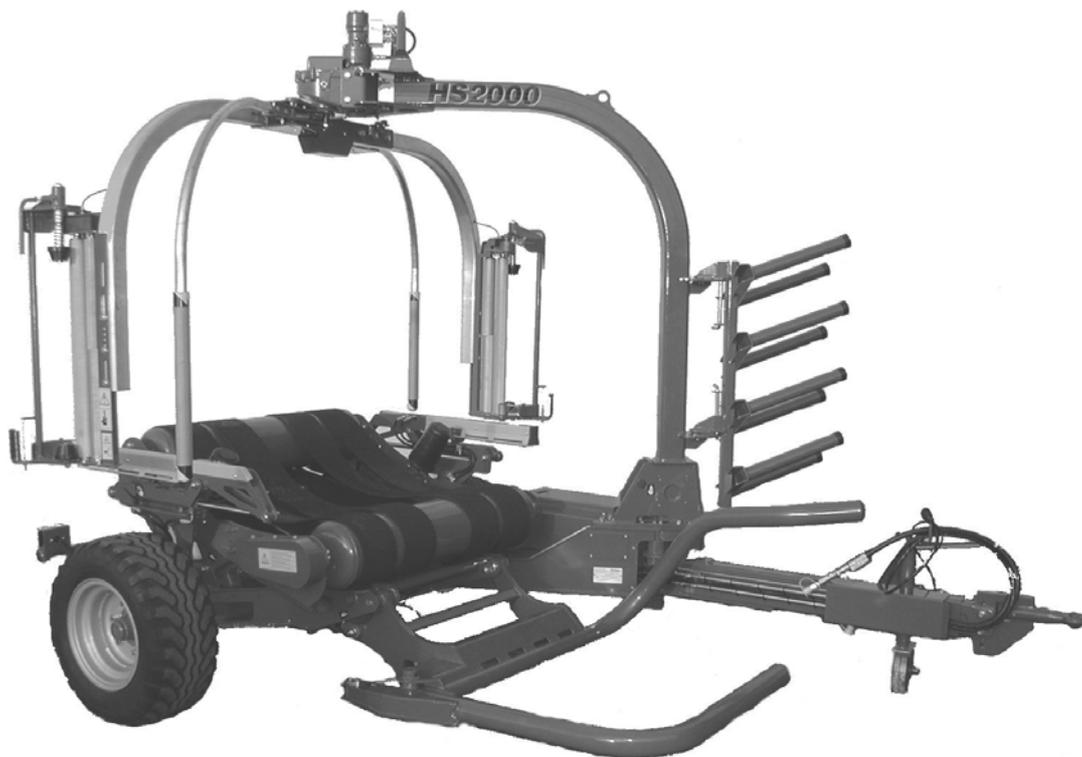


McHale HS2000



HS2000 Round Bale Wrapper Operator Instructor Manual Issue 6

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CLT00305_6

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McHale HS2000 Round Bale Wrapper

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 by 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.

Serial number:	
Year of manufacture:	
Date of delivery:	

If you require further copies of this instruction manual,
please quote part number: CLT00305

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

Please note that all specifications marked with an  in this manual only relate to
certain models or optional equipment. Also these specifications may not be available
in all countries.

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.

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1

Introduction

The **McHale HS2000** Round Bale Wrapper is a completely new product. This product 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 **McHale HS2000** 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 **McHale HS2000** is a fully trained operator. 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.

2

Product Information

The **McHale HS2000** 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, detailed in "Danger zone" on page 14) free of all persons and animals at all times, while the machine is in operation. This manual must be read and fully understood by anyone who will operate the machine.

2.1 Designated use of the machine

The **McHale HS2000** 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 **HS2000** is designed to be used in conjunction with a round baler or as a trailed machine after a tractor. 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:

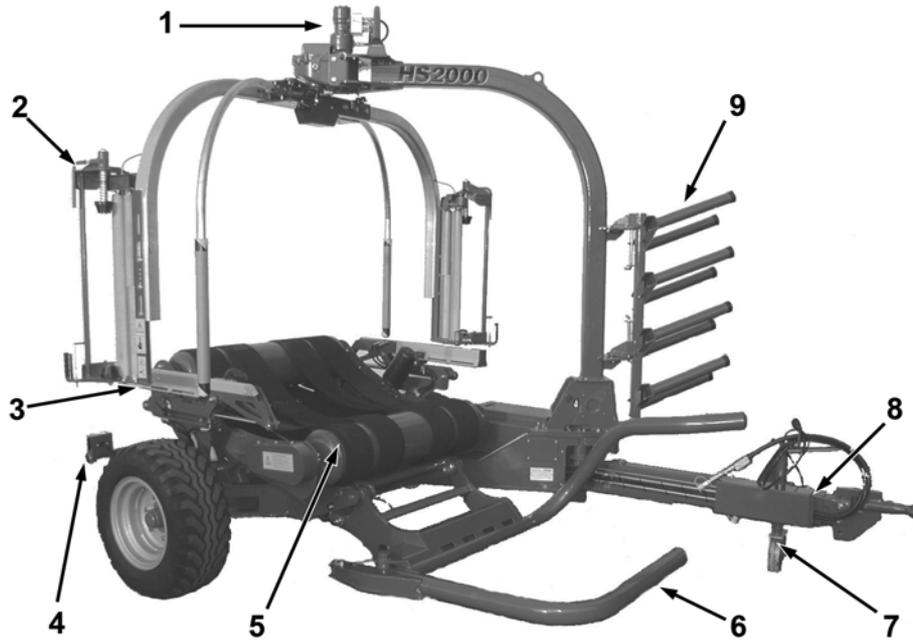
- The operating, maintenance and repair instructions given by the manufacturer will be strictly fulfilled.
- Exclusively persons who are familiar with it and instructed about the risks are entitled to operate, maintain, and/or repair the machine.
- The relevant health and safety requirements, that may 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.



WARNING: 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
1	Dispenser motor and brake unit
2	Satellite dispenser arms
3	Cut and hold
4	Tail lights
5	Wrapping table
6	Lift arm
7	Drawbar stand
8	Drawbar
9	Spare film roll holder

2.3 General dimensions & specifications

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

Transport length	4.5 m (14' 9")
Transport width	2.49 m (8' 2")
Transport height	2.97 m (9' 9")
Height to top of rollers	0.99 m (3' 3")
Transport weight (unladen)	1560 kg (3,439 lbs)
Tyre dimensions	340/55 -16
Tyre pressure	2.07 bar (30psi)
Maximum road speed	40 km/hour (25 mph)

Check with national road traffic regulations in the individual country!

2.4 Tractor attachment

Attachment	Pin hitch
Towing tractor requirements	35 kW
Electrics	12 Volt DC, 7 A approx (min. specification)
Lighting	12 V/ 7 pin
Hydraulic systems	Open centre, closed centre, load sensing
Minimum hydraulic pressure	170 bar (2465 psi)
Minimum hydraulic flow rate	30 lit/min @ 170 bar (2465 psi)

2.5 Machine specifications

Bale dimensions		Minimum	Maximum
		1,200 mm wide x 1200 mm	1,270 mm wide x 1350 mm
Bale weight		1,200 kg (2,646 lbs)	
Plastic film	Film width	750 mm (29.5")	
	Film stretch	70% (64% and 55% are optional)	
	Film layers	2+2 system, up to 90 arm rotations)	
	Film storage	8 rolls (+ 2 rolls on dispenser)	
Dispenser rotary speed		30 rpm	

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 and environmental messages:

When reading this manual, pay particular attention when you see the symbols below, i.e. warning, caution, note, and environmental. 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 that, if not followed strictly, could result in machinery damage.



ENVIRONMENTAL: 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. If safety decals are damaged or missing due to wear and tear or component replacement, ensure that they are replaced by genuine **McHale** decals. Refer to section 4.7 in this manual (or spare parts book provided) to see the spare part codes for the relevant decals, which are available from your **McHale** dealer.

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, such as films rolls and any other stored items, in a secure and safe manner so as to prevent items from falling. Keep storage areas clear of bystanders and children.

3.4 Protective clothing



Always wear clothing and safety equipment that is fit for the job at hand, never wear loose clothing. In the event of loud noises, wear suitable protective hearing devices. Use of mobile phones or radio/music headphones is not recommended while operating machinery as it impairs 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 moving parts

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

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 In the event of a fire



In the event of a fire, the following is given only as a guideline procedure, assuming it is safe to do so, as it is the operator's decision to ascertain the seriousness and hence the solution to the situation.

1. Immediately move any bales off the machine and drive the tractor and wrapper away from the flammable material.
2. Shutdown the tractor and remove the key from the ignition.

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3. Remove all hydraulic hosing and electrical looms from the machine.
4. With all connections removed, disengage the wrapper from the tractor.
5. Drive the tractor away from the wrapper.
6. Using a suitable fire extinguisher, attempt to put out the fire.



WARNING: Fire prevention

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

3.8 General safety warnings

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 metres radius from the rotating centre axis), and a minimum of 8 metres 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 at all times. All chains and slings used must be in good condition.
- Extreme caution is required when fitting or adjusting the overhead frame, motor, and satellite dispenser arms.

Before operation



WARNING: Rotating dispenser arm

When the electronic control box is switched on, the rotating dispenser arm is activated.

- The operator must ensure that the manufacturer's instructions for attaching and detaching the machine are followed. This includes the drawbar linkage attachment, the electric and hydraulic lines, in particular the lighting system.
- The operator must ensure that all covers are closed and all safety devices, in particular the dispenser rotation trip arms, are in operating mode and in good working order. Replace if necessary.
- 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.
- The continuous cycle 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.
- Adjust driving speed to suit ground conditions. Allow for mounted machines reducing the front end weight of tractor.
- 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 arms damaged or missing.
- The operator must always be aware of the location of the film holder because in any position, other than the transport position, it protrudes out past the general width of the machine.



