted well clear of the ground during extraction.

Incorporation of a direct drive, in place of the chain drive, removed a part of the unit which required regular attention and was particularly noisy. The danger of sticks or branches becoming entangled was also eliminated.

Fitting of the winch took approximately seven working days, including repainting the machine. It is expected that any further fittings would take no longer than five days, with the knowledge gained from this excercise. Total cost of fitting, including paint work, was approximately $5,000 (September 1982).

CONCLUSIONS.

Some time is now required in order to appraise the modifications carried out to assess the reliability and productivity of a winch fitted in this manner. If the expected productivity increases are achieved, then the cost of $8,000 for the purchase of the winch and $5,000 for componetry and installation, would be a small price to pay for better skidder utilisation. LIRA plans to carry out production trials of this unit.

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