



## ***HP 1600 high density baler***



## **A Revolutionary forage conservation development**

Traditionally forage conservation has been a labour intensive operation. The arrival of the new HP1600 high density baler heralds major changes in forage harvesting and straw packaging. This machine revolutionises silage making and offers significant advantages in work-rate, labour utilisation, quality of end product and handling of both 'raw' and 'cured' silage.

## **Large, rectangular bales 0.7 x 1.2 x 1.6m**

It is the sheer power of the hydraulic compression system that enables crops of almost all dry matter levels to be formed into high density rectangular bales. Obviously the pick-up and feeding system together with the tying mechanism contribute to the efficiency of producing these big bales (0.7 x 1.2 x 1.6m); yet it is the speed of operation and remarkable work-rate that will impress most of all.

60 bales an hour at 40% dry matter represents an output of 36 tonnes an hour or 2-3 Ha/hour (5-7 acres) of grassland grown for silage. In straw up to 12 tonnes per hour can be achieved although ultimate performance will depend on swath preparation and density.

Designed for long periods of continuous work the HP1600 high density baler is ideally suited to contractor use for all season profit-

ability. Harvesting forage crops at their optimum stage of maturity calls for timeliness unhindered by systems that rely on the weather, or that are too slow to maintain a consistent quality from start to finish. The HP1600 considerably reduces dependence on the weather by its speed and ability to bale grass at anything between 20% and 60% dry matter.



## **High Density**

The twin hydraulic rams powering the compression process exert up to 36 tonnes pressure in the bale chamber. With grass for silage at 40% dry matter the bale produced

can weigh up to 600kg. This compares favourably in dry matter density terms with silage well compressed in a more conventional bunker system, i.e. 200kg DM/m<sup>3</sup>.

As this density originates in the

field rather than at the clamp significant savings in transport and handling costs ensue in the field clearing operation.



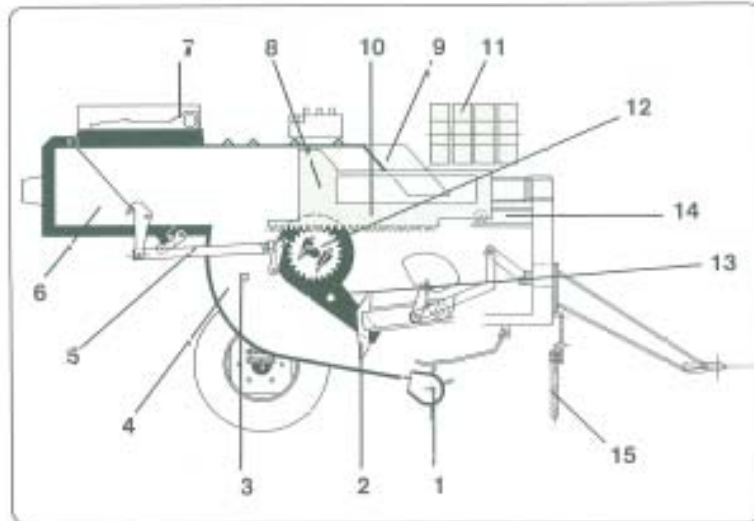


## Operating Sequence

A wide (1.99m (78")) conventional pick-up is the first stage in the baling process. An oscillating swath divider in front of the pick-up reel prepares the swath to ensure an even distribution of material across the width of the pick-up.

The action of the eccentric feeder or "thruster" clears the pick-up area filling the charge chamber with forage material. When full a photo-electric cell indicates that sufficient pre-compressed material is available, the rotary feeder transfers this pre-compressed forage up into the main bale compression chamber. Hydraulically operated, the plunger compresses the material against

the rear door, meanwhile the charge chamber is continually being filled by the pick-up and eccentric feeder.