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 hydraulic supply are switched off.
- Ensure lights (if fitted) are connected and working correctly.
- If plastic film is to be transported on the machine, it must only be done so on the holders provided and secured if necessary.
- Lift arm must be in the fully raised position and satellite dispenser arms inside width of machine.
- Drawbar transport lock must be fitted while travelling on the road.
- This machine is not suitable for towing at speeds above 40 km/h.

Performing maintenance

- Maintenance and repair work on the **HS2000** 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.
- 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. If these items were to get caught, severe injury could result.
- Before working on this machine, such as replacing film rolls, 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

McHale HS2000 Round Bale Wrapper

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.

- 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.



WARNING: Dispenser arm rotation must never exceed 30 rpm

Never increase the speed of dispenser arm rotation.

During inspection

- If carrying out an inspection during machine operation within the 'Danger Zone' (**highly dangerous and NOT recommended!**), there should be a fully trained and competent second person operating both the tractor and wrapper controls. If at any time the second operator loses sight of the inspector, turn off all tractor power immediately! Such inspection should only be carried out if all guards are fully in place, the machine is on level ground, and a safe distance is kept from any hazards on the machine.

4

Specific Safety Warnings

4.1 Electronic safety warnings

- This machine is equipped with electronic parts and components which comply to the EMC directive 2004/108/CE 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 (faulty safety circuits will cause risks).
- Do not modify any safety circuits.

4.2 Hydraulic safety warnings



WARNING: When switching on the control box

Switching on the control box causes dispenser activation.



NOTE: Dispenser arm will not rotate by manual operation

Dispenser arm will not rotate by manual operation of the lever on the main valve if the control box is switched off.

- 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, such as lift arm, 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 regularly 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

McHale HS2000 Round Bale Wrapper

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 Regulation 86/188/EEC 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 **McHale HS2000**, 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.

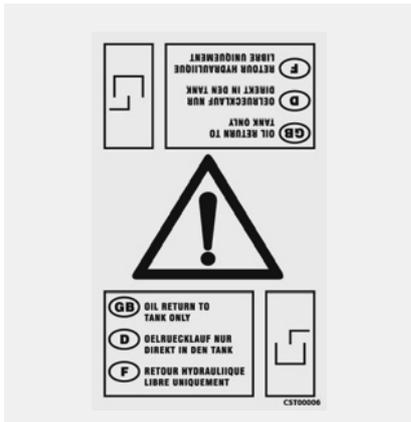
4.5 Special safety devices/instructions

- 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.

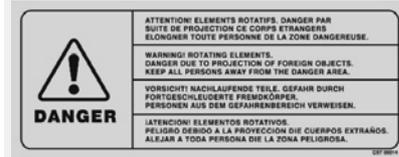
4.7 Safety warnings & instructions explained

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 **McHale HS2000** are displayed with their meanings below:



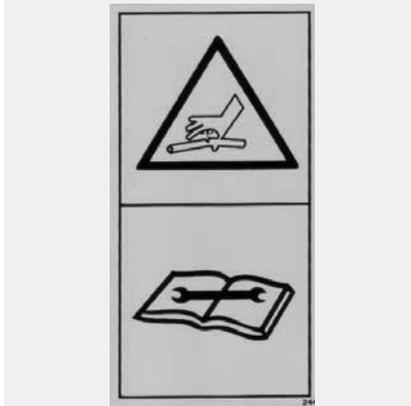
Free flow return to tank
(CST00006)



Danger of falling parts, rotating objects
Keep clear of machine while working
(CST00014)

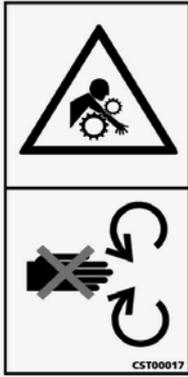


Stop tractor, remove ignition key
Read and understand the manual before working on or performing maintenance on the machine
(CST00015)



Beware of high-pressure hoses, even when the machine is switched off
Also, read and understand the manual before working on any part of the hydraulic system
(CST00016)

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Keep hands clear of rotating rollers
(CTS00017)



Keep hands out of crush area
(CST00019)



Check wheel nuts daily
(CST00020)



Check tyre pressure
(CST00021)



Diagram of plastic film path through dispenser.
(CST00022)

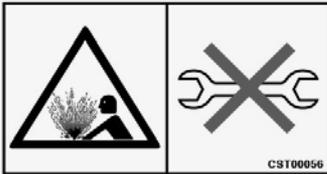
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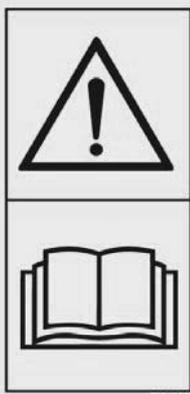
Keep hands out of the trap area
(CST00026)



Lifting hook location
(CST00032)



Do not dismantle
High pressure always
(CST00056)



Read instruction manual before use
(CST00057)

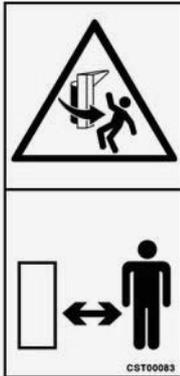


Grease daily
(CST00060)

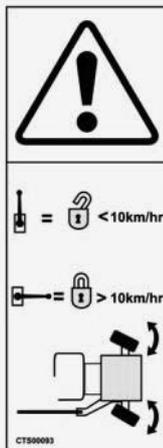
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Do not use continuous cycle when operating machine with remote
(CST00073)



Keep clear of rotating dispenser arms
(CST00083)



Always turn level valve to the off position when travelling on a road, or at any time that the machine is moving faster than 10 km/h
(CST00093)



Remove loose grass
(CST00102)



Warning! Never operate dispenser above 30 rpm
(CST00701)

McHale HS2000 Round Bale Wrapper

Tel: 353 (0) 94-9520300 Fax: 353 (0) 94-9520356 Email: sales@mchale.net Web: www.mchale.net	McHale Castlebar Road, Castlebar Rd., Ballinrobe Ireland..
CE	TYPE HS2000
	S/N -
YEAR OF MANUFACTURE	20

CST00013

HS2000 chassis plate

4.8 Machine lifting guidelines



WARNING: Machine lifting

- Only use chains or strapping that are rated for a minimum load of one tonne (1,000 kg) per chain or strap when using the three lift eye locations on the chassis, shown below.
- The crane or lifting device must be capable of lifting a minimum load of two and a half tonnes (2,500 kg).
- All chains and slings used must be in good condition.
- Always ensure that the machine cannot move by using wheel chocks.
- 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.



Rear LHS lift hook



Rear RHS lift hook



Front view

Do not use this eye to lift machine (Use for lifting arch sub-assembly only)



Front lift hook

4.9 Machine re-assembly

When the machine leaves the **McHale** factory it will normally be “knocked down” to a greater or lesser extent according to how it is shipped. This section is a description of how to re-build the machine to working order. Re-assembly takes place as follows:

- Lifting the **HS2000**
- Fitting drawbar cylinder
- Fitting lighting brackets
- Fitting spare film roll holder

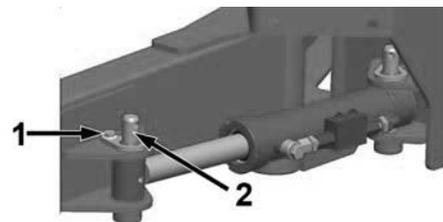
4.9.1 Lifting the HS2000

1. Remove the protective plastic cover from the machine.
2. Using suitable lifting gear, attach the lifting chains to the three lifting points on the machine chassis as shown below.
3. Ensuring that nobody is in the near vicinity of the crane, take up the slack on the lifting chains and move the machine to the desired location.



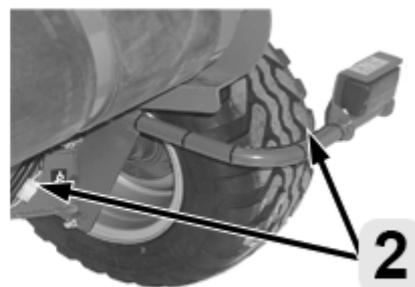
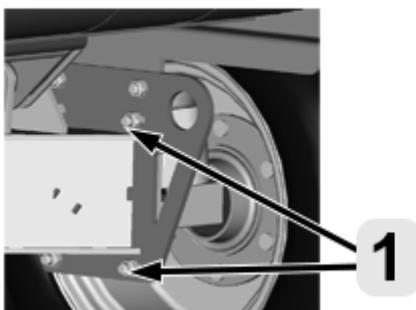
4.9.2 Fitting drawbar cylinder

1. Swing out the drawbar until it lines up with the bore on the drawbar cylinder.
2. Secure the drawbar cylinder in place, using the pin supplied.
3. The pin is secured in position using the M10 bolt and nyloc-nut supplied, as shown.



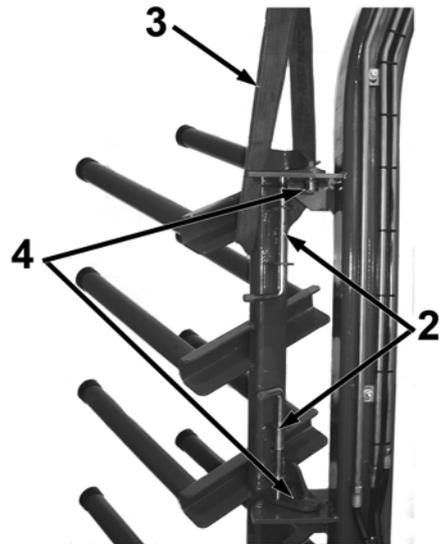
4.9.3 Fitting light brackets

1. Attach the light bracket and secure it in place using two 2x M16 bolts that are supplied.
2. Connect the light's wiring plugs to sockets on the machine electrical loom.



