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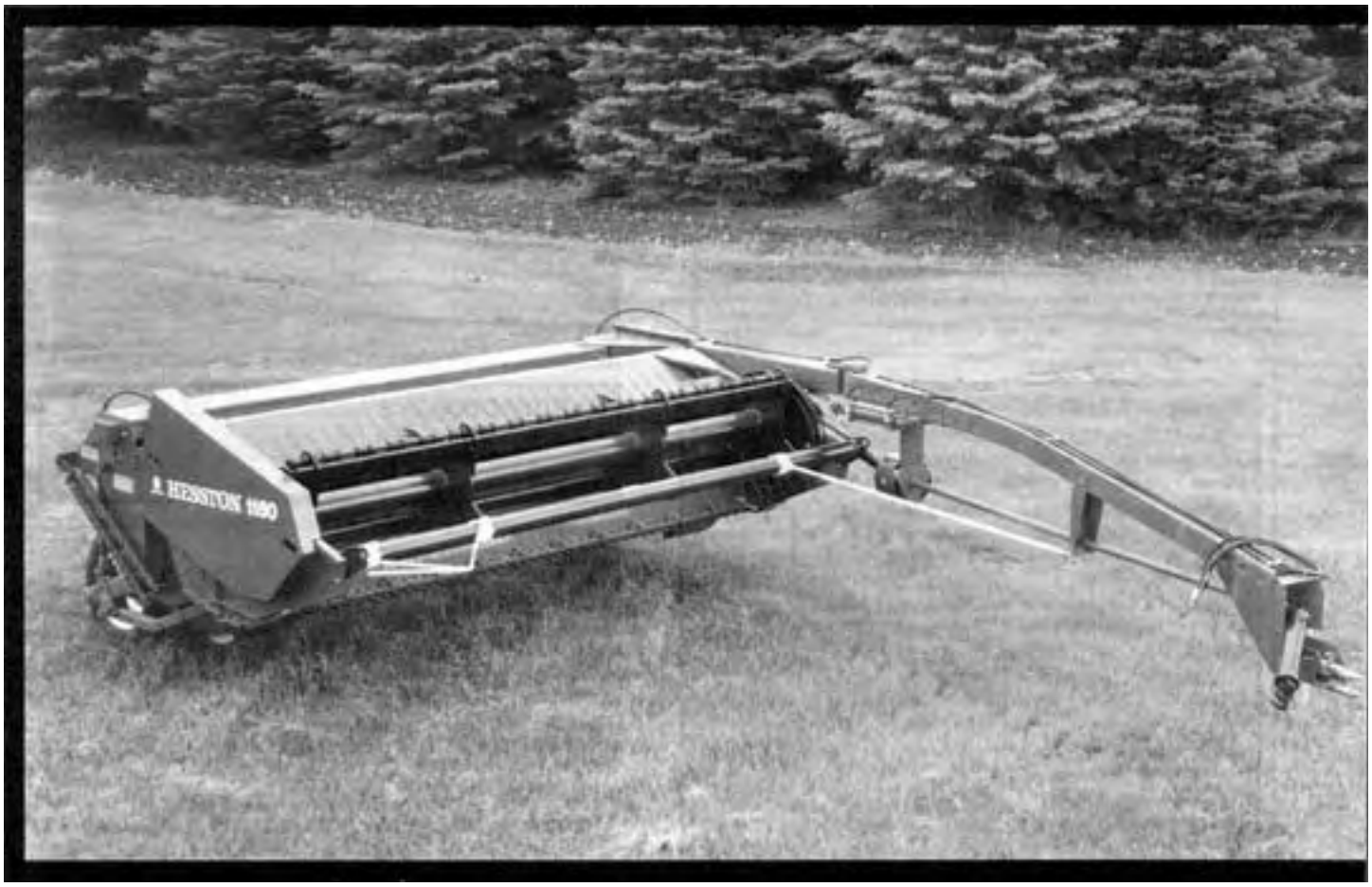

Hesston 1150 Mower Conditioner

A Co-operative Program Between
ALBERTA FARM MACHINERY RESEARCH CENTRE
PAMI
PRAIRIE AGRICULTURAL MACHINERY INSTITUTE

HESSTON 1150 MOWER CONDITIONER

MANUFACTURER:
Hesston Corp.
Hesston, Kansas
67062

DISTRIBUTOR:
Hesston Industries Ltd.,
#2, 2315 - 30 Avenue N.E.
Calgary, Alberta
T2E 7C7
(403) 250-7320

RETAIL PRICE:
$15,590 (February, 1987 f.o.b. Portage la Prairie, Manitoba) with spare knife.

