

Evaluation Report

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Gehl RB 1860 Round Baler

A Co-operative Program Between



GEHL RB 1860 ROUND BALER

MANUFACTURER AND DISTRIBUTOR:

Gehl Company
West Bend, Wisconsin
USA

PARTS DISTRIBUTORS:

Homestead Farm Supply
4030 Thatcher Avenue
Saskatoon, Saskatchewan S7K 3J7

RETAIL PRICE:

\$21,587.00 (January 1987, f.o.b. Portage la Prairie, Manitoba)
with optional auto-electric wrap system and crowder wheels.

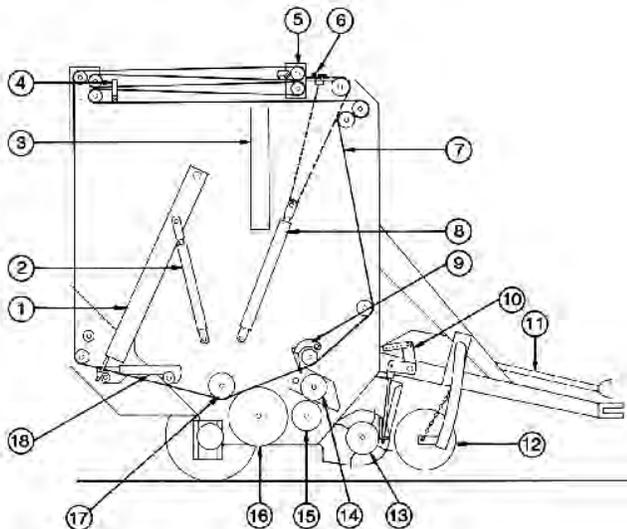


FIGURE 1. Gehl RB 1860 Round Baler: (1) Lifting Link (2) Gate Cylinder, (3) Reservoir, (4) Overfill Clutch Actuator, (5) Shuttle, (6) Shuttle Stop, (7) Upper Belts, (8) Density Cylinder, (9) Bale Starter, (10) Pickup Adjustment, (11) Drive Shaft, (12) Crowder Wheel, (13) Pickup, (14) Packing Roller, (15) 8" Lower Roller, (16) 16" Lower Roller, (17) Penetrating Roller (18) Gate Latch.

SUMMARY

The functional performance of the Gehl RB 1860 round baler was very good in hay and straw crops. Correctly forming the core was the key in making a good bale.

Rate of Work: The average throughput of the Gehl RB 1860 varied from 5.4 ton/h (4.9 t/h) in oat and wheat straw to 11.5 ton/h (10.4 t/h) in alfalfa. Throughput was usually limited by pickup and feeding performance rather than by bale chamber capacity.

Bale Quality: Bale quality was very good, with well formed and durable bales in all crops. The bales were well formed and neat in appearance. Hay bales weighed from 1400 to 2100 lb (635 to 953 kg) and straw bales from 850 to 1250 lb (386 to 567 kg).

Weatherability: Resistance to bale moisture penetration and spoilage was very good after 65 days of weathering.

Leaf Loss: Total leaf and stem loss varied from 1.8% to 3.3% at a moisture content of 15%. This was very good.

Ease of Operation: Getting a solid core across the chamber of the baler was the only part of the baling operation that required experience. The bale starter made this operation easier. Forming the bale was very easy with the Gehl 1860.

The auto-electric wrap system required the operator to stop, once the wrapping operation began. Adjustable bale ramps made backing unnecessary to clear the bale from under the gate. A bale could be wrapped and discharged in about 50-70 seconds.

Feeding was positive and aggressive in all crops. Overloading the pickup caused shearbolt failure while overloading the bale chamber caused the overfill clutch to disengage the pickup.

The Gehl 1860 was easy to manoeuvre and transport. Visibility to the rear was good when the chamber was empty.

Ease of Adjustment: Servicing, maintenance and routine adjustments were simple.

Power Requirements: Peak power requirements were about 28 hp (21 kW) in hay and straw on level fields. A 50 to 60 hp (37 to 45 kW) tractor was suggested by the manufacturer to fully utilize baler capacity on soft and hilly fields.

Operator Safety: The Gehl RB 1860 was safe to operate if standard precautions were observed. Care had to be taken when adjusting the pick-up height.