- 1 = Pick-up
- 2 = Eccentric feeder
- 3 = Photo-electric cell
- 4 = Charge chamber
- 5 = Rear door lock pin
- 6 = Rear door
- 7 = Tying mechanism
- 8 = Plunger
- 9 = Oil tank
- 10 = Transfer feeder gear rack
- 11 = Wire coils
- 12 = Gear and freewheel
- 13 = Transfer feeder
- 14 = Hydraulic pump
- 15 = Swath divider

## Bales ejected on the move

Depending on the bale weight required, dry matter, and type of baling material; between six and eight cycles of the main plunger are necessary to form the bale.

Sensors in the hydraulic system indicate when a pre-set pressure is attained in the baling chamber and the tying operation is commenced. (The plunger remains in the rear position.)

When the next transfer cycle is commenced the plunger returns to its forward position, the lock on the rear door is released and the bale ejected.

The tractor driver/operator is kept informed throughout all the baling cycle by a digital display and control box in his tractor cab. An audible warning sounds in the event of any malfunction with the added safety facility of an instantaneous emergency stop button by the driver's hand. There is even a timer incorporated to provide information on work-rate.

Throughout the whole baling process the HP1600 maintains forward travel picking up continually.





## Advanced technology

In order to achieve impressive performances in such a wide range of crops and conditions the HP1600 'thinks' for itself. An electronic micro-processor in a sealed compartment on the top of the machine monitors and controls all the various functions, operations and processes involved.

The power take off is connected directly to the pick-up and eccentric feeder providing a mechanical drive. All other functions are operated hydraulically, a constant power pump also being driven from the pto.

A tractor with a minimum of 100 pto horsepower at 1,000 rpm is all that is required.

This combination of hydraulics, mechanical components and electronic control offers the benefits of reliability and safety.

Since the main plunger operates at very slow speed, wear and tear on bearings, runners, and in the bale chamber itself is negligible. The HP1600 can be seen as being a significantly longer term investment than other baling systems.

### Low ground pressure

The HP1600 is designed to work in a variety of seasons, weather conditions and terrain. To minimise soil compaction in the wet, wide Velleborg 500 x 22.5 low pressure tyres are fitted. While the HP1600 is a considerable all up weight, these tyres provide excellent flotation over soft ground.

The chassis, drawbar and axle position all lead to an easy to handle machine, stable in the field and on the road.



## Unique tying system

Each bale is tied with four galvanised steel wires. A unique system, patented by Vicon, shoots the wire round the bale in tracks in the rear door and plunger. The ends of the wire now lie side by side in slots on the top of the bale chamber. A transverse gear rack simultaneously twists the respective ends of each of the four wires together, tying the bale.

Sufficient wire is held on the HP1600 for 800 bales in coils at the front of the machine. This stock would normally be sufficient for a whole day's baling eliminating the need to stop for replenishment.