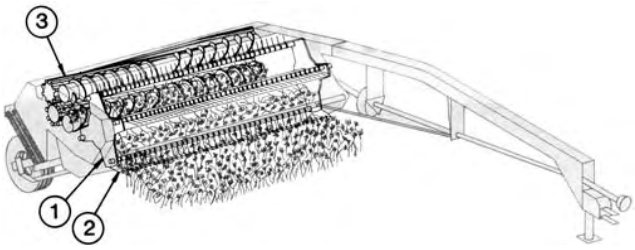

FIGURE 1. Hesston 1150 Mower Conditioner: (1) Reel, (2) Knife, (3) Conditioning Rollers.

SUMMARY AND CONCLUSIONS

Rate of Work: The typical continuous field speed varied from 3.5 to 6.1 mph (5.6 to 9.8 km/h). Typical continuous work rate varied from 5.5 to 9.0 ac/h (2.2 to 3.6 ha/h).

Quality of Work: Cutting ability was very good in all crops. Occasional plugging occurred in damp or fine stemmed crops. Conditioner performance and windrow formation were very good in most crops.

Ease of Operation and Adjustment: The ease of operation and maintenance was good. Daily service and lubrication took approximately 15 minutes.

Power Requirements: A tractor with a minimum power take-off rating of 60 hp (45 kW) and two remote hydraulic outlets was required.

Operator Safety: One safety problem was apparent. Otherwise the machine was safe to operate, maintain and adjust.

Operator's Manual: The operator's manual was very good. It contained useful information on operation, maintenance and adjustment.

Mechanical History: Only a few minor mechanical problems occurred during the test.

RECOMMENDATIONS:

It is recommended that the manufacturer consider:
1. Supplying a drawbar transport lock.

Station Manager: G.M. Omichinski
Project Engineer: C.W. Chapman

THE MANUFACTURER STATES THAT

With regard to the recommendation:

At this time, the Hesston Safety Committee does not find it necessary to have a transport lock on the tongue of the 1150 Mower-Conditioner. This could change in the future but not at this time.

Manufacturer's Additional Comments

Also, Hesston offers the 1150 with stub-on-stub guards that are designed for wet, down, matted material. This would have eliminated the plugging problem you experienced.

GENERAL DESCRIPTION

The Hesston 1150 is a 12 ft pull-type, 540 rpm, power take-off driven mower conditioner. The rigid cutting platform uses a conventional reciprocating knife, a cam action reel and dual feed augers. Two intermeshing rollers crimp the crop. Rear shields form a windrow. The mower conditioner is driven mechanically by a power take-off shaft.

Detailed specifications are given in APPENDIX I and FIGURE 1 shows the location of the major components.

SCOPE OF TEST

The Hesston 1150 was operated in the crops shown in TABLE 1 for 205 hours while harvesting 988 ac (400 ha).

It was evaluated for quality of work, rate of work, ease of operation, power requirements, operator safety, and suitability of the operator's manual.

TABLE 1. Operating Conditions

Crop	Hours	Field Area	
		ac	ha
Alfalfa	114	605	245
Mixed Hay	22	78	32
Heavy Grass	14	57	23
Alfalfa/Grass	40	173	70
Alfalfa/Brome	8	30	12
Oats/Grass	7	45	18
Total	205	988	400

RESULTS AND DISCUSSION

RATE OF WORK

Typical continuous field speed varied from 3.5 to 6.1 mph (5.6 to 9.8 km/h) and the typical continuous work rates varied from 5.5 to 9.0 ac/h (2.2 to 3.5 ha/h).

Daily work rates are lower than continuous work rates, because continuous rates do not account for time due to turning, and other field irregularities.

Ground speed was limited by the cutting ability of the knife in most crops. In heavy or damp fine stemmed crops ground speed was limited by the feeding ability of the augers and conditioning rollers.

QUALITY OF WORK

Windrow Formation: The Hesston 1150 produced good quality windrows in all crops as shown in FIGURE 2. Windrow formation was controlled by an adjustable baffle, behind the conditioning rollers. Windrow width was controlled with adjustable side shields.

FIGURE 2.

Cutting Ability: All tests were conducted with top serrated knife sections. Cutting ability was very good in most hay crops if knife sections and guards were kept sharp and in good condition. Some plugging of the cutterbar occurred in fine stemmed or damp crops.

Forward speed was limited by cutting ability, especially in heavy or damp crops.

Stubble: The Hesston 1150 produced ideal stubble in most crops if knife sections were kept sharp and header floatation was properly adjusted.

If knife sections were dull or header floatation was not properly adjusted, stubble became irregular. Cutting height was adjustable by lowering or raising the header skid shoes and adding control collars to the master lift cylinder.