Operator's Manual: The operator's manual was clearly written and useful.

Mechanical Problems: Two upper belts came apart at the splice during the 180 hours of operation. Imminent failure of two other belts was apparent at the end of the test. An eyebolt supporting the rope for the bale size indicator failed. A weld in the rewrap roller failed. Hydraulic fittings on the gate cylinder were damaged and replaced.

RECOMMENDATIONS:

It is recommended that the manufacturer consider:

1. Modifying the pick-up adjustment or the mounting bracket for the crowder wheels to eliminate the chance of the operator's hand getting caught between the reversing wrench handle and the frame.
2. Providing decals to locate all grease fittings.
3. Modifying or changing the belt splicing used on the upper belts to prevent them from splitting and tearing at the splice.
4. Modifying the connection of the hydraulic fittings on the lifting cylinders to eliminate interference with the lifting links.

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THE MANUFACTURER COMMENTS:

1. Instructions will be added to the operator's manual on the method of adjusting pickup height for machines equipped with crowder wheel accessory.
2. The operator's manual contains close up photographs of all grease fitting locations. Consideration will be given to adding a decal, which duplicates this information.
3. We are continually testing improvements in belt lacings and a new clipper lacing pin retainer, which prevents loss of end lacing clips, is currently being tested to improve the belt life.
4. Shorter 90 degree swivel fittings were incorporated into later production machines.

ADDITIONAL COMMENT:

The height of the pickup can be easily adjusted on balers equipped with crowder wheels by installing the reversing wrench handle vertically and raising or lowering the pickup and, if necessary, getting a new bite and repeating the above.

GENERAL DESCRIPTION

The Gehl RB 1860 is a pull type, power take-off driven baler with a variable cylindrical baling chamber and a floating drum pickup. The twine wrapping mechanism is automatic. A single twine guide tube is electronically actuated when the bale reaches a predetermined size. Bale size is adjustable with the maximum size being 5 ft (1.5 m) wide and 6 ft (1.8 m) in diameter. The amount of twine per-wrap is set at the operator seat with the auto-electric wrap control system.

Material is fed to the baling chamber between a 6 in (152 mm) diameter packing roller and an 8 in (208 mm) diameter ribbed steel lower forming roller. The 8 in (208 mm) bottom roller and 16 in (406 mm) diameter ribbed steel rear lower roller feed material into the belts onto a 6 in (152 mm) diameter penetrating roller. The bale forming device consists of seven 45.5 ft (13.9 m) long by 6 in (152 mm) wide forming belts that provide uniform pressure to the bale with the "air-draulic" system. The air-draulic system permits infinitely variable bale density within a certain range.

Adjustable bale ramps are fitted on to the axle to give the bale an extra push to roll it away from under the gate to permit immediate

closing.

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

The machine supplied to PAMI was equipped with the following options: auto-electric twine wrap system and crowder wheels.

SCOPE OF TEST

The Gehl RB 1860 baler was operated in a variety of crops (TABLE 1) for 180 hours, while producing 1900 bales. It was evaluated for rate of work, quality of work, power requirements, ease of operation, ease of adjustment, operator safety and suitability of the operator's manual. Any mechanical problems were noted also.

TABLE 1. Operating Conditions

Crop	Hours	Number of Bales	Equivalent Field Area	
			ac	ha
Alfalfa	71	754	379	153
Alfalfa-Timothy	13	197	120	49
Hay Mixture	20	175	100	41
Grass	3	28	20	8
Brome	6	61	50	20
Slough Grass	11	105	65	26
Wheat Straw	43	460	275	111
Oat Straw	13	120	65	26
Total	180	1900	1074	434

RESULTS AND DISCUSSION

RATE OF WORK

Throughput depended on windrow size, uniformity of crop conditions, field surface, available tractor speeds and operator skill. Typical throughput for the Gehl RB 1860 (TABLE 2) varied from 5.4 ton/h (4.9 t/h) in oats and wheat straw to 11.5 ton/h (10.4 t/h) in alfalfa. The values in Table 2 are all based on average workrates for daily field operation. Peak workrates during any one day were generally 10 to 20% higher.

