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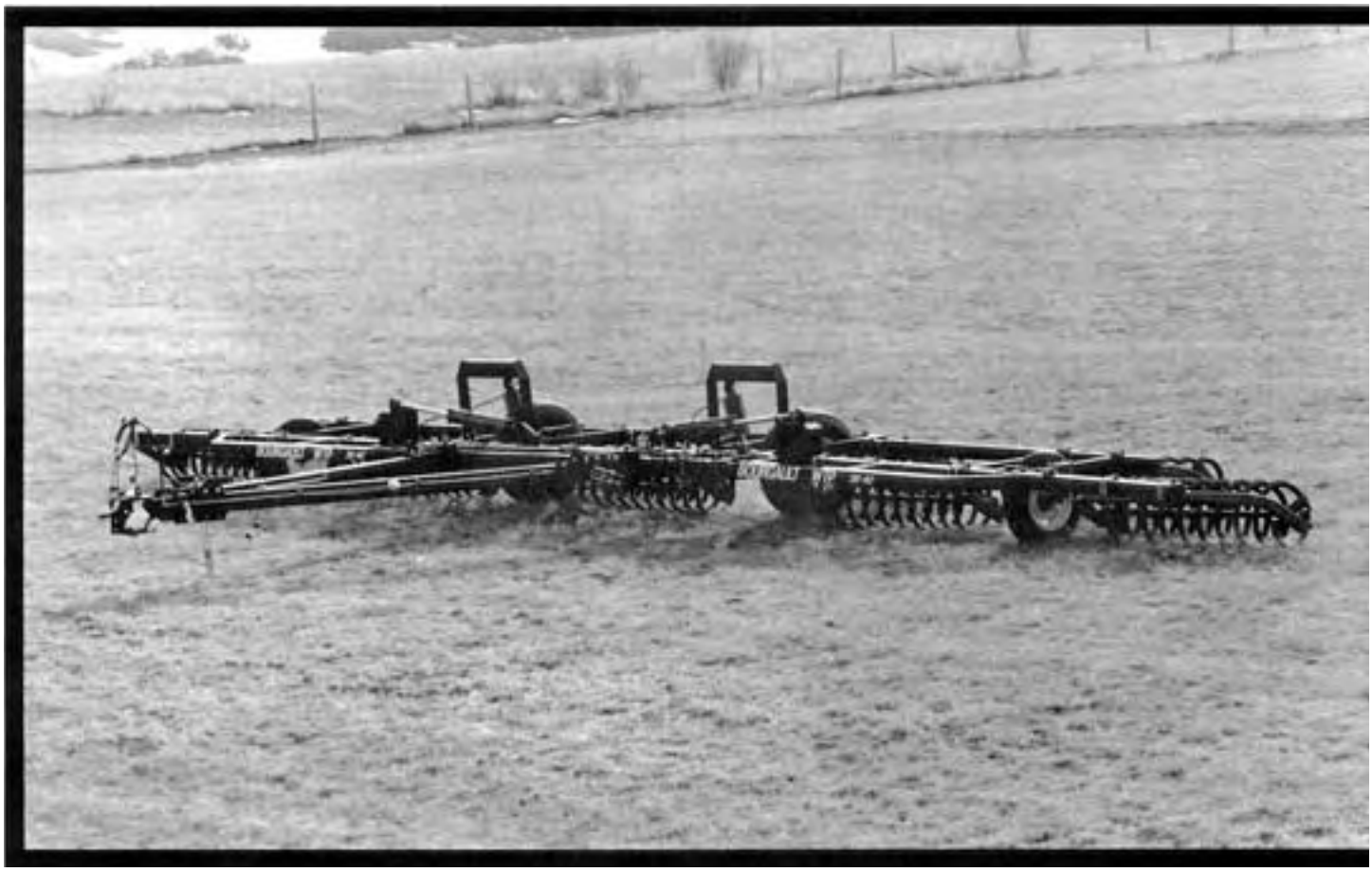
Evaluation Report 664