Floatation: Adjustable springs provided header floatation. Header floatation was very good in all field conditions encountered. Removable control collars on the master lift cylinder provided proper floatation at various cutting heights.

Reel Performance: Reel performance was very good in all crops. The reel effectively fed all cut material from the cutter bar to the augers. Reel position was adjustable to suit specific or adverse crop conditions. The reel position was not adjusted during the test.

Reel speed was variable from 68 to 98 rpm by adding or removing spacers from the belt drive sheave. The factory set reel speed of 85 rpm was adequate for all crops tested.

Reel tooth movement was actuated by a cam, and was adjustable.

Augers: The dual augers effectively fed ail cut material from the reel to the conditioning rollers. Plugging occurred infrequently.

Conditioner Performance: The Hesston 1150 was equipped with two conditioner rollers, one steel and one rubber, with an intermeshing spiral design. Roller clearance could be adjusted by an adjusting nut and lock nut and roller pressure was adjusted by a single bolt acting on springs and cables.

Conditioner performance was very good in all crops. Feeding was aggressive in most crops. In heavy crops of fine or damp grass some hesitant feeding occurred and limited capacity.

The purpose of a conditioner is to reduce curing time by crimping the plant stems allowing moisture to escape. This results in more uniform drying.

FIGURE 3 compares the effect of conditioning of the Hesston 1150 with a windrower without a conditioner. The use of a conditioner will likely permit baling one-half to one day earlier.

Much variation in drying time can be expected due to weather conditions at the time of curing.

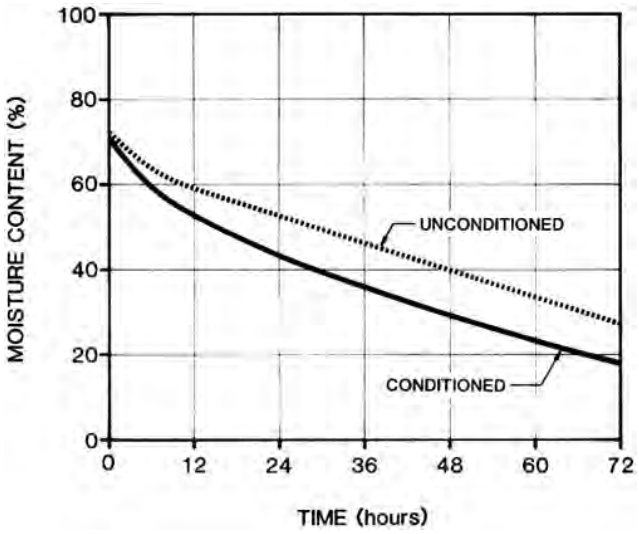

FIGURE 3. The effect of conditioning in alfalfa at 3.5 ton/ac (7.8 t/ha).

Leaf Loss: Leaf loss from the Hesston 1150 was negligible. The uniform drying of conditioned crop also reduces leaf loss in baling.

EASE OF OPERATION AND ADJUSTMENT

Hitching: The Hesston 1150 was equipped with a clevis hitch and a standard 540 rpm power take off shaft. Hitching was easy.

Controls: Two remote hydraulic outlets, one for raising and lowering the mower conditioner and one for swinging the hitch from transport position, were required.

Transporting: The Hesston 1150 transported by moving the hitch to the transport position. The Hesston 1150 was not equipped with a transport lock. It is recommended that the manufacturer supply one. Safety latches held the mower conditioner in the raised position.

The mower conditioner transported well at all tractor speeds and had adequate ground clearance. The Hesston 1150 was equipped with a slow moving vehicle sign.

Adjustments: Reel speed was adjusted by adding or removing spacers from the halves of the belt drive sheave.

Adjusting the conditioning roller pressure was easy, using the bolt mechanism on the right hand side of the machine. Roller clearance could be adjusted by an adjusting nut.

Floatation springs were easily adjusted by turning the spring bolts.

Cutting height was easily adjusted by lowering or raising the skid shoes. Cutting height was adjustable from 1.25 to 5.0 in (30 to 125 mm).

The Hesston 1150 was equipped with an optional spare knife, which was stored in the frame tube of the machine. This allowed for easy knife repair by removing the damaged knife and replacing it with the spare knife.

Windrow formation was easily adjusted by changing the position of the side shields to form wider or narrower windrows.

Lubrication: The Hesston 1150 was equipped with 28 pressure grease fittings, which required lubrication every 10 hours. Two chains required lubrication daily. The one gearbox should be checked weekly and the lubricant changed seasonally.

All pressure grease fittings and other lubrication points were easily accessible, complete daily and weekly lubrication took approximately 15 minutes.

