

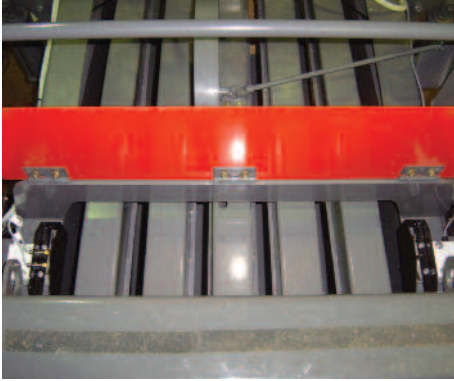


HAYBOSS G2 BALER EQUIPMENT



FROM MASSEY FERGUSON





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Get one step ahead of the weather.

Baling hay or straw is extremely weather dependent. If you leave hay too long before baling, it will lose quality and yield. Baled too early and at moisture levels above 15%, you risk bales heating up and at worst spontaneously combusting. Without preservative, moulds will also develop resulting in dust and a loss of bale quality, with the result that livestock will be more susceptible to respiratory issues and the nutrient value of the forage will be reduced.

The latest HayBoss Application Systems allow you to beat the weather and by using Baler's Choice hay preservative, safely bale at moisture levels between 15% and 30% moisture.

Being able to safely bale at higher moisture levels has many benefits:

- Greener hay will generally have a higher feed value
- Allows you to bale sooner compared to untreated forage
- Being able to start earlier and finish later extends the baling day and can result in greater productivity and profitability from your baler
- Enables you to make the most of your baler and maximise your return on investment
- Allows you to add value to your bales and achieve a premium product

HayBoss applicators are in use on balers around the world. Key to the accuracy of the applicators are the highly accurate precision moisture sensors fitted in the bale chamber. These keep you fully informed of the crop moisture content, and are used by the applicator's processor to immediately react automatically to any variations in moisture and alter the application rate accordingly.

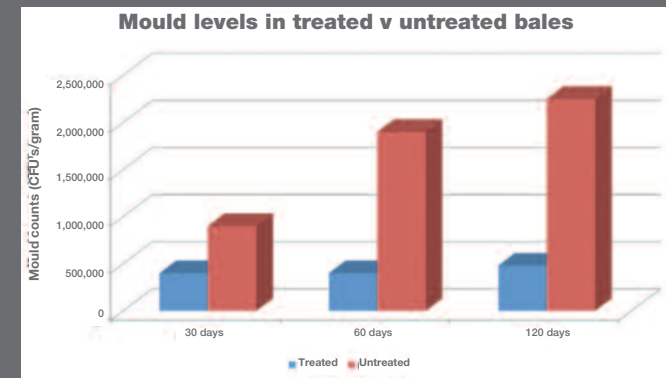
HayBoss applicators have been developed to withstand all the demands of modern agriculture whilst delivering increased baler output and producing the highest quality hay and straw with the use of Baler's Choice preservative.

Mould in hay and straw

The myco-toxins present in a dusty or mouldy bale can be a major challenge to the respiratory system and the cause of illness.

- In humans the most common association would be 'farmer's lung'
- In livestock the spores result in respiratory illness, loss of performance and potentially can lead to abortion

In trials at the University of Wisconsin hay harvested at 22% moisture was tested after 120 days. In untreated bales, mould counts rose considerably to around 2,250,000 cfu's/gram (colony forming units), while those in the bales treated with propionic acid remained at the same virtually insignificant levels.



Source: University of Wisconsin

Additional trials have also been conducted by a leading agricultural equipment testing company in Germany comparing mould and yeast levels in wheat straw bales at 21% moisture after being stored for two months.

CFU's/gram	Untreated		Treated	
	Before	After	Before	After
Mould	75	14,000,000	70	1,300
Yeast	47	11,000,000	40	100

Maximise your baler output by up to 30%.

Baler's Choice Preservative is non-corrosive with a pH of 6.0, so does not corrode machinery and the operator handles a much safer product.

Baler's Choice is between 2—3 times stronger than other hay preservative products on the market and is designed for use specifically with forage and straw, unlike other products originally designed for grain preservation. When applied at the correct rate, it ensures optimum bale quality and maximum cost effectiveness. Using a weaker product with a higher application rate will reduce the applicator's and baler's output capacity.

The HayBoss automatic system will continually monitor moisture and apply Baler's Choice correctly, as moisture levels can fluctuate by up to 5% along a 100m swath (research of moisture in swath by Tom McGuire, Cranfield University, UK).

