



Orbital
Round Bale Wrapper
Operator Instruction Manual
Issue 6

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This is the original operator manual with 'Original Instructions'. The English language version of the operator manual is the source document for all translations.

If there is any conflict as to the accuracy or content, of any translation, the English source manual remains the authorised document.

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Thank you for buying this **McHale** machine, you have chosen wisely!
Given proper care and attention, you can expect it to provide you with
years of dependable service.

Warranty/Guarantee

Attention End User!

Please ensure your machine is fully registered with **McHale**,
by your dealer, at the time of delivery.
Failure of the dealer to register the machine will render your warranty void!
You can check the registration of your machine by visiting **www.mchale.net**.

It is important to quote the machine serial number when ordering spare parts or
requesting technical assistance. Space is provided below to record machine details.

(See 'Description of the serial number plate')

Serial number:	
Year of manufacture:	
Date of delivery:	

If you require further copies of this instruction manual,
please quote part number: CLT00689

Due to a policy of continuous product development and improvement, **McHale**
Engineering reserves the right to alter machine specifications without prior notice and
any obligation to make changes or additions to the equipment previously sold.

It is vital to replace defective parts of the machine immediately and to use only genuine
McHale spare parts, as these are designed and manufactured to the same standard
as the original machine. Spare parts can be obtained from your **McHale** dealer.

Throughout this manual there are links to other relevant sections of the manual, to
guide the reader to additional information to convey the complete message. These
links are in *(grey italic font)*. See the example above i.e. the link to the description of
the serial number plate. When you click on the link in the PDF document, the page will
jump automatically to the linked section. With Adobe Reader, you can go back to the
page on which you clicked the link, by clicking on the 'Previous view' button (or by
holding 'Alt' and pressing the 'left arrow').

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1

Introduction

The **McHale Orbital** Round Bale Wrapper is designed to wrap, with plastic stretch film, cylindrical section bales of forage for the purpose of storage as fodder for livestock. The design has been developed based on years of extensive research and development in the field of round bale wrappers. Given proper care and attention, the machine will provide years of reliable and dependable performance.

Please do not assume that you know how to operate and maintain your machine before reading this manual carefully. In order to prevent misuse, damage and accidents, it is very important that everybody who will operate the machine is a fully trained operator. (See 'Trained operator criteria'). They must read and fully understand all of the contents of this manual, before operating the machine, paying particular attention to the following:

- Safety instructions
- Functions
- Controls (hydraulic and electrical)

It is highly recommended to get acquainted with any new machinery slowly. Take time to learn and understand all of the features of the machine. Proficiency will increase as more experience is obtained.

If you have any questions in relation to the instructions in the manual, please contact your **McHale** dealer. It is highly recommended that training be sought from your local **McHale** dealer.

The operator is solely responsible for the safe use and maintenance of the machinery, in accordance with this manual. Keep this manual safe and make sure it remains with the machine, at all times.



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2

Product information

The machine is protected against many dangers to itself while being operated from the control box in manual and fully automatic modes. However, it is of the utmost importance for the safety of the operator and for others, that the operator pays attention to all warnings and instructions given in this manual. In particular all safety devices, decals, guards and controls must be in place and in fully functioning condition. Never try to clear any malfunction when the tractor is switched on or while the machine is running. Keep the 'Danger Zone' (an area around the machine) free of all persons and animals at all times, while the machine is in operation (See 'Danger Zone'). This manual must be read and fully understood by anyone who will operate the machine.

2.1 Designated use of the machine

The machine is exclusively designed for normal use in agricultural applications. The machine has been designed to wrap cylindrical bales of forage with plastic stretch film for the purpose of storing as fodder for feeding livestock. This designation includes the movement of the machine, between fields by track or road, incidental to the wrapper's main use. The manufacturer will not be held responsible for any loss or damage resulting from machine applications other than those specified above. Any other use the machine may be put to is entirely at the owner/operator's risk.

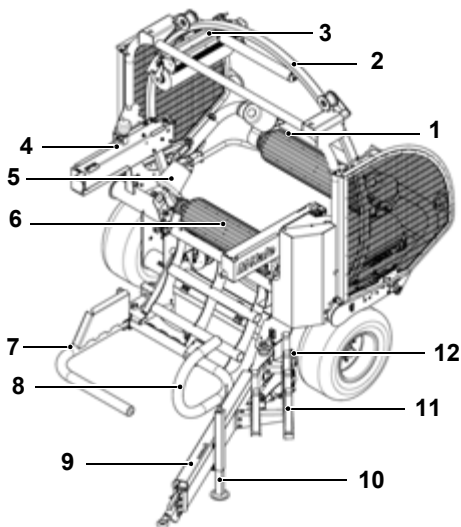
The designated use of the machine includes that:

- The operating, maintenance and repair instructions given by the manufacturer will be strictly fulfilled
- Exclusively persons who are familiar with it and instructed about the risks are entitled to operate, maintain and/or repair the machine
- The relevant health and safety requirements, that may be in force in the country of use, will be strictly followed
- No other equipment or accessories, other than released by **McHale**, are installed in the machine. The use of any other equipment or accessory is entirely at the owner/operator's risk. In such cases, unauthorised modifications/changes exclude any liability of the manufacturer.

**NOTE: Loss of machine validity**

By any alteration of safety equipment, the declaration of conformity and the CE sign loses its validity for this machine.

2.2 Front view



No.	Machine function	No.	Machine function
1	Tip arm roller	7	Clamp arm
2	Dispenser ring	8	Load arm
3	Dispenser	9	Drawbar
4	'Cut and Hold'	10	Drawbar stand
5	Bobbin	11	Spare film roll holder
6	Wrapping table roller	12	Road transport lock

2.3 General dimensions & specifications

Units are given in both metric and UK imperial values, with the latter shown in brackets.

Transport width	2.74 m (108")
Transport weight (unladen)	2,400 kg (5,291 lbs)
Axle load (unladen)	2,185 kg (4,817 lbs)
Maximum road speed*	40 km/h (25 mph)

*Check with national road traffic regulations in the individual country!

2.4 Tractor specifications

Attachment	Pin hitch
Towing tractor requirements	35 kW (47 HP)
Electrics	12 V, 10 A (min. specification)
Lighting	12 V / 7-pin socket
Hydraulic systems	Open-Centre, Closed-Centre, Load-Sensing
Minimum hydraulic pressure	170 bar (2,465 psi)
Minimum hydraulic flow rate	35 l/min (7.7 gal/min) @ 170 bar (2,465 psi)

2.5 Machine specifications

Bale dimensions		1,200 mm (47") wide x ø 1,100 mm (43") (Min)	1,270 mm (50") wide x ø 1,450 mm (57") (Max)
Bale weight		1,200 kg (2,646 lbs) (Max)	
Plastic film	Film width	750 mm (29.5")	
	Film stretch	70% (64% and 55% are optional)	
	Film layers	2+2 system, 2+2+2; etc	
	Film storage	6 rolls (+ 2 rolls on dispensers)	
Dispenser rotary speed		40 rpm	

2.6 Tyre specifications

Details	Type	Field pressure	Road pressure	Part No.
380/55-17 133 A8 (Vredestein)	Flo +	1.45 bar	2.4 bar	CWH00268
480/45-17 145 A8 (Vredestein)	Flo +	1.45 bar	2.4 bar	CWH00270
15.0/55-17 141 A8 (BKT)	AS 504	2.4 bar	3.6 bar	CWH00293

2.7 Optional equipment*

Side-tip	Trailed fold up side-tip
Dispenser gears	55% and 64% film stretch
Radio remote	Allows remote control of the machine
Wired remote	Remote hand piece

*May not be available in all countries, check with your **McHale** dealer for availability in your country.

Side-tip option

The side-tip option is used for knocking the bale onto its side and is very useful for coarse ground with strong stubble (which may have a tendency to puncture the film), as it allows the bale to land on its edge, which has a much higher degree of film coverage. It is also very useful on hilly/sloping ground as it can prevent bales from rolling, when they land on their side. The side-tip is attached to the rear wrapping cradle. (See 'Side-tip')

Additional options or features may be available. Check with your **McHale** dealer or the **McHale** website for further information.

3

General safety

3.1 Be aware of all safety information

Follow all safety precautions and practice safe operation of machinery, at all times.

Warning, caution, note & environment messages:

When reading this manual, pay particular attention when you see the symbols below i.e. warning, caution, note and environment. They will be used at various points in this manual and may also appear on safety decals on the machine. The purpose of these messages is to ensure that the most important information stands out from the rest of the text.



WARNING: This symbol indicates a potentially hazardous situation, that if not avoided could result in machinery damage, personal injury or even death.



CAUTION: This symbol indicates a potentially hazardous situation, that if not avoided could result in machinery damage or personal injury.



NOTE: This symbol is used to identify special instructions or procedures which, if not followed strictly, could result in machinery damage.



ENVIRONMENT: This symbol reminds you to respect the environment in relation to the correct disposal of waste material.

3.2 Follow all safety instructions



Using this manual, read all safety instructions and messages, and be aware of the meanings of all safety decals. (See '*Safety warnings & instructions explained*'). The spare part codes for each decal are also listed, which are available from your **McHale** dealer. If safety decals are damaged or missing due to wear and tear or component replacement, ensure that they are replaced. As with all machinery, learn all operations and use controls by reading this manual thoroughly. Do not attempt to let anyone operate this machine without being fully instructed.

3.3 Store all items carefully



Store all attachments in a secure and safe manner so as to prevent items from falling. Keep storage areas clear of bystanders and children.

3.4 Personal protective equipment (PPE)



The following PPE should be worn, at all times, when carrying out maintenance work on this machine, to help prevent health and safety hazards:

- Safety glasses
- Ear muffs
- Safety boots
- Gloves
- Tight fitting clothing

Use of mobile phones or radio/music headphones are strictly forbidden while operating machinery and driving, as these impair the operator's attention.

3.5 In case of emergencies



In the event of any accident, emergency equipment should be kept close at hand. A first aid kit and fire extinguisher along with emergency phone numbers should always be available to machine operators.

3.6 Stay clear of rotating elements

Serious injury or death can result from entanglement of clothing or body parts with PTO shafts, drivelines and other rotating and moving components.

Keep all guards in place at all times, only wear close fitting clothing and ensure that tractor engine has stopped and key is removed before carrying out any adjustments, connections or cleaning of equipment.

3.7 Trained operator criteria

Age related requirements		General requirements
18 +	The operator needs to be fully trained in the use of this machine and have a valid tractor driver's licence.	<ul style="list-style-type: none"> The operator must be in full control of his/her senses and must not be under the influence of any alcohol or drugs, prescribed or otherwise. The operator must have read and understood all aspects of the operator manual in order to operate, maintain and clean the machine. Ideally, they should also receive training from their McHale dealer. It is only acceptable to have more than one person in the tractor cab, if it has a second seat.
16 - 18	An operator between the age of 16 and 18 years old must have a provisional licence and must be accompanied by an experienced driver/operator, at all times, even during maintenance and cleaning!	
< 16	Persons younger than 16 years of age are not allowed to operate, clean or carry out maintenance on this machine, under any circumstances!	

3.8 In the event of a fire



In the event of a fire, it is the operator's decision to determine the seriousness and hence the solution to the situation. The following is given only as a guideline procedure:

1. Switch control box to manual mode. (See 'Electronic control system')
2. Immediately tip the bale off the table.
3. Move the tractor and machine away from the flammable material. Position the tractor upwind, in an open area to limit the fire spreading.
4. Remove all hosing and electrical looms from the machine, assuming it is safe to do so.
5. With all connections removed, disengage the wrapper from the tractor.
6. Drive the tractor away from the wrapper and park it upwind of the fire.
7. Shutdown the tractor and remove the key from the ignition.
8. If safe to do so, use a suitable fire extinguisher to attempt to put out the flames. If unable to do so or there is a risk of personal injury stand well clear and call the fire brigade.



WARNING: Fire prevention

It is recommended that the machine be kept reasonably clean and free of build-ups of crop, lubricants, etc. This will help to reduce the risk of fires.



WARNING: Do not risk personal injury

If a fire is too far advanced, do not try to extinguish it. Avoid smoke inhalation and severe burns. Burning tyres or gas struts can explode unexpectedly.

3.9 General safety warnings

It is important to be aware of the potential hazards associated with the operation of farm machinery. Numerous research studies have shown that the majority of machinery-related accidents occur as the result of human negligence, including taking shortcuts to save time, lack of or improper maintenance, ignoring warnings, failing to read the operator's manual, lack of or improper instruction and failure to follow safety rules.

Read and understand this operator manual before using the machine. If any of the instructions appear unclear do not hesitate to contact your **McHale** dealer.

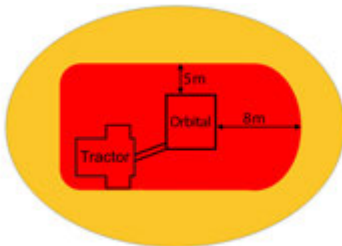
Only competent persons who have read and fully understood this manual are qualified to operate this machine. The owner of this machine is obliged, by law, to ensure that every operator understands all of the functions, controls, working processes and safety warnings, before operating the machine.

Safety devices

- All safety devices such as guards, protection parts and safety controls must be in place and in fully functioning condition. It is forbidden to operate this machine with defective or incomplete safety devices.

Danger Zone

- The 'Danger Zone' is the area around the rotating machine (approx. 5 m radius from the rotating dispenser), and a minimum of 8 m to front and back of the machine to allow for safe bale transfer on and off the machine.





NOTE: 'Danger Zone' can vary in size

The operator must be aware of the 'Danger Zone' which can vary in size, depending on operating conditions, i.e. hilly terrain.

- It is the operator's responsibility to ensure that there is no person in the 'Danger Zone' while operating the machine, especially during start up.
- The only person who should be present is the machine operator and they should be seated in the tractor cab while the bale wrapper is in operation.

Before repair or reassembly

- Safe lifting gear of sufficient capacity must be used for machine assembly. All chains and slings used must be in good condition.