Bourgault WTP 36-40 Wing Type Packer

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

BOURGAULT WING TYPE PACKER

MANUFACTURER AND DISTRIBUTOR:

F.P. Bourgault Air Seeder Division Ltd.
P.O. Box 39
St. Brieux, Saskatchewan
S0K 3V0
Phone: (306) 275-2300

RETAIL PRICE:

$13,882.00 (NOVEMBER, 1991, f.o.b. Lethbridge, Alberta) Bourgault WTP 36-40 Wing Type Packer with 1.5 in (38 mm) steel coil packers, telescoping hitch, track eliminators and Air Seeder hitch with hydraulic lines.

FIGURE 1. Bourgault WTP 36-40 Wing Type Packer: 1) Telescoping Hitch, 2) Transport Wheels and 3) 1.5 in (38 mm) Steel Coil Packers.

SUMMARY AND CONCLUSIONS

QUALITY OF WORK:

Soil finishing of the wing type packer was very good in all field conditions encountered. The track eliminators were effective in eliminating the tracks left by the air seeder in light trash conditions. The track eliminators left trash clumps on the soil surface in heavy trash conditions.

The packers performance was very good in all field conditions. The 100 lb/ft (1459 N/m) per width packing force was adequate in forming a firm seedbed for good crop emergence. During turns packer alignment was maintained. Sideways skewing was not a problem in all field conditions encountered.

EASE OF OPERATION AND ADJUSTMENT:

Maintenance of the wing type packer was very good with easy access to all lubrication points. Ease of hitching the unit was good. When extending the hitch poor alignment of the extension brackets required the brackets to be loosened before hitching was possible. A rear jack was used to prevent the hitch from raising when unhitching the unit.

The wing type packer was placed into transport position in ten minutes. The sequencing valve reduced the remote hydraulic requirements to one set. Maneuverability of the wing type packer was very good. The telescoping hitch provided clearance between the unit and a cultivator when turning. When pulled as a separate unit sharp turns were possible without the hitch contacting the tractor's tires.

POWER REQUIREMENTS:

Average and maximum power take-off horsepower requirements to pull the wing type packer in tilled loam soil were 23.7 hp (17.7 kW) and 38.2 hp (28.5 kW).

OPERATOR SAFETY:

The packer was safe to operate providing normal safety precautions were observed. Transport wing lock pins and transport lock blocks were provided.

OPERATOR'S MANUAL:

The operator's manual was good containing useful information on operation and maintenance. Assembly and parts list manuals not provided.

MECHANICAL PROBLEMS:

No mechanical problems were encountered during the test.

RECOMMENDATIONS

It is recommended that the manufacturer consider:

1. Providing a safety tow chain and the accommodations to secure the chain.
2. Improving the alignment of the extension brackets to allow for easier hook-up of the telescoping hitch.

Manager: R.R. Atkins
Project Engineer: L.W. Papworth
Field Technologist: G.A. Magyar

THE MANUFACTURER STATES THAT:

The track eliminators are designed to break up the air seeder tire tracks in soil types where, tire tracks tend to bake hard and inhibit plant emergence. This generally occurs in soils which are high in clay and low in organic matter, if there is sufficient straw to cause the track eliminator to bunch, soil baking will not occur and therefore the track eliminators should be de-activated while operating in these conditions.

With regards to recommendation number:

1. A safety tow chain will be available in the next model year.
2. The misalignment that occurred with the extension brackets appears to have been an isolated incident, which could have easily been corrected in assembly. The fixture in which the part is built, will be modified to ensure that the problem cannot reoccur,

GENERAL DESCRIPTION

The Bourgault Wing Type Packer is designed for use with varying models of Bourgault cultivators and air seeders. The Wing Type Packer is available in 28, 32, 36, 40, 48 and 50 ft (8.5, 9.8, 11, 12.2, 14.6 and 50 m) widths. The packer drawbar is used for seedbed preparation and soil finishing after seeding.