Using Baler's Choice allows the operator to gain on average 30% more output per day, due to starting earlier and finishing later. Even in a good year approximately 20% of the hay is still spoilt or sub standard due to moisture fluctuations in the crop. Most of the crop may be dry (below 16% moisture) but there will inevitably be some that is not, and it is the damp crop which must be treated to prevent spoilage and hot spots developing in the bale.

Baler's Choice will keep your baler in good condition

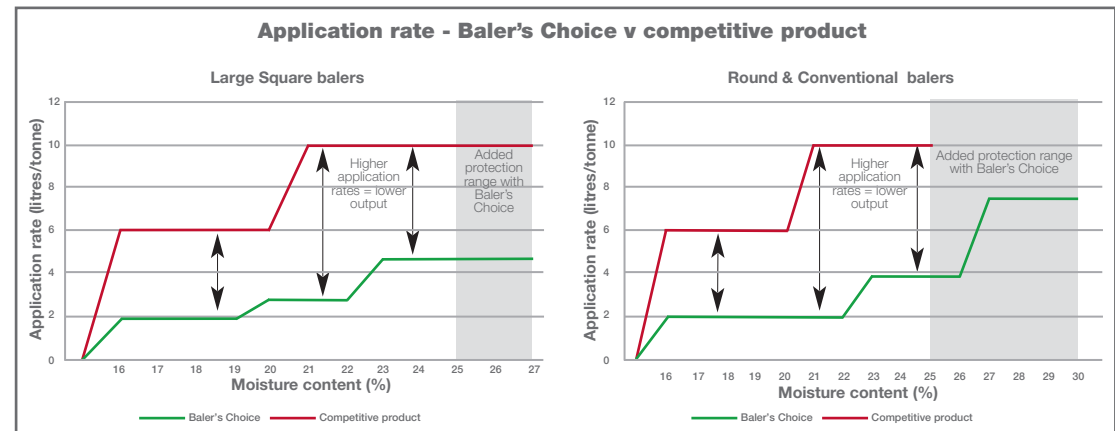


Only Baler's Choice is approved for use with a HayBoss applicator. Using non-approved products can be corrosive and have a detrimental effect on the baler service life.

The main reasons why costs are higher when using substandard products:

- Baler's Choice allows the baler to be operated at a maximum outputs of up to 80 tonnes/hour, even at the highest moisture ranges.
- Outputs using weaker products will be considerably less
- Downtime is increased due to the need to refill the tank more times per day
- Substandard acids and poorly buffered acid based products will corrode the baler and increase cost on wearing parts, such as bearings and pickup cams

Weaker acids are volatile and evaporate with air contact, while Baler's Choice is stable, remains in the bale and does not evaporate when applied or migrate out of the stored bale.



Effect of Baler's Choice at 16% to 22%



Untreated



Treated with Baler's Choice

Hay baled at moistures between 16% and 22% will heat sufficiently to cause discolouration and lose its fresh smell. A low level of Baler's Choice will avoid this.

Effect of Baler's Choice at 23% to 26%



Untreated



Treated with Baler's Choice

Untreated, hay baled at between 23% and 26% will reach temperatures of up to 50°C when stored. Mould will develop and quality drops considerably. When treated with Baler's Choice the bale will remain cool and bale colour is retained.

Effect of Baler's Choice at above 27%



Untreated



Treated with Baler's Choice

When baled at over 27%, bales can reach temperatures of over 60°C, the hay will turn black and may combust when untreated. Baler's Choice continues to work at moistures of up to 30% if applied at the correct rate.

Using pH 6.0 Baler's Choice premium buffered preservative results in top quality bales.



600 Series ISOBus Modular baler equipment.

Suitable for: Large square balers

Module 1 - Moisture Monitor (large square balers only)

The 600 Series Moisture Monitor is the base building block for the HayBoss system. The Moisture Monitor is a read only system that links directly through a compatible baler's CANbus system, utilising the baler's power supply.

Star Wheels located in the bale chamber behind the knotter penetrate the bale. The Star Wheels take a reading nine times per second and averages every three seconds for supreme accuracy.