In most crops, the feedrate was primarily limited by windrow size and pickup/feeding performance. In lighter crops, the ground speed was normally limited to about 9 mph (14 km/h) due to rough ground. In some cases the Gehl could be operated at 9 mph (14 km/h) in heavier crops if the ground was smooth.

The auto electric wrap system with the delay time knob is convenient. As is common with balers having a single twine tube wrapping system, the wrapping time was slow, from 40 to 60 seconds depending on wrap setting.

TABLE 2. Typical Throughputs

Crop	Crop Yield		Daily Average Throughput	
	ton/ac	t/ha	ton/h	t/h
Alfalfa: Field A	1.8	3.9	11.5	10.4
Field B	1.8	3.9	9.3	8.5
Hay Mixture	1.1	2.4	5.7	5.2
Brome	0.9	2.0	7.0	6.4
Slough Grass	1.6	3.6	9.5	8.6
Straw	0.9	2.0	5.4	4.9

QUALITY OF WORK:

Bale Quality: The Gehl RB 1860 produced firm, durable bales with flat ends and uniform diameter in all hay crops (FIGURE 2). Short straw generally resulted in a less durable bale, however, the automatic twine tying mechanism with its even and uniform tying made a good bale for handling. Generally, bale quality depended greatly on the operator experience. Failure of the operator to evenly feed both sides of the baler in light windrows resulted in barrel or cone-shaped bales.

A typical hay or straw bale averaged 5.0 ft (1.52 m) in width and 6 ft (1.83 m) in diameter. Bales usually settled to about 95% of their original height after 100 days. Typical hay bales weighed from 1400 to 2100 lb (635 to 953 kg) with densities ranging from 9.9 to 14.9 lb/ft³ (160 to 240 kg/m³). Straw bales typically weighed from 850 to 1250 lb (386 to 567 kg) with densities ranging from 6.0 to 8.8 lb/ft³ (97 to 143 kg/m³). This wide variance in the density was made possible with the 'Total Density Control' of the Gehl baler.

Bale Weathering: During a period of 65 days, over which a total rainfall was measured at 4.2 in (10.6 cm), moisture had penetrated to a maximum of 2 in (50 mm) on top of the bale, and less than 1 in

(25 mm) on the sides. Spoilage occurred to a depth of 1 in (25 mm) in the ground contact area.



FIGURE 2. Typical Hay Bale.

Leaf Loss: The Gehl RB 1860 was tested for leaf and stem loss in a light crop of alfalfa, which had been cut with a 22 ft (6.7 m) swather and in which two swaths were raked together to form a single windrow. Average crop yield was about 0.8 ton/ac (0.7 t/ha). Total material loss ranged from 1.8% to 3.3% at a moisture content of 15%. This was considered very good.

The importance of baling at a high moisture content on losses can be noted in FIGURE 3. This figure represents an accumulation of previous data for several round balers showing the total measured leaf and stem loss over a range of moisture contents, in fields of mixed alfalfa, crested wheatgrass and brome grass. Although the Gehl RB 1860 was tested in a different crop, its performance was above that presented in the figure.

FIGURE 3 does not include relative effects of baling unconditioned or light windrows. Heavy, conditioned windrows were important to minimizing losses.

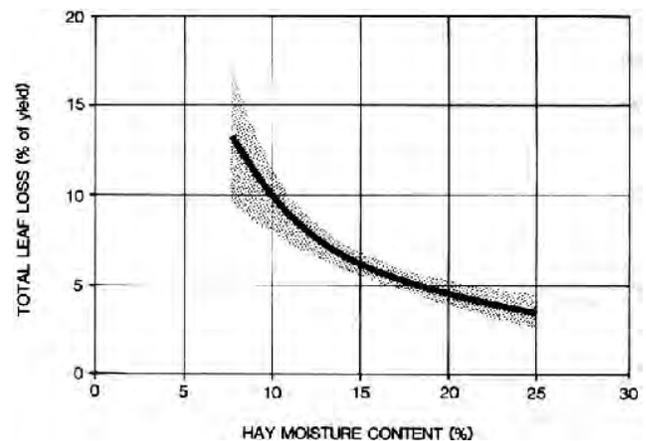


FIGURE 3. Leaf and Stem Loss in Mixed Alfalfa, Crested Wheatgrass and Bromegrass.