Before operation

- Never operate farm machinery while under the influence of drugs or alcohol. The physiological effects of drugs and alcohol impair performance and can lead to operators taking risks or putting others at risk. This includes over-the-counter cold/flu and allergy medications or prescription drugs that are not recommended to be taken whilst driving a car or operating machinery.
- The operator must ensure that the manufacturer's instructions for attaching and detaching the machine are followed. This includes the drawbar attachment, the electric and hydraulic lines, in particular the lighting system.
- The operator must ensure that all covers are closed and all safety devices are in operating mode.
- The operator must ensure that there is no person in the 'Danger Zone'.
- Always be familiar with the health and safety requirements that may be in force in the country of use.
- Auto bale-tip function should not be used in hilly terrain as the operator needs better control of bale unloading, i.e. the bale should only be unloaded on level ground.

During operation

- While operating this machine on hilly or sloping ground the operator must take extra precautions, in particular the 'Danger Zone' is increased in such conditions as bales are more likely to roll away, causing a potential risk.
- Precaution must be taken when travelling over sloping or rough ground due to the risk of overturning. Always travel at a speed suitable for the ground conditions.
- The operator must ensure that there is a minimum of 4 m clearance between the machine and any obstacle above, in particular electrical high voltage lines.

- Be careful when working with the 'Cut and Hold'. Remember that the accumulators are under pressure.
- Avoid contact with the knife.
- Do not attempt to clamp plastic film in the 'Cut and Hold' mechanism.
- Particular care must be taken, if the machine is left idle for any extended period, to ensure that all sensors and safety features are working correctly.
- Never operate machine with dispenser safety guards damaged or missing.
- Never climb onto any part of the machine, while it is in operation.



WARNING: Do not carry people or animals on the machine

The operator must ensure that no persons or animals are carried on the machine at any time or are hidden under the machine (on the tractor persons are only allowed to sit on the relevant seats).

Before travelling on public roads

- The owner of this machine is obliged by law to ensure that every operator has a valid driving licence and is familiar with the road traffic regulations relating to the country of use.
- Always ensure that the electronic control box and oil supply are switched off.
- Ensure lights are connected and working correctly.
- Ensure that the work lamp is switched off.
- If plastic film is to be transported on the machine, it must only be done so on the holders provided and secured if necessary.
- Close the clamp arm and move the load arm to the fully raised position.
- Drawbar transport lock must be fitted correctly while travelling on the road.
- Ensure that the drawbar safety chain is attached securely to the tractor. The safety chain must be attached in such a way that if the coupling breaks, the hitch or drawbar cannot make contact with the ground.
- This machine is not suitable for towing at speeds above 40 km/h.

Performing maintenance

- Maintenance and repair work on the machine should always be carried out in accordance with this manual.
- Always maintain the machine according to manufacturer's recommendations.
- Maintenance and repair work exceeding the content of this manual should only be carried out by qualified persons or your **McHale** dealer.

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- When conducting maintenance work tie long hair behind your head. Do not wear a necktie, necklace, scarf or loose clothing when you work near the machine or moving parts. Rotating machinery parts can entangle loose clothing, long hair or dangling jewellery faster than a victim can react. If these items were to get caught, severe injury could result.
- Before working on this machine or altering any setting, the operator must ensure the following:
 - (a) The tractor has definitely stopped moving
 - (b) The hand brake is applied
 - (c) The engine is shut down
 - (d) The ignition key is removed
 - (e) Electronic power supply and control box is disconnected
 - (f) Hydraulic oil supply is switched off

**It is forbidden to open any safety guards or to carry out any work on the machine, unless the above specified precautions have been carried out.*
- When conducting maintenance work always support the machine properly. Where possible, lower the attachment or implement to the ground before you work on the machine. If it is not possible to lower the machine or attachment to the ground, always securely support the machine or attachment. Do not work under a machine that is solely supported by a jack. Never support the machine with props that may break or crumble under continuous load.
- Tyres should be inspected for wear on a regular basis. Tyres should be replaced before wear becomes excessive or after 10 years from the date of manufacture, as indicated on the tyre. Care must be taken when handling tyres. Tyres shall be inflated to the pressures indicated in this manual and on the machine and never over inflated. Tyres shall only be inflated while on the machine or in an appropriate safety cage.
- Replace any electrical or hydraulic devices immediately, at the first sign of malfunction or failure, as these components affect the functionality, sequencing and thus safety of operation. Never use a machine where a malfunction exists! Contact your **McHale** dealer to achieve a solution. Always think 'Safety First'!
- Never disable any electrical safety circuits, tamper with safety devices or carry out any unauthorised modification to the machine.
- Avoid heating near pressurised fluid lines, as pressurised lines can be accidentally damaged when heat goes beyond the immediate flame area.
- Regular clean down is recommended in order to maintain the machine in a safe and reliable working condition. **McHale** recommend that the machine be blown down with an air line, as opposed to a pressure washer, due to the dangers involved with pressure washing and to protect the overall paint work on the machine. If, despite our advice, a pressure washer is used then take extreme caution and operate from ground level only. Never climb onto any part of the machine, while pressure washing, due to the fact that all metal surfaces become extremely wet and slippery and always ensure that the tractor has been shut down, with the ignition key removed.

- Check bearings for early warning signs of wear or damage and replace if necessary. Always be on alert for bearings that are squeaky or noisy despite being well lubricated and bearing housings that are running very hot especially with a burning smell or paint discolouration. Carry out these checks daily, immediately after using the machine, with the tractor shut down and the handbrake applied.

During inspection

- If on the rare occasion that it is necessary for an inspection to be carried out within the 'Danger Zone' while the machine is running (**extremely dangerous and not recommended!**), there shall be a fully trained and competent second person operating both the tractor and machine controls. The tractor hand brake shall be applied and the electronic control box shall be in manual mode. The machine shall be on level ground with all guards closed. Communication is key. The operator shall inform the inspector before any machine function is activated. The inspector shall remain in the field of vision of the operator at all times and inform the operator of their intended actions. If communication is lost with the operator, or they move within 1.1 m of moving parts or parts that have the potential to move, all tractor power shall be turned off immediately.

Child safety on farms

- All adults working or present on farms are required, by law, to do everything reasonably practical to ensure the safety and health of children and young people on the farm.
- Children must be supervised at all times! Remember, farms are not playgrounds.
- Store farm machinery with safety and stability in mind. Lower any implements or loaders to the ground and apply the hand brake.
- Always exclude children from potentially dangerous areas (they will often get into apparently inaccessible places). Do not allow them in farm yards on busy days. Contractors should always be made aware of the presence of children.
- Never leave children alone in a tractor cab as they can interfere with controls and many children have been killed falling from the door or rear window of a tractor.
- Children under 16 years of age should never operate power-driven machinery. Keys should be removed from vehicles and controls left in neutral.
- Do not allow children to use bales of any description for playing. It is very easy to fall from stacked bales resulting in serious injury, or fall between them leading to suffocation. Make sure there is no evidence of children burrowing under stacked bales.
- Children under 16 should never handle chemicals. Always keep them in their correct containers and securely stored out of sight under lock and key.
- Keep matches in a safe place

Danger of lightning strike

- If there is a risk of lightning in the area, stop all work.
- If there is a risk of lightning while travelling, find a safe place to pull over and stop the tractor.
- Do not leave the tractor cab or start work until the risk of lightning has passed.

4

Specific safety warnings

4.1 Electronic safety warnings

- This machine is equipped with electronic parts and components which comply to the EMC Directive 2014/30/EU but still may be influenced by electromagnetic transmissions of other apparatus, such as welding machines, etc.
- Check electric cables regularly for signs of breakage or wear. If in doubt always replace.
- Do not modify any safety circuits (faulty safety circuits will cause risks).

4.2 Hydraulic safety warnings

- The maximum pressure in the hydraulic system of this machine should not exceed 210 bar.
- Always ensure the system is not under pressure before working on the machine. Oil under pressure can penetrate the skin and cause injury. Beware of pipes under accumulator pressure, depressurise lines by unthreading connections extremely slowly.
- Hydraulically actuated devices must be blocked mechanically against movement, before working on the machine.
- If any hoses are removed or replaced ensure they are marked and re-installed to the correct position during re-assembly.
- Check hoses monthly for signs of leakage or wear. Use a piece of card when checking for leaks. Fine jets of hydraulic fluid can penetrate the skin. Never use your fingers or face to check for leaks. If in doubt always replace. The recommended maximum working time of hoses should not exceed 5 years. Only use exact specification **McHale** genuine replacement parts.
- As the 'Cut and Hold' is kept closed by gas accumulator pressure, it is necessary to release this before removing the accumulator or working on the hydraulic cylinder. Otherwise injury may occur. If in doubt entrust the job to your **McHale** dealer.
- Do not work on hydraulic systems unless you are qualified to do so. This work should only be carried out by qualified persons or your **McHale** dealer.

4.3 Noise level

- The European Directive 2003/10/EC directs employers and employees to control the noise level at work. The noise level at field work may differ according to the tractor, ground, crops and other environmental conditions.
- In normal conditions, whilst driving the machine, the noise level to the driver's ear does not exceed 70 dB (A) with the rear screen of the tractor cabin open. The common noise level of the machine and the tractor is primarily influenced by the tractor noise (radio is an additional noise source). It is recommended to operate this machine with closed cabin windows.

4.4 Fire precautions

- Be aware that crops are easily inflammable.
- Do not smoke or make use of any open fire next to the machine.
- A functioning fire extinguisher should always be available on the tractor.
- The machine is to be kept clear of oil, grease, crops, string, plastic or any other flammable material at all times.
- Do not continue to work with overheated parts, cables or pipes, unless you have identified and eliminated the reason for overheating.
- Check bearings for early warning signs of wear or damage and replace if necessary. Always be on alert for bearings that are squeaky or noisy despite being well lubricated and bearing housings that are running very hot especially with a burning smell or paint discolouration.

4.5 Special safety devices/instructions

- The owner of the machine is obliged, by law, to ensure that all safety devices are installed on the machine and are in good functioning condition.
- Always use protective gloves when replacing knife blades in the 'Cut and Hold'.


4.6 Safety instruction decal locations



4.7 Safety warnings & instructions explained

Danger areas which cannot be protected by any devices are marked by yellow safety decals. Therefore it has to be ensured that all safety warnings and instructions are understood and followed. If any of the decals are damaged or missing, they are available from your **McHale** dealer. The relevant part numbers are shown in brackets.

The decals featured on the machine are displayed with their meanings below:

	<p>Free flow return to tank (CST00006)</p>
	<p>Danger of falling parts, rotating objects. Keep clear of machine while working. (CST00014)</p>
	<p>Keep hands clear of rotating rollers (CST00017)</p>
	<p>Keep hands out of crush area (CST00019)</p>
	<p>Diagram of plastic film path through dispenser (CST00022)</p>

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	Lifting hook location (CST00032)
	Grease daily (CST00060)
	Read instruction manual before use (CST00110)
	Beware of high-pressure hoses, even when the machine is switched off. Also, read and understand manual before working on any part of the hydraulic system. (CST00111)
	Turn off and remove key from tractor. Read and understand the manual before working on or performing maintenance on the machine. (CST00113)
	Close protective covers before operating the machine (CST00114)
	Hydraulic accumulator is under high pressure. Slowly release hydraulic pressure before carrying out any maintenance. (CST00115)

McHale Orbital Round Bale Wrapper



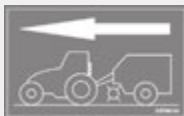
Beware of rotating dispensers, ring and moving wrapping table rollers
(CST000116)



Disconnect the machine feed line and turn off the control box during road use.
Read the operation instruction manual before proceeding.
(CST00135)



Dispenser park rotation decal
(CST00137)



Dispenser ring orientation
(CST00154)



Check wheel nuts daily
(CST00256)



Tie-down points
(CST00901)

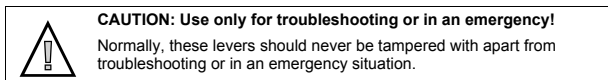


Jacking points
(CST00923)



4.8 Hydraulic control valve unit decal

The machine is fitted with an emergency hydraulic valve instruction decal. In an emergency, the hydraulic control valve unit levers may need to be activated manually, depending on the specific situation. If the decal becomes damaged or missing, a replacement part CST00883 can be ordered from your **McHale** dealer.



Lever up					
Lever up	Dispenser ring rotate - reverse ★	Tip arm - lower ★★	Cut and hold - partial open (spring return)	Clamp arm - open ★★★	Load arm - down ★★★★
Lever down	Dispenser ring rotate - forward (normal) ★	Tip arm - raise ★★	Cut and hold - full open (spring return)	Clamp arm - close ★★★	Load arm - up ★★★★
Lever down					

In normal operation, the machine functions are only allowed to happen in a specific sequence. For this reason, some valves are not fitted with actuation levers as there is a danger of causing damage to the machine. However, each valve can be actuated separately, using an 8 mm ring spanner providing these cautionary note conditions are satisfied.



CAUTION: Machine damage will occur if operated out of sequence

When valve levers are not fitted, the following conditions must be met before operating them with a spanner, in order to avoid damage.

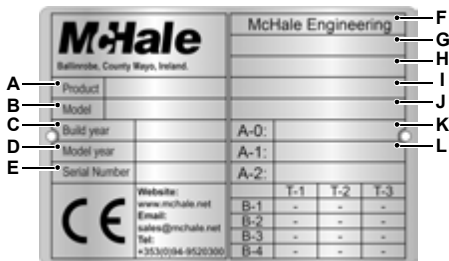
*	Dispenser ring: The load arm must be in the fully lowered position and the tip arm in the fully raised position, before rotating.
**	Tip arm: The dispenser ring must be parked in the home position, before lowering or raising.
***	Clamp arm: The load arm must be in the fully lowered position, before opening.
****	Load arm: The clamp arm must be fully closed and the dispenser ring must be parked in the home position, before raising.



WARNING: Keep out of the 'Danger Zone'

Keep all persons outside of the 'Danger Zone' during all machine operations! (*See 'Danger Zone'*)

4.9 Description of the serial number plate



The following is a description of the serial plate content:

- A. Product description
- B. Model name/number of the machine
- C. Year of manufacture of the machine
- D. Model year of the machine
- E. Serial number of the machine
- F. Name of the manufacturer
- G. Vehicle category
- H. Machine type approval number
- I. Vehicle identification number (VIN)
- J. Technically permissible maximum laden mass
- K. Vertical load on the coupling point
- L. Technically permissible maximum mass per axle

4.10 Machine lifting guidelines

Should the machine need to be lifted, it will require two lifting plates. (Order from your **McHale** dealer using part no. CZH05307 (2x)).