The Wing Type Packer consists of five 5 ft (1.5 m) and four 4 ft (1.2 m) packers arranged in two rows. The 1.5 in (38 mm) square steel coil packer weighs 100 lb/ft (1460 N/m) of width. Swivel connections are used between the frame and each packer section to allow for free movement of the packer. A sequencing valve is connected between the two main frame cylinders and the two winglift cylinders. The valve directs hydraulic flow to extend the winglift cylinders and then contract the transport cylinders into working position. The reverse procedure is used to place the unit into transport position.

Optional equipment include track eliminators, telescoping hitch, Bourgault air seeder hitch with hydraulic line extensions, 1.5 in (38 mm) and 1.75 in (44 mm) coil packers, frame extensions and 3, 4 or 5 ft (0.9, 1.2 and 1.5 m) coil packers.

The test machine was 41.1 ft (12.5 m) wide. Optional equipment included a telescoping hitch, track eliminators, Bourgault air seeder hitch with hydraulics extensions and 1.5 in (38 mm) coil packers.

SCOPE OF TEST

The Bourgault packer was operated in the field conditions shown in TABLE 1 for 127 hours while packing 2417 ac (979 ha). The 40 ft (12.2 m) wing type packer was evaluated for quality of work, ease of operation and adjustment, power requirements and operator safety. The packer drawbar was used for seedbed finishing after seeding with a Bourgault air seeder.

TABLE 1. Operating Conditions

Field Conditions	Hours	Field Area	
		ac	ha
Silt loam to Silty Clay Loam	47	851	344
Silty Loam	10	235	95
Loam	54	821	312
Clay to Clay Loam	22	510	206
Total	133	2417	977

The machine evaluated by the Alberta Farm Machinery Research Centre (AFMRC) was configured as described in the General Description, FIGURE 1 and Specifications section of this

report. The manufacturer may have built different configurations of this machine before or after AFMRC tests. Therefore, when using this report, be sure to first check that the machine you are considering is the same as the one shown here. If it is not, assistance can be obtained from the manufacturer or AFMRC in determining how this new machine will perform compared to the one tested.

RESULTS AND DISCUSSION

QUALITY OF WORK

Soil Finishing: Soil finishing of the Bourgault Wing Type packer was very good. FIGURE 2 shows the soil surface after seeding into an untilled barley stubble field, both before and after soil finishing with the wing type packer. FIGURE 3 shows the soil surface after seeding into a summerfallow field, both before and after soil finishing. The wing type packer was effective in leaving a level soil condition after packing. In both cases soil finishing was completed at the time of seeding.

FIGURE 2. Soil surface after seeding into an untilled barley stubble field, both before (front) and after (rear) soil finishing.

FIGURE 3. Soil surface after seeding into a summerfallow field, both before (right) and after (left) soil finishing.

FIGURE 4 shows the location of the track eliminators while FIGURE 5 shows how the track eliminators were effective in eliminating the tracks left by the air seeder. The track eliminators should not be used in heavy trash conditions.

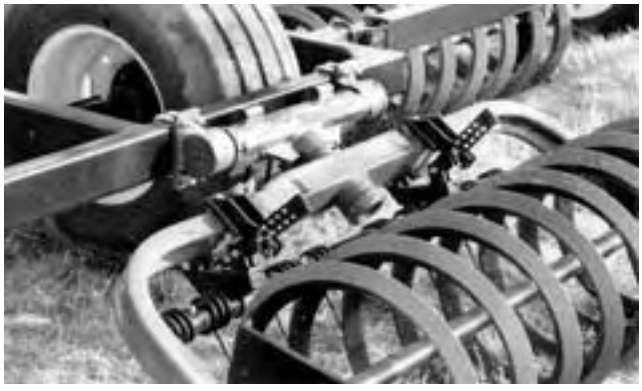


FIGURE 4. Track eliminators.