EASE OF OPERATION

Forming a Bale: It was easy to form a neat, durable bale in most crops. Feeding hay across the width of the bale chamber by weaving was essential to form a uniform core. Two ribbed steel rollers fed the hay into the forming chamber. Performance of these rollers was very good. Alternate side-to-side feeding was required during the later stages of bale formation. Good visibility into the forming chamber made it easy to judge bale uniformity and size. The operator could then feed the bale chamber accordingly to produce bales of uniform diameter. FIGURE 4 shows stages for the bale formation of the Gehl RB 1860.

Wrapping the Twine: The twine wrapping on the Gehl RB 1860 was automatic. An audible alarm cued the operator informing him that the bale had reached a predetermined size. An electric actuator, automatically swings the single twine guide tube to the centre of the pick-up. The operator then stopped the forward motion

of the tractor and after allowing sufficient time for one to two wraps, activated the tying mechanism with the switch on the control box at the operator seat. The twine tube swung quickly to the left side of the baler, then automatically across the width of the bale chamber at predetermined intervals as the twine was wrapped around the bale. The recommended PTO speed had to be maintained during the entire tying cycle. Twine was then cut on the right side with a twine cutting knife.

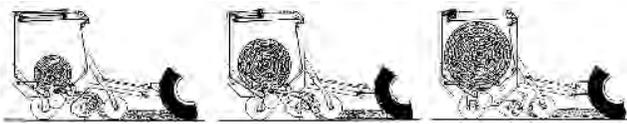


FIGURE 4. Stages of Bale Formation: (Left) Starting Bale, (Centre) Partially Completed Bale. (Right) Completed Bale.

The number of wraps was adjustable with a delay time potentiometer at the control box. The potentiometer dial sets the amount of time the twine tube stays at each predetermined interval. The stop time on the ends was approximately 3 times the duration of an intermediate stop. The twine could be positioned at 4 to 7 in (100 to 180 mm) from the end of the bale.

wine requirements did not vary much with the type of crop or conditions. With the delay time knob set at about a fifth of the maximum position, twine consumption was 310 ft (95 m) per bale. Little operator skill was required for this tying operation.

The auto-electric wrap system could be overridden by using the manual 'Extend/Auto/Manual Retract' switch. This switch allowed the operator to manually extend and retract the actuator at any time. This was convenient when finishing a field with a less than full size bale in the chamber. Bale size was indicated by an indicator located on the front of the baler. The control box also had a bale counter and a "gate unlatched" indicator light, FIGURE 5.

Twine tension adjustment was required only during initial setup. The twine tube is protected with a shear bolt.

The tying sequence took approximately 40 to 60 seconds to complete, depending on the delay interval setting. This was considered slow and is typical of balers with a single twine tube wrapping system.



FIGURE 5. Twine Wrapping Control Box
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Discharging a Bale: Once the twine was cut, the power take-off had to be shut off to prevent the belts from catching on the bale and/or twisting. The bale was ejected by simply activating the tractor hydraulics to open the rear gate. Adjustable discharge ramps mounted to the baler axle beneath the chamber opening rolled the bale out of the way of the gate. There was no requirement to back up prior to discharging the bale. It was necessary to adjust the axle height to its lowest position for the discharge ramps to work effectively. It was sometimes necessary to engage the power take-off at a very low rpm to get the bale to roll off the lower rollers. The bale could be wrapped and discharged in 50 to 70 seconds.

Transporting: The Gehl RB 1860 was easy to manoeuvre and transport. Ground clearance was adequate and there was ample hitch clearance for turning sharp corners. Backing up the baler was not a problem because visibility through the belts was good. The baler could be easily towed behind a tractor or a suitably sized truck. The operator had to dismount to lift the pickup.

Hitching: The Gehl RB 1860 was easy to hitch to a tractor. The hitchjack was convenient for raising and lowering the A-frame hitch. After hitching, the jack was raised off the ground, then removed and stored on the inside of the hitch. Full retraction of the jack was not required.

Feeding: Feeding was positive and aggressive in all crops with only infrequent plugging. Overloading of the windrow pickup caused the driveline shearbolt to break. The operator was required to grease the shear flange to prevent the pilot shaft from seizing before installing a new shear bolt.