4.9.4 Fitting spare film roll holder

1. Remove wrapping material from film roll holder.
2. Set locking spring bolts in unlocked position.
3. Apply carrying sling.
4. Slide holder onto arch brackets through the pivot holes.
5. Secure with the two M10 x 20 bolts, washers and spring washers as supplied.
6. Release spring bolts and rotate holder to the desired location. Check that both spring bolts can fully engage in all 3 hole positions.



5

Tractor Requirements & Preparation

5.1 Tractor requirements

The minimum recommended size of tractor for operating the baler/wrapper comfortably is largely dependant on the power requirements of the baler. An estimate would be to use an 80-90 kW model. To operate the wrapper on its own a minimum of 35 kW is recommended. On hilly ground or difficult conditions, an additional 10 to 15 kw is advisable.

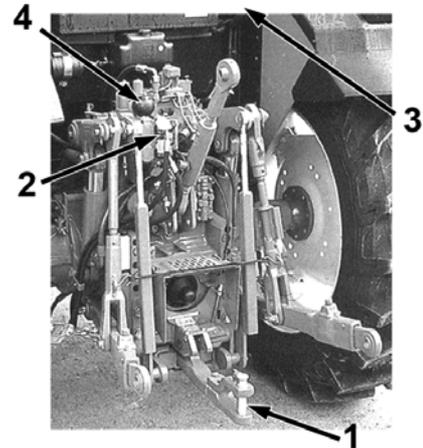


NOTE: Use good quality oil

Ensure that the tractor has clean, good quality oil, 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 bale wrapper to the tractor:

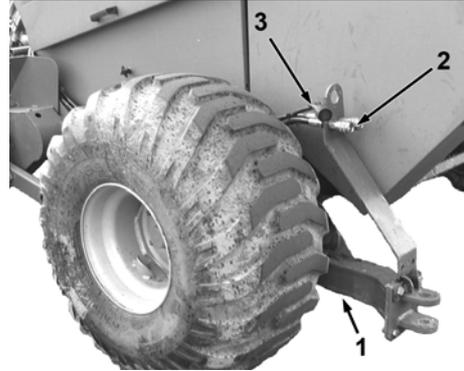
1. Pin hitch with pin as supplied with tractor accessories
2. Two ½" female quick releases (feed and return) for hydraulic power supply
The return line must be freeflow to tank (check with a **McHale** dealer for details)
3. One 12 V/ 20 A euro socket or battery power cable
4. One 12 V/ 7 pin lighting socket



5.2 Baler requirements

The following items are also required on the baler for attachment of the bale wrapper behind a baler:

1. Hitch on baler for wrapper
2. Two hydraulic hoses (feed and return) to bring hydraulic supply from tractor to wrapper, see section 5.8
3. One loom extension for electronic control box
4. One lighting extension loom (option)
5. Flow control/diverter valve (option - varies according to baler and tractor)
6. Camera for monitoring of wrapper during use (option)



5.3 Electronic control box installation

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. It is secured to the glass using the suction pad on the rear. Ensure that the cable to the machine is not under tension and not near sharp edges, etc. The electric power supply is obtained from the euro socket of the tractor.

Connect the supplied fused electric power lead to the tractor battery ensuring to route away from sharp edges and hot surfaces. The control box is not waterproof, it must be protected from rain. See "Electronic Control System" on page 42



CAUTION: Electrical power supply

Do not use any other power supply for the electronic control system, otherwise damage may occur.

5.4 Attaching wrapper to tractor

1. Reverse tractor up to wrapper, lining up the hitch of the tractor with the hitch of the wrapper.
2. Fit tow pin to hitch, ensuring it is secure.
3. Screw jack up off the ground, remove the locking pin and turn jack into transport position.
4. Connect hydraulic connections.
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 to the glass in an appropriate place using the suction pad on the rear. The safety strap must be secured to protect the box from accidental damage. If there is no cab on the tractor secure as appropriate, bearing in mind the box is not waterproof.

McHale HS2000 Round Bale Wrapper

7. Screw the 37 pin socket on the electronic box onto the 1.5 m extension cable and in turn onto the 37 pin plug on machine. Ensure that the cable to the machine is not under tension and clear of sharp edged etc.
8. Connect the control box to the tractor battery using the fused electric power cable provided (preferred option), or to the euro 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 of the above functions operate correctly.
10. The machine is now ready to work.

5.5 Attaching the wrapper to baler

1. Reverse tractor and baler up to the wrapper, lining up the hitch of the baler with the hitch of the wrapper.
2. Fit tow pin to hitch ensuring it is secure.
3. Screw jack up off the ground, remove locking pin and turn jack into transport position. Secure locking pin.
4. Connect the hydraulic connections as described in section 5.9.
5. Plug the 7 pin lighting plug into the socket on the baler which in turn is connected to the 7 pin socket on the tractor.
6. Place the electronic box in the tractor cab and secure to the glass in an appropriate place using the suction pad on the rear. Safety strap must be secured to protect box from accidental damage. If there is no cab on the tractor secure as appropriate bearing in mind the box is not waterproof.
7. Screw 37 pin socket on baler and 37 pin plug on machine together. The loom on the baler should be attached to the electronic control box.
8. Connect control box to tractor euro socket or battery using the power cable provided. The supplied battery power cable is the preferred option. There must be a good 12V supply to the control box.
9. The camera (if fitted) is situated on an appropriate position on the baler and must be connected to the monitor in the tractor.
10. Check that all functions operate correctly.
11. The machine is now ready to work.

5.6 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.

5.7 HS2000 set-up & tractor hydraulic system



CAUTION: It is important to determine the correct hydraulic system on the tractor

Incorrect setup will cause serious damage to the tractor's hydraulic system or, at least, excessive heating of the oil.

Open centre

This is the most common system on smaller tractors (i.e. less than 60 kW) and 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, the output flow will be max. 60 l/min and is usually not adjustable.

Closed centre

This system is found on older John Deere models (i.e. pre 00 and 10 series) and on some other makes and particular models. In this system, no oil flows through the control valve when the machine is idle but it maintains maximum oil pressure in the feed line. The tractor will have a fixed displacement pump and the output flow is usually not adjustable.

Load-sensing with Power Beyond fitted

This is the preferred hydraulic system. This system is found on most, but not all, newer tractors. 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.

Ideal configuration

In its most ideal configuration, the tractor will have a Power Beyond connection, whereby the oil comes direct from the pump, by-passing the tractor auxiliary valves to a female ½" quick release connection, which becomes the main feed.

It will also have a third 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 the most efficient hydraulic system available as the control valve now controls the amount and the 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 **HS2000** with a load-sensing system via the tractor auxiliary spools (i.e. continuous oil flow, where the control valve is set to open centre setup and flow is set to 60 l/min. from the tractor), **McHale** do not recommend operating in this setup as controlling the oil flow is too variable from one tractor to another and there is a 20 kW PTO power loss associated with the overheating of oil.

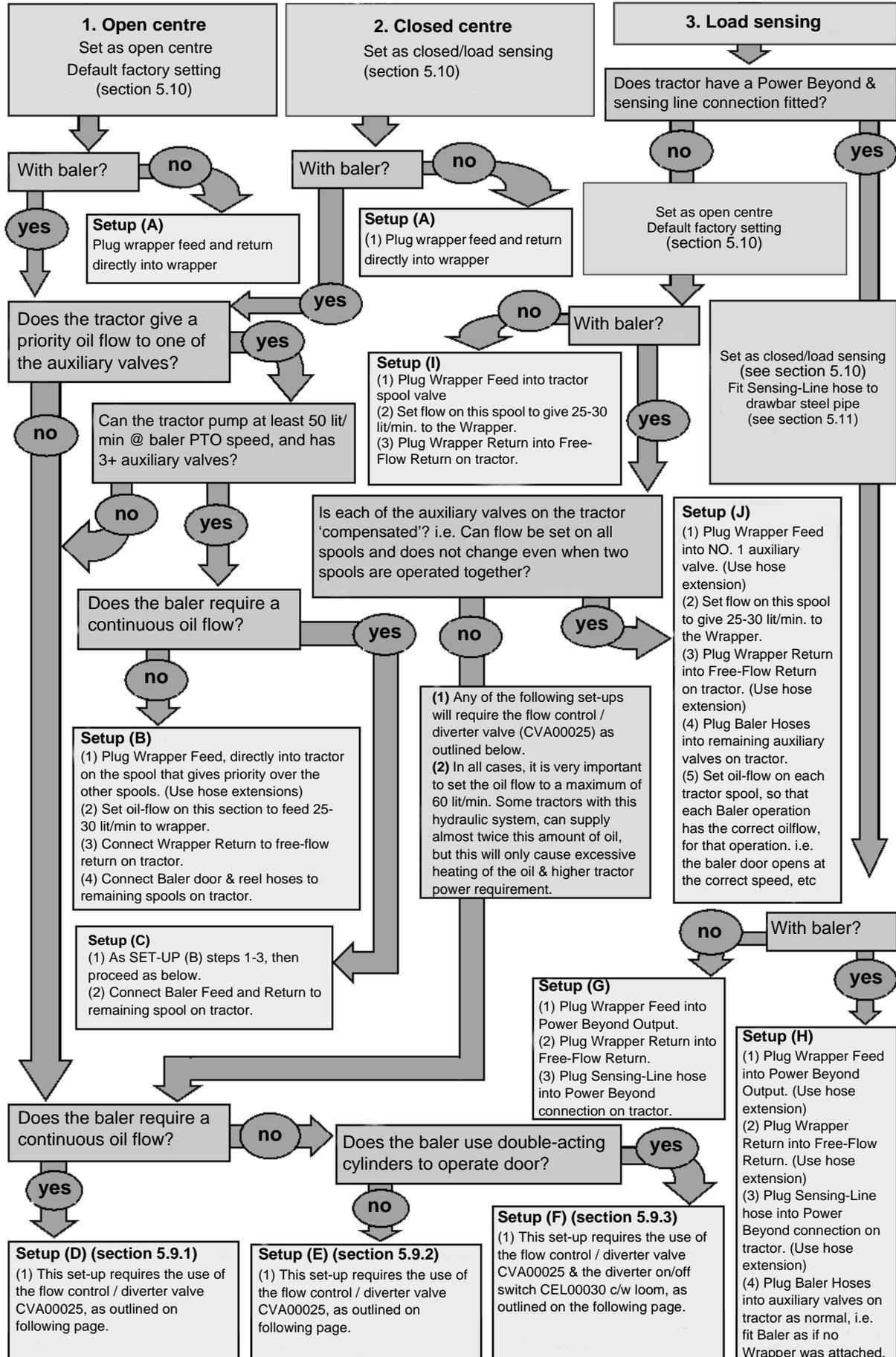
Load sensing without Power Beyond fitted