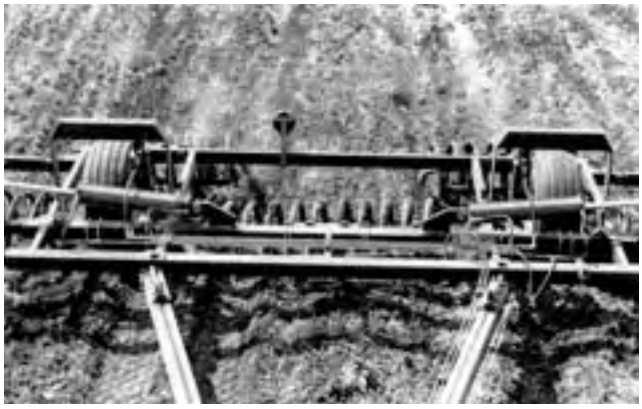


FIGURE 5. Operation of track eliminators.

Packing: Performance of the packers was very good in the conditions encountered. Weight of the 1.5 in (38 mm) square coil packers was 100 lb/ft (1459 N/m). The packer's weight was adequate to form a firm seedbed for good crop emergence. Coverage by the coil packers was even and packer alignment was maintained when turning. Ridge depths left by the coil packers ranged from 0.8 to 1.2 in (20.3 to 30.5 mm), depending on soil conditions.

Skewing: Stability of the Wing Type packer was very good. Sideways skewing was not a problem in fields encountered during the test. When attached to the applicator the packer followed behind the air seeder with minor skewing in hilly conditions.

EASE OF OPERATION AND ADJUSTMENT

Maintenance: Ease of performing routine maintenance on the Bourgault Wing Type packer was very good. All grease fittings were accessible without any difficulty. The four wheel bearings required seasonal greasing. A service schedule was provided. Servicing all 58 grease fittings took one person 20 minutes.

Hitching: Ease of hitching was good. The wing type packer maintained a positive hitch weight of 650 lb (295 kg) in both field and transport position. One person could hitch or unhitch the unit in five minutes. The wing type packer was equipped with a rear jack to prevent the hitch from raising when unhitching the unit.

To pull the packer directly behind a cultivator the telescoping hitch was extended. To extend the hitch the two hitch lock pins were removed and the hydraulic lines were disconnected. The tractor was pulled ahead until the extension brackets came together. Poor alignment of the extension brackets (Figure 6) required the operator to loosen the brackets before the pins could lock the brackets together. It is recommended that the manufacturer consider improving the alignment of the extension brackets to allow for easier hook-up of the telescoping hitch.

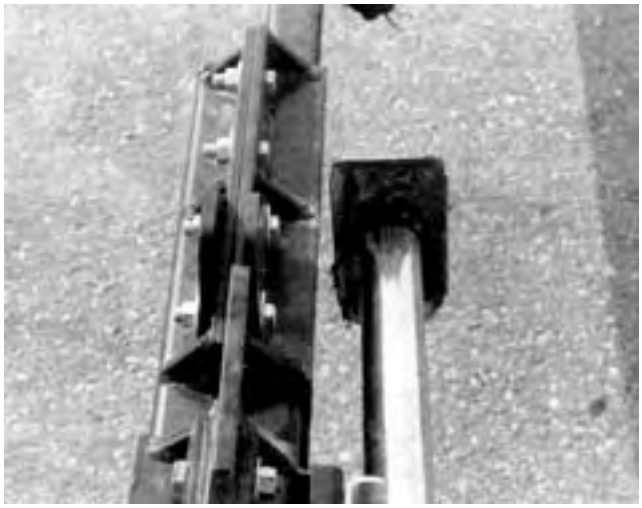


FIGURE 6. Poor alignment of hitch extension brackets.

