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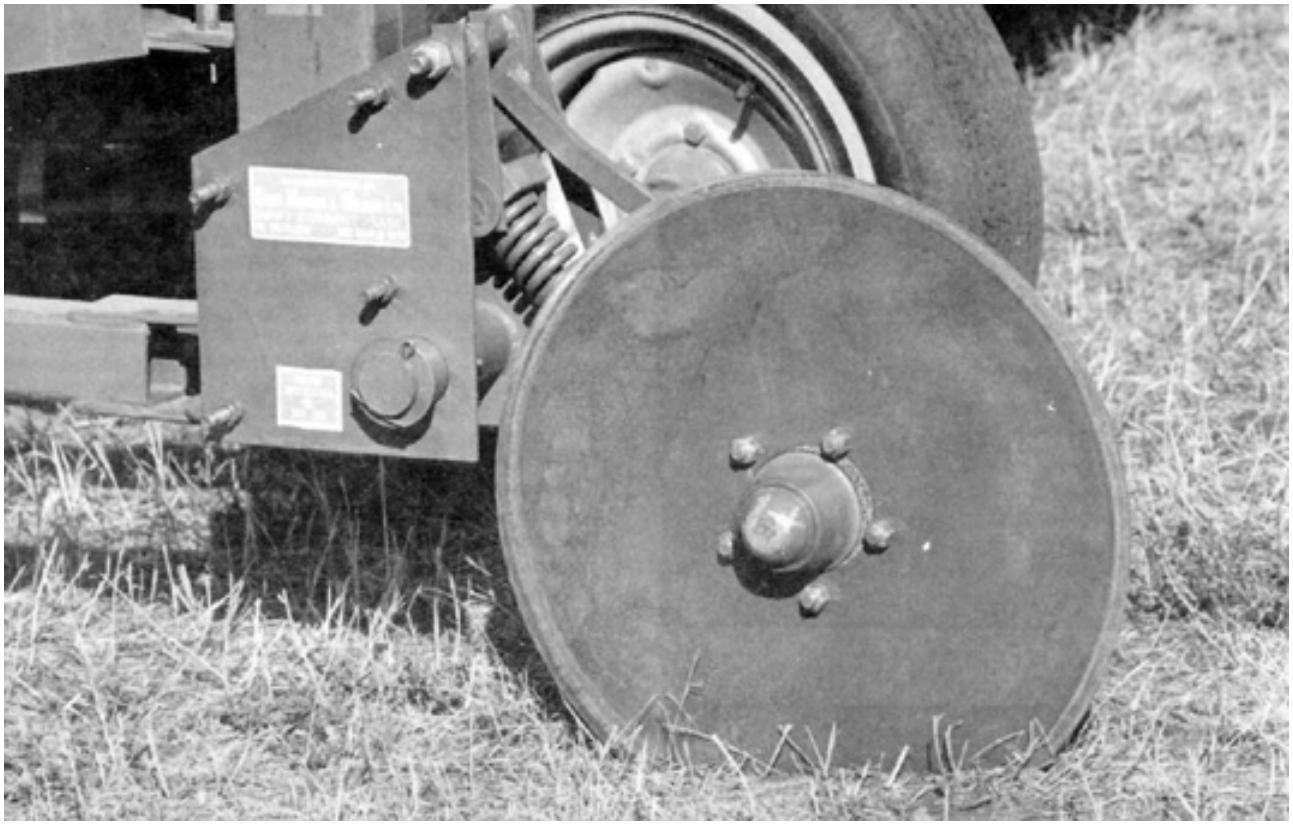

Swift Puli-Type Windrower Stabilizer Attachment

A Co-operative Program Between

ALBERTA FARM MACHINERY RESEARCH CENTRE

PAMI
PRAIRIE AGRICULTURAL MACHINERY INSTITUTE

SWIFT PULL-TYPE WINDROWER STABILIZER ATTACHMENT

MANUFACTURER AND DISTRIBUTOR:

Swift Machine and Welding Ltd.
Box 1372
1831 Chaplin Street West
Swift Current, Saskatchewan

RETAIL PRICE:

$298.00 (January, 1985, f.o.b. Humboldt).

SUMMARY AND CONCLUSIONS

Quality of Work: The ability of the Swift Stabilizer Attachment to control side skewing of a pull-type windrower was very good. Side skewing was reduced when operating up or across steep slopes and in soft soils. It was less effective in very soft soils as the disk plowed sideways.