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:

- a. 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, e.g. lifting the baler reel while wrapping, will cause the tractor to send all the oil flow to the wrapper, which results in inadequate oil pressure to lift the reel.
- b. 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, see “Which hydraulic system is used?” on page 33 to select the best set-up for the **HS2000**.

5.8 Which hydraulic system is used?



5.9 Wrapper hydraulic set-ups

5.9.1 Setup (D)

1. Fit wrapper hitch to baler as appropriate. This will depend on the model of baler to which it is being fitted.
2. Fit combined flow control/diverter valve in an appropriate position on the baler. For example, at the back end of the baler hitch (above the pick up reel). The diverter section is not used for this situation.
3. Select a single acting spool valve on the tractor (preferably with a detent to hold the lever open in one position). This will be used for operating the baler and the wrapper.
4. Connect a hydraulic hose from Port B on the flow control/diverter valve to the selected spool valve.
5. Connect the baler return hose to a freeflow return to tank.
6. Connect Port 2 on the flow control/diverter valve to the wrapper feed hose. This ends at the wrapper hitch on the baler.
7. Connect Port 1 on the flow control/diverter valve to the baler feed hose.
8. Connect wrapper return directly to a freeflow return to tank on the tractor. Refer to your tractor manual to see where this is best achieved. This freeflow is very important so that the working of the wrapper will not be impaired.
9. Blank off Ports A and 3 on the flow control /diverter valve.

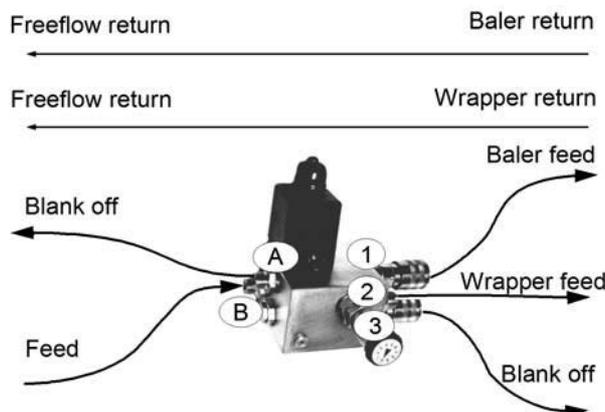
The system works as follows:

1. Move hydraulic valve in one direction to feed baler and wrapper.



NOTE: The graduated flow control knob must be adjusted to give an oil flow to the wrapper of 25-30 l/min, just enough to allow the wrapper to work

The first symptom of low oil flow is that the cut and hold will not release enough to catch the plastic at the end of the cycle.



5.9.2 Setup (E)

1. Fit wrapper hitch to baler as appropriate. This will depend on the model of baler to which it is being fitted.
2. Fit combined flow control/diverter valve in an appropriate position on the baler. For example at the back end of the baler hitch (above pick up reel). The diverter section is not used for this situation.
3. Select a double acting spool valve on the tractor (preferably with a detent to hold the lever open in one position). This will be used for operating the rear door of the baler and the wrapper.
4. Connect Port B on the flow control/diverter valve to the tractor spool valve, on the side that will be used to send oil to the wrapper (*spool valve upper*).
5. Connect Port A on the flow control/diverter valve to a freeflow return to tank on the tractor. Refer to your tractor manual to see where this is best achieved. This freeflow is very important so that the working of the wrapper will not be impaired. This is also used as the return for the wrapper.
6. Connect the baler rear door hydraulic hose to the same tractor spool valve (as used on item no.4) to the *opposite* side that will be used to send oil to the wrapper (*spool valve lower*).
7. Connect Port 2 on the flow control/diverter valve to the wrapper feed hose. This ends at the wrapper hitch on the baler.
8. Port 3 is to be blanked off.

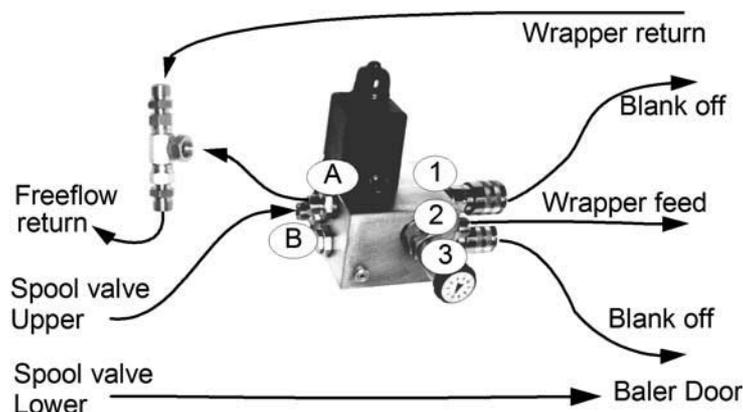
The system works as follows:

1. Move tractor hydraulic valve lever in one direction to open rear door.
2. Move tractor hydraulic valve lever in opposite direction to close rear door and supply feed to the wrapper.



NOTE: The graduated flow control knob must be adjusted to give an oil flow to the wrapper of 25-30 l/min, just enough to allow the wrapper to work

The first symptom of low oil flow is that the cut and hold will not release enough to catch the plastic at the end of the cycle.



5.9.3 Setup (F)

1. Fit wrapper hitch to baler as appropriate. This will depend on the model of baler to which it is being fitted.
2. Fit combined flow control/diverter valve in an appropriate position on the baler. For example at the back end of the baler hitch (above pick up reel).
3. Select a double acting spool valve on the tractor (preferably with a detent to hold the lever open in one position). This will be used for operating the rear door and the wrapper.
4. Connect a hydraulic hose from Port B on the flow control/diverter valve to one side of the selected spool valve.
5. Connect another hydraulic hose from Port A on the flow control/diverter valve to other side of the selected spool valve.
6. Connect baler door closing hose to Port 3 on flow control/diverter valve.
7. Connect baler door opening hose to Port 1 on flow control/diverter valve.
8. Connect Port 2 on the flow control/diverter valve to the wrapper feed hose. This ends at the wrapper hitch on the baler.
9. Connect wrapper return directly to a freeflow return to tank on the tractor. Refer to your tractor manual to see where this is best achieved. This freeflow is very important so that the working of the wrapper will not be impaired.
10. Remove knob of selected spool valve handle on tractor. Replace with supplied handle fitted with switch.
11. Connect power lead into lead that supplies electronic control box.
12. Connect solenoid connector to connection on flow control/diverter valve.
13. When baler is removed from tractor the loom may be split at the connector.

The system works as follows:

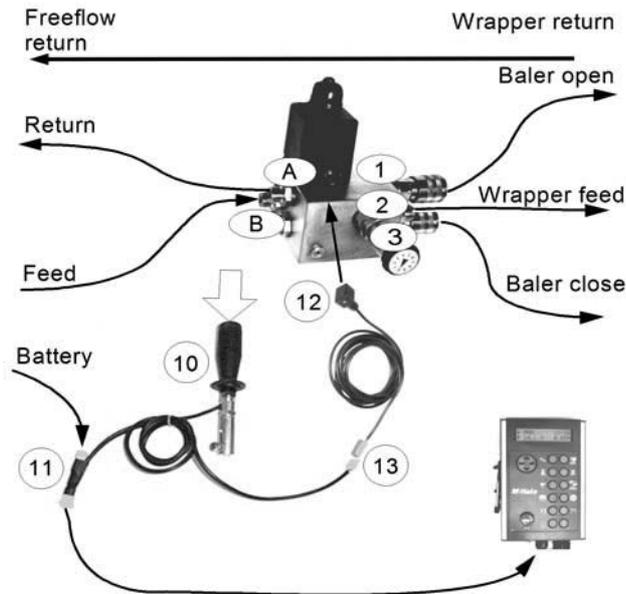
1. Push switch and move tractor hydraulic valve lever in one direction to open rear door.
2. Push switch and move tractor hydraulic valve lever in opposite direction to close rear door. Release switch and hold the lever to supply feed to the wrapper.



NOTE: The graduated flow control knob must be adjusted to give an oil flow to the wrapper of 25-30 l/min, just enough to allow the wrapper to work

The first symptom of low oil flow is that the cut and hold will not release enough to catch the plastic at the end of the cycle.