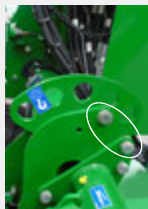
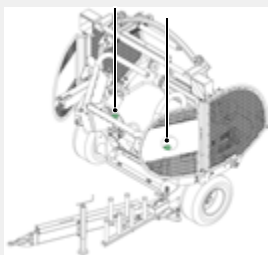
WARNING: Machine lifting

- The machine may be lifted using the two lifting points while the drawbar is in the road transport position.
- Only use chains or strapping that are rated for a minimum load of two tonnes (2,000 kg) per chain or strap when using the two lift eye locations on the chassis, shown below.
- Lift the machine very slowly at first, checking the balance. Adjust the hooks between hole positions if necessary.
- The crane or lifting device must be capable of lifting a minimum load of four tonnes (4,000 kg).
- Never go under a suspended machine or attempt to try and stop it if moving erratically, death or serious injury may result.
- Always be observant of people and objects around the suspended machine and do not allow the machine to impact heavily on the ground after suspension or movement.

Remove the bobbin brackets and fit the lifting plates using the bolts as shown below.



RHS lift hook



LHS lift hook

4.11 Jacking points

Jacking points are indicated on the machine with decals. Ensure the machine is on flat solid ground before attempting to raise it. Suitable well maintained equipment shall be used to lift the machine, the use of axle stands is recommended. The wheel on the opposite side of the machine should be chocked to guard against uncontrolled movement. Never climb underneath the machine when it is raised off the ground. Care should be taken not to make contact with the wrapping ring motor when jacking the machine. Introduce the jack from the front of the machine until it is directly under the stub axle, before starting to raise the jack.



WARNING: Do not rely solely on a hydraulic jack!

Ensure the machine is additionally supported with axle stands or equivalent of suitable capacity. Never support the machine with props that may break or crumble under continuous load.

5

Tractor requirements & preparation

5.1 Tractor requirements

The minimum recommended size of tractor for operating the machine comfortably is 35 kW. On hilly ground or difficult conditions, an additional 10 to 15 kW is advisable.

**NOTE: Use good quality oil**

Ensure that the tractor has clean, good quality, hydraulic/universal oil to avoid problems later on. Also, the hydraulic filters on the tractor should be changed regularly, according to the manufacturer's service instructions. Avoid dirt getting into the hydraulic couplings.

The following items on the tractor are required for attachment of the machine behind the tractor:

1. Drawbar hitch suitable for a vertical load of at least 1,470 kg and a D value of at least 38 kN
2. Two ½" female quick-releases (feed and return) for hydraulic power supply. The return line must be freeflow to tank (check with a **McHale** dealer for details)
3. ¾" female quick-release for load-sensing (Only required if tractor has a load-sensing hydraulic system)
4. Two ½" female quick-releases (double-acting spool) for drawbar ram
5. 12 V/ 10 A socket or battery power cable
6. 12 V/ 7-pin lighting socket
7. Suitable location to attach safety chain. The safety chain must be attached in such a way that if the coupling breaks, the hitch or drawbar cannot make contact with the ground.

5.2 Connecting the control box

The electronic control box must be located inside the tractor cab in the operator's field of vision and within easy reach of the red emergency stop button. (See '*Electronic control system*'). Secure the control unit in the tractor cab, using the V-brackets and fasteners provided. The male half attaches to the control box and the female half attaches to the tractor cab allowing for quick replacement/removal, every time it is used. Ensure that the cable to the machine is not under tension and not near sharp edges, etc. The control box is to be connected to a 12 V, 10 A power supply, using the supplied power lead or the battery power cable. The control box is not waterproof, it must be protected from rain.

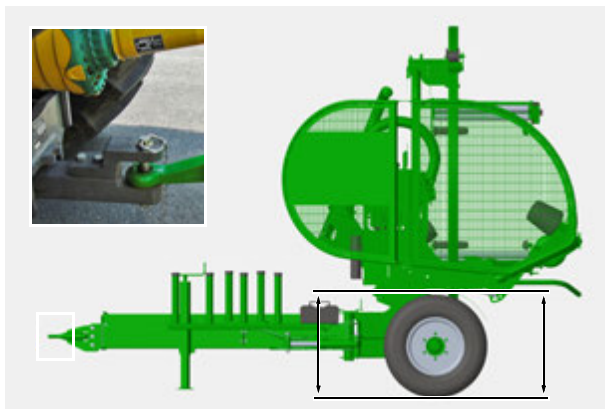


CAUTION: Do not connect control box to a 24 V power supply

Do not attempt to connect the control box to a power supply greater than 12 V, as machine component damage will result.

5.3 Attaching to drawbar

The drawbar is to be attached so that the machine is horizontal to the ground.



Machines are set up for hitching to the tractor drawbar. Once the tractor is attached to the drawbar, attach the PTO shaft. Depending on the country of use a safety chain may also be required. Detach in reverse order of attachment.



CAUTION: Tractor drawbar and coupling device must be compatible

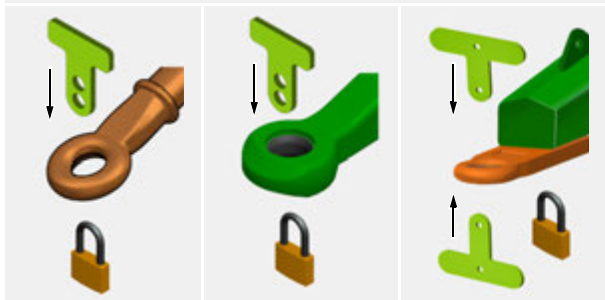
Check that the tractor drawbar is compatible with the coupling device on the machine. If in doubt, consult your **McHale** dealer.

5.4 Preventing unauthorised use

To prevent unauthorised use, **McHale** recommend using the padlock and the locking device provided. Both items are stored in the tool box on the machine and should be fitted to the drawbar coupling when the machine is not in use.

Couplings with holes (Swivel hitch, drawbar eyes or coupling rings)

- Place the steel plate/s through the hitch eye from the top, and bottom where provided
- Attach the padlock underneath, through either hole in the device
- Once the padlock is locked, the machine should be secure



Other couplings

- Slide the keeper plate to the mid-point of the top of the coupling
- Hinge the second plate and rotate upwards until the holes align
- Attach the padlock through the hole in the device, as indicated
- Once the padlock is locked, the machine should be secure



5.5 Machine set-up & tractor hydraulic system



CAUTION: Hydraulic system setup

It is very important to determine the correct hydraulic system on the tractor, as a wrong setup will cause serious damage to the tractor hydraulic system, or at least excessive heating of the oil.

There are 3 systems found on tractors, as outlined below:

1. **Open-centre:** This is the most common system on smaller tractors (less than 60 kW) and also on some bigger older tractors. In this system, all the oil flows through the control valve, when the machine is idle. The tractor will have a fixed displacement pump and the output flow will be max. 60 l/min and flow is usually not adjustable.
2. **Closed-centre:** Although not so common on today's tractors, this system is still found on the older John Deere models (pre. 00 & 10 series), but also on some other makes and particular models. In this system, no oil flows through the control valve, when the machine is idle, but maintains max. oil pressure in the feed line. The tractor will have a fixed displacement pump and the output flow is usually not adjustable.
3. **Load-sensing with 'Power Beyond' fitted:** This is, by far, the preferred system. Most newer tractors are done this way, but not all. In this system, no oil flows through the control valve, when the machine is idle, but it maintains a low oil pressure in the feed line, (approx. 21 bar). The tractor will have a variable displacement pump and will always have some means of adjusting the oil flow on each auxiliary valve.

In its most ideal configuration, the tractor will have a 'Power Beyond' connection, i.e. oil comes direct from the pump, by-passing the tractor auxiliary valves, to a 'female 3/4" quick-release' connection, which becomes the machine feed.

It will also have a 3rd connection to the tractor, called the pilot sensing line, and this pipe sets the correct oil flow for the tractor to pump for each operation.

This is the most advanced and efficient hydraulic system available, as the machine control valve now controls the amount & pressure of oil required for each control valve operation, and only the correct amount is pumped. This will save up to 20 kW PTO power on the tractor.

Although it is possible to operate the machine with a load-sensing system via the tractor auxiliary spools, i.e. continuous oil flow (control valve is set to open-centre setup and flow is set to 45 l/min from the tractor). **McHale** do not recommend operating the machine in this setup, as controlling the oil flow is too variable from one tractor to another, and there is also a 20 kW PTO power loss with its associated overheating of the oil.

Once the correct tractor system is identified, use the map in the next section, to select the best setup for the machine.

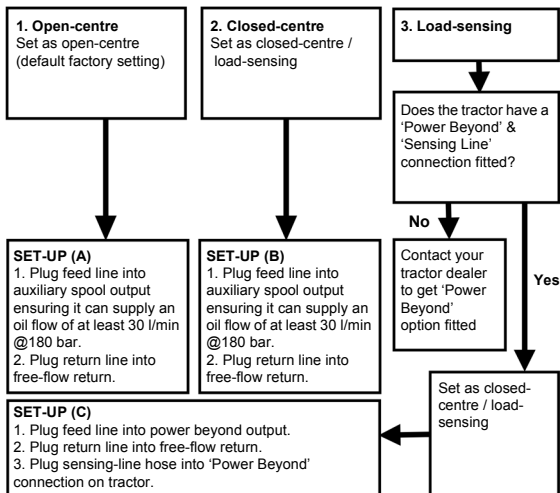
Load sensing without 'Power Beyond' fitted

There are two further variations on this system as described below. This will only affect the wrapper setup, when a 'Power Beyond' connection is not available:

1. Load-sensing (not compensated): This is the more basic of the two versions usually found on the 'economy' tractor models. The disadvantage of this system is that it does not maintain the set oil flow to the wrapper when another auxiliary valve is operated. It will cause the tractor to send all the oil flow to the wrapper, which results in inadequate oil pressure.
2. Load-sensing (compensated): This is the better option as it allows for each tractor auxiliary valve, to be set to deliver a fixed amount of oil, and providing that the total amount of oil required does not exceed the max oil flow of the tractor, 2, 3 or even 4 auxiliary valves can be used at the same time.

Once the correct tractor system is identified, use the map in the next section, to select the best setup for the machine.

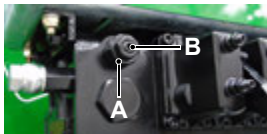
5.6 Which hydraulic system is used?



5.7 Hydraulic spool valve setup

Procedure to select an open/closed-centre valve configuration:

1. Using a 17 mm spanner, loosen locknut (A) as shown below
2. With a 4 mm Allen Key, tighten or unscrew the bolt (B) according to the following guidelines:
 - (a) Open-centre (factory default): Screw in fully (do not overtighten)
Tightening torque = 6.0 Nm
 - (b) Closed-centre/load-sensing: Unscrew 5 full turns from the fully in position
3. Re-tighten 17 mm locknut. Tightening Torque = 20 Nm



5.8 Making connections to the tractor



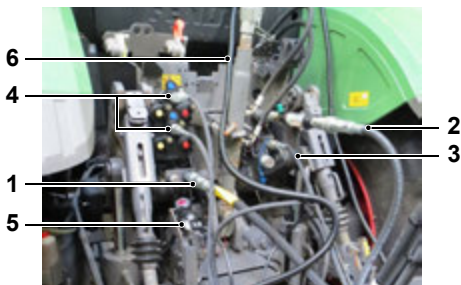
WARNING: Turn off tractor before connecting hydraulic hosing

When connecting hydraulic hosing to the tractor, ensure that the tractor engine is turned off and that the ignition key is removed. Ensure that all hydraulic connections are correctly tightened.

There are a total of five hydraulic hoses (two for the drawbar ram) and two electrical connections that must be connected to the tractor. They are as follows:

1. 1/2" male quick-release for the return line. Note: The return line must have a free flow to tank.
2. 1/2" male quick-release for feed line
3. 3/8" male quick-release for load-sensing (if the tractor is load-sensing)
4. Drawbar hoses
5. 12 V / 7-pin lighting socket
6. Machine loom to control box

See the following image for possible hosing layout. Ensure that the machine operator is familiar with all tractor connections and fittings.



Possible layout of hydraulic hosing and electric looms

5.9 Attaching the machine to a tractor

1. Reverse the tractor up to the machine, lining up the hitch of the tractor with the hitch of the machine.
2. Fit the tow pin to the hitch, ensuring it is secure. Attach the safety chain to the tractor. The safety chain must be attached in such a way that if the coupling breaks, the hitch or drawbar cannot make contact with the ground.
3. Screw the jack up off the ground, into the transport position.
4. Attach all hydraulic hoses to the tractor.
5. Plug the 7-pin lighting plug into the 7-pin socket on the tractor.
6. Place the electronic box in the tractor cab and secure it in an appropriate place. If there is no cab on the tractor, secure as appropriate, bearing in mind the box is not waterproof.
7. Screw the 37-pin socket on the electronic box into the 37-pin plug on the machine. Ensure that the cable to the machine is not under tension and is clear of sharp edges, etc.
8. Connect the control box to the tractor battery using the fused electric power cable provided or to the 12 V socket of the tractor, ensuring to route away from sharp edges and hot surfaces. There must be a good 12 V supply to the control box.
9. Check that all functions operate correctly. The machine is now ready to work.



CAUTION: Tractor drawbar and coupling device must be compatible

Check that the tractor drawbar is compatible with the coupling device on the machine. If in doubt, consult your **McHale** dealer.

5.10 Lighting system

The 7-pin plug of the lighting system on the machine must be connected to the 7-pin socket on the tractor.



NOTE: Check lighting system before travelling on the road

Before travelling on a public road, the operator must ensure that the complete (tractor and machine) lighting system is in a fully functioning condition.

6

Bale & film requirements

6.1 Bale requirements

The bales to be wrapped should be well shaped, dense and of suitable quality for making silage. Substandard material will not produce good quality silage regardless of how well the bale is wrapped.

- Bale width - between 1,200 mm and 1,270 mm wide
- Bale height - diameter from 1,100 mm up to 1,450 mm

6.2 Film requirements

Good quality silage depends on the use of top quality plastic film, in addition to well shaped dense bales. Low standard film material will not produce good silage regardless of how well the machine wraps the bale. The plastic film should be used and stored according to the instructions of the film manufacturer.