Windrower maneuverability was excellent. The Swift Stabilizer did not restrict left or right turning of the windrower. The stabilizer disk could be raised for transporting.

Ease of Installation: Ease of installing the Swift Stabilizer was excellent. It took one man about 20 minutes to install.

Ease of Operation and Adjustment: Ease of operating and adjusting the stabilizer attachment was good. In firm soils, the stabilizer disk was difficult to engage. No adjustments were required.

Operator Safety: Hand injuries could result from disengaging the spring-loaded lever for transporting. No other safety hazards were apparent.

Operator's Manual: Instructions for installing and operating the Swift Stabilizer were not provided.

Mechanical History: No serious mechanical problems occurred. Windrower hitch and frame stresses were neither increased nor decreased by the Swift Stabilizer when windrowing on steep hills or when turning corners.

RECOMMENDATIONS

It is recommended that the manufacturer consider:

1. Including installation and operating instructions with the attachment.
2. Modifications to make the stabilizer disk easier to engage.
3. Modifications to make the stabilizer disk safer to disengage.

Senior Engineer: G.E. Frehlich

Project Engineer: M.E. Jorgenson

THE MANUFACTURER STATES THAT

With regard to recommendation number:

1. Every unit sold has installation instructions attached to it. The instructions were overlooked on the unit sent to PAMI.

2&3. The pressure required to engage the disk in the ground is necessary to get the required depth. The best way to avoid injury is to engage the blade in cultivated soil only. A hydraulic lift option is available that wilt eliminate these problems.

GENERAL DESCRIPTION

The Swift Stabilizer Attachment mounts on the rear hitch pole of a pull-type windrower. A 22.25 in (565 mm) disk cuts into the soil to resist sideways movement of the windrower in soft fields or on rolling land. The disk is spring cushioned for rock protection and can be raised and pinned for transport.

Detailed specifications are given in APPENDIX I.

SCOPE OF TEST

The Swift Stabilizer was mounted on a Massey Ferguson 35 pull-type windrower with a 28 ft (8.5 m) header. It was evaluated for quality of work, ease of installation, operation and adjustment, safety, and suitability of the operating instructions.

RESULTS AND DISCUSSION

QUALITY OF WORK

Windrower Stability: A pull-type windrower becomes unstable and skews sideways when the drag on the windrower becomes too great. Too much drag can occur when the cutterbar contacts the ground, when the wheels supporting the right side of the windrower sink into soft soil, or when windrowing up or across a steep hill. Little or no drag occurs when windrowing on firm, level ground or down a steep hill.

The ability of the Swift Stabilizer to maintain windrower stability was very good. It significantly reduced skewing in soft soils and on rolling hills. For example, when windrowing up or across a steep slope of 15°, the stabilizer reduced skew by 40% (FIGURES 1 & 2). Forward skewing was reduced when operating downhill. In very soft soils, the stabilizer disk plowed sideways, reducing its effectiveness.

Windrower Maneuverability: Maneuverability with the Swift stabilizer was excellent. It did not restrict turning of the windrower to the left or the right. The stabilizer did not have to be raised when backing up and tripped safely over rocks in the field. It could be easily raised and pinned for transport.

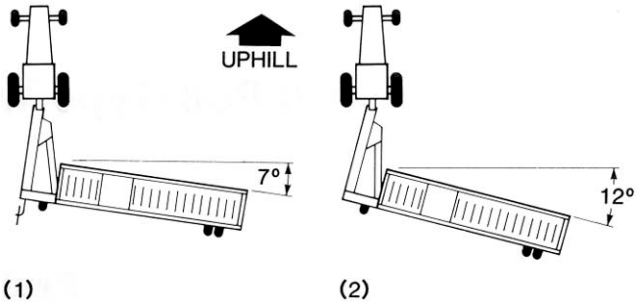

FIGURE 1. Windrower Skew When Operating Up a 15° Slope: (1) With the Stabilizer, (2) Without the Stabilizer.

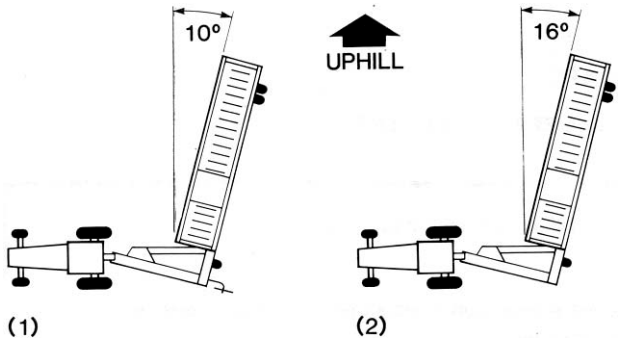

FIGURE 2. Windrower Skew When Operating Across a 15° Slope:
(1) With the Stabilizer, (2) Without the Stabilizer.