POWER REQUIREMENTS

Over the range of test operating conditions, average power take-off requirement for the Hesston 1150 in alfalfa was 30 hp (23 kW) and peak power requirement was 39 hp (30 kW). Average drawbar power at 6 mph (10 km/h) was 10 hp (8 kW).

A tractor with a power take-off rating of 60 hp (45 kW) would be sufficient to operate the Hesston 1150 in most typical prairie conditions.

OPERATOR SAFETY

The Hesston 1150 was safe to operate and service providing common sense was used and the manufacturer's recommendations were followed.

The Hesston 1150 was not equipped with a drawbar transport lock. It is recommended that the manufacturer consider supplying a lock.

OPERATOR'S MANUAL

The operator's manual was concise, clearly written and contained useful information on operation, maintenance and safety.

MECHANICAL HISTORY

TABLE 2 outlines the mechanical history of the Hesston 1150. The intent of this project was a functional evaluation of the machine and an extended durability evaluation was not conducted.

TABLE 2. Mechanical History

Item	Operating Hours	Equivalent Field Area ac	(ha)
-the individual knife sections or guards were damaged and replaced at:	10, 20, 27, 45, 101, 140, 171	48, 91, 164, 216, 484, 627, 837	(19, 36, 88, 86, 196, 254, 339)
-the gib retaining key in the conditioning rollers was lost at:	98	465	(188)
-the bevel gear in the drawbar jack broke and the jack was replaced at:	140	627	(254)

APPENDIX I
SPECIFICATIONS:

MAKE:	Hesston
MODEL:	1150
SERIAL NUMBER:	1186 00428
HEADER:	
-- width of cut (divider pointers)	12.1 ft (3.7 m)
-- effective cut (inside dividers)	12.0 ft (3.7 m)
-- range of cutting height	1.5 to 7 in (40 to 180 mm)
-- guard spacing	3 in (75 mm)
-- length of knife section (under serrated)	3 in (75 mm)
-- knife speed	840 cycles/min
REEL:	
-- number of bats	4
-- bat action	cam action
-- number of reel arms per bat	4
-- diameter	3.3 ft (1.0 m)
-- number of teeth/bat	18
-- bat teeth spacing	4 in (100 mm)
-- reel speed range	68 to 98 rpm
-- reel position adjustment	
-fore and aft	3.0 in (75 mm)
-height above cutter bar	1.0 to 20 in (25 mm to 50 mm)
AUGERS:	
-- number of augers	2
-- length	11.9 ft (3.6 m)
-- diameter	
-top auger	10 in (250 mm)
-bottom auger	10 in (250 mm)
-- speed	
-- top auger	325 rpm
-- bottom auger	516 rpm

CONDITIONING ROLLERS		
-- number	2	
-- material		
-top roller	rubber	
-bottom rollersteel		
-- length	9.2 ft (2.8 m)	
-- diameter		
-top roller	8 in (200 mm)	
-bottom roller	7.5 in (190 mm)	
-- speed	810 rpm	
OVERALL DIMENSIONS:	**Field Position**	**Transport Position**
-- length	21.3 ft (6.5 m)	21.8 ft (6.6 m)
-- width	18.3 ft (5.6 m)	13.5 ft (4.1 m)
WEIGHT:	**Field Position**	**Transport Position**
-- left wheel	1587 lb (720 kg)	2302 lb (1044 kg)
-- right wheel	2112 lb (958 kg)	1410 lb (640 kg)
-- hitch	963 lb (446 kg)	970 lb (440 kg)
Total	4682 lb (2124 kg)	4682 lb (2124 kg)
TIRES:		
-- number/size	2, 9.5 L x 15, 6-ply	
SERVICING:		
-- grease fittings	28, every 10 hours	
-- chains	2, every 10 hours	
-- wheel bearings	2, seasonally	
-- gearbox	1, change oil seasonally	

SUMMARY CHART
HESSTON 1150 MOWER-CONDITIONER

RETAIL PRICE:	$15,590 (June 1987, f.o.b. Portage la Prairie, MB)
RATE OF WORK:	**Very Good;** 3.5 to 6.1 mph (5.6 to 9.8 km/h); 5.5 to 9.0 ac/h (2.2 to 3.5 ha/h)
QUALITY OF WORK:	**Very Good** cutting and conditioning performance in most crops.
POWER REQUIREMENTS:	60 hp (45 kW) 540 rpm power take-off required.
EASE OF OPERATION:	Easy to operate, adjust and maintain.
OPERATOR SAFETY:	**Good**
OPERATOR MANUAL:	**Very Good**
MECHANICAL HISTORY:	Only minor mechanical problems

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