It is recommended that a minimum of four (4) layers of film be applied to the bale. If the material being wrapped is of a hard or stemmy nature it may be necessary to apply six (6) or eight (8) layers to ensure a good airtight package. Only 750 mm film is to be used, unless otherwise stated.



NOTE: Operator must check to ensure bales are wrapped correctly

The operator needs to ensure that the bale is wrapped correctly. It is good practice to check the bales regularly after being wrapped for torn, split or perforated plastic film.

If the stubble in a particular field has a tendency to puncture the plastic film, it is strongly advised to wrap the bales at the stack, where there may be more control over ground conditions.

6.2.1 Determining the number of wrapping ring rotations

To determine the number of wrapping ring rotations required to cover a bale, carry out the following procedure:

1. Using manual operation, from the control box, manually count the number of wrapping ring rotations to cover the bale completely with plastic film
2. Add 0.5 to this number

3. Multiply the resultant figure by 2 (for 4 film layers), 3 (for 6 film layers), 4 (for 8 layers), 5 (for 10 layers), etc.
4. Round up to the next full number if the result contains a fraction of a full number

Example:

- Number of 'Wrapping ring rotations' to cover bale: $3.5 = (x)$
- Number of rotations to apply 4 layers of film to bale = $(3.5 + 0.5) \times 2 = 8$

Important Notes:

- (x) 'Wrapping ring rotation' = both dispensers rotating 360° around the bale
- Bale diameter must not vary by more than 3%. If this is not possible, then the above test must be carried out on the largest diameter bales to be wrapped.



NOTE: Check bale diameter for enough wrapping ring rotations

It is very important to note that bales in excess of 1,300 mm will not have enough 'wrapping ring rotations' if the above exercise has been carried out on a normal 1,250 mm bale. Therefore, it is important to check the bale diameter at every change in crop condition or in differing crop row widths and densities.



ENVIRONMENT: Dangerous health effects of burning plastics

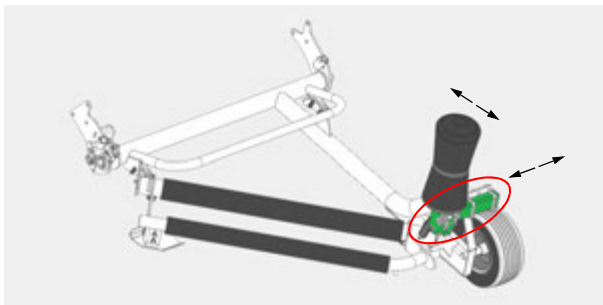
It is vitally important to observe health and safety rules in order to avoid unnecessary environmental damage or danger to anybody near the machine. This especially applies to the responsible disposal of plastics. Never throw away or burn waste net or plastic. Burning plastics is toxic as they release dioxins and furans. To inhale dioxins or to be exposed to its fumes can cause deadly results. Respect the environment! Always take waste materials to a recycling centre.

6.3 Care of the film roll

The film roll should be protected from damage, moisture, and prolonged exposure to the sun. Do not remove the protective cover until ready for use. Film damage can cause undesired film performance and affect bale weatherability.

6.4 Side-tip bobbin adjustment

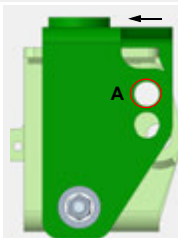
For machines equipped with side-tip the angle and lateral position of the rear bobbin assembly is adjustable to handle different size bales. There are two angle positions on the assembly which can be secured with the lock pin at either location **A** or **B**. There is approximately 100 mm of lateral adjustment to allow for bale sizes between 1,250 and 1,450 mm and this equates to the bale radii increasing from 625 mm to 725 mm.



Position A (upright & inwards) for bales up to \varnothing 1,250 mm

Secure the lock pin through the upper pinhole in the rear bobbin stack assembly to keep the bobbins upright as shown.

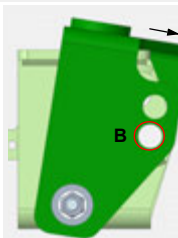
Using a 24 mm spanner, loosen the 4 nyloc nuts on the U-bolts and slide the tube inwards as shown. Then tighten the nuts securely.



Position B (tilted & outwards) for bales between \varnothing 1,250 mm and \varnothing 1,450 mm

Secure the lock pin through the lower pinhole in the rear bobbin stack assembly to allow the bobbins to tilt backwards as shown.

Using a 24 mm spanner, loosen the 4 nyloc nuts on the U-bolts and slide the tube outwards as shown. Then tighten the nuts securely.



Once the mechanical adjustment is set for the correct bale size, then the upward tip speed can be fine tuned from the control box until the desired results are achieved.

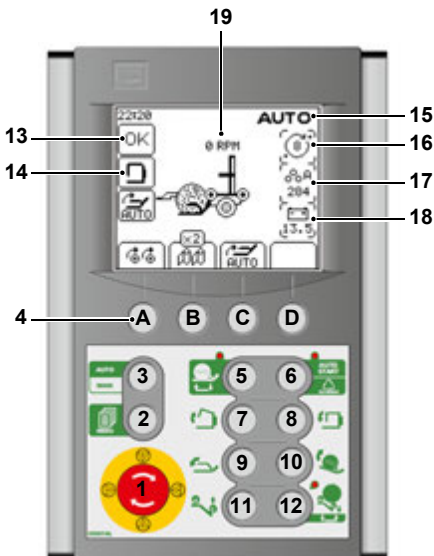
7

Electronic control system

(Software Version EP350-232 onwards)

7.1 Electronic control box

The electronic control box is the main interface between the operator and the machine. While the machine is fully automatic, setting up is required before wrapping commences. It is also possible to work the machine manually through the buttons on the control box.



7.2 Electronic control box functions

No.	Function	
	Manual	Automatic
1	Stop button - twist clockwise to turn on the control unit	
2	Menu button	
3	Select Automatic	Select Manual
4	Four soft keys (A, B, C & D) with interchangeable functions (each function relates to the corresponding option directly above it on the screen)	
A	'Cut and Hold' open	Rotate bale on rollers / Add one extra revolution
B	'Cut and Hold' release	Press and hold to change the number of rolls of film
C	Rotate ring backwards	Switch bale sensor on and off / Reverse ring to home position / Clear warnings
D	Rotate ring forwards	Move load arm into transport position / Index ring forward to home position
5		One press to auto load bale Press again to cancel
6		Start/Pause/Resume/Rewrap Press & hold to start, resume or rewrap Press once to pause wrapping
7	Clamp arm open	
8	Clamp arm close	
9	Load arm down	
10	Load arm up	
11	Tip arm up	
12	Tip arm down	One press to tip bale Press again to cancel
13		Number of revolutions completed
14	Clamp arm position - open or closed	
15	Shows whether Manual or Auto is selected	
16	Target number of revolutions	
17	Bale total	
18	Supply voltage	
19	Ring speed in revolutions per minute	

7.3 Electronic control box features

7.3.1 Working display

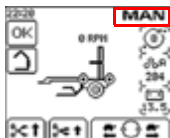
When the electronic control box is first switched on it displays the **McHale** logo along with the software version number.

7.3.2 Manual/Automatic modes

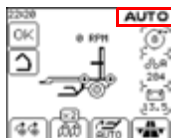
There are two working screen modes:

1. **Manual** - Shows solid external machine image with soft keys to manually operate the 'Cut and Hold' and also to manually rotate the wrapping ring forward or reverse. Wrapping ring speed is electronically limited to 25 rpm in Manual Mode. Manual mode should also be used to lower the load arm into the work position and raise the load arm into transport position.
2. **Automatic** - Shows external machine image with bale icons on the machine to show the status of the wrapping sequence. There are soft keys to rotate the bale on the rollers, select number of film rolls and add extra revolutions during wrapping.

To switch between the manual and automatic modes, press AUTO/MAN (Button 3). The selected control mode is displayed in the top right corner of the screen.



Manual Screen Display



Automatic Screen Display

7.3.3 Manual wrapping

Soft keys C and D are used to rotate the wrapping ring in manual mode. Pressing and holding the forward soft key (D) or reverse soft key (C) once will rotate the ring slowly. Pressing the forward soft key twice and holding it will rotate the ring forward at fast speed.

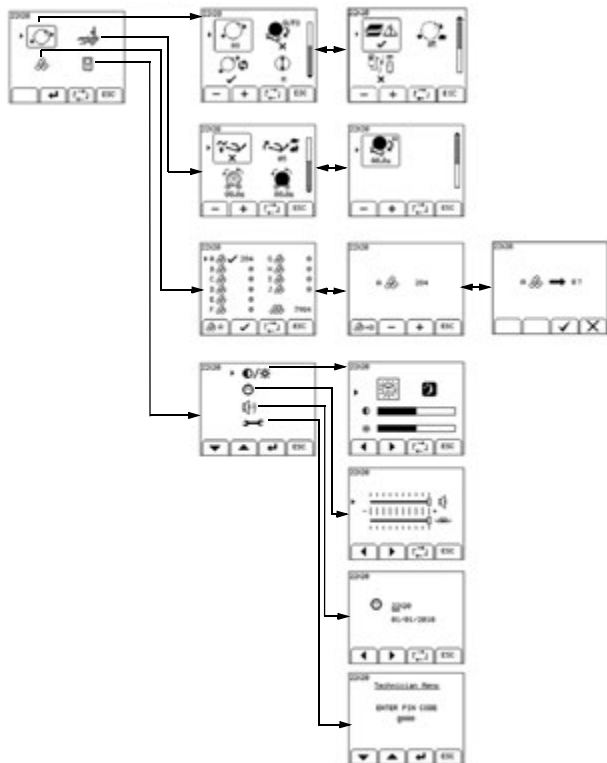
In Automatic Mode, the rotate buttons will only be active if the load arm is down, the tip arm is up and ring is NOT in the "home" position. (*See 'No rotation warning'*)

7.4 Menu structure

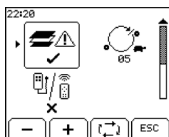
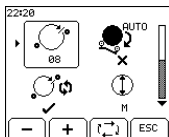
Press button 2 to access the Control unit menu.

7.4.1 Control unit menu

Below is a navigation map for the menu layout. Detailed descriptions of each setting's function are on the following pages.










7.4.2 Machine setup 1

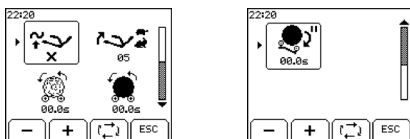


Use the following buttons to navigate the Machine setup 1:

- Toggle key to move the arrow head to each of the parameters
- + and - keys to change the value of the selected parameter
- ESC to return to the Machine Menu






Number of revolutions 	<p>Number of revolutions of the wrapping ring around the bale. Film layers are set by the number of ring rotations. Using two rolls of film count the number of rotations required to cover the bale once and add 0.5 of a rotation, then multiply this resultant figure by half the number of layers required, e.g. $(3.5 + 0.5) \times 2 = 8$ rotations for four layers. When using only one roll of film this figure will then need to be doubled, e.g. 16 rotations for four layers. Use the + and - soft keys to adjust this figure.</p>
Auto Tip - ✓/✗ 	<p>Bale tips off automatically at end of wrapping. Alternatively, press the tip button during wrapping to enable/cancel the auto tip of individual bales. The down arrow on the main screen indicates Auto Tip is on.</p>
Auto Wrap - ✓/✗ 	<p>Wrapping begins automatically at end of auto load cycle. Press the AUTO START button during the loading cycle to cancel the auto wrap of individual bales. The two rotating arrows on the main screen indicates auto wrap is on.</p>
Bale Size - M/L/XL 	<p>Select the bale size. The larger the bale the lower the tip arm position.</p>
Film Sensor - ✓/✗ 	<p>Switch film sensors on/off.</p>
Wrapper Slow Speed 	<p>Sets the speed of the wrapping ring at the end of wrapping. Note: If set too high then the plastic may not cut correctly at the end of wrapping.</p>
Remote Type 	<p>Sets the type of remote to use. There are two remote options, wired or radio. The radio remote must be paired with the control unit before it will operate. (See 'Radio remote')</p>

7.4.3 Machine setup 2



Use the following buttons to navigate the Machine setup 2:

- Toggle key to move the arrow head to each of the parameters
- + and - keys to change the value of the selected parameter
- ESC to return to the Machine Menu

Float Position 	Sets the float position of the load arm. Adjustable between 1 (low) and 5 (high). Set to 'X' to disable.
Load Arm Speed 	This controls the speed of the load arm. Set to a low value for gentle loading of the bale. Set to higher value for faster loading of the bale. The value is adjustable from 1 (low) to 10 (high). 5 is the default value.
Bale Rotate Time 	Time to rotate the bale on the rollers at the end of auto load cycle. Set to 0.0s to disable.
Wrapped Bale Rotate Time 	Time to rotate the wrapped bale on the rollers at the end of the wrapping. This is useful for pressing the plastic tails into the bale. Set to 0.0s to disable.
Tip Pause Time 	This is used to adjust the tip arm pause time in the down position during a tip cycle.

7.4.4 Counters



This menu allows the user to manage the bale counter options. The toggle key (button 3) can be used to scroll between each counter. Press enter (button 2) to select a new subtotal.

Press 'ESC' (button 4) to return to the main menu.

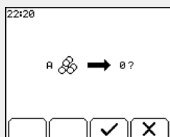


Subtotals

Press soft key A to enter the selected subtotal.

Subtotals can be adjusted or reset.

Press the + and - keys to adjust the selected subtotal.



Subtotal reset

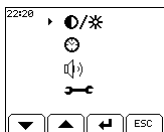
To reset a subtotal press soft key A, followed by the ✓ key to confirm or ✗ key to cancel.



Grand total

The bale grand total cannot be reset and has no letter or symbol displayed.

7.4.5 Operator menu



Use the toggle key to move the arrow to each of the parameters and the + and - keys to change the value of the selected parameter. 'ESC' (soft key D) will return to the machine menu.



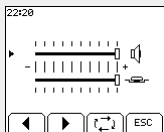
Contrast

Extremes of temperature may affect the contrast of the display, which is adjustable from the contrast menu. Select day or night, then the contrast and brightness settings can be adjusted for that option.



Clock adjust

This is used to set the time on the clock which is always displayed on the top left of the screen. A date setting is also available.



