

McHale *Fusion* **3**

INTEGRATED
BALER
WRAPPERS

Fusion 3 & Fusion 3 Plus



www.mchale.net

The Professional Choice

Innovative high output solutions for today's farmer and contractor...

Farmers and contractors all over the world are under pressure to reduce costs and increase output. On-going development of farming techniques has led to the need for thoroughly reliable, specialised machinery to meet these demands.

Over the last decade the McHale range of balers have been operating across the globe, in some of the worlds most difficult conditions and have developed an award winning reputation for providing high output, excellent reliability, operator comfort and top resale value.

The McHale Fusion is known worldwide for its reliability, unique patented bale transfer, vertical wrapping ring and high output.

The McHale Fusion 3 is designed to provide greater operator comfort and flexibility, maximising output and reducing maintenance intervals.

Bale netting in chamber & wrapped bale being tipped

STEP 1



THE ADVANTAGES

1 Simple transfer & reduced handling

As the bottom half of the bale chamber doubles as a transfer mechanism, it eliminates the need for a moving table or lift arm between the baler and the wrapper. This results in reduced handling, higher levels of reliability, a faster transfer time and a compact design with a total machine length of just 5.8 metres.

2 Positive bale transfer on steep ground

The bale is transferred directly onto the wrapper by five drive rollers in the lower section of the chamber. This McHale Patented Bale Transfer system makes the McHale Fusion very reliable in all types of ground conditions.

McHale Patented Bale transfer

STEP 2



3 Reliable bale transfer on hillsides

When working with other combined baler wrappers on hillsides, there may be issues with the bale cross travelling as it is being transferred from the baler to the wrapper. With the McHale Fusion 3 these problems are eliminated as the bale is supported in position by the sidewalls of the bale chamber during the transfer. This results in a reliable transfer even on tougher ground conditions.

4 A fast smooth transfer

The transfer of the high density bale occurs over the axle of the baler, reducing the stress on the tractor and the machine. Due to the simplicity of the unique McHale bale transfer, there are a reduced number of moving parts and electronic monitoring systems. Overall this leads to a more reliable machine.

Fusion 3- A fully automatic high output machine

The McHale Fusion 3 is fitted with a servo operated load sensing control valve, which when combined with the expert plus control box makes the baling and wrapping process fully automatic.

The machine is equipped with a 25 knife-chopping unit. Once the bale is formed, net is automatically applied and then the chamber splits like a clamshell. The lower section of the bale chamber then transfers the bale into the wrapping ring. Once the chamber is closed the operator can continue working and the fully automatic machine will start the wrapping process.

Operator comfort is at the forefront of this machine and as the machine moves up along the swath the control console constantly monitors machine operation and notifies the operator of any changes such as knife pressure, knife position or plastic breakages.

When the bale on the back is wrapped the machine will hold the wrapped bale and automatically tip it, when the next bale in the chamber is being netted.

In difficult ground conditions bales can be tipped at the operator's convenience.

Baling while wrapping

STEP 3



5 High output

The transfer occurs in one pass, as the chamber is opening and closing to release the bale. This means, the machine takes a similar amount of time to transfer the bale, as a traditional baler would take to eject a bale from the chamber.

6 High speed

In effect the bale transfer does not slow down the machine output. The bale chamber splits horizontally (like a clam shell) and the lower section of the bale chamber doubles as a transfer mechanism to transfer the netted bale into the vertical wrapping ring.

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fusion®

BALES AND
WRAPS IN A
SINGLE PASS

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OUR SPECIFICATION



- 1 Machine Guarding
- 2 Chassis Design
- 3 Split Drive Gear Box
- 4 Pick Up
- 5 Rotor Design
- 6 Chopper Unit

1. Machine Guarding

The guarding on the Fusion 3 has been designed using a durable twin skin composite, which is able to absorb the daily knocks and scratches these machines inevitably endure. Once the guarding of the machine is opened up, the operator has easy access to the machine components.



2. Chassis Design

The Fusion 3 benefits from a tubular chassis design. The chassis is made from tubular steel; the chassis design delivers a number of benefits namely:

- Reduced crop build up
- A faster and more positive bale transfer
- A machine with a lighter footprint
- Better road travel



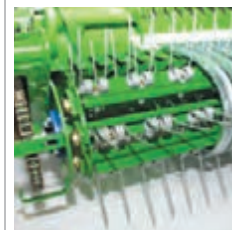
3. Split Drive Gear Box

The Fusion 3 is equipped with the tried and tested split drive gear box, which ensures that power is evenly distributed between the rollers in the bale chamber, which are driven from the left, and the pickup and chopper unit which are driven from the right hand side of the machine. This system ensures direct short transfer paths and optimal power distribution.