EASE OF INSTALLATION

Ease of installing the Swift Stabilizer on the MF 35 windrower was excellent. It was easily installed by one man in 20 minutes. Four bolts fastened the stabilizer to the rear hitch frame member. Installation instructions were not provided. Although installation was not complicated, it is recommended that the manufacturer include installation and operating instructions with the attachment.

EASE OF OPERATION WITH ADJUSTMENT

Ease of operation and adjustment of the Swift Stabilizer was good. In firm soils, the hand lever for engaging the spring-cushioned stabilizer disk was difficult to push into field position. It is recommended that the manufacturer consider modifications to make engaging the stabilizer disk easier.

The stabilizer disk was easily raised and pinned for safe transport. However, the hand lever snapped suddenly overcentre when lifting the disk. The disk penetration could be adjusted, but this adjustment was not required.

OPERATOR SAFETY

Hand injuries could have resulted when disengaging the stabilizer disk for transporting. The cushioning spring caused the hand lever to snap very suddenly overcentre. It is recommended that the manufacturer consider modifications to make disengaging the stabilizer disk safer.

OPERATOR'S MANUAL

No instructions were provided for installing and operating the Swift Stabilizer. A recommendation to provide instructions has been made.

MECHANICAL HISTORY

The stabilizer was operated in the field for about 10 hours. The intent of the test was evaluation of functional performance. An extended durability evaluation was not conducted.

During the tests, one of the mounting bolts welded to the mounting plate, broke loose. No other mechanical problems occurred.

Windrower Hitch Stress: A windrower hitch and frame may be subjected to considerable stress due to the extra loading that occurs when the windrower skews sideways.

The Swift Stabilizer significantly reduced side skewing on steep hills. Loads on the hitch, however, were not significantly reduced. For example, when windrowing up a 15° slope, maximum draft was 1580 lb (7.00 kN) with the stabilizer and 1940 lb (8.60 kN) without the stabilizer. The side load on the hitch was 1160 lb (5.20 kN) with and without the stabilizer. The Swift Stabilizer had no effect on hitch stress when making left or right turns.

Therefore, the Swift Stabilizer did not increase or decrease stresses on the windrower hitch.

APPENDIX I

SPECIFICATIONS

MAKE & MODEL:	Swift Stabilizer
SERIAL NO.:	N/A
MANUFACTURER:	Swift Machine & Welding Ltd. Box 1372 1831 Chaplin Street W. Swift Current, Saskatchewan
DIMENSIONS:	
-- disk	
-- diameter	22.25 in (565 mm)
-- thickness	0.181 in (4.60 mm)
-- hand lever length	18.4 in (467 mm)
-- overall	
-- height	30.7 in (780 mm)
-- width	110 in (279 mm)
-- length	30.8 in (782 mm)
-- total weight	99.5 lb (45.1 kg)
STABILIZER MECHANISM:	
-- type	double-rolled rigid disk held into the soil behind the windrower frame
-- penetrating force of disk	135 lb (0.60 kN)
-- positioning (rear of frame to centre of disk)	12 in (305 mm)

OPTIONS:

-- available to fit most makes of puli-type windrowers
-- hydraulic tift

APPENDIX II

Machine Ratings

The following rating scale is used in Machinery institute Evaluation Reports:

excellent	fair
very good	poor
good	unsatisfactory

SUMMARY CHART

SWIFT PULL-TYPE WINDROWER STABILIZER ATTACHMENT

RETAIL PRICE	$298.00 (January, 1985, f.o.b. Humboldt, Sask.)
QUALITY OF WORK	
Windrower Stability	**very good;** reduced skewing on steep slopes and in soft soils; less effective in very soft soils
Windrower Maneuverability	**excellent;** left and right windrower turns unrestricted, stabilizer disk raised for transporting
EASE OF INSTALLATION	**excellent;** took one man .about 20 minutes
EASE OF OPERATION AND ADJUSTMENT	**good;** stabilizer disk difficult to engage, no adjustments needed
OPERATOR SAFETY	Possible hand injury when disengaging spring-loaded lever
OPERATOR'S MANUAL	No installation or operating instructions provided
MECHANICAL HISTORY	No major mechanical problems, stress on windrower hitch not increased or decreased by stabilizer

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