Volume

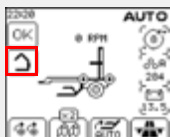
The volume of the beeper and the button tone can be adjusted. Use the toggle key to select the beeper/button tone setting. Use the left arrow head (soft key A) to decrease the volume and the right arrow head (soft key B) to increase the volume.



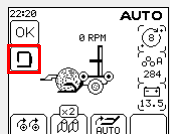
Technician menu

The Technician menu is reserved for **McHale** engineers only. A pin code needs to be entered to access this menu.

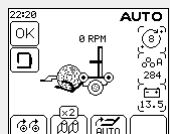
7.5 Machine operation



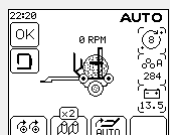
A bale is ready to be loaded. The clamp arm is open. The load arm is down.



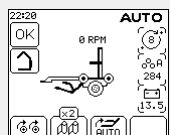
Press the AUTO LOAD button. The clamp arm closes. The bale icon is shown on the load arm.



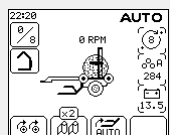
The load arm starts to lift the bale onto the wrapper.



The load arm is fully up and the bale is loaded onto the wrapper.

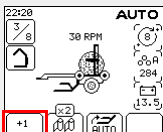


The load arm goes down and the clamp arm starts to open.

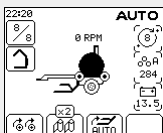


Press and hold the AUTO START button to begin wrapping. The buzzer sounds as a warning. Wrapping starts and the number of revolutions is shown on screen.

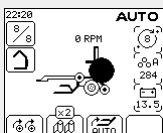
McHale Orbital Round Bale Wrapper



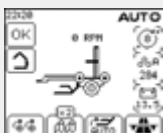
The ring rotates and the speed is shown in rpm. Extra revolutions can be added by pressing the '+1' soft key.



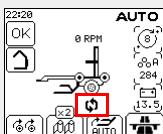
Wrapping finishes and the wrapped bale icon is shown on the wrapper.



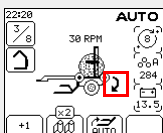
Press the tip button to tip off the bale. The tip arm goes down and the wrapped bale icon disappears off screen.



The tip arm comes back up and the next bale is ready to be loaded.

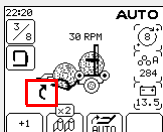


If Auto Wrap is set to On in Machine Setup 1 then wrapping will start automatically after the loading cycle is completed. The two rotating arrows shows that Auto Wrap is on.

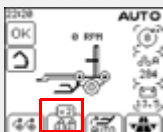


If Auto Tip is set to On in Machine Setup 1 then the bale will be automatically tipped off at the end of wrapping. The down arrow shows that Auto Tip is on.

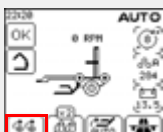
McHale Orbital Round Bale Wrapper



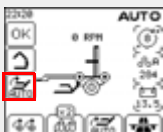
A second bale can be preloaded onto the wrapper by pressing the AUTO LOAD button a second time after first bale is loaded. The up arrow shows that the second bale will load automatically after the first bale is tipped off.



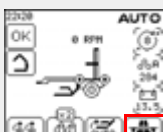
The operator can change the number of rolls of film by pressing and holding soft key B. The number of wrapping ring revolutions automatically doubles when you switch from 2 rolls to 1 roll.



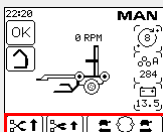
The bale can be rotated manually on the rollers by pressing the first soft key A. This is useful for loading badly shaped bales which do not sit correctly on the wrapper after loading.



If 'Bale Sensor' is set to 'on' then an icon is shown on the main wrapping screen to notify the operator that the sensor is now live. 'Bale Sensor' defaults back to off every time the control box is rebooted.

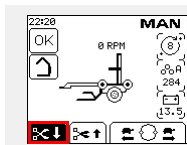


If the wrapper is empty and the wrapping ring is in the home position, then the transport position soft key can be pressed to close the clamp arm and raise the load arm into the transport position automatically. Once the load arm is in the transport position the control unit switches to manual mode.



In manual mode there are four soft keys:

- Open 'Cut and Hold'
- Release film
- Reverse the ring
- Rotate ring forward slow/fast

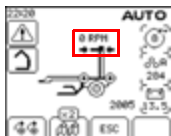


If you press and hold soft key A for 8 or more seconds then the 'Cut and Hold' will stay open when you release the button. The external beeper will sound on/off and the soft key icon will change. Press the soft key again to close the 'Cut and Hold'

WARNING: Never work on the 'Cut and Hold' by holding out the rails against hydraulic pressure.

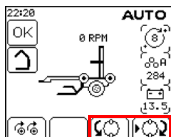
7.6 Warning messages

Ring position warning

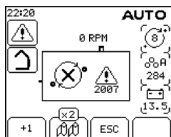


If you attempt to load, wrap or tip a bale when the wrapping ring is not in the home position then the ring position warning with two flashing arrows will be shown. Press ESC to clear the warning and then move the ring to the home position using the index buttons on soft keys C and D. Press soft key D once to rotate the ring forward to the home position or alternatively press and hold soft key C to reverse the ring to the home position.

(2005)



No rotation warning



If you attempt to wrap a bale or rotate the ring when the film loading door is open or if the hydraulics are switched off then a no ring rotation warning will be displayed. For safety, the ring will not rotate if the loading door is open.

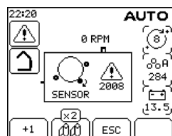
(2007)



CAUTION: Ensure that the rear door switch is operating correctly

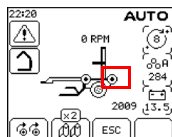
A warning should always appear on the control box if an attempt is made to rotate the dispenser ring while the rear door is open. If this is not the case or if the warning appears with the rear door fully closed, contact your **McHale** dealer.

Motor speed sensor

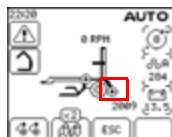


If the control box does not receive a speed signal from the ring motor, when the ring is rotating, then a motor speed sensor warning is displayed. (2008)

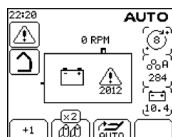
Tip arm position



If you attempt to load or start wrapping when the tip arm is down then a warning will appear on screen. The tip arm will flash up and down to tell the operator to raise the tip arm. (2009)

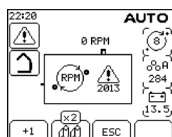


Low voltage



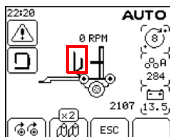
If the voltage drops below 10.5 volts, then this warning will be displayed. The usual causes are nearly always either an inadequate power lead cable or corroded connections. Ensure the cable connection to the 12 V socket is of good quality. Check the tractor power supply. (2012)

Wrapper too fast

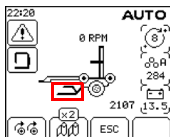


If the ring rotates too fast a warning will be displayed. During normal operation the ring will rotate at up to 40 rpm. (2013)

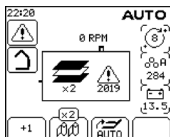
Load arm position



If you attempt to start wrapping and the load arm is up then a warning will appear on screen. The load arm will flash up and down to tell the operator to lower the load arm. (2017)

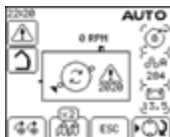


Out of dispenser film



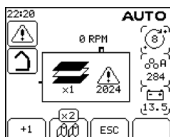
When both dispenser film rolls are empty, this warning is shown on the display and the dispenser rotates slowly to the loading position where the first dispenser roll is replaced. (See 'Loading dispenser film') (2019)

Index warning



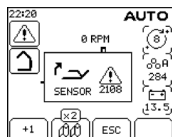
Press the button on side of machine or soft key D to index the wrapping ring or to change the second roll of film. A warning appears on screen when ring is rotating. Press ESC to cancel. (2020)

1 dispenser film only



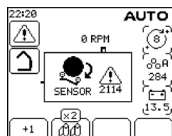
When the dispenser film sensor is switched on, failure of one dispenser to feed film will flash this warning on the display and the wrapping rollers will operate in 50/50 mode giving a correct wrap with the remaining film roll. Press ESC to silence the alarm. (2024)

Load arm position sensor



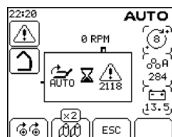
If the load arm position sensor gets disconnected or is reading a voltage below an acceptable range, then a warning is displayed. The AUTO LOAD button and the bale sensor will be disabled. The operator can only load the bale using the manual buttons. **CAUTION:** In this scenario there are no software interlocks for the load arm, so it is possible to damage the machine. Proceed with caution when using the load arm. (2108)

Tip arm position sensor



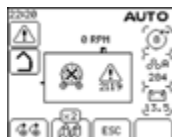
If the tip arm position sensor gets disconnected or is reading a voltage below an acceptable range, then a warning is displayed. Most functions will be disabled to prevent damage to the machine. (2114)

Auto load sensor timed out



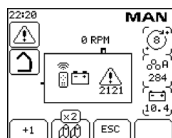
This warning will be shown if the bale is not detected at the bale sensor paddle within the required time. The bale sensor will automatically switch off. (2118)

Bale transfer incomplete



Loading will stop and this warning will be shown if the bale does not transfer from the load arm to the wrapper rollers i.e. if the bale sensor paddle does not open after attempting to load a bale. (2119)

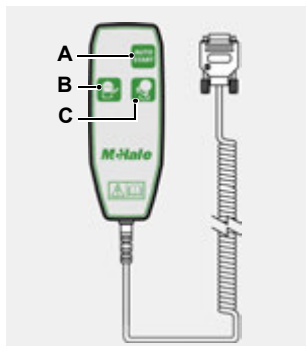
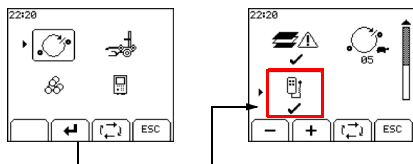
Radio remote low voltage



Displayed if low battery is detected in the radio remote transmitter. Control unit automatically switches to manual mode for safety. (2121)

7.7 Wired remote

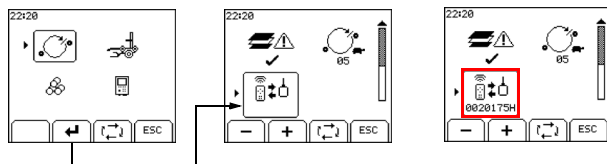
Select Machine setup 1 in the main menu. Scroll through the settings to remote setting. Using the + and - buttons set the remote setting to wired remote.



- A. Wrap/Pause/Resume/Rewrap
- B. Load bale
- C. Unload bale

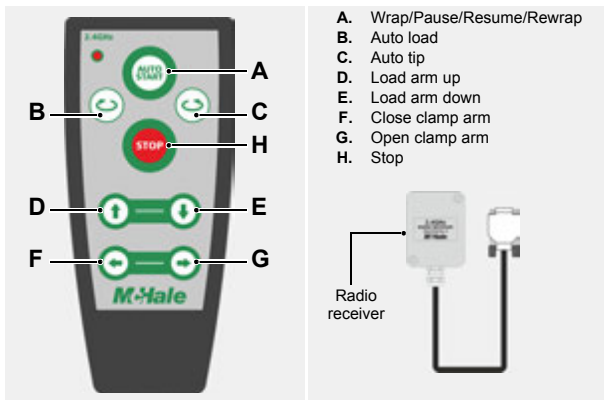
7.8 Radio remote

Select Machine setup 1 in the main menu. Scroll through the settings to remote setting. Using the + and - buttons set the remote setting to radio.



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- Press the stop button on the remote. A code will be shown when the remote has been paired with the control unit.
- The radio remote only works machine functions when the control unit is in Auto mode. Press the red button on the rear of the remote when pressing any button, except the stop button. The red LED will flash every time a machine function is operated.
- The external beeper will sound for 3 seconds before an automatic sequence starts.
- Pressing the stop button will cancel all machine functions and switch the control unit to Manual mode.



NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

8

Wrapper operation



WARNING: Keep out of the 'Danger Zone'

Keep all persons, especially children, outside of the 'Danger Zone' during all machine operations! (See 'Danger Zone')



WARNING: Do not carry people or animals on the machine

The operator must ensure that no persons or animals are carried on the machine at any time or are hidden under the machine (on the tractor persons are only allowed to sit on the relevant seats).



ENVIRONMENT: Recycling of the plastic film

Respect the environment! Never dump or burn waste plastic film. It is toxic! Always take waste materials to a recycling centre.

8.1 Preparing the machine for wrapping

1. Turn on oil supply.
2. Remove drawbar transport lock and put it into working position slot as shown.
3. Then, adjust drawbar to the desired working position. Do not operate the hydraulic cylinder with the road transport lock in position.
4. Switch on electronic control box.
5. The machine is now ready to wrap.



8.2 Wrapping behind tractor



WARNING: Ensure the area is clear before operating the wrapper

Always ensure there is no person or wrapped bales in the way of the wrapper before operating it again. Ensure that all bystanders remain outside of the 'Danger Zone'.

The following is the recommended method for operating the Round Bale Wrapper behind a tractor. It assumes the bales are well shaped for wrapping. However since it is impossible to allow for differing conditions and terrain it may be necessary for the operator to vary this.

1. Remove drawbar safety lock and fit to working position. (*See 'Preparing the machine for wrapping'*)
2. Adjust drawbar angle to give optimum position.
3. Ensure the bale load arm is lowered and the clamp arm opened.
4. Select **Auto** on control box.
5. Drive tractor up beside the bale to be wrapped. It will take practice to line up the bale correctly with the wrapper.
6. Press **AUTO LOAD** (button 5) on the control box.
7. The wrapper should go through a sequence as follows:
 - (a) The clamp arm closes and lifts bale on to the wrapping table.
 - (b) The bale load arm lowers to the ground and the clamp arm opens.
 - (c) The dispensers start rotating and plastic film is applied to the bale.
 - (d) After a few revolutions the 'Cut and Hold' releases the film.
 - (e) The dispensers slow down one revolution before the end.
 - (f) The 'Cut and Hold' units move to grip the film as the dispensers complete the set number of rotations.
 - (g) The dispensers come to a halt and the 'Cut and Hold' units extend and retract, gripping and cutting the film.
 - (h) If Auto Tip is set to on, the bale is tipped off, otherwise, the operator pushes the tip button to complete the cycle.
 - (i) The wrapper is now ready to receive another bale.