4. Pick Up

After extensive testing, the Fusion 3 is fitted with a 2.1 metre galvanised high intake pick up. The five tine bar pick up lifts even the shortest of crop. The pick up is fitted with lateral feed augers that smoothly guide the crop into the chopping unit.



5. Rotor Design

(i) As crop enters the spiral rotor, rotating tines feed the crop through the chopping unit. The double tines on the rotor ensure high output, while the spiral layout reduces load peaks as the machine works in heavy swarths. The rotor design encourages a uniform crop flow, which reduces the risk of blockages, thus maximising output.



(ii) The feed rotor or chopping unit now boasts a heavy-duty rotor and comb. The rotor on the Fusion 3 machines is welded on both sides for superior strength and on the drive side the rotor is fitted with a double row bearing with a long service life.



6. Chopper Unit

(i) The knives in the chopping unit of the Fusion 3 can be engaged and disengaged from the tractor cab. When engaged, the knives extend into the spine of the rotor, which ensures a consistent cut quality. Knives have hydraulic protection, ensuring that if a foreign object enters the chopping unit, the knives can drop out of the way and automatically reset.



(ii) The knives in the chopping unit are made from hardened tool steel, which ensures long life and maximum productivity, through reducing the downtime associated with knife sharpening.



(iii) On the Fusion 3, the operator has the option to upgrade the chopper unit on the machines to a selectable knife system.



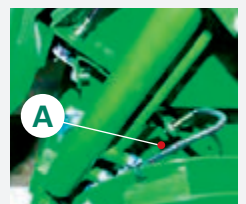
(iv) To ensure that the machine always delivers a good chop quality, two monitoring systems have been put in place on the Fusion 3.



(A) Firstly, knife-working pressure is monitored and displayed on the control box. If the knife pressure becomes too high audible and graphic alarms are activated to notify the operator.



(B) Secondly, a sensor monitors the distance between the top of the knife and the spine on the rotor. If the knife moves out of position for any reason the operator is notified via the control box.



A

A. Knife sensor



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MAKING
BALING
EASIER!



3 SIMPLE STEPS TO REMOVING A BLOCKAGE

1

2

3

Drop the Floor

Re-engage the PTO

Reset the Floor



Should a blockage occur the sound of the slip clutch alerts the operator who can hydraulically lower the floor from the tractor cab.



This widens the feed channel and on re-engaging the PTO the blockage can be fed through.



The floor can then be reset and baling can resume.

7. Drop Floor Unblocking System

All Fusion 3 machines are fitted with the McHale tried and tested drop floor unblocking system, a feature which operators have come to love for its simplicity of use and effective unblocking cycle. As baling conditions are not always ideal, uneven swaths can occur which can lead to blockages.

The McHale Fusion 3 baler range is fitted with a drop floor unblocking system, which means blockages can be fed through in three simple steps.

When operating the drop floor cycle on the Fusion 3, the knives and the drop floor now drop together during the

unblocking process, giving even more clearance to allow the blockage to be fed through.

On the Fusion 3 the drop floor is now equipped with a hydraulic check feature, which ensures that the drop floor is in the correct position after every bale.



8. Bale Chamber



(i) Bale Chamber Specifications

At the heart of this machine is the 1.23 by 1.25 meter bale chamber, which is formed by 18 heavy-duty rollers.

The bale chamber splits like a clam shell and the lower section of the bale chamber moves up and out, transferring the bale into the wrapping platform. This reduces bale transfer time and increases reliability.



(ii) Roller Design

The rollers are formed from high-grade tubular steel and have heavy-duty 50 mm forged shafts.



(iii) Chamber Bearings

All roller assemblies utilise high quality 50 mm bearings on the drive and non-drive side of the bale chamber. On the main load points, double raced bearings are fitted to ensure maximum reliability. This combination gives maximum strength and ensures a long working life.

Greasing and Oiling

An automatic progressive greasing system supports the Fusion 3 bearings. This is a pressurised system, efficiently delivering grease to all points, through individual steel pipes. The automatic oiling system

ensures the chamber, rotor and pick up chains all receive a measured amount of oil. After a pre-set number of bales, a lube alarm will sound reminding the operator to top up the lubrication system.

