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Field Note N°: General-12
Previous Reference Sheet N°: *Summary of FERIC HB-08

INSTALLATION OF A 3-PT. HITCH AND PTO ON A USED SKIDDER

The handbook summarized by this field note explains how a power take-off (PTO) and a three-point (3-pt.) hitch can be installed on a skidder to permit the use of forestry implements that are designed to be mounted on farm tractors. The steps to be followed are outlined in considerable technical detail in the handbook since careful design and installation are vital to the proper and *safe* operation of the equipment. As such, the handbook is directed at readers with a relatively high level of technical expertise. Three main points are addressed:

- How to adapt each of the three common types of skidder winch drives to drive a PTO shaft.
- How to design, construct and install a 3-pt. hitch on the rear of the skidder.
- How to supply hydraulic and electric power to the implement.

WHY CONVERT SKIDDERS?

The "single-function" wheeled skidder has been the basic logging machine used in Canada for the past thirty years. However, trends in the forest industry today indicate that loggers need ever-increasing flexibility in their logging systems so as to be able to adapt to the market place. In small-scale operations in eastern Canada, owner operators often produce a variety of forest products, and carry out silvicultural work as well. Since many can not afford several single-function machines, they require a "multi-purpose" machine and suitable implements to go with it.

Farm tractors equipped with a PTO and 3-pt. hitch are "multi-purpose" machines in that many forestry implements (e.g., winches, grapples, processors) are available for mounting thereon. However, forest conditions such as rough terrain, steep slopes, deep snow, and soft ground often restrict or prohibit the use of farm tractors in the forest. The trend to full-tree logging on

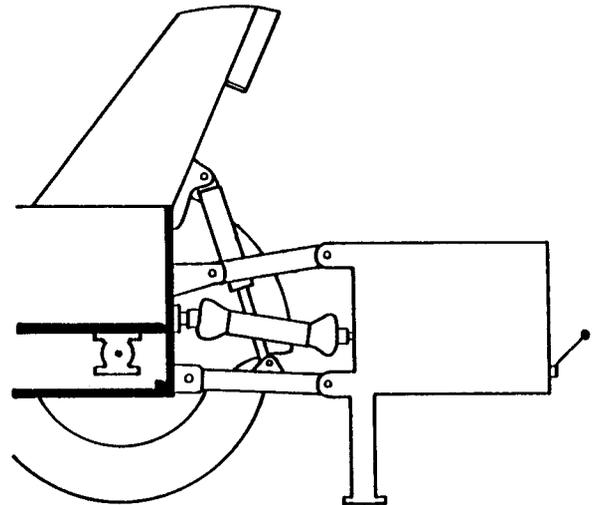


Figure 1. A 3-pt. hitch and PTO on a skidder.

large-scale operations has left an oversupply of used, small skidders (under 75 kW) that may be purchased in the \$15 000-\$30 000 price range. These small skidders can often serve as suitable carriers for forestry implements designed for farm tractors, but the skidder must first be equipped with a PTO and a 3-pt. hitch.

A skidder thus equipped has several advantages over the farm tractor because of its articulated frame steering, higher ground clearance, larger tires, greater stability, more robust cab, and a better front-to-rear weight ratio. The skidder is thus more suited to forest conditions than the farm tractor. Moreover, a used skidder may cost considerably less than a new farm tractor.

Conversely, there are a few disadvantages to installing a PTO and 3-pt. hitch on a skidder. The cost of the installation will be \$3000-\$4000. The winch must be removed if a PTO is installed on the butt plate of a skidder. The PTO may function differently than on a

* Summary prepared by T. Schwan, ing.f. under contract to FERIC.

farm tractor. There is usually not enough space in the skidder cab to reverse the seat and sit facing the back of the machine to operate loader controls. Also, the skidder-mounted 3-pt. hitch described in the handbook is not suitable for certain farming tasks such as plowing.

SKIDDER MODIFICATIONS

The handbook describes the two ways that skidders can be modified to power forestry implements. In the first, only a hydraulic power outlet and a 3-pt. hitch (with no PTO) are installed, and the winch remains operational on the skidder. With this type of installation 15 to 18 kW of *hydraulic power* is available to power the implement.

In the second version, a hydraulic power outlet, 3-pt. hitch, *and PTO* are installed. Thus, the same hydraulic power as above is available, plus 30 to 45 kW of mechanical power from the PTO.



Figure 2. Vimek G30 processor on Timberjack 207D skidder.

IMPLEMENT INSTALLATIONS

Skidders equipped with a PTO and 3-pt. hitch can be used, with varying degrees of efficiency, for a wide variety of implements such as shortwood processors like the Vimek G30 (an installation on an 18-year-old Timberjack 207D is described in the handbook) and the Nokka 400, firewood processors, scarifiers, snowblowers, powered trailers, cable yarders and specialty winches.

In general, skidders are best suited to pulling applications such as with scarifiers, trailers and winches. Implements with a loader (e.g. Nokka) are less suitable for skidder mounting since skidder cabs usually do not have adequate space for the operator to turn his seat and face the rear when operating the loader controls. Skidder-mounted snowblowers are somewhat restricted because of the PTO configuration and the relatively high travel speed in first gear with skidders which present some difficulties in deep snow and tight corners. For firewood processors, the required conversion varies considerably depending on the type of processor and careful planning is necessary, especially for high-production units.

CONCLUSIONS

A small, used skidder can be transformed into a versatile, low-cost unit for woodland operations by installing a PTO and a 3-pt. hitch. A skidder is a more stable carrier than a farm tractor for heavy attachments and for pulling logging trailers. A skidder also negotiates difficult terrain better than a farm tractor.

There are many points to consider when equipping a used skidder with a PTO and a 3-pt. hitch. A step-by-step approach as outlined in the handbook, along with careful planning, will help assure a successful conversion.

This Field Note is a summary of FERIC Handbook HB-08 "Handbook for Installation of a 3-pt Hitch and PTO on a Used Skidder" by Ismo Makkonen. Copies of HB-08 are available free of charge in English or French from:

Forest Extension Service, Department of Natural Resources, Box 6000, Fredericton, N.B. E3B 5H1.
Publications, Department of Forestry, Box 2006, Corner Brook, Nfld. A2H 6J8.
Publications, Department of Lands & Forests, Box 698, Halifax, N.S. B3J 2T9.
Publications, Private Land Forestry Unit, Ministry of Natural Resources, Box 1000, Sault Ste. Marie, Ont. P6A 5N5.
Publications, Department of Energy & Forestry, Box 2000, Charlottetown, P.E.I. C1A 7N8.
Direction de la forêt privée, Ministère de l'Énergie et des Ressources, 785 Salaberry, Quebec, Que. G1R 5N5.