Material was compressed between the packing roller and the front lower ribbed roller and then fed into the chamber by the rear lower ribbed roller (FIGURE 1). The feeding performance of the Gehl 1860 was excellent.

A scraper and packing roller at the top of the feeding area and ribbed steel rollers facilitated aggressive feeding into the bale chamber. A bale starter located above the scraper roller (FIGURE 1) prevented material from feeding between belts while the bale was starting to form. There was good clearance between the hitch and pickup.

Ground driven crowder wheels located on either side of the pick-up were effective in wedging the crop into the pickup when baling wide windrows. They also helped minimize losses when alternating side to side feeding and during turns.

Twine Threading: Threading the twine through the twine projection tube required the use of a wire.

The twine cutter performed well, although it did miss cutting the twine occasionally. This occurred because the twine knife arm was not set properly to catch the twine as it travelled across. Modification of the stop arm to extend drop of the twine knife arm to within 1 in (25 mm) from the pickup guard improved the operation of the knife. The knives left a length of twine protruding out the end of the twine tube for starting the wrap on the next bale.

EASE OF ADJUSTMENT

Forming Belts: The upper belt tension and subsequent bale density was controlled by the total density control (TDC) system. (See FIGURE 6). This system is self-contained and independent from the tractor hydraulics. Air pressure in the reservoir was preset and no adjustments were required during the test. Upper belt tension was varied by changing the relief valve pressure setting.

This adjustment was convenient. The shaded areas in FIGURE 6 indicate the position of the TDC System when the bale reached its full size.

The forming belts were all chain driven off the 8 in (203 mm) lower roller. The forming belts were easily replaced without disassembly of the baler. Two people could change a belt in 20 minutes.

Compression Rollers: The packing roller was spring loaded and driven at the left side of the machine. Clearance between the packing roller and lower roller was set at 0.25 in (6 mm) at the factory and required no further adjustment throughout the test.

Bale Starter: The bale starter is a set of fingers that deflect material away from wrapping on the packing roller. The fingers are a part of a movable assembly held by pivoting links and positioned by an adjustable roller. The adjustable roller was positioned so that the fingers moved out of the way just after the bale core started to roll. The lower the roller the quicker it moved out of the way. The

adjustable roller was factory set in the highest position and was not changed during the test.

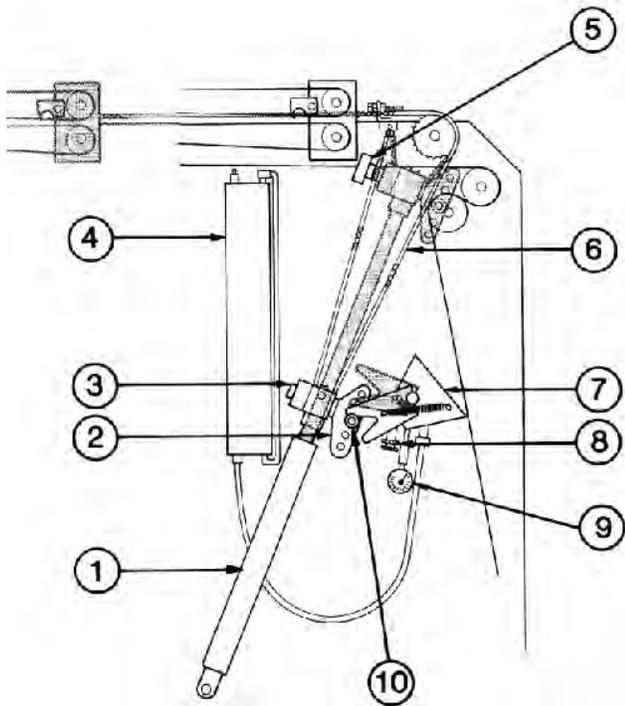


FIGURE 6. The Total Density Control System Components: (1) Density Cylinder, (2) Trip Arm, (3) Magnet, (4) Reservoir, (5) Magnetic Sensor, (6) Loading Chain, (7) Valve Trip Mechanism (8) Adjustable Relief Valve, (9) Pressure Gauge, (10) Trigger.

Upon delivery of the machine, the bale starter return springs would occasionally stick due to paint in the links and pivot bushings. This problem was solved by one person working the starter up and down while another person greased the pivot bearings on either side.