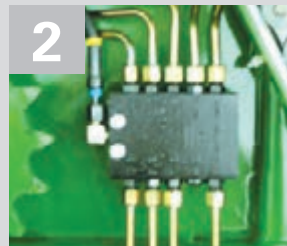


A greasing system supports the following bearings:

- Chamber roller bearings on the drive and non drive side
- Rotor bearings (drive and non drive side)
- Pick up gears



GREASE LINE



GREASE LINE

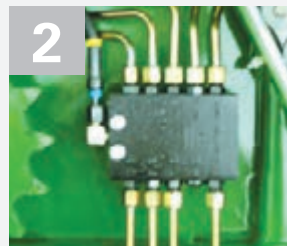


An oiling system supports the following chains:

- Bale chamber drive side chains, which are 1-1/4" (20B)
- Rotor chain which is 1" duplex (16B-2)
- Pick up chains, which are 3/4" (ASA 60H)



OIL LINE



OIL LINE

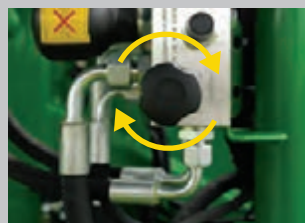


BALE CHAMBER



(iv) Roller Design & Sealing

The roller ends are fitted with high performance self cleaning seals that have a unique reverse-thread sealing system, which hinders the crop from getting into the bearings. As the roller moves in one direction, the thread on the seal moves in the opposite direction, ensuring that any crop that tries to find its way into the bearing is automatically threaded out. The seals prevent the grease around the bearings from becoming contaminated by crop.



(v) Bale Density Adjustment

On the Fusion 3, the chamber pre charge pressure can be easily adjusted on the density control valve on the machine, by adjusting the handle in a clockwise direction, density can be increased, while rotating the handle in the opposite direction reduces density.



(vi) Heavy Duty Chains

High quality, heavy-duty chains ensure reliable operation all around the machine. The main chain coming from the gearbox is an endless chain for maximum strength, while all other chains on the drive side of the bale chamber are an inch and a quarter or 20B. The rotor chain is Inch duplex or 16 B2 and all pick up chains are three quarter inch or ASA 60H.



Netter Release

After the bale full beeper sounds on the control box, the net tension bars pivot forward allowing the net to feed into the bale chamber unrestricted.



Netter Tension

As the net comes into contact with the bale the net tension bars pivot back, applying maximum pressure. This ensures efficient net usage and that a tight layer of net is applied to the bale.



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BALE CHAMBER DOUBLES AS A TRANSFER MECHANISM



Bale Transfer

When the netting process is complete the bale chamber splits horizontally. As the top section of the bale chamber moves up, at the same time the lower section of the bale chamber moves up and out, transferring the bale into the wrapping platform.



Wrapping

Once the bale chamber is closed, wrapping will automatically start and baling can resume, this delivers maximum output.





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1 Vertical Wrapping Ring

The vertical wrapping ring is fitted with two 750 mm dispensers, which take approximately 20 seconds to apply four layers and 30 seconds to apply six layers of film. This means that the wrapping platform is always waiting for the next bale.



2 Cut and Holds

On the last rotation of the wrapping cycle the cut and holds extend out and the film is gently supported in the rail, once supported the cut and holds gather the film to one point where it is cut and held. This system makes the machine's performance extremely reliable particularly in hot or wet conditions.



3 Film Storage

Five rolls of film can be stored inside the panels on either side of the machine. Two additional rolls can be transported on the dispensers. The film holders swivel down to allow the operator to easily unload the plastic from the storage area.



4 Film Loading

Film can be loaded from the left hand side of the machine. After loading film on the first dispenser, the operator can push the index button and the dispensers will then rotate around and automatically stop at the loading position for the second dispenser. This allows the operator to easily load the second roll of film.



5 Film Break Sensors

The machine is fitted with two film break sensors, which monitor the film as it goes onto the bale. Should one of the rolls of film break or run out, the machine will alert the operator via the control box and automatically switch to single dispenser mode. In single dispenser mode the bale rotation is slowed and the ring does additional rotations to ensure that the bale is wrapped with the remaining roll of film. Should the film on both dispensers break or run out the machine will notify the operator that the machine is out of film.



6 Bale Tip / Side Tip

When the machine tips off the wrapped bale, the outer wrapper roller moves down to ground level and ejects the bale. This eliminates problems associated with bales being tipped from a height and getting damaged as they roll away. In stalky crops or on rougher ground conditions a side tip option is available which allows the machine to tip the bales on their ends where there is additional film.