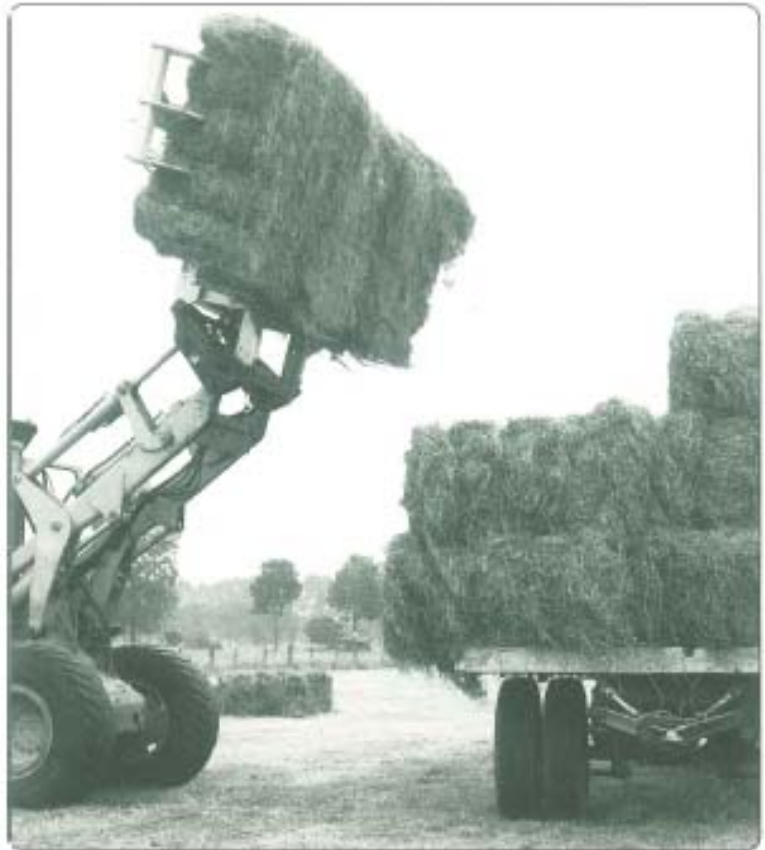


## ***Simplified bale transport***

Specialised trailers for silage can become a thing of the past. HP1600 bales may be loaded onto flat trailers or lorry transport.

The high payloads resulting from the density of the bales open up new possibilities for longer distance haulage of silage both before clamping and afterwards.

Equally suited to hay and straw the same ease of transport makes the HP1600 system most attractive to farmers, contractors and hauliers alike. Two bales fit neatly across the width of lorry bodies giving a total width of 2.4m, i.e. within the legal width restrictions for road transport.



## ***Field clearing a one-man operation***

A range of three grippers is available to simplify on farm handling. A one bale gripper is designed primarily for feeding the bales, taking individual packages from the clamp or stack either directly to the animals or loading onto farm trailers. A two bale gripper can halve handling time and may be used in the field for clearing behind a baler. These grippers may be attached to existing heavy duty front end loaders or rough terrain fork trucks. Really efficient handling and field clearing calls for the three bale gripper which clamps three bales tightly together further assisting exclusion of air for efficient ensiling. A high powered loader/industrial shovel type of machine is required with the three bale gripper.

One man with two flat trailers, a loader and three bale gripper can load, transport and clamp some 60 bales per hour. In practice this has proved sufficient to clear behind one baler, making field clearing a one man operation.



## Silage clamping with ease

Clamped silage normally entails the use of walled clamps or pits. With the HP1600 clamps can be built anywhere a firm base can be obtained. There is no need for a concrete base except where ground conditions in winter necessitate what would otherwise be considered a luxury.

Bales are stacked in clamps of a size to suit the groups of animals to be fed, location and size of covering



sheet available. Polyethylene sheeting is used to seal both under the clamp and over the top. The rectangular bales form a very neat easy to seal clamp with the edges of the sheeting folded together and weighed down with sand. A more substantial nylon weather cover is used over the sealed clamp and weighted or netted to prevent wind, bird and vermin damage.



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### Feeding a quality product

Whether it be silage or hay you can be sure that the end product conserves the very best of the quality forage used in baling.

Feeding is not only fast, it is totally mechanised taking the hard work out of what is often a daily routine. Furthermore, weekend feeding can be eliminated, silage bales may be fed and left without significant deterioration for several days.

Baled silage is highly palatable, cattle intake being high particularly if high dry matter levels have been

maintained. The long fibre not only ensures less wastage than with short chopped material, there are other advantages such as higher milk butterfat levels when fed to dairy cows.

The Vicon HP1600 offers the farmer and contractor speed, ease of operation and quality feed while lowering the labour involvement throughout the year.



### Specifications

Length	6.1m (20")
Width	2.85m (9'7")
Height	2.65m (9')
Weight	6400Kg (14080 lbs)
Wheel equipment	Trelleborg LP 500 x 22.5 Trelleborg LP 600 x 26.5
Pick-up width	1.99m (6'6")
Plunger stroke	1.38m (4'7")
Tying system	Patented Vicon 4 wire system
Wire diameter	42mm (0.16")
Bale dimensions	0.7 x 1.2 x 1.6m (28" x 47" x 63")
Bale weights	Straw: 200-250 kg Hay: 300-350 kg Silage: 400-600 kg