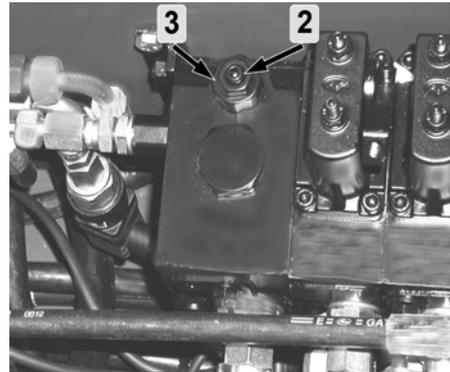
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5.10 Hydraulic spool valve setup

Procedure to select open/closed centre valve configuration:

1. Using a 17 mm spanner, loosen locknut.
2. With a 4 mm Allen Key, tighten or unscrew the bolt 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



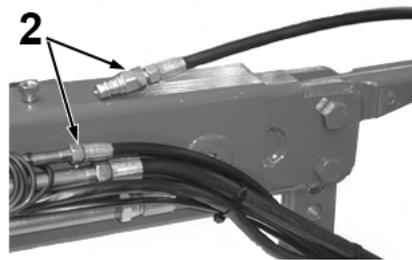
5.11 Attaching Load-Sensing hose



WARNING: Rotating dispenser arm

When the electronic control box is switched on, the rotating dispenser arm is activated.

1. Remove 1/4" blanking cap.
2. Fit hose supplied including 3/8" quick release coupling.
3. Plug this end into load-sensing line of tractor.



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 1200 mm and 1270 mm wide

- Bale height: Diameter from 1200 mm up to 1350 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 quality film material will not produce good silage regardless of how well the machine wraps the bale. The 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 are 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.

The operator needs to ensure that the bale is correctly wrapped. It is good practice to periodically check the bales after being wrapped for any torn, split or punctured 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.

The plastic film must be applied to the centre of the bale. If it is too low or too high adjust the dispenser height as appropriate. See “Dispenser height” on page 62.

To determine the number of wrapping arm 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 arm rotations* to cover the bale completely with plastic film.
2. Add 0.5 to this number.

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3. Multiply this resultant figure by 2 (for 4 film layers) or 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 arm rotations to cover bale: 3.5

Number of rotations to apply 4 layers of film to bale = $(3.5+0.5) \times 2 = 8$

Important notes:

1. * One 'wrapping arm rotation' = both dispensers rotating 360° around the bale.
2. 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.



ENVIRONMENT: Recycling of film roll

Respect the environment! Never throw away or burn the waste film and the core tube. 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.

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7

Electronic Control System

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

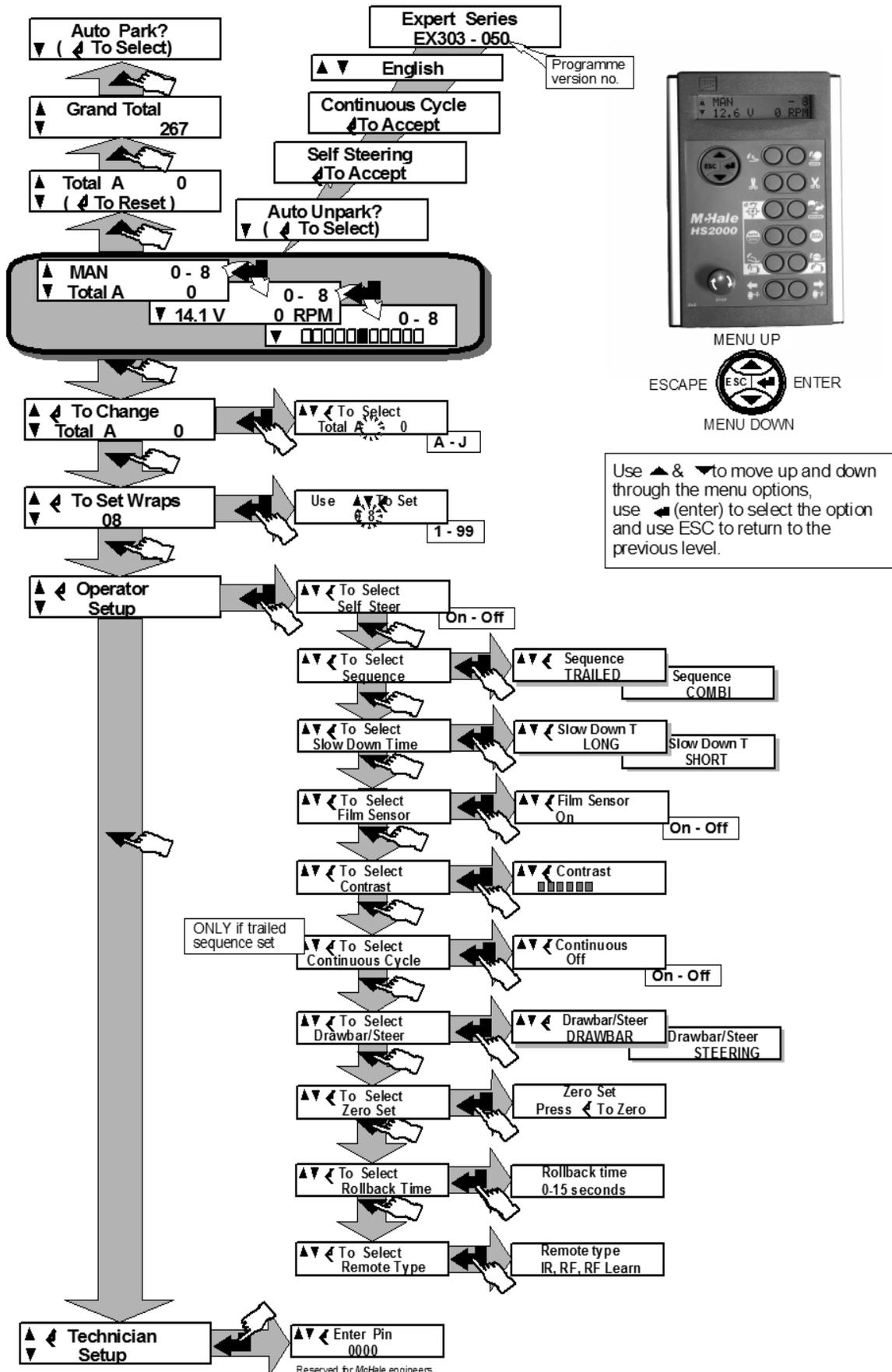
No.	Function
1	Display up
2	Escape back to main display, or cancel error
3	Enter
4	Display down
5	Stop button - twist clockwise to restart the controller
6	Display
7	Table lower
8	Table tip, starts the second tipping part of an automatic cycle
9	Cut and hold close
10	Cut and hold open, this will only open the top ram. There is no manual function for raising the cut and hold assembly
11	Diverter - diverts hydraulic oil from the load arm to the clamp arm, "d" is displayed
12	<p>Rotate forward (slow/fast) - Press and hold button for slow rotate. Release button and press again quickly for fast rotate. In Auto, the dispensers will rotate forward to the start position</p> <p>Resume - Press to resume Auto cycle after film break or safety arm trip</p>
13	Automatic cycle/manual cycle
14	Automatic cycle start
15	Bale load arm down Open bale clamp arm if diverter on (d)
16	Bale load arm up Close bale clamp arm if diverter on (d)
17	Drawbar left
18	Drawbar right

7.3 Available wrapping programmes

Programme	Description
TRAILED	HS2000 operating in trailed mode behind tractor
COMBI	HS2000 operating in 'in-line' mode behind trailer

See "Wrapping sequence" on page 47.

7.4 Electronic control box set-up



7.5 Electronic control box features

7.5.1 Working display

When the electronic control box is first switched on it displays Expert Series, followed by the program version number, followed by the selected language. The working language can be changed at this point if necessary. The language is changed by pressing Display Up (button 1) or Down arrow (button 4) to scroll to the desired language when the default language “English” is displayed.



NOTE: Previous settings

If the continuous cycle option was selected in the previous cycle, the electronic control box asks you to confirm these settings by pressing Enter (button 4).

If the Auto Parked function was selected in the previous cycle, press Enter (button 4) to Auto Unpark. Before you select Auto Unpark, move the drawbar and film roll holder into the working position.

After a short delay the working display (screen 1 of 3) appears. There are three different working screens. Press Enter (button 3) to toggle between the three screens.

Main working screen

The main screen shows the machine status, manual or automatic, the current wrap count, and the preset number of wraps.

Second working screen

This screen shows the total for the selected bale counter, or the voltage and the wrapping speed in rpm.

Third working screen (does not apply to newer machines)

This screen shows the steering angle indicator.

7.5.2 Counters

The Expert Series electronic control box contains the following counters:

- **Ten different bale counters (A - J)**, which can be reset. These bale counters can be used to measure the amount of bales wrapped for various customers by using a different counter for each customer.
- **Grand total counter**, which cannot be reset. Every bale that is wrapped by the machine is added to this counter.

Select and set a bale counter (A-J)

1. From the working display, press Display Down (button 4) once to see the To Change Total display.
2. Press Enter (button 3) to move to the To Select Total display.
3. Select desired counter (A -J) using Display Up and Display Down (buttons 1 and 4).
4. When you reach your desired counter, press Enter (button 3) to select it.
5. Press Display Up (button 1) or ESC (button 2) once to return to the working display.

Reset the current bale counter (A-J)

1. Press Display Up (button 1) once, from the main working screen.
2. The current bale counter total will be displayed.
3. Press Enter (button 3) to reset it.
4. Press Display Down (button 4) or ESC (button 2) once to return to the working display.

View the grand total bale counter

1. To view the grand total bale counter, press Display Up (button 1) twice, from the main working screen.
2. The grand total counter will be displayed.