WARNING: Stop machine to unload wrapped bale

The machine should not be moving when the bale is tipped off to avoid damage to plastic film.

The machine is designed with a wrapping system which has two plastic film dispensers. Differing from conventional wrappers, the dispensers move vertically around the bale. Although the dispenser carrier ring is well protected by the safety guards and electrical safety switches, the operator must ensure that all people and animals are kept out of this region while operating the machine.



CAUTION: Ensure that the rear door switch is operating correctly

A warning should always appear on the control box if an attempt is made to rotate the dispenser ring while the rear door is open. If this is not the case or if the warning appears with the rear door fully closed, contact your **McHale** dealer.



ENVIRONMENT: Recycling of the plastic film

Respect the environment! Never throw away or burn the waste plastic film. Always take waste materials to a recycling centre.

8.3 Loading dispenser film



1. The dispenser safety door, on the left-hand side of the machine can be opened by releasing the primary latch (A) with a 13 mm spanner or flat blade screwdriver and then pulling outwards on the secondary latch handle (B).

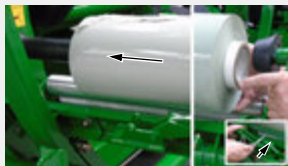


2. Locate the dispenser lever tool inside the safety door and guide the open slot onto the dispenser roller frame. Then push down on the lever until the spring-loaded dispenser roller frame latches in the open position.

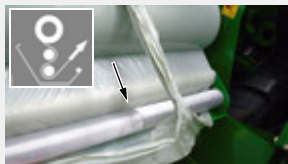


3. Remove the linch pin and release the dispenser film roll lock. Remove the old core and ensure it is disposed of responsibly.

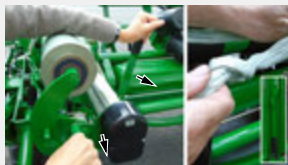
McHale Orbital Round Bale Wrapper



4. Push the new roll on the central pin, engage the film roll lock and reinsert the linch pin.



5. Thread the film through the dispenser rollers, as per the threading diagram, taking care not to trap fingers between the rollers.



6. Pull approximately 1.5 m of film away from the dispenser and make a knot at the end of the plastic film. Using the lever, push down on the spring-loaded dispenser roller frame while pulling on the knob to release. Then ease the lever back gently until the dispenser roller rests firmly against the film roll. Place the lever tool back inside the dispenser safety door.



7. Close the dispenser safety door. Push the rear mounted dispenser park button, for approx. two seconds, in order to rotate the next dispenser to the loading or 'home' position. The dispenser ring can only rotate when the safety door is closed and the control box must be in Automatic Mode when depressing this button.



8. Open safety door and load film, as before. Thread the film through the dispenser rollers, as per the threading diagram, taking care not to trap fingers between the rollers.

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9. Pull approx. 1.5 m of film away from the dispenser and make a knot at the end, as before.



10. Insert the knotted end of the film into the left hand side slot of the rear wrapping roller.



11. Grab hold of the dangling film on the right hand dispenser and insert the knotted end of the film in the right hand side slot of the rear wrapping roller.



12. Close the door firmly making sure that both primary and secondary latches have been engaged.



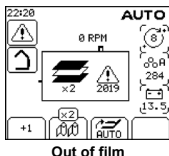
WARNING: Do not clamp film in the 'Cut and Hold' mechanism

Do not attempt to clamp plastic film in the 'Cut and Hold' mechanism as this action may result in serious injury!



NOTE: Resume a cycle interrupted by 'Out of film' error symbol

Press and hold the AUTO START button on the control box to resume and complete the wrapping cycle of a bale that is interrupted by an 'Out of film' error symbol, as shown below.



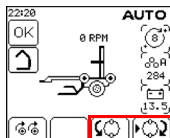
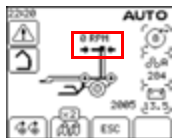
8.4 Wrapping process

The wrapping process starts automatically as soon as the bale has been transferred from the load arm to the wrapping table. After the bale is wrapped with the selected number of film layers, two 'Cut and Hold' units grip and cut the film. The wrapping cycle is completed and the bale is ready for discharging.



NOTE: Bale will not transfer if dispenser ring is in wrong position

The bale will not transfer from the load arm if the dispenser ring is in the wrong position. This is a safety feature and is normal. In this case an audible alarm will sound and the 'Dispenser Position' error symbol will be displayed in the control box display. The forward and reverse soft key indicators will become active on the control box. Press the appropriate button in order to correct the position of the dispensers and then press the AUTO LOAD button to load the next bale.



Dispenser position error symbol

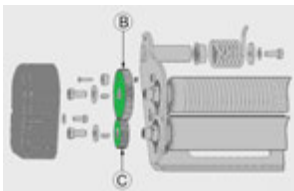
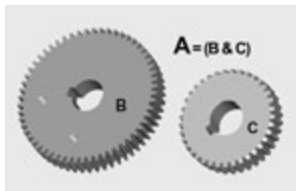


CAUTION: Do not tip off bales while moving

The machine should not be moving when the bale is tipped off, as this greatly increases the risk of plastic film damage.

8.5 Dispenser gear options

The dispenser rollers are set for a standard film stretch of 70%. Optional sets of dispenser gears for both 55% and 64% film stretch are available from your **McHale** dealer. One kit (A) is necessary for each dispenser on the machine.



70% Gear option

Item	Part Code	Description
A	ADP00018	Kit dispenser gears 70%
B	CMH00055	Gear spur 1.5 m 60 t dispenser
C	CMH00175	Gear spur 1.5 m 35 t dispenser

64% Gear option

Item	Part Code	Description
A	ADP00020	Kit dispenser gears 64%
B	CMH00056	Gear spur 1.5 m 59 t dispenser
C	CMH00096	Gear spur 1.5 m 36 t dispenser

55% Gear option (Hot climates)

Item	Part Code	Description
A	ADP00019	Kit dispenser gears 55%
B	CMH00057	Gear spur 1.5 m 58 t dispenser
C	CMH00174	Gear spur 1.5 m 37 t dispenser

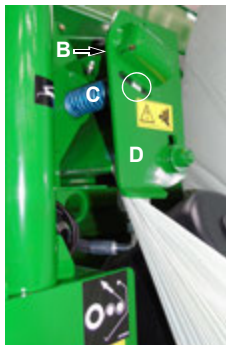
8.6 'Cut and Hold' system



WARNING: Beware of knives & accumulators during maintenance

The 'Cut and Hold' system utilises knives and accumulators in order to function. Beware of serious injury when carrying out any maintenance in this area. Turn off the tractor and remove the key from the ignition. Wear protective gloves and clothing, at all times! Also, never carry out any work on the hydraulic hosing because even when the machine is off, hosing remains under high pressure due to the accumulators.

The 'Cut and Hold' system on the machine is designed to operate in conjunction with both the dispenser and table rollers to cut the plastic after a desired amount of film wrap has been applied to the bale, as set on the control box. The 'Cut and Hold' system operates by way of a slider (D) that slides in and out using a hydraulic ram. The slider (D) then clasps the film and retracts to hold the film between (C) and (D) which is then cut at knife point (B). Once the wrapping process resumes, the film is then released.



Release hydraulic pressure from accumulators



WARNING: Hydraulic accumulator is under high pressure

Before working on 'Cut and Hold' rails, always release the hydraulic pressure from accumulators by wrapping the spanner and hose-fitting with a cloth, then slowly and carefully open the pressure hose fitting, allowing oil to release before re-tightening. Accumulator pressure will reset automatically following the first operation of the 'Cut and Hold' cylinder in the fully out direction. Never work on the 'Cut and Hold' by holding out the rails against hydraulic pressure.



WARNING: Wear proper safety equipment & follow all instructions

Ensure to wear proper safety equipment at all times when working with the machine, such as gloves, eye protection, etc. and follow all safety decals and instructions.



Accumulator pressure hose

'Cut and Hold' knife adjustment and removal

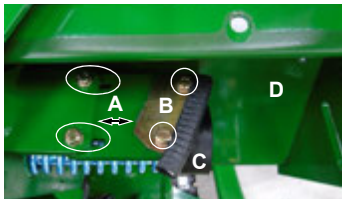


CAUTION: Use protective gloves

Use protective gloves for any manual work in this area! Beware of sharp knife edges. Use temporary protective cover, as shown.

The 'Cut and Hold' knife may be adjusted in and out by following the procedure below:

1. Remove the two M6 nyloc nuts and bolts that hold knife plate (A) using 10 mm spanners. Beware of the cutting knife! Use temporary protective cover, as shown.
2. Move the knife plate to the desired position. The factory setting is to the fully out position, as shown.
3. Insert the two M6 bolts and tighten nyloc nuts to 12 Nm.
4. Repeat for the other 'Cut and Hold'.



The 'Cut and Hold' knife blade condition is very important for the proper operation of the 'Cut and Hold' system. A blunt blade may not cut the film cleanly or possibly not at all. As such, the knives must be changed under part number CKN00011. Ensure all safety precautions are taken before carrying out the following procedure.

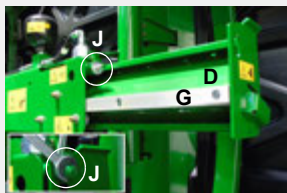
1. Loosen the two M6 setscrews that hold the knife clamp plate (B) in place using a 10 mm spanner or socket, beware of knife blade! Use temporary protective cover, as shown.
2. Remove used knife, noting that there is a spare knife blade held by the bottom of the knife clamp plate (B).
3. Place spare knife in the working position and place a new spare knife underneath, if available.
4. Tighten the two M6 setscrews to 12 Nm.

'Cut and Hold' rail adjustment

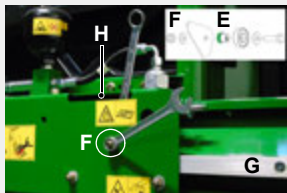
After much use, the moving part of the 'Cut and Hold' rail (G) may develop wear. In such a case this may be adjusted, to ensure optimum working of the 'Cut and Hold'. Adjust as follows:



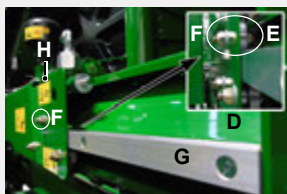
1. Release hydraulic pressure from accumulators, as shown. (See procedure above). Allow enough oil to escape until the slide rail moves forward 80 mm approximately, before re-tightening the hose fitting.



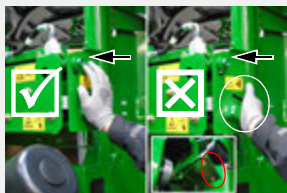
2. Disconnect the ram rod (J) from the slider (D), using a 22 mm spanner on the nyloc nut and a slim 17 mm open-ended spanner on the piston rod flats. Once the nut and washers have been removed, the slider (D) can now be moved in and out freely. It can also be completely removed for cleaning.



3. Insert a 24 mm open ended spanner into slot (H) until it engages with the hexagon on adjuster cam (E). Loosen M12 nyloc nut (F) on adjuster slightly, just enough to be able to turn adjuster (which works on a cam principle).



4. Turn adjuster (preferably clockwise from cam side E), with a 24 mm spanner, until the resistance to turning increases greatly. Then back off a touch, so the slide rail (G) can glide freely and smoothly. Hold resistive pressure on the adjuster cam (E) and tighten the M12 nyloc nut. (F)



5. Push the slider (D) back fully. Beware of the 'Cut and Hold' knife, keep fingers on the outside end of the slider, as shown. Fit washers and nyloc nut and reconnect the ram rod using the 17 mm and 22 mm spanners. Do not overtighten! There should be only 2 threads protruding past the nut when tightened securely.



NOTE: Slide rails should be removed & cleaned once per season

In normal use, the slide rails should be removed, at least once per season, to clean build up of dirt and crop. Severe build up of dirt and crop can cause erratic movement of the 'Cut and Hold' mechanisms. Once slides are thoroughly cleaned, they can be reassembled and lubricated and the above adjustment carried out before the machine is put back in service. In extreme use or in dry dusty conditions this should be carried out several times per season.

9

Road traffic safety & operation

9.1 Before travelling on any public roadway



NOTE: Check lighting system before travelling on the road

Before travelling on a public road, the operator must ensure that the complete (tractor and machine) lighting system is in a fully functioning condition.



WARNING: Complete a full inspection before travelling on the road

Ensure that a full inspection is completed every time before attempting to go on to a public roadway, always think and practice safety!



NOTE: Control box

Before travelling on a public road, always make sure that the electronic control box is switched off.

The following should be inspected every time, before travelling on a public road:

- All bales, wrapped or unwrapped, should be unloaded from the machine.
- Press the transport position soft key to automatically close the clamp arm and raise the load arm.
- Slowly move the drawbar to transport position. (Cylinder extended)



- Affix the transport bar into the correct position, as shown.

- Ensure that the tyres are set to the correct pressure as per safety decals and according to the specifications. (See 'Tyre specifications')
- Ensure that all doors are securely closed and fastened, ensuring that primary and secondary catches are fully engaged, these should be kept clear of foreign objects to ensure proper and trouble free operation.
- The lighting system of the machine must be connected to the tractor and must be in a fully functioning condition; ensure that the work lamp is switched off.
- The hydraulic supply must be turned off and protected from accidental activation by disconnecting the hydraulic feed line. Support all loose lines in a safe manner.
- The electronic control box must be switched off or disconnected from the power supply. (See 'Electronic control box functions')
- Ensure the oil supply is turned off and cannot be turned on accidentally.
- Attention must be paid to the maximum travel speed limit (40 km/h).
- If plastic film is to be transported on the machine it must only be done so on the holders provided and secured if necessary.
- Ensure that all the national road traffic regulations relating to the country are fulfilled i.e. the use of safety chains is mandatory in EU countries when air brakes are not installed. The safety chain must be attached in such a way that if the coupling breaks, the hitch or drawbar cannot make contact with the ground.

9.2 Road transportation with side-tip attached



CAUTION: Side-tip must not be used on public roadways!

Side-tip must not be used on public roadways and must always be folded vertically beforehand.

- Side-tip must be folded vertically and secured.
- Ensure the transport-pin is secured in the transport position with the linch-pin attached. (See 'Side-tip')
- Do not attempt to go over 20 km/h at any time, while the side-tip attachment is in the field working position.
- By inverting the hitch eye assembly further adjustment positions can be achieved.