Pick-up: Pick-up floatation was provided by an adjustable floatation spring. After the initial setting of the floatation was determined, no further adjustments were required during the test. Adjusting the pick-up was performed with the aid of a wrench provided with the baler. Lowering or raising the pickup was difficult because of the limited space between the crowder wheel brackets and baler side housing. The operator's manual suggested placing the wrench onto the shaft parallel to the ground when lowering the pick-up to allow adequate rotation of the wrench. This was impossible when the crowder wheels were attached. The wrench had to be placed on the shaft with the handle very high thus making it very difficult to lower the pick-up. Lowering the pick-up had to be done in several small steps so as not to catch one's hand between the wrench and baler side housing. A change in the pick-up adjusting procedure or a redesigned mounting bracket for the crowder wheels is recommended for balers outfitted with the crowder wheels.

The pick-up was driven by a V-belt from the 8 in (203 mm) lower roller. This belt slipped in the event of an overload. Belt tension was increased by increasing spring tension on the idler. No adjustment of the belt tension was required during the test.

A convenient unplugging device at the main gearbox allowed for manually reversing the drive in the event of plugging. The same wrench provided for lowering the pickup was used to reverse the drive. Plugged material in the packing roller area was easily removed, once free of the rollers.

Bale Size Density and Wrap Settings: The auto-electric wrap system with the manual override permitted tying the bales at a preset, uniform size or manually tying the bale in the event of finishing a field with a partial bale. A magnetic sensor was appropriately positioned by the operator for the desired bale size (FIGURE 6).

When a magnet, located on the yoke of the density cylinder crossed the sensor, the automatic twine tying system would start. There was also a bale size indicator located near the top of the baler, visible from the operator's seat.

Bale density was adjusted by moving a trigger up or down to trip the density core formation mechanism, sooner for hard core

formation and later for a softer core. Belt tension was varied by changing the relief valve pressure setting (FIGURE 6). Turning the valve cartridge end disc clockwise, into the cartridge, increased belt tension and density. Both core formation and density were easily adjustable and took one man about one to three minutes.

The Gehl RB 1860 came equipped with an overflow clutch mechanism linked to the pick-up. If the bale became too large in the chamber, a cable disengaged in the clutch and stopped the pick-up. To restart the pick-up the baler was moved out of the windrow and left running. The bale slowly compressed, thus reengaging the clutch and restarting the pick-up. The bale could then be tied. Readjustment of the overflow clutch cable was not required during the test.

The number of wraps was adjustable at the operator seat, using the delay time control knob on the auto electric wrap system control box. This was very convenient.

Servicing: All 5 chains had to be manually oiled every 10 hours. There were 22 grease fittings that were greased every 10 hours, 4 every 50 hours and 6 every 100 hours as suggested by the operator's manual. The fixed length drive shear flange was greased every time a bolt was sheared. The operator's manual suggested checking gearbox fluid every 200 hours and repacking the wheel bearings every season. Occasionally, grease fittings went unserviced when an operator greased the machine according to decal location. This was due to incomplete decal identification of grease nipple locations. It is recommended that the manufacturer consider providing decals to locate all grease fittings.

POWER CONSUMPTION

Power Requirements: FIGURE 7 shows the power take-off and drawbar power requirements for the Gehl RB 1860 for the two extreme settings of the total density control system, hard centre and soft centre. The power input is plotted against the bale weight to show the power requirements while each bale is formed. Power take-off input varied from 8 hp and 13 hp (6.0 kW and 9.7 kW) at no load to a maximum of 20 hp and 22 hp (15.0 kW and 16.4 kW) in alfalfa for soft and hardcore bales respectively. Drawbar requirements at about 8 mph (12.6 km/h) was 4.5 hp (3.4 kW) for the soft core and at 9 mph (14.5 km/h) was 6 hp (4.5 kW) for the hard core bale, when both bales reached maximum size. Tests were performed on a flat firm field. Although maximum horsepower requirements did not exceed 28 hp (21 kW), additional power was needed to suit field conditions, especially in soft, hilly fields. The manufacturer suggested a 50 to 60 hp (37 to 45 kW) tractor to fully utilize baler capacity.