7.5.3 Voltage monitor

The Expert Series electronic control box monitors its operating voltage and displays it during wrapping. If the voltage falls below a safe level “LOW BATT” is flashed on the display. The usual causes of low voltage are:

- A bad battery
- A defective charging circuit
- Loose or corroded connections
- Fuses or a faulty power lead to the control box

7.5.4 To set wraps

1. To change the desired number of film wraps, press Display Down (button 4) twice to display the To Set Wraps screen.
2. Press Enter (button 3) to move to the Use To Set screen.
3. Use Display Up and Display Down (buttons 1 and 4) to make changes to the flashing figure. When correct figure shows press Enter (button 3). The second digit is programmed in the same way.
4. When the desired figure is displayed, return to the working display by pressing ESC (button 2) or Display Up (button 1).

7.5.5 Operator setup

To enter the Operator Setup menu:

1. Press Display Down (button 4) twice from the main working screen.
2. Press Enter (button 3) once to move to the Operator Setup screen:
 - Wrapping sequence
 - Slow down time
 - Film break sensor
 - Display contrast
 - Continuous cycle
 - Drawbar/Steer (not applicable on newer machines)
 - Zero set (not applicable on newer machines)
 - Rollback time
 - Remote type
3. Use Display Up and Display Down (buttons 1 and 4) to select an item, then press Enter (button 3) to adjust the current selection/setting.

Wrapping sequence

It is important that the correct wrapping sequence is selected. The 'trailed' programme is used for wrapping behind a tractor; the clamping arm opens to receive the bale and continuous cycle is possible.

The 'combi' programme is selected when it is desired to wrap in combination with a baler; the bale clamping arm remains closed and tip up must be pushed to complete the wrapping cycle.

To access the Wrapping Sequence screen:

1. Press Display Down (button 4) three times.
2. Press Enter (button 3) once to access the Operator Setup menu.
3. Press Display Down (button 4) once to select the Wrapping Sequence screen.
4. Use Display Up and Display Down (buttons 1 and 4) to select the appropriate setting and press Enter (button 3) to save the new setting.

Slow down time

Available in all sequences, this option allows the operator to select a shorter satellite slowdown time at the end of the wrapping cycle. The default setting is 'long', as this gives optimum reliability in varying working conditions. However, it is possible to select 'short', which reduces the cycle time, giving greater output. Each time the electronic control box is switched off, the setting returns to Long.



NOTE: When selecting the 'short' setting

The 'short' setting should only be selected once the machine has reached working temperature to maintain reliability.

To access the Slow Down Time screen:

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1. Press Display Down (button 4) three times.
2. Press Enter (button 3) once to access the Operator Setup menu.
3. Press Display Down (button 4) twice to select the Slow Down Time screen.
4. Use Display Up and Display Down (buttons 1 and 4) to select the appropriate setting and press Enter (button 3) to save the new setting.

Film sensor

During wrapping, the Expert Series electronic control box monitors the flow of film through the dispensers. If one dispenser stops feeding film due to a film breakage or the roll coming to an end, the control box will give an audible alarm and “1 Dispenser only” will flash on the screen. Bale rotation goes into 50/50 mode, rotating the bale at half speed, applying the correct film coverage, and wrapping of the bale can be completed. If the second dispenser empties, the dispensers will rotate slowly forward and stop over the wheels, the bale will rotate in reverse to the position where the plastic ended, and the electronic control box will display “Out of film” and wait.



WARNING: Turn off the machine

The hydraulic power supply must now be switched off, the parking brake applied, and the dispenser safety arms put into the tripped position.

Replace the film rolls and attach the film to the bale. Switch on the hydraulic oil supply and complete the wrapping cycle by pressing Resume (button 12).



NOTE: Film sensor can be switched off if desired

Film sensors are normally turned ON, but can be switched OFF from the Operator Setup menu if film sensing is not desired or if there is a problem with a sensor.

To switch the Film Break sensor on and off:

1. Press Display Down (button 4) three times.
2. Press Enter (button 3) once to access the Operator Setup menu.
3. Press Display Down (button 4) three times to select the Film Break Sensor screen.
4. Use Display Up and Display Down (buttons 1 and 4) to select the appropriate setting and press Enter (button 3) to save the new setting.

Display contrast

This setting calibrates the height sensor. Extremes of temperature may affect the contrast of the display which is adjustable from the contrast menu.

To access the Contrast menu:

1. Press Display Down (button 4) three times.
2. Press Enter (button 3) once to access the Operator Setup menu.

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3. Press Display Down (button 4) four times to select the Contrast menu.
4. Use Display Up and Display Down (buttons 1 and 4) to select the appropriate setting and press Enter (button 3) to save the new setting.

Continuous cycle

When the continuous cycle is switched on, it allows the wrapper to tip off the bale at the end of wrapping without any input from the operator. Continuous cycle can only be selected if the trailed sequence is set.

To access Continuous Cycle settings:

1. Press Display Down (button 4) three times.
2. Press Enter (button 3) once to access the Operator Setup menu.
3. Press Display Down (button 4) five times to select the Continuous Cycle settings.
4. Use Display Up and Display Down (buttons 1 and 4) to select the appropriate setting and press Enter (button 3) to save the new setting.

Drawbar/steer (does not apply to newer machines)

This is used to select whether the operator wants the drawbar or steering active on the bottom two buttons of the control unit (buttons 17 and 18). The drawbar is adjusted to place the wrapper at the correct working position either behind the tractor or the baler. The safety bar is first placed in the working position and the drawbar left/right menu selected where the buttons will adjust the drawbar. Alternatively the handle can be used on the machine control valve. When using valve handle to adjust drawbar, slowly deflect the valve handle as the machine will move. On steering machines, adjustments to the drawbar will make it necessary to readjust the zero set position of the drawbar angle sensor.

Zero set (does not apply to newer machines)

The zero position (centre position) of the drawbar sensor may be set from within this menu. The control box is switched to manual and 'self steer' switched off. The wrapper wheels must first be set to the straight ahead position as shown on the control box display, (using the steering buttons to centre the indicator on the wheel angle display). The drawbar is next adjusted by using the control box buttons or the lever handle on the wrapper to place the wrapper in line with the baler. The combination is next driven forward a short distance in a straight line to allow the wrapper to find its position behind the baler, when the machines are in alignment Zero Set is selected, and enter is pushed. The display shows "New Zero Set". This "new" centre position for the drawbar sensor is now stored in the control box memory. Self steer may now be switched on. Should the wrapper be attached to another baler or the drawbar adjusted this calibration must be done again.

Rollback time

This feature rotates the bale on its own after wrapping and is useful for expelling any air from between the layers of film. It can be set from 0-15 seconds and this is the length of time that the bale is rotated for. Normally 6-7 seconds is enough to rotate the bale once.

Set to zero to disable this feature.

To access this menu:

1. Press Display Down (button 4) twice, from the main working screen, to display the Operator Setup menu.
2. Press Enter (button 3).
3. Press Display Down (button 4) eight times to select the Rollback Time screen.
4. Use Display Up and Display Down (buttons 1 and 4) to select the correct setting, press Enter (button 3). Return to the working display by pressing ESC (button 2) or Display Up (button 1) twice.

Remote type

This option is used to select the remote control type. There are 2 different types used:

- Infrared (IR) - older machines
- Radio frequency type (RF) - newer machines

To select the remote type:

1. Press the Display Down (button 4) three times to select the Operator Setup menu.
2. Press Enter (button 3).
3. Press Display Down (button 4) nine times and press Enter (button 3).
4. Select either IR/RF/RF Learn, as appropriate.
5. Press Enter (button 3) to save the selection.

Infrared remote

Whenever an infrared remote type is being used, select "IR" in the Remote Type menu, as above. Connect the receiver to the serial port on the electronic control box and select auto mode (button 13). The cycle can be started by pointing the infrared remote at the receiver and pressing the Auto Start button, see below. The Emergency Stop button will stop the cycle at any time. The other two buttons will rotate the table in forward and reverse.



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Radio remote

Whenever a radio remote is being used for the first time, the remote frequency code must be “learned” by the electronic control box. Select “RF LEARN” in the Remote Type menu and connect the receiver to the serial port on the electronic control box and select auto mode (button 13). Press the Stop button on the radio remote. A code will appear on the screen of the electronic control box to show that the radio frequency code has been stored. ESC (button 2) can then be pressed to return to the working screen and the remote is ready to use.

This procedure only needs to be followed when the remote handpiece is used with an electronic control box for the first time. The “RF” type will be automatically used once the remote frequency code has been established. Up to 7 handpieces can be programmed into the one electronic control box, if desired. Each remote handpiece has a different code which ensures that multiple wrappers can operate in the same location, without interfering with each other.



CAUTION: Press the safety button on the radio remote simultaneously with all function buttons, except for ‘stop’

There is a safety button located on the back of the remote which needs to be pressed simultaneously with each function button to activate it. This safety button doesn't need to be used for the Stop button.