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Fusion Expert Plus Control Box

The Fusion 3 is controlled with an Expert Plus control box, which features a large graphic display; this allows the operator to monitor the baling process graphically from the control box. The Fusion 3 is fully automatic in operation, however the operator can select various options depending on the crop and ground conditions.

The operator can select, if they want:

- the knives in the chopper unit on or off.
- the machine to tip or hold the wrapped bale.
- a 'bale only' programme for hay or straw.
- to record multiple bale totals.
- various bale transfer options depending on ground conditions.

The control box also monitors the lube usage and reminds the operator to check the grease and oil every 300 bales.



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Fusion 3

PLUS



STANDARD FUSION 3 FEATURES

- 2m pick up
- McHale Fusion 3 rotor
- 25 knife chopper unit
- Knife pressure display
- Knife position sensor
- Drop floor unblocking system
- Drop floor sensor
- 18 roller bale chamber
- 50mm bale chamber bearings
- 1'-1/4" chain on the bale chamber
- Continuous oiler system
- Automatic progressive greasing system
- Vertical wrapping ring
- Film break sensors
- 560/60R - 22.5 tyres

FUSION 3 PLUS ADDITIONAL FEATURES

- Film application system
- Film monitoring system
- iTouch control system with inbuilt camera technology



Film on Film Technology



Film on film technology refers to the application of film to the barrel of the bale in the bale chamber. The film binds the bale together as it passes from the baler to the bale wrapper, which eliminates the need for string or net wrap. The film that binds the bale together forms a wrap layer and gives better film or plastic coverage on the largest surface of the bale.

The Advantages

1 Chamber Film Acts As A Wrapping Layer

The plastic which is added to the barrel of the bale to keep the bale together as the bale passes from the baler to the wrapper also forms part of the wrapping process and adds value by placing more plastic on the largest surface of the bale.

2 Chamber Film Results In Better Shaped Bales

When plastic is applied to the barrel of the bale it can be stretched to approximately 20%. The stretch ratio is higher than what can be achieved with net wrap or twine and as a result the material is kept tighter, which ultimately results in better bale shape.

3 Chamber Film Delivers Higher Quality Silage

As the plastic is being stretched as it is being applied to the barrel of the bale it expels more air than net wrap would and as a consequence results in better silage quality.

4 Chamber Film Makes Recycling Easier

As plastic is used to both bind the bale in the bale chamber and to wrap the bale, on feed out the farmer will be left with one form of waste. This reduces the time needed to feed the bale and avoids the unpleasant and time consuming job of separating the twine or net wrap from the plastic before the plastic is recycled.

Patented Film Application



Patented Film Application

In the development of the McHale Fusion 3 Plus, McHale realised that changes in temperature and sun light could affect the chamber wrapping film, in that, as the day got hotter or cooler the film was either being overstretched or under stretched, and this in turn would cause reliability problems and result in inefficient film use.

As a result McHale developed a patented application system which adjusts the breaking force on the roll of plastic in-line with working conditions and allows for a continuously variable stretch, which can adjust to changes in the day automatically without the operator having to adjust any settings. The McHale patent film application system ensures consistent film stretch, reliable film application, delivers optimum bale shape and bale density. Should an operator wish to use netwrap for hay or straw this can be done with a simple adjustment.



McHale Fusion 3 Plus - iTouch Control Unit

The McHale Fusion 3 Plus is a fully automatic machine which is controlled by the McHale iTouch Control Unit. The McHale "iTouch System" has a 7 inch colour touch screen monitor, which allows for increased levels of monitoring, through its colour graphic display.

The iTouch control unit also has an inbuilt systems to ensure that the plastic is applied to the bale.

The operator can adjust the number of layers of film of film being applied to the bale and can also adjust the stretch of the film being applied to the bale in the bale chamber from the comfort of the tractor cab.

The operator can select, if they want:

- the knives in the chopper unit on or off
- the machine to tip or hold the wrapped bale
- a 'bale only' programme for hay or straw
- to record multiple bale totals
- a lube alarm
- various bale transfer options depending on ground conditions



Inbuilt Camera

The iTouch monitor features a Camera to monitor wrapper operation.

The camera can work in two modes:

- Manual monitoring
- Automatic monitoring

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MCHALE FUSION 3 PLUS - CAMERA MODES

1 Manual Monitoring

At any point in the cycle the operator can switch to camera mode to view the wrapper and rear of the machine on the iTouch screen.