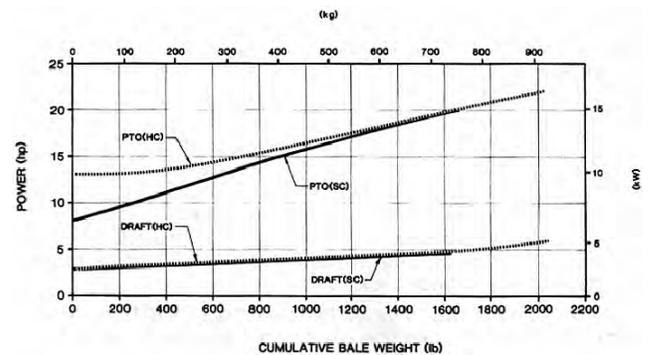


FIGURE 7. Power Consumption During Bale Formation Alfalfa-Bromegrass (HC) Hard Core Bale, (SC) Soft Core Bale.

Specific Capacity: Specific capacity is a measure of how effectively a machine performs a task. A large specific capacity indicates efficient energy use. The specific capacity of the Gehl 1860 was about 0.70 ton/hp-h (0.85 t/kW-h) in alfalfa at an instantaneous work rate of 12.5 ton/h (11.4 t/h) with the baler set for hard core bales. This specific capacity was greatly influenced by the workrate.

This compares to an average specific capacity of 0.6 to 1.2 ton/hp-h (0.7 to 1.4 t/kW-h) for small square balers in alfalfa.

OPERATOR SAFETY

The operator is cautioned that a round baler is potentially a very dangerous farm implement. The operator must disengage the power take-off and stop the tractor engine to clear blockages or to make adjustments. Many serious and fatal accidents have occurred with

round balers. Most of these are caused by operators dismounting from the tractor while leaving the baler running.

The Gehl RB 1860 was safe to operate and service as long as common sense was used and the manufacturer's safety recommendations were followed. Rotating parts were well shielded. The pickup and feeding area were well guarded to discourage operators from attempting to clear blockages with the baler in operation. The safety shields were conveniently hinged so they did not have to be completely removed.

The Gehl RB 1860 had rear gate cylinder locks to permit safe servicing with the rear gate open.

A slow moving vehicle sign was not provided with the baler but a mounting bracket was.

OPERATOR'S MANUAL

The operator's manual was well written and contained much useful information on operation, servicing, adjustments and safety procedures.

MECHANICAL HISTORY

The Gehl RB 1860 was operated for 180 hours while baling 1900 bales. The intent of the test was an evaluation of functional performance and an extended durability evaluation was not conducted.

TABLE 3. Mechanical History

Item	Operating Hours
-Two belts failed at the splicing and were replaced at:	30, 60
-Upper hydraulic fittings on gate cylinders were damaged and replaced at:	100
-Eye bolt of bale size indicator failed at:	120
-Weld on rewrap roller failed and was repaired at:	150
-Imminent failure at the splicing of two belts was apparent at:	175

DISCUSSION OF MECHANICAL PROBLEMS

Hydraulic Fittings: The upper hydraulic fittings on the two gate cylinders were damaged when they came into contact with the lifting links (FIGURE 1) and had to be replaced with shorter fittings. It is recommended that the manufacturer provide fittings that will clear the lifting links.

Belts: The splicing used on the belts was vulnerable to damage. It is recommended that the manufacturer consider a more durable splicing system.

Rewrap Rollers: The weld at the roller end plate was not adequate. It took two people about 4 hours to remove and replace the roller.

FORMING BELTS:

- number of belts seven
- belt width 6 in (150 mm)
- thickness 3/16 in (5 mm)
- spacing (centre to centre) 8.25 in (210 mm)
- belt speed (at 540 rpm) 312 ft/min (95 m/min)
- belt length 45.5 ft (13.9 m)

ROLLERS:

- Packing Roller
 - type steel
 - length 5.0 ft (1.5 m)
 - diameter 6 in (152 mm)
 - speed 100 rpm
 - peripheral speed 1.8 mph (2.9 km/h)
 - Lower Rollers
 - number two
 - roller surface ribbed steel
 - length 5.0 ft (1.5 m)
- | | Front | Back |
|-------------------|--------------------|----------------------|
| -diameter | 8 in (203 mm) | 16 in (406 mm) |
| -speed | 149 rpm | 298 rpm |
| -peripheral speed | 3.6 mph (5.8 km/h) | 14.2 mph (22.9 km/h) |