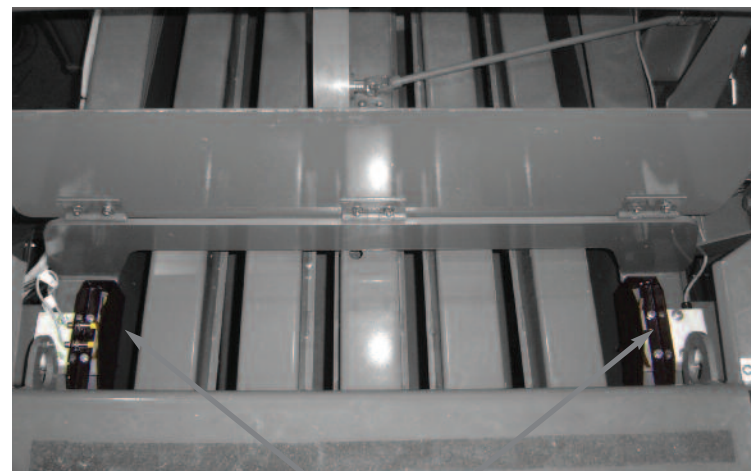
Moisture range:

- Large square balers: 8-72%

Massey Ferguson large square balers are HayBoss ready from the factory. This means that the components that you want can be installed from new or retrofitted at a later point. If you wish to add additional HayBoss components at a later point a companion kit will need to be installed to provide additional power to upgrade the Moisture Monitor system.



Adding a Bale Marker to the Moisture Monitor system makes it easy to quickly identify higher moisture bales.



Module 2 - Moisture Pro (All balers)

Moisture Pro is a 'plug and play' moisture reading system that suitable for all types of baler and is able to accept any of the other HayBoss modules, in any combination, depending on your individual requirements without the need for a companion kit. Job records are fully downloadable with Moisture Pro.

Moisture readings accurate to +/-1% are taken using either Star Wheels in the bale chamber of large square and conventional balers, or in round balers moisture sensing discs either side of the chamber take a reading through the bale.

Moisture range:

- Large square balers: 8-72%
- Round balers: 8-60%
- Conventional balers: 8-32%

Control options

Both the Moisture Monitor and Moisture Pro 600 Series systems can be controlled using any ISOBus compatible terminal or tractor monitor.

Alternatively, a Bluetooth connector is supplies as standard to enable the applicator system to be set-up and controlled using an app on an iPad*.

From the screen, you can instantly see essential information, such as:

- Actual crop moisture content
- Average for the previous bale's moisture
- Baling rate in tonnes per hour, based either on a bale weight and length set by the operator or integrated baler systems that are compatible with the HayBoss applicator system

A job record containing all this information, plus a unique number for each bale and the date and time baled, can then be downloaded.



	A	B	C	D	E	F	G	H	I
1	-----JOB DATA-----								
2	FIELD	JOB #	AVG MC	HI MC	L USED	BALES	MT	DATE/TIME	
3	Long Acre	1	14	25	17	45	24	9 MAY 14 18:04	
4	-----BALE DATA-----								
5	FIELD	JOB #	AVG MC	HI MC	L/BALE	BALE ID	BALE WT	DATE/TIME	
6									
7	Long Acre	1	12	17	0.2	5.35E+09	529	09 May 14 18:06	
8	Long Acre	1	11	18	0.1	5.35E+09	515	09 May 14 18:07	
9	Long Acre	1	13	16	0	5.35E+09	503	09 May 14 18:07	
10	Long Acre	1	14	16	0.1	5.35E+09	510	09 May 14 18:08	
11	Long Acre	1	16	22	1.1	5.35E+09	545	09 May 14 18:08	
12	Long Acre	1	13	17	0.2	5.35E+09	521	09 May 14 18:09	
13	Long Acre	1	15	18	0.3	5.35E+09	535	09 May 14 18:10	
14	Long Acre	1	16	20	0.6	5.35E+09	553	09 May 14 18:10	
15	Long Acre	1	17	20	0.7	5.35E+09	558	09 May 14 18:11	



*iPad not included ** Moisture Pro is capable of operating all HayBoss modules

Instant identification.

Module 3 - Bale Marker (All large and conventional balers)

When linked into the Moisture Monitor (large square balers only) and Moisture Pro systems, the Bale Marker provides an easy and cost effective way to mark the bales that have high moisture spots.