2 Automatic Monitoring

In automatic mode the camera will automatically appear on the screen at a number of pre-determined points such as, when the bale tip is pressed or when the first layers of plastic are being applied by the vertical wrapping ring.

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OPTIONAL EXTRAS

Fusion³

Fusion³ PLUS



Optional Extras



Crop Roller

A small diameter high throughput crop roller is also available for the Fusion 3. This crop roller helps to level out uneven swaths and has the ability to increase baler throughput.



Selectable Knives

On the Fusion 3 selectable knives provides the operator with three options: they can choose to engage and chop with a bank of 12 knives or a bank of 13 knives. Should fine chopping be required the operator can choose to engage both knife banks, which will give a 25 knife chopper system - capable of delivering a theoretical chop length of 46mm.



Side Tip or End Tip

When fitted to the Fusion 3 the side tip mechanism allows the machine to turn the bale through 90 degrees and leaves the bale sitting on its end. This is the preferred option when working in stalky crops such as alfalfa.

		Fusion³ PLUS
Dimensions & Weight		
Length	5.8 m	5.8 m
Width	2.76 / 2.94 m*	2.76 / 2.94 m*
Height	3.02 m	3.02 m
Weight	5500 kgs	5650 kgs
Pick Up		
Working Width	2000 mm	2100 mm
Tine Bars	5	5
Tine Spacing	70 mm	70 mm
Pick Up Lift	Hydraulic	Hydraulic
Pick Up Guide Wheels (pneumatic)	Standard	Standard
Chopper Unit		
Maximum Number of Knives	25	25
Theoretical Chop Length	46 mm	46 mm
Unblocking System	Drop Floor	Drop Floor
Knife Control	Hydraulic from Tractor Cab	Hydraulic from Tractor Cab
Knife Protection	Hydraulic	Hydraulic
Bale Chamber		
Number of Rollers	18	18
Width (m)	1.23	1.23
Diameter (m)	1.25	1.25
Greasing	Progressive (Standard)	Progressive (Standard)
Bearings	50 mm**	50 mm**
Bale Chamber Wrap		
Type	Net	Plastic or Net
Layer Adjustment	Manual on Baler	InCab
Wrap Roll Capacity	1+1 Storage	1+1 Storage
Wrap System	Pivot Stretch Netter(4 bar)	Infinite Stretch
Control	Manual or Automatic	Manual or Automatic
Wrapping		
System	Vertical Wrapping Ring	Vertical Wrapping Ring
Film Storage	10 Rolls & 2 on the Wrapper	10 Rolls & 2 on the Wrapper
Film Layers	2+2+2 System	2+2+2 System
Dispensers	70% x 750 mm	70% x 750 mm
Film Stretch	70% standard (55% optional)	70% standard (55% optional)
Drives		
Pick Up Protection	Slip Clutch	Slip Clutch
Main Drive Protection	Cam Clutch	Cam Clutch
Gearbox	Split Drive	Split Drive
Chain Lubrication	Automatic (Standard)	Automatic (Standard)
Control		
Density Adjustment	On Baler Valve	On Baler Valve
Operation	Fully Automatic Electronic	Fully Automatic Electronic
Control System	Expert Plus	iTouch System
Inbuilt Camera	Not available	Standard
Other		
Axle	8 stud	8 stud
Tyre Sizes	560/60R 22.5 (standard) 650/50R 22.5 (optional)	560/60R 22.5 (standard) 650/50R 22.5 (optional)
Electronics	12 Volt DC, 7 amp approx.	12 Volt DC, 7 amp approx.
Road Lights	Standard	Standard
Tractor		
Minimum Hydraulic Flow	45 litres / min at 180 bar	45 litres / min at 180 bar
Hydraulic System	Open, Closed or Load Sensing	Open, Closed or Load Sensing
Minimum PTO Power Requirements	80kW (107hp)	80kW (107hp)
Glossary		
*Width will depend on tyre selection		
**Bearings are 50mm double raced on the main load points		





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McHale has evolved from a farm machinery retail outlet, which is still in existence today. This background has provided an excellent foundation for the design and manufacture of farm machinery, due to direct contact with the end user. Manufacturing takes place in a purpose built facility, which utilises the latest in laser and robotics manufacturing technology and operates to ISO 9001/2008 accreditation.

All research and development is conducted in-house using leading edge technologies. Machines go through rigorous testing during the product development process and machine performance is constantly monitored. As a result, this ensures that product of the highest quality, specification and design are delivered to you. Which explains why a McHale product is truly "an investment in the future."



991B



998



V660



F5000



Fusion 3

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