BALE SIZE INDICATOR TYPE:

mechanical to shuttle movement and audible alarm on the auto-electric wrap system

PICKUP:

- type fully floating, cylindrical drum with spring teeth
- height adjustment wrench and transport arm with stop settings
- width 6.0 ft (1.8 m)
- diameter 22 in (559 mm)
- number of tooth bars four, 18 teeth per bar
- speed (at 540 rpm) 160 rpm
- tooth tip speed (at 540 rpm PTO) 10.5 mph (16.9 km/h)

TWINE SYSTEM:

- capacity 3 balls
- type automatic electric wrap with manual override switch
- recommended twine sisal or plastic
- twine feed automatic single twine tube
- twine cutter pivoting knife against twine

DRIVES:

- number of belt drives one
- number of chain drives five
- number of gear drives none
- number of universal joints two

SAFETY DEVICES:

- main drive shearbolt
- overfill clutch, disengages pickup when chamber is overloaded
- rear gate cylinder locks
- hinged safety shields
- crossbars and movable restraint bars over pickup
- tailgate latch indicator
- twine knife guard

SERVICING:

- grease fittings 22, every 10 hours
- chains five, every 10 hours
- pivot points three, every 50 hours
- one, every 100 hours

TRACTOR HOOK-UP:

- connections double action hydraulic hose; electrical connection for auto-electric wrap system
- hitch height 14 to 18 in (356 to 457 mm)

APPENDIX I SPECIFICATIONS:

MAKE:	Gehl
MODEL:	RB 1860
SERIAL NUMBER:	126242
MANUFACTURER:	Gehl Company West Bend, Wisconsin
DIMENSIONS:	
-- width	8.2 ft (2.5 m)
-- height	92 ft (28 m)
-- length	14.2 ft (4.3 m)
-- ground clearance	83 in (210 mm)
TIRES:	Two, 11L x 14
WEIGHT:	
-- left wheel	1918 lb (870 kg)
-- right wheel	1874 lb (850 kg)
-- hitch point	<u>825 lb (374 kg)</u>
Total:	4617 lb (2094 kg)
BALE CHAMBER:	
-- width	5.1 ft (1.6 m)
-- bale density control	self contained air and hydraulics
-- bale peripheral speed (at 540 rpm)	36 mph (5.8 km/h)

APPENDIX II MACHINE RATINGS

The following rating scale is used in PAMI Evaluation Reports:

Excellent	Fair
Very Good	Poor
Good	Unsatisfactory

SUMMARY CHART

GEHL RB 1860 ROUND BALER

RETAIL PRICE:	\$21,587.00. (January 1987, f.o.b. Portage la Prairie, Man.)
RATE OF WORK:	5.4 to 11.5 ton/h (4.9 to 8.5 t/h)
QUALITY OF WORK:	
Bale Quality	Very Good; tight wrap
Weatherability	Very Good; about 1 in (25 mm) spoilage
Leaf Loss	1.8% to 3.3% in alfalfa hay
POWER REQUIREMENTS:	
Tractor size	50 to 60 hp (37 to 45 kW) tractor has sufficient reserve for most field conditions
Specific Capacity	0.70 ton/hp-h (0.85 t/kW-h)
EASE OF OPERATION:	
Forming a bale	Very Good; side to side feeding required
Wrapping the twine	Very Good; a bit slow
Discharging the bale	Very Good; disengaging PTO is required
Transporting:	Very Good; easy to manoeuvre, good visibility
Hitching	Very Good; jack was convenient
Feeding	Excellent; due to performance of crowder wheels.
EASE OF ADJUSTMENT:	
Forming Belts	Excellent; very simple
Compression Rollers	Very Good; never needed adjusting
Bale Starter	Very Good; sometimes stuck
Pick-up	Fair; obstructed by crowder wheels
Servicing	Good; took 20 minutes, lubricant decals weren't specified.
OPERATOR SAFETY:	Well shielded and accessible
OPERATOR'S MANUAL:	Very Good; well written
MECHANICAL HISTORY:	Two belts split at the splice, hydraulic fittings on lifting cylinder were damaged.



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