Transporting: Ease of transporting the wing type packer was very good. To place the unit into transport position (Figure 7) required ten minutes. The packer used a sequencing valve (Figure 8) to

direct the hydraulic flow between the depth and winglift cylinders. Sequencing occurred once the pressure built up to 1600 psi (11,030 kPa). To place the unit into transport position the main frame depth cylinders were extended and then the winglift cylinders contracted. Lock pins were provided for each wing and transport lock blocks for each depth cylinder. The reverse procedure was used to lower the unit into field position. The unit required the use of one set of remote hydraulic.

FIGURE 7. Transport position.

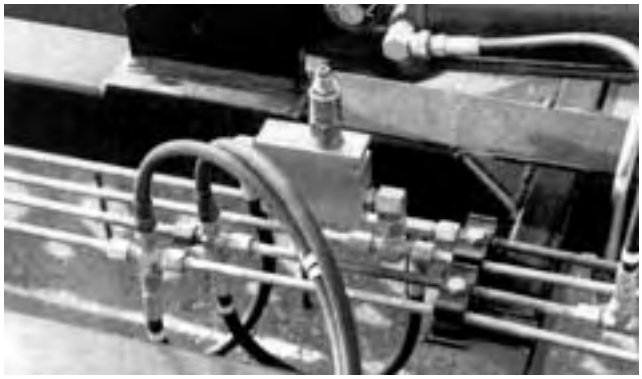


FIGURE 8. Sequencing Valve.

Transport width was 18.8 ft (5.7 m) while transport height was 16.6 ft (5.1 m). Caution had to be used when transporting the unit because of the wide transport width. Packer to ground clearance was 6.75 in (171 mm). When transporting the unit at speeds greater than 10 mph (16 km/h) the tire load for the tires would exceed the Tire and Rim Association maximum load rating. It is recommended that the wing type packer not be transported at speeds above 10 mph (16 km/h).

Maneuverability: Maneuverability of the wing type packer was very good. The extended hitch provided clearance between the packer and cultivator when turning. Very sharp turns when the wing type packer was pulled behind the air seeder were avoided to prevent the packer from coming into contact with the cultivator. When pulled as a separate operation the packer could be turned sharply without the hitch contacting the tractor's tires.

POWER REQUIREMENTS

Draft: Average draft for the wing type packer in the extended and normal hitch positions were similar. Average draft for the normal hitch position at a speed of 5 mph (8 km/h) in a tilled loam soil was 985 lb (4.4 kN) while the average draft in the extended hitch position was 997 lb (4.4 kN). Average maximum draft for the wing type packer in tilled loam soil was 1598 lb (7.1 kN). Tractor Size: Average and maximum power take-off horsepower requirements to pull the wing type packer in tilled loam soil were 23.7 hp (17.7 kW) and 38.2 hp (28.5 kW), respectively.

OPERATOR SAFETY

The Bourgault packer was safe to operate providing normal safety precautions were observed. A rear jack, transport wing lock pins and transport lock blocks were provided. A safety tow chain and accommodations for securing the chain were not provided. It is recommended that the manufacturer consider providing a safety tow chain and the accommodations to secure the chain in accordance to ASAE standards.

The manufacturer recommended that the rear jack be used at all times when unhitching the unit to prevent the hitch from raising upwards. Transport width of 18.8 ft (5.7 m) necessitated caution when towing on public roads, over bridges and through gates.

OPERATOR'S MANUAL

The operator's manual was good. The manual contained useful information on operation and maintenance. Assembly and parts list manuals not provided.

MECHANICAL HISTORY

The intent of the test was evaluation of functional performance. An extended durability evaluation was not conducted. No mechanical problems were encountered during the test.