WARNING: Radio remotes have a very long range, do not accidentally press any buttons when not near the machine

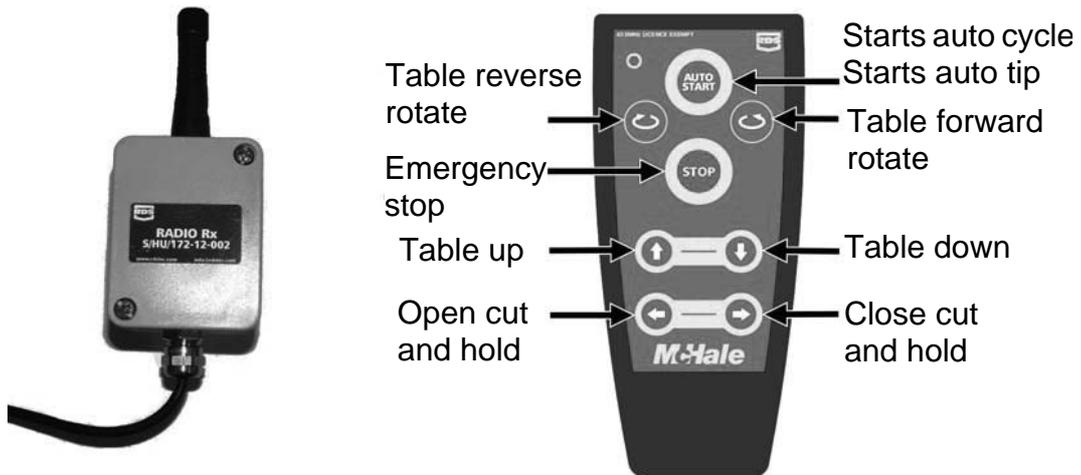
There is a very long range with radio remotes (approx. 200 metres in the line of sight), so care must be taken not to accidentally press any buttons even when not near the machine. The control box must be in AUTO mode before any remote functions will work.

With either remote type, pressing Rotate Forward (button 12) on the handpiece during wrapping will switch On/Off a 12 volt output on one of the spare electrical connectors on the wrapper wiring loom. This feature can be used to switch on an external valve on a hydraulic power pack to select a lower oil flow setting (this is useful when wrapping badly shaped bales).

There is a spare connector on the wrapper wiring loom marked with the letter “E”. (On machines up to serial no. 58297 the white/blue wire is +12 volts and the yellow/green is ground). (On machines from serial no. 58298 the brown wire is +12 volts and the yellow/green is ground).

The maximum current available on this 12 volt output is 3 amps.

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7.5.6 Technician menu

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

7.5.7 Auto park

Auto park is used to make it easier to move the wrapping machine between fields. The operator must first ensure that both the drawbar and spare film roll holder are in the working position prior to selecting auto park.



WARNING: The drawbar and spare film roll holder must not be in the way of the loading arm

The operator must first ensure that the drawbar and spare film roll holder are in the working position prior to selecting auto park.

1. Select MAN mode.
2. From the working display, press the Display Up key three times; "Auto park?" is displayed on the screen.
3. Press Enter (button 3) and hold for one second until "Park run" appears on the display.
4. The loading arm first moves downwards if not already lowered; the bale clamp arm opens and the dispensers move slowly forward and stop with one dispenser at the front and the other at the back of the wrapper. The open bale loading arm now moves to the upper position and the clamping arm closes behind the dispenser. The plastic film remains gripped in the cut and hold units. If the machine is being moved by road, the drawbar safety bar must be applied.

7.5.8 Auto unpark

This option is available on the start menu if the machine has previously been auto parked.



WARNING: The drawbar and spare film roll holder must not be in the way of the loading arm

The operator must first ensure that the drawbar and spare film roll holder are in the working position prior to selecting auto unpark.

Press Enter (button 3) to select Auto Unpark; “Unpark Run” is displayed, the loading arm first moves upwards and the clamp arm opens. After a short pause the loading arm lowers and the dispensers slowly move forward to the index position, if the combi programme is selected the clamp arm closes, otherwise it stays open. The held wrapping film has now crossed the wrapping table and wrapping can commence.

7.5.9 Dispenser rotation

An automatic cycle can only start when the dispensers are in the correct position over the wheels, “Dispenser Position?” is flashed on the display if the dispensers are in the incorrect position. In automatic mode, pushing the forward rotate button will rotate the dispensers forward in slow speed to the correct position under the rotate sensor.

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” on page 14.



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).

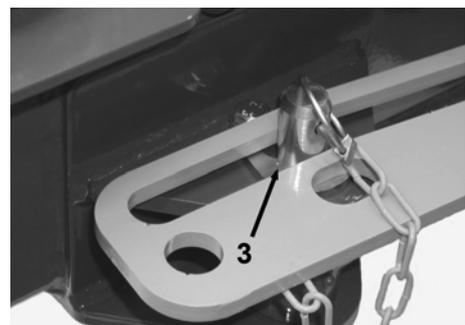


ENVIRONMENT: Recycling of the plastic film

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. Move the film holder to the working position, see section 10.12.
2. Turn on oil supply.
3. Remove drawbar transport lock and put it into working position slot as shown.
4. Then, adjust drawbar to the desired working position. Do not operate the hydraulic cylinder with the road transport lock in position.
5. Switch on electronic control box.
6. Check operation of dispenser safety arms by attempting to rotate dispensers when arms are in tripped position. Carry out this test on each dispenser arm.
7. Ensure wrapping table is tipped in the fully forward position.
8. The machine is now ready to wrap.



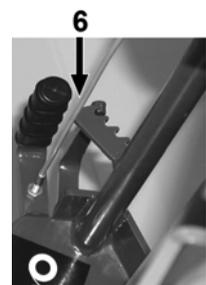
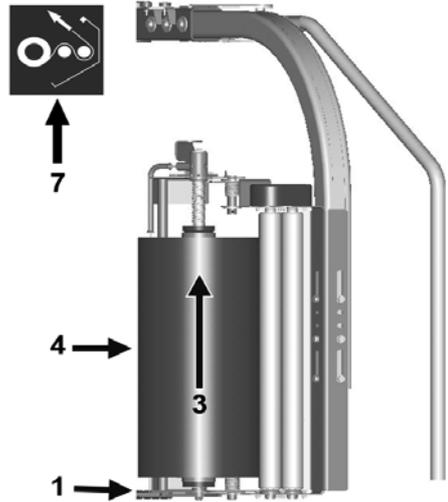
8.2 Loading plastic film



WARNING: Turn off power source before loading plastic film rolls

Always turn off the oil supply to the wrapper, apply the parking brake, and put the dispenser trip arms in the tripped position before changing the film rolls or at any time the operator needs to go near the dispensers. Turn off the electronic control box and shut down the tractor.

1. Push back the handle until the dispenser latches open.
2. Release the film roll lock by locking the cable in the notches provided, just enough to release the roll lock for the old film roll to be removed while still holding the top roll holder in the upwards position to allow you to fit the new rolls (usually this works when the cable is locked in the second-from-outside notch).
3. To remove the old roll, push upwards to latch top roll holder in the Up position and then discard core responsibly.
4. Sit new roll onto the bottom roll holder and centralise with the top roll holder.
5. While still holding the roll, pull the cable to release the top roll holder. The roll of plastic film is now held.
6. Re-engage the film lock by releasing the cable from the notch.
7. Thread the film through the dispenser rollers as per the threading diagram. Take care not to trap fingers between rollers.
8. Tie the ends of the plastic film together and lay them across the centre of the table. Never attempt to clasp plastic film in the cut and hold itself.
9. Close the dispenser by releasing the latch. The film-roll should now rest against one of the aluminium rollers.



8.3 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 working the **HS2000** wrapper after 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.

The electronic control box must be set to programme 'trailed', see "Wrapping sequence" on page 47.

1. Put film holder in working position (see section 10.12).
2. Remove draw bar safety lock and fit to working position (see section 8.1).
3. Adjust drawbar angle to give optimum position using either control box buttons or valve handle.



WARNING: When using valve handle to adjust drawbar

Engage the valve handle very gently as the machine will move.

4. Ensure wrapping table is tipped in the fully forward position.
5. Dispensers must be positioned over wheels.
6. Ensure the bale lift arm is lowered and the clamp arm opened.
7. Select **Auto** on control box.
8. Drive tractor up beside the bale to be wrapped. It will take practice to line up the bale correctly with the wrapper.
9. Press Auto Start (button 14) on the control box.
10. 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 lift arm lowers to the ground.
 - (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 upwards to grip the film as the dispensers complete the set number of rotations.
 - (g) The dispensers come to a halt and cut and hold units lower, gripping and cutting the film.
 - (h) If continuous cycle is selected, the bale is tipped off, otherwise, the operator pushes the table tip button to complete the cycle.



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.

McHale HS2000 Round Bale Wrapper

- (i) During tipping, the clamp arm opens.
- (j) The table now tips forward to the fully forward position.
- (k) The wrapper is now ready to receive another bale.

8.4 Wrapping behind baler

The following is the recommended method for working the HS2000 after a baler. It assumes the bales are well shaped for wrapping. However since it is impossible to allow for all differing conditions and terrain it may be necessary for the operator to vary this.



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.

Electronic control box must be set to programme 'combi'.

1. Put film holder in working position (see section 10.12).
2. Remove draw bar safety lock and fit to working position (see section 8.1).
3. Check drawbar height and length to give correct position.
4. Adjust drawbar angle to give optimum position using either control box buttons or valve handle.



WARNING: When using valve handle to adjust drawbar

Engage the valve handle very gently as the machine will move.

5. Ensure wrapping table is tipped in the fully forward position.
6. Dispensers must be positioned over wheels.
7. Ensure the bale lift arm is lowered and the clamp arm closed.
8. Select Auto on control box.
9. Discharge bale from baler and close baler door.
10. Press Auto Start (button 14) on the control box.
11. The wrapper should go through a sequence as follows:
 - (a) The arm lifts bale on to the wrapping table.
 - (b) The lift arm lowers to the ground.
 - (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 upwards to grip the film as the dispensers complete the set number of rotations.
 - (g) The dispensers come to a halt and cut and hold units lower, gripping and cutting the film.
 - (h) The audible alarm sounds and the operator pushes the table tip button to tip off the bale and complete the cycle.

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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.