10

Field operation & machine adjustments

From time to time it may become necessary to carry out adjustments to the machine, whether to improve machine performance or allow for general wear and tear. Such adjustments are part of the machine design. The following chapter gives details of how to go through the various adjustments. Some of these are field adjustments while others will be performed during machine maintenance or initial set-up. All of these adjustments should be checked thoroughly before the machine goes to work for the first time. The wrapper should be parallel to the ground when working.

**WARNING: Always think 'Safety First'!**

Always ensure that tractor is stopped, handbrake applied, engine stopped and ignition key removed before working on machine. Always maintain machine according to manufacturer's instructions.

10.1 Drawbar height

The height of the drawbar may be adjusted to allow for use with different tractors. To change the height go through the following procedure:



1. Remove 3 x M20 nyloc nuts and the 3 x M20 bolts holding hitch on.
2. Move hitch eye up or down to new position.
3. Insert the 3 x M20 bolts and tighten the nyloc nuts to 400 Nm.

Extra adjustment positions may be achieved by flipping the hitch eye assembly upside down, with the bolts removed.

11

Attachments

11.1 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. For stalky crops or on rough ground conditions a side-tip option is available which allows the machine to tip the bales on their ends where there is additional film.

Operating your machine with side-tip

Once the side-tip frame is assembled to the machine, it will operate automatically without any operator input. As each wrapping cycle is completed, the operator must ensure that a clear and sufficiently large landing area is available for the bale. The hydraulic flow rate can be adjusted to modulate the speed at which the rear cradle and side-tip moves using the operator adjustable flow-restrictor valve (CVA00276) mounted under the main hydraulic valve. (P)

Safety

Always ensure that there are no persons behind or around the wrapper during operation and unloading. It must also be noted that the side-tip frame adds 1.7 m to the overall length of the machine. Always allow for the tail swing when turning the machine and side-tip frame. Beware of projection distance to the rear of the machine, when reversing, a side-tip attachment greatly increases the length of the machine.

Road transport

If the side tip is to be transported on public roads while attached to the machine, it shall be raised in the vertical transport position. It is not to be used in fields or on roads at speeds above 20 km/h.

External tip control

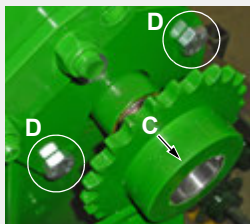
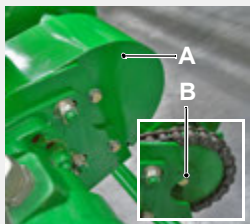


There is an external tip control located on the back left corner of the machine. The external tip control is a double button switch, pressing and holding the upper button raises the rear cradle at a slow speed and pressing and holding the lower button lowers it, at a slow speed. The control box must be in Manual mode.

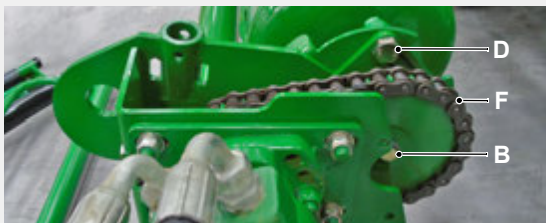
Fitting the side-tip to the machine

The following instructions (1 - 9) refer to adapting the machine for a side-tip.

1. It may be easier when fitting the side-tip to lower the rear cradle halfway down. This may be done either directly from the control box within the tractor, or using the external tip control on the back left corner of the machine (control box must be in Manual mode). Ensure that the tractor engine has been shut down, the ignition key removed and the brakes applied before starting work.
2. Secure the rear roller, using suitable lifting gear. Remove the rear cradle roller chain guard. **(A)** Remove the M10 x 25 bolt from the end of the rear roller sprocket. **(B)** Rotate the rear roller manually to locate the joiner link in the drive chain. Remove the link and chain.
3. Pull the sprocket out on the end of the shaft, as far as possible. **(C)**



4. Remove the four M16 nuts and bolts, which hold the flange bearing. Fit the right hinge mounting bracket (ARC00398) using four M16 x 55 bolts (CFA00349) and nyloc nuts. **(D)** Ensure bolts are tightened fully.
5. Refit the sprocket and secure using the M10 x 25 bolt. **(B)** Refit the drive chain and joiner link. **(F)**
6. Refit the rear cradle roller chain guard. **(A)**



McHale Orbital Round Bale Wrapper

7. To fit the left mounting bracket (ARC00394) to the idle end of the roller, remove the four M16 nuts and bolts.
8. Fit the bracket, using four M16 x 55 bolts (CFA00349) and nyloc nuts. **(H)** Ensure bolts are tightened fully.

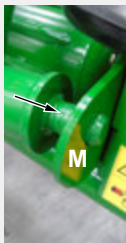


9. Fit the flow-restrictor valve (CVA00276) under the main hydraulic valve, as shown, by removing the cradle supply hose, mounting valve, fittings and washers. **(P)** Once the machine is up and running, this valve can be adjusted to give the desired lowering speed for the rear cradle and side-tip combination.

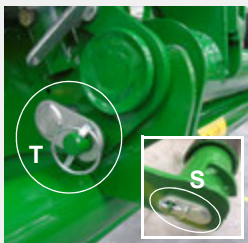
This completes adapting the machine for fitting a side-tip assembly, which is only necessary the very first time.

Instructions from here on (10 - 13) apply to installing or removing the side-tip assembly to the machine. **NOTE:** Removal is in reverse order of installation.

10. Using suitable lifting gear **(J)**, place the side-tip frame assembly down into the mounting brackets. First engage the right main pivot into the right cradle bracket. **(M)**



11. Next, lower the left main pivot onto the left cradle bracket. (L) Swing the V-shaped plate (CZH03852) over the main side-tip pivot on the left mounting bracket and secure onto the stub shaft using a linch pin. (N)



12. The transport pin must be removed from its storage location (S) and repositioned into the transport position (T) on the rear cradle. When the side-tip is being transported, the transport pin must be in the transport position. (T) Always use the linch pin to secure the transport pin in either location.

13. Once the rear cradle is raised to the home position the side-tip is automatically swung into the vertical transport position, allowing it to be transported safely, as shown below. Finally an additional linch pin can be installed, as shown, to secure the gravity latch in position. (R)



WARNING: Remove linch pin (R) before lowering the rear cradle!

It is very important that this linch pin is removed before lowering the rear cradle again, otherwise the side-tip components are put under undue strain!

12

Machine maintenance

To maintain the machine in good working order it is necessary to carry out preventative maintenance regularly. The following section gives details of how this may be carried out and how often it will be required.

Replace any electrical or hydraulic devices immediately, at the first sign of malfunction or failure, as these components affect the functionality, sequencing and thus safety of operation. Never use a machine where a malfunction exists! Contact your **McHale** dealer to achieve a solution. Always think 'Safety First'!



WARNING: Wear proper safety equipment & follow all instructions

Ensure to wear proper safety equipment at all times when working with the machine, such as gloves, eye protection, etc. and follow all safety decals and instructions.



WARNING: Inspections in the 'Danger Zone' with the machine running, shall only occur with a trained operator at the controls

Entering the 'Danger Zone' while the machine is running is not recommended. If it is to be carried out, a fully trained operator shall be at the controls. The tractor hand brake shall be applied and the electronic control box shall be in manual mode. The operator shall remain in communication with the inspector throughout. If communication is lost with the inspector, or they move within 1.1 m of moving parts or parts that have the potential to move, all tractor power shall be turned off immediately.

12.1 Maintenance intervals

The following intervals should be adhered to, in order to ensure a long and efficient life for the machine and maximum safety of personnel. They assume constant working during the wrapping season.

First 5 working hours

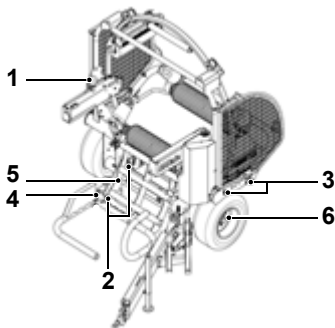
1. Check all nuts and bolts for tightness. Tighten if necessary.

Every day

1. Grease 'Cut and Hold' plunger
2. Grease load arm ram ends

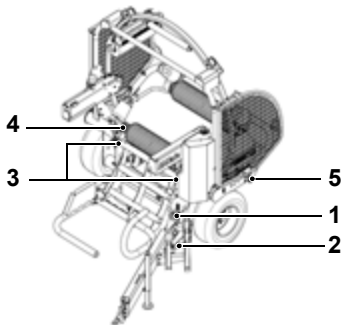
McHale Orbital Round Bale Wrapper

3. Grease tip arm hydraulic cylinder ends
4. Grease clamp arm pivot
5. Grease clamp arm ram ends
6. Check wheel nuts
7. Check all guards and safety related components
8. Check for any oil leaks and damaged pipes



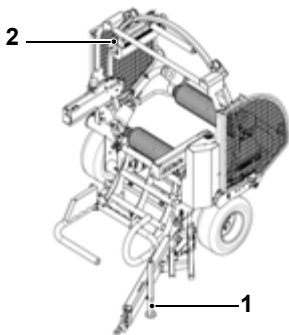
Every week

1. Grease drawbar pivot
2. Grease drawbar hydraulic cylinder ends
3. Grease load arm hinges
4. Grease roller bearings
5. Grease tip arm hinges



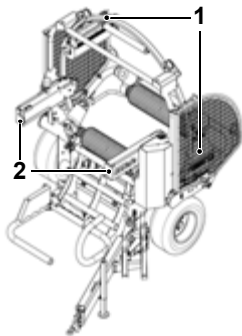
Every month

1. Grease parking jack
2. Grease dispenser top coil roller shaft
3. Check all chain tensions



Every year

1. Clean and lubricate dispenser gears
2. Clean, adjust and lubricate both 'Cut and Hold' slides (See "Cut and Hold" system')





CAUTION: Hydraulic hoses to be replaced every 5 years

All hydraulic hoses must be replaced every 5 years.

It may become necessary from time to time to clean the dispenser rollers as they pick up the 'tack' from plastic film. Clean off with kerosene.

At the end of the season the machine should be washed and cleaned.

Carefully clean all machine sections, inside and out. Dirt and foreign objects are likely to draw moisture and cause rusting of steel components. **McHale** recommend that the machine be blown down with an air line, as opposed to a pressure washer, due to the dangers involved with pressure washing and to protect the overall paint work on the machine. If, despite our advice, a pressure washer is used then take extreme caution and operate from ground level only. Do not point pressurized water at or near electrical components, pivots points, valves or bearings. Never climb onto any part of the machine, while pressure washing, due to the fact that all metal surfaces become extremely wet and slippery and always ensure that the tractor has been shut down, with the ignition key removed.

Any damaged paintwork should be touched up. Any maintenance or repairs should be carried out at this stage. The electronic control box is not waterproof, so it must always be stored in a dry environment. All exposed hydraulic cylinder rods should be greased. (See 'Storage')



ENVIRONMENT: Health and safety rules for the environment

It is vitally important to observe health and safety rules in order to avoid unnecessary environmental damage or danger to anybody near the machine. This especially applies to the responsible disposal of oil. Never spill pollutants (oil, grease, filters, etc.) on the ground, never pour them down the drain and never discard them where they can pollute the environment. Always take waste materials to a recycling centre.

12.2 Tightening torque values

It is important that the correct torques for fasteners are adhered to. Below are tables of recommended torques for these. These are to be used unless torques are otherwise specified. These values are for general use only. Check tightness of all fasteners periodically. Torque values are in Nm (Newton metres).

Nuts and bolts		Black, Phosphated or Galvanized		
Grade marking		8.8	10.9	12.9
	Dimensions	Metric standard thread		
Hex. bolts	M4	2.7	3.8	4.6
DIN 931	M5	5.5	8	9.5
DIN 933	M6	10	14	16
	M8	23	33	40
Socket head	M10	45	63	75
Cap screws	M12	78	110	130
DIN 912	M14	122	175	210
	M16	195	270	325
Hex. nuts	M18	260	370	440
DIN 934	M20	370	525	630
	M22	510	720	870
	M24	640	900	1,080
	M27	980	1,400	1,650
	M30	1,260	1,800	2,160
	Dimensions	Metric fine thread		
Hex. bolts	M8 x 1	25	35	42
DIN 960	M10 x 1.25	48	67	80
DIN 961	M12 x 1.25	88	125	150
	M12 x 1.5	82	113	140
Hex. nuts	M14 x 1.5	135	190	225
DIN 934	M16 x 1.5	210	290	345
	M18 x 1.5	300	415	505
	M20 x 1.5	415	585	700
	M22 x 1.5	560	785	945
	M24 x 2	720	1,000	1,200
	M27 x 2	1,050	1,500	1,800
	M30 x 2	1,450	2,050	2,500
NOTE:	For nuts and bolts from different materials and/or surface finishes a torque value must be used that is lower than the value stated above.			

13

Storage

13.1 End of season

- Carefully clean all machine sections, inside and out. Dirt and foreign objects are likely to draw moisture and cause rusting of steel components. **McHale** recommend that the machine be blown down with an air line, as opposed to a pressure washer, due to the dangers involved with pressure washing and to protect the overall paint work on the machine. If, despite our advice, a pressure washer is used then take extreme caution and operate from ground level only. Do not point pressurized water at or near electrical components, pivots points, valves or bearings. Never climb onto any part of the machine, while pressure washing, due to the fact that all metal surfaces become extremely wet and slippery and always ensure that the tractor has been shut down, with the ignition key removed.
- Remove the control box from the tractor and store in a dry, safe environment.
- Lubricate all pivot points and apply a thin layer of grease to all adjustment bolt threads and exposed ram rods.
- Any components from which paint has become worn should be touched up or coated with grease to prevent rusting.
- Remove all dirt from all chains and blow dry using compressed air. Secure the hitch eye with the provided security device and padlock to prevent unauthorised use. (See *'Preventing unauthorised use'*)

13.2 Start of season

- Fully review this operators instruction manual.
- Lubricate all pivot points.
- Tighten all bolts, nuts and setscrews. (See *'Tightening torque values'*)
- Check air pressure of both tyres.
- On electronic control machines, connect the control box and inspect it for the correct operation of all functions. (See *'Electronic control box functions'*)
- Inspect and modify, if necessary, all machine adjustments. (See *'Field operation & machine adjustments'*)
- Check film wrapping adjustments and replace 'Cut and Hold' knives. Wear protective clothing whenever working in this area!
- Inspect aluminium dispenser rollers for a build up of tack/glue, clean off using kerosene or diesel oil and wipe rollers dry.