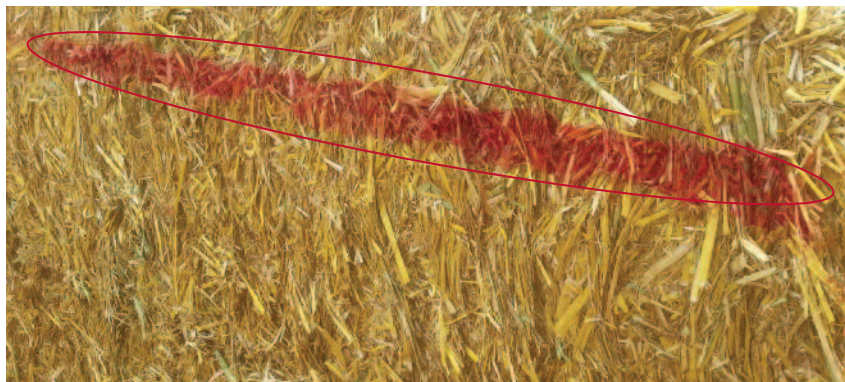
Once the alarm point has been set by the operator, the Bale Marker will spray a red coloured food grade dye onto the bale flakes that have moisture readings above the alarm point.

Highlighting high moisture bales allows the operator to store only bales within their preferred moisture range. All the marked bales can be stored separately as the quality of these bales will be reduced and so they will not damage surrounding bales during storage.

If untreated high moisture bales are stored with bales that would normally be considered safe, this will cause the preferred moisture bales to spoil as well, due to moistures equalising in the stack. The Bale Marker is a simple way to keep unwanted, untreated moisture from the stack helping the operator to maximise returns from good quality forage and straw bales.



A hay bale marked when the alarm was set to 27%, showing the middle section is within the preferred moisture range, while the end flakes were above 27% moisture



Straw bale marked when the alarm was set to 27% clearly showing the operator that this entire bale is too wet to be stacked with the rest of the Baler's Choice treated straw from this field

Automatic Preservative Application.

Module 4 - Automatic Applicator (All balers)

By upgrading the Moisture Monitor or adding the applicator module to the Moisture Pro, allows you to automatically apply the correct amount of Baler's Choice preservative to higher moisture bales. The system keeps track of the moisture levels of the bales, and also displays and records the amount of preservative being applied and the application rate for each individual bale. Sensors on the pickup detect crop flow and will pause and resume the system automatically. The sensors are also part of the bale time management system.

The HayBoss system needs either bale weight and length on square balers, or weight and time on round balers, to calculate baling speed in order to accurately adjust to changes in crop conditions throughout the day.

Controlled by the ECU, the system includes either a 100, 200, 210, 400 or 420 litre tank that mounts on the baler, a three-pump system, a spray shield located in the baler's pick up and all the pipe work and wiring harnesses required to apply Baler's Choice preservative. HayBoss applicators are specifically designed to suit individual baler models, so are easy to fit with the minimum of fabrication.

Using the moisture readings taken nine times a second by the moisture and speed sensors, the automatic system adjusts the application rate second by second to match the baling speed and condition of the hay or straw. This precision gives the operator the exact amount of product required to keep the crop in great condition without wasting Baler's Choice.

When applicator systems are installed onto integrated balers, the applicator utilises the baler's on-board sensors and automatically adjusts the relevant data for precision application.

When the 600 Series is fitted to non integrated machines, the system utilises operator defined weights and lengths and other HayBoss sensors.

Module 5 - GPS Yield Mapping

GPS yield mapping for accurate fertiliser utilisation and traceability (requires suitable yield mapping software).



Filling and drain point



Crop Detection



The ECU is the heart of the 600 Series system



Uses up to three nozzles per pump

400 or 420 litre tank with three pumps for large square balers



300 Series Automatic applicators for round & conventional balers

300 Series Automatic Modular system.

Suitable for: Round and conventional balers

300 Series Moisture Monitor

The HayBoss 300 Series Moisture Monitor is ideal for operators of round and conventional balers who want a straight-forward precision moisture monitor.

The moisture sensors are accurate to within 1% and take readings nine times a second, which are averaged every three seconds.

Moisture range:

- Round balers: 8-60%.
- Conventional balers: 8-32%

iPad control

The 300 Series offers a premium specification for ease of use and simplicity. It comes as standard with a Bluetooth receiver to enable the system to be controlled using either an iPad or iPad Mini (not supplied).

100-220 litre tanks available depending on baler model.