APPENDIX I
SPECIFICATIONS

MAKE:	Bourgault Wing Type Packer	
MODEL:	WTP 36-40	
SERIAL NUMBER:	WP 1300	
MANUFACTURER:	F. P. Bourgault Air Seeder Division Ltd. P.O. Box 39 St. Brieux, Saskatchewan S0K 3V0 Phone: (306) 275-2300	
DIMENSIONS:	**Field Position**	**Transport Position**
-- width	41.1 ft (12.5 m)	18.8 ft (5.7 m)
-- length		
-normal	20.2 ft (6.2 m)	20.2 ft (6.2 m)
-extended	29.1 ft (8.9 m)	29.1 ft (8.9 m)
-- minimum ground clearance		6.8 in (172 mm)
-- wheel tread	27.1 ft (8.3 m)	10.0 ft (3.1 m)
PACKERS:		
-- type	coiled steel, 1.5 in (38 mm) square	
-- number	9	
-- width	five 5 ft (1.5 m), four 4 ft (1.2 m)	
-- coil diameter	18.3 in (465 mm)	
-- rows	2	
-- weight	100 lb/ft (1460 N/m)	
HITCH:		
-- vertical adjustment range	7.5 in (191 mm)	
FRAME:		
-- hitch	2 x 5 in (51 x 127 mm)	
-- main	4 x 4 in (102 x 102 mm), 2 x 4 in (51 x 102 mm) laterals	
-- wing	4 x 4 in (102 x 102 mm) and 2 x 4 in (51 x 102 mm)	
TIRES:		
-- main frame	two, 12.5L-15, 8-ply	
-- wing	two, 5.90-15, 4-ply	
SERVICING:		
-- grease fittings	58	
-- wheel bearings	8	
WEIGHTS:	**Field Position**	**Transport Position**
-- right mainframe	1100 lb (500 kg)	3210 lb (1459 kg)
-- left mainframe	1110 lb (505 kg)	3270 lb (1487 kg)
-- right wing	2040 lb (927 kg)	
-- left wing	2330 lb (1014 kg)	
-- hitch	650 lb (295 kg)	650 lb (295 kg)
TOTALS	7130 lb (3241 kg)	7130 lb (3241 kg)

OPTIONS INCLUDED ON TEST MACHINE

four and five foot 1.5 in (38 mm) square coil packers, telescoping hitch, track eliminators, frame extensions and Bourgault air seeder hitch with hydraulic line extensions.

OTHER AVAILABLE OPTIONS

1.75 in (44 mm) square coil packers and three foot coil packers.

APPENDIX II
MACHINE RATINGS

The following rating scale is used in AFMRC Evaluation Reports:

-Excellent	-Very Good
-Good	-Fair
-Poor	-Unsatisfactory

SUMMARY CHART
BOURGAULT WING TYPE PACKER

RETAIL PRICE:	$13,882.00 (NOVEMBER, 1991, f.o.b. Lethbridge Alberta) WTP 36-40 Wing Type Packer with 1.5 in (38 mm) steel coil packers, telescoping hitch, track eliminators and Air Seeder hitch with hydraulic lines
QUALITY OF WORK:	
-Soil Finishing:	**very good;** track eliminators worked best in light trash conditions
-Packing:	**very good;** packers weighed 100 lb/ft (1460 N/m)
-Skewing:	**very good;** packers tracked well
EASE OF OPERATION AND ADJUSTMENT:	
-Maintenance:	**very good**
-Hitching:	**good;** poor alignment of extension brackets when extending hitch
-Transporting:	**very good;** sequencing valve reduced hydraulic line requirements to one set
-Maneuverability:	**very good;** sharp turns possible
POWER REQUIREMENTS:	average to maximum horsepower requirements were 23.7 hp (17.7 kW) and 38.2 hp (28.5 kW)
OPERATOR SAFETY:	Transport wing lock pins and lock blocks provided
OPERATOR'S MANUAL:	**good;** assembly and parts list manuals not provided
MECHANICAL PROBLEMS:	no problems encountered during the test

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