14

Certification & Warranty

14.1 Declaration of Conformity

The Declaration of Conformity is provided by **McHale**. It certifies the new machine under all the relevant provisions of the EC machinery directive and the national laws and regulations adopting this directive.

The declaration gives a description of the machine and its function, along with the model and serial number details. (See *'Declaration of Conformity'*)

By any alteration of the machine, the Declaration of Conformity, as well as the CE sign on the machine, loses its validity.

14.2 PDI form

The PDI (pre-delivery inspection) form is filled out on the commissioning of every new machine, by the **McHale** dealer. The following checks are completed and signed off:

- All parts and accessories are provided to the customer, with the machine
- Machine is reassembled correctly
- Hydraulics, electrics and lighting are working
- New owner has been instructed on how to operate & maintain the machine

The PDI is included in the operator manual. (See *'Pre-delivery inspection form'*)

14.3 Change of ownership pre-checks

The PDI (pre-delivery inspection) form that is filled out on the commissioning of every new machine, should also be used during the transfer of ownership of a **McHale** machine. The same check list must be completed and any areas requiring attention addressed before the re-sale of the machine should occur. Pay particular attention to all safety related areas. Take time to familiarise the new owner with machine operation, maintenance and all its safety features.

14.4 Limited Warranty

Limited Warranty conditions are supplied with each **McHale** product. They cover the terms & conditions associated with abnormal failure under normal working conditions. (See *'McHale Limited Warranty'*)

Declaration of Conformity



DECLARATION OF CONFORMITY

We hereby certify that the machinery stipulated below complies with all the relevant provisions of the EC Machinery Directive 2006/42/EC and the national laws and regulations adopting this directive. Modifications to the machine, without prior approval from the undersigned, will render this declaration null and void.

Machine description and function: Round bale wrapper for wrapping bales of agricultural fodder with agricultural bale wrap film.

Model: Orbital **Serial Number:** _____

Name of manufacturer: McHale Engineering
Address: Ballinrobe, Co. Mayo, Ireland, F31 K138

Is also in conformity with the provisions of the following other EU directives:
2014/30/EU - Electromagnetic compatibility (EMC)

Technical file compiled by: James Heaney
c/o McHale Engineering
Ballinrobe, Co. Mayo, Ireland, F31 K138

Harmonised standards applied:


EN ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 4254 - 1	Agricultural machinery - Safety - Part 1: General requirements
EN ISO 4254 - 14	Agricultural machinery - Safety - Part 14: Bale wrappers

Signed: 
Date: **Place:** Ballinrobe, Co. Mayo, Ireland, F31 K138
Name: James Heaney
Position: Design Office Manager

Signed: 
Date: **Place:** Ballinrobe, Co. Mayo, Ireland, F31 K138
Name: Gerry Corley
Position: Quality Manager



Pre-delivery inspection form

 PRE-DELIVERY INSPECTION (PDI)	
Dealer:.....	Model: Orbital
Full address:.....	Serial No:.....
.....	Date Delivered:.....
Fitter:.....	Date Inspected:.....
Customer:.....	
Full Address:.....	Tel:.....
.....	Mobile:.....
.....	E-mail:.....
ENSURE THAT THE TRACTOR IS OF THE CORRECT SPECIFICATION FOR THIS MACHINE. REFER TO THE OPERATOR INSTRUCTOR MANUAL BEFORE MAKING ANY ADJUSTMENTS!	
This machine must be registered on www.mchale.net by the Dealer in order to qualify for Warranty!	
1. Check that all accessories are with the Owner/Operator. Check Operators Instruction Manual and Parts Lists.	10. Adjust drawbar-swing/safety transportation-bar.
2. Ensure machine is re-assembled correctly. (Refer to all assembly instructions supplied)	11. Check for smooth operation of all moving parts. Check dispenser ring & dispensers are running smoothly & free from damage or grit.
3. Ensure that the wheels are correctly fitted (i.e. valve to the outside). Torque wheel nuts correctly.	12. Ensure plastic is applied to the centre of the bale.
4. Check for correct tyre type, tread and pressure. (Tyre inflation pressure is 1.45 bar (21 psi))	13. Check dispenser(s) are running smoothly & free from damage or grit.
5. Hitch machine to tractor/baler. Set transportation bar and ensure all pins are secure.	14. Run the 'Auto' cycle on the control unit.
6. Adjust drawbar to ensure wrapper is parallel to the ground when coupled to tractor/baler. Attach 7-pin plug for lighting system.	15. Check that all electrics and lights function correctly.
7. Connect hydraulic hosing to tractor ensuring proper hydraulic setup. Note: Ensure free-flow return to tank.	16. The operator must be fully aware of all hazards, controls (electric & hydraulic), all functions & safety devices of both the machine and the tractor.
8. Ensure control-unit power supply is 12 V direct from battery otherwise the machine may malfunction.	17. Ensure that the owner/operator reads the operator instruction manual and understands fully all safety & operating aspects of the machine, as described.
9. Ensure the control-unit is on the correct program. Check all manual functions from the control unit.	18. Instruct operator on machine maintenance i.e. Check chain tensions, adjustments, tyre pressure & wheel nuts, also areas to be greased daily along with all other routine functions.
I am satisfied that the above checks have been carried out, and that the machine is complete with all accessories and manuals.	
Signed:.....	(Dealer) Date:.....
Signed:.....	(Owner) Date:.....
A signed copy of this form is to be retained by both the Dealer and the Customer!	

McHale Limited Warranty

McHale Engineering, Ballinrobe, Co. Mayo, Ireland (hereinafter called 'the company') warrants to the original retail purchaser that new products sold and registered with the company, shall be, at the time of delivery, free from defects in material and workmanship, and that such equipment is covered under Limited Warranty providing the machine is used and serviced in accordance with the recommendations in the operator's manual.

This Limited Warranty covers the equipment for 10,000 bales, or a period of one year starting from the date the equipment is commissioned, whichever comes first.

The online submission of the pre-delivery inspection (PDI) form by the dealer (importer) is taken as evidence of the delivery of the machine to the original retail purchaser. This is compulsory, and is required to record the machine in the **McHale** warranty system.

These conditions are subject to the following exceptions:

- Parts of the machine which are not of **McHale** manufacture, such as tyres, PTO shafts, slip clutches, hydraulic cylinders, etc. are not covered by this Limited Warranty, but are subject to the warranty of the original manufacturer. Warranty claims applying to these types of parts must be submitted in the same way as if they were parts manufactured by **McHale**. However, compensation will be paid in accordance with the warranty agreement of the manufacturer concerned.
- This Limited Warranty does not apply to failure through normal wear and tear, to damage resulting from negligence or from lack of inspection, from misuse, from lack of maintenance and/or if the machine has been involved in an accident, lent out or used for purposes other than those for which it was intended by the company.
- This Limited Warranty will not apply to any product that has been altered or modified in any way without the express permission of the company, or if parts not approved by **McHale** are used in repair.
- The company take no responsibility for any additional costs, including loss of oil and/or consumables incurred during the failure and repair of a product.
- The company cannot be held responsible for any claims or injuries to the owner or to the third party, nor to any resulting responsibility.
- Also, on no account can the company be held liable for incidental or consequential damages (including loss of anticipated profits) or for any impairment due to failure, a latent defect or a breakdown of a machine.

The customer will be responsible for the following costs:

- Normal maintenance such as greasing, maintenance of oil levels, minor adjustments, etc. as specified in the operator's manual.
- Labour charges other than originally agreed, incurred in the removal and replacement of components.
- Dealer's travel time and travel costs to and from the machine.
- Parts defined as normal wear items such as, but not limited to PTO shafts, chains, tyres, bearings, belts, blades, knives, tines, tine bars, slip clutches, nylon chain runners and slides, etc. that are not covered under the Limited Warranty.

The importer will be responsible for the following costs:

- All warranty labour charges.

The warranty is dependent on the strict observance of the following:

- The machine has been put in service by the **McHale** dealer according to our instructions.
- The online pre-delivery inspection (PDI) form has been correctly completed by the dealer.
- A printed version of the PDI form has been signed and dated by the original retail purchaser. This copy is to be stored by the dealer and made available to **McHale** when requested.
- The warranty claim is submitted using the **McHale** online claims system.
- The warranty claim must be submitted by the original retailing **McHale** dealer only.
- The decision of the company in all cases is final.
- Warranty parts must be held by the dealer for a period of two years from the date the warranty claim is submitted to **McHale**, or until a return request has been issued within the two years.
- When **McHale** issue a return request, parts must have the claim number written clearly on each individual part. These parts must be free from dirt and oil. If a part is returned in an unfit state, the claim will be refused.
- If damaged parts have been returned to the company and warranty is refused, the dealer is allowed a period of one month from the date of receiving our notification to request the return of the damaged parts to the dealer site.

Further conditions - limits of application and responsibility:

- This Limited Warranty cannot be assigned or transferred to anyone without the prior written consent of the company.
- **McHale** dealers have no right or authority to assume any obligation or take any decision on the company's behalf, whether expressly or tacitly.
- Technical assistance given by the company or its agents for repairing or operating equipment does not lead to any responsibility on the company's behalf and cannot under any circumstances bring novation or derogation to the conditions of the present Limited Warranty.
- The company reserves the right to incorporate changes in its machines without prior notice and without obligation to apply these changes to machines previously manufactured.
- The present Limited Warranty excludes any other responsibility, whether legal or conventional, express or implied, and there are no warranties extending beyond those defined herein.

14.5 Unit conversion table

Length

mm	cm	m	km	inch (in)	foot (ft)	yard (yd)	mile (mi)
1	0.1	0.001	0.000001	0.03937	0.003281	0.001094	6.21e-07
10	1	0.01	0.00001	0.393701	0.032808	0.010936	0.000006
1000	100	1	0.001	39.37008	3.28084	1.093613	0.000621
1000000	100000	1000	1	39370.08	3280.84	1093.613	0.621371
25.4	2.54	0.0254	0.000025	1	0.083333	0.027778	0.000016
304.8	30.48	0.3048	0.000305	12	1	0.333333	0.000189
914.4	91.44	0.9144	0.000914	36	3	1	0.000568
1609344	160934.4	1609.344	1.609344	63360	5280	1760	1

Area

mm ²	cm ²	m ²	in ²	ft ²	yd ²
1	0.01	0.000001	0.00155	0.000011	0.000001
100	1	0.0001	0.155	0.001076	0.00012
1000000	10000	1	1550.003	10.76391	1.19599
645.16	6.4516	0.000645	1	0.006944	0.000772
92903	929.0304	0.092903	144	1	0.111111
836127	8361.274	0.836127	1296	9	1

Volume

cm ³ (ml)	m ³	litre (l)	in ³	ft ³	US gal	Imp. gal	US barrel
1	0.000001	0.001	0.061024	0.000035	0.000264	0.00022	0.000006
1000000	1	1000	61024	35	264	220	6.29
1000	0.001	1	61	0.035	0.264201	0.22	0.00629
16.4	0.000016	0.016387	1	0.000579	0.004329	0.003605	0.000103
28317	0.028317	28.31685	1728	1	7.481333	6.229712	0.178127
3785	0.003785	3.79	231	0.13	1	0.832701	0.02381
4545	0.004545	4.55	277	0.16	1.20	1	0.028593
158970	0.15897	159	9701	6	42	35	1

Mass

gram (g)	kg	tonne	US ton	Imp. ton	pound (lb)	ounce (oz)
1	0.001	0.000001	0.000001	9.84e-07	0.002205	0.035273
1000	1	0.001	0.001102	0.000984	2.204586	35.27337
1000000	1000	1	1.102293	0.984252	2204.623	35273.96
907200	907.2	0.9072	1	0.892913	2000	32000
1016000	1016	1.016	1.12	1	2240	35840
453.6	0.4536	0.000454	0.0005	0.000446	1	16
28	0.02835	0.000028	0.000031	0.000028	0.0625	1

McHale Orbital Round Bale Wrapper

Flow rate

l/sec	l/min	m ³ /h	ft ³ /min	ft ³ /h	gal/min	US brl/day
1	60	3.6	2.119093	127.1197	15.85037	543.4783
0.016666	1	0.06	0.035317	2.118577	0.264162	9.057609
0.277778	16.6667	1	0.588637	35.31102	4.40288	150.9661
0.4719	28.31513	1.69884	1	60	7.479791	256.4674
0.007867	0.472015	0.02832	0.01667	1	0.124689	4.275326
0.06309	3.785551	0.227124	0.133694	8.019983	1	34.28804
0.00184	0.110404	0.006624	0.003899	0.2339	0.029165	1

Pressure

bar	psi	kPa	MPa	kgf/cm ²	mm Hg	atm
1	14.50326	100	0.1	1.01968	750.0188	0.987167
0.06895	1	6.895	0.006895	0.070307	51.71379	0.068065
0.01	0.1450	1	0.001	0.01020	7.5002	0.00987
10	145.03	1000	1	10.197	7500.2	9.8717
0.9807	14.22335	98.07	0.09807	1	735.5434	0.968115
0.001333	0.019337	0.13333	0.000133	0.00136	1	0.001316
1.013	14.69181	101.3	0.1013	1.032936	759.769	1

Speed

m/s	m/min	km/h	ft/s	ft/min	mi/h
1	60	3.6	3.28084	196.8504	2.237136
0.01667	1	0.060007	0.054692	3.281496	0.037293
0.2778	16.66467	1	0.911417	54.68504	0.621477
0.3048	18.28434	1.097192	1	60	0.681879
0.00508	0.304739	0.018287	0.016667	1	0.011365
0.447	26.81464	1.609071	1.466535	87.99213	1

Torque

Nm	kgfm	ftlb	inlb
1	0.101972	0.737561	8.850732
9.80665	1	7.233003	86.79603
1.35582	0.138255	1	12
0.112985	0.011521	0.083333	1

Temperature conversion formulas

Degree Celsius (°C)	(°F - 32) x 5/9	(K - 273.15)
Degree Fahrenheit (°F)	(°C x 9/5) + 32	(1.8 x K) - 459.67
Kelvin (K)	(°C + 273.15)	(°F + 459.67) ÷ 1.8