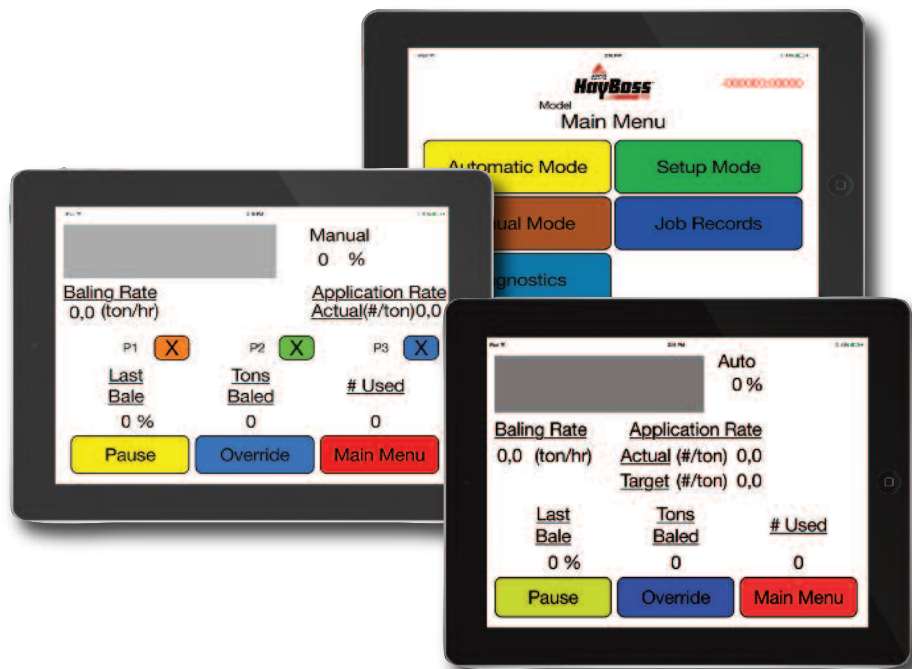


300 Series Automatic Applicator

As with all our Automatic Applicators, the 300 Series relies on highly accurate Star Wheels on conventional balers or sensing discs on either side of the round bale chamber.

Instant response

The 300 Series Automatic Applicator features an improved flowmeter working through a single bypass pump, which supplies a constant pressure to a pulsating solenoid valve. This is capable of covering a wide range of application rates, but also provides improved response to variations in moisture and an instant on/off. This has the added benefit of being simple to service and operate.



Electronic Manual High Output applicator for large square and round balers

Electronic Manual High Output applicator.

Suitable for: Large square and round balers

The ideal solution for applying additives and inoculants

The Electronic Manual High Output Applicator is the ideal solution for large square and high output round baler users needing a robust, well built applicator system for applying additives and inoculants to silage and haylage.

Unlike the Automatic systems, the Electronic Manual High Output is designed to apply a fixed rate. This is set by the operator using the in-cab control terminal to alter the pressure at which the product is applied. This in turn can be used to increase or decrease the application rate.



The Manual High Output is ideal for applying silage additives and inoculants when using high output balers

The X-Hi Manual applicator is a high flow system designed to cope with the output demands of the modern balers during the silage and haylage making process. It is designed to provide a fixed rate application controlled by the operator.

For even greater flexibility, in the future it will also be possible to upgrade the Electronic Manual system to the full 600 Series specification for large square balers and 300 Series specification for round balers.

Adding a 600 or 300 Series Moisture Monitor system will provide precision moisture readings so the operator can apply products at the optimum rates. Alternatively a moisture reading can also be obtained using a hand held moisture meter.



Crop eyes can be added as an option to automatically pause the applicator when no crop is passing over the pickup



Electronic Manual applicator.

Suitable for: Conventional balers

The HayBoss Electronic Manual applicator is available for all makes and model of conventional baler.

It uses a single variable output pump, that is controlled in the cab. The operator uses the operating manual to determine the tonnes per hour baling speed of the baler.

Based on the highest readings from the moisture meter the operator can then select tips and pressure to apply Baler's Choice preservative. The applicator requires less initial capital expenditure but will use on average 25% more preservative because hay and straw needs to be treated for the highest moisture readings that are being baled, whereas in contrast the precision automatic system follows the moisture up and down during the baling process.



The control box for the manual applicator has an on/off switch and a dial to control pump output

Crop eyes can be optionally added to pause the applicator when no crop is entering the baler



Optional Moisture Indicator

Moisture readings for the manual system are provided from the FX2000. This unit will give a continuous chamber reading when connected to a 12volt supply. When the operator wishes to spot test a swath or bale the unit can be used as a hand held option.

FX2000 provides a guide for small square balers when fitted close to the plunger on the cut side of the bale to detect stem moisture in contact with the pad. For round balers placing the pad 15-25mm from the bottom roller will generate a reading due to the friction of the rotating bale against the pad.

The F2000 hand held only probe is available for spot testing bales. this can be useful tool for testing truck loads of hay and straw upon delivery.





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