- (i) The table now tips forward to the fully forward position.
- (j) The wrapper is now ready to receive another bale.

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!

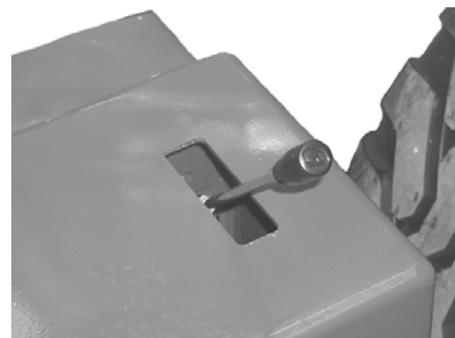


NOTE: Control box

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

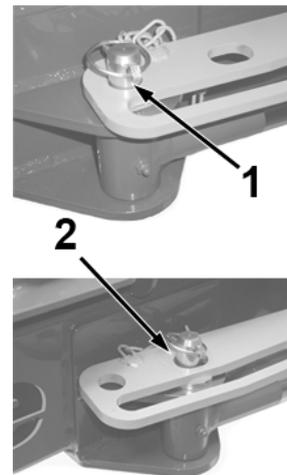
The following should be inspected every time, before travelling on a public road:

- All bales, wrapped or unwrapped, should be unloaded from the machine.
- Slowly move the drawbar manually to transport position by means of the hydraulic lever as shown; then, remove the lever and replace it in the hole provided on the valve guard.
- Move film holder to the 'road transport' position, ensuring that both top and bottom spring bolts are both fully engaged in the correct slot (see section 10.12).



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- Bring the wrapper into park position by pressing Auto Park (button 14) on the control box, ensuring that the film holder is in the transport position.
- Affix the safety bar into the appropriate position as shown. Position 1 applies to machines attached directly to a tractor. Position 2 shows the safety bar position, when the wrapper is in 'combi' mode, i.e. in use with the baler.
- The dispensers must be swung around so that they are inside the transport width of the machine.
- Ensure that the tyres are set to the correct pressure as per safety decals and according to the specifications, as outlined in section 2.3.
- The lighting system of the machine must be connected to the tractor and must be in a fully functioning condition.
- Ensure the oil supply is turned off and cannot be turned on accidentally.
- The electronic control box must be switched off or disconnected from the power supply, see "Electronic control box functions" on page 43.
- 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.
- Attention must be paid to the maximum travel speed-limit (40 km/hr) printed on the chassis plate, on the left hand side of the machine. Other speed limits that may be printed, on the drawbar plate or axle plate, for example are not relevant.
- If plastic film is to be transported on the machine it must only be done so on the holders provided and secured if necessary. If plastic film is left in the dispensers during transport, ensure that it is pushed away from the aluminium rollers.
- Ensure that all the national road traffic regulations relating to the country are fulfilled i.e. the use of safety chains may be mandatory in certain countries.



10

Field Operation & Wrapper 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.



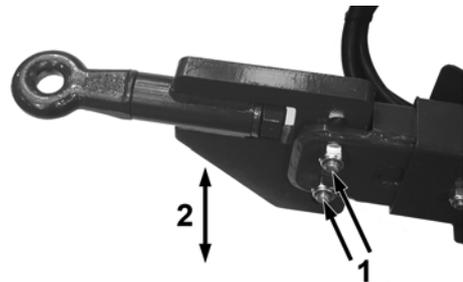
WARNING: Only competent operators should operate this machine

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 the use with different balers and tractors. To change the height go through the following procedure:

1. Remove 2x M20 nyloc nuts and the 2x M20 bolts holding hitch on.
2. Move hitch to new location.
3. Insert the 2x M20 bolts and tighten nyloc nuts.

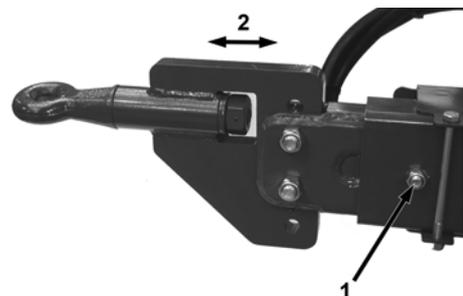


10.2 Drawbar length

It is necessary, when used on some balers, to extend or shorten the drawbar. This may be necessary to clear the baler when turning or to get the bale to roll into the bale lift arm properly.

This may be set as follows:

1. Remove M16 nyloc nut holding drawbar together and remove M16 bolt.
2. Slide inner drawbar into new position (do not remove drawbar).
3. Insert the M16 bolt into its new position and tighten nyloc nut.

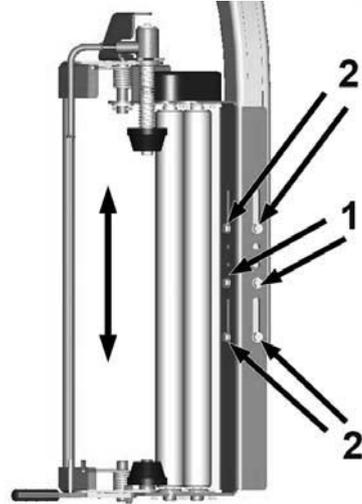


10.3 Dispenser height

The plastic film needs to be applied around the centre of the bale to ensure optimum coverage. To achieve this, the dispenser may need to be adjusted up or down as necessary. Do not adjust too low as the dispenser may touch the cut and hold.

The dispenser height may be adjusted as follows:

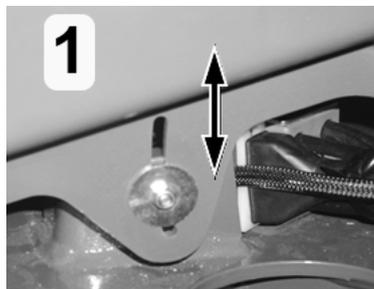
1. Remove the 2x centre bolts and washers.
2. Open the 2x top bolts and 2x bottom bolts back a few threads. Do not remove these bolts as they support the weight of the dispenser unit.
3. There are three height positions for the dispenser unit. Move the dispenser up or down as required. Insert the centre bolt when the desired height has been selected.
4. Tighten all bolts fully.
5. Rotate dispensers slowly to ensure that they do not touch any other part of the machine.



10.4 Table levelling adjustment

After a period of time it may become necessary to readjust the level of the table. The table should be horizontal when in wrapping mode. If the table is not operating properly it is very possible that it is due to one of the following: broken/missing magnet, damaged sensor or loose sensor connection.

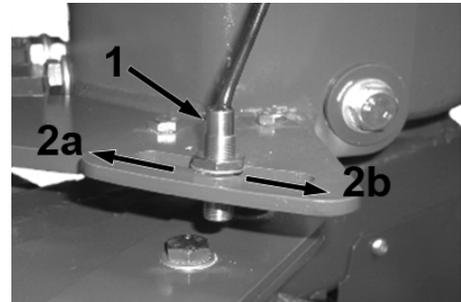
1. Run the machine and if the table is off level within ± 20 mm then adjust the table magnet accordingly as shown. If the front is lower than the rear, then move the magnet slightly downwards. The opposite also applies; although a central position of the slot generally works well for table levelling.
2. The sensor must be positioned facing the magnet. The end of the sensor should be flush with the nut.



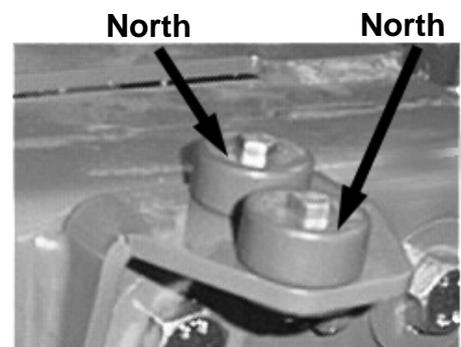
10.5 Dispenser arm sensor

In the unlikely event of the dispenser not finishing in the correct position such that the cut and hold cannot get a firm grip on the plastic, then it may be necessary to adjust the sensor (bale dimensions can also be a factor, see section 2.5).

1. Holding the sensor by hand, loosen the nut on the sensor.
2. Move the sensor to the position that is required
 - (a) Move to the left to get dispenser to stop sooner.
 - (b) Move to the right to get dispenser to stop later.



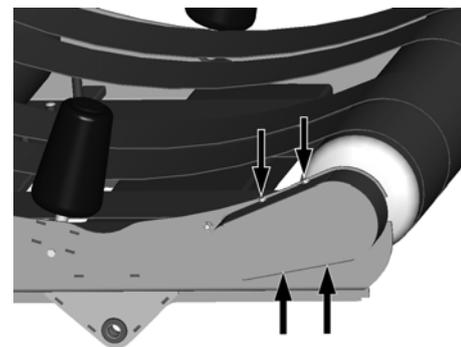
In the case of a magnet being damaged or broken, it is necessary to replace it as both magnets are required. As magnets have a North and a South pole it is important, when replacing magnets, that the magnets will have the same poles facing up as shown. To check this, simply position the magnets with flat sides facing one another until the magnets repel one another (like poles repel, opposite poles attract). Then face these like poles in the same direction as one another.



10.6 Table roller drive chain

After a period of time it may become necessary to readjust the table roller drive chain. To adjust go through the following procedure.

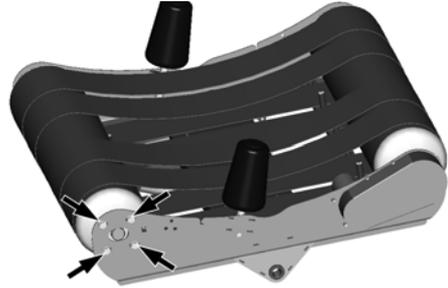
1. Remove chain guard by undoing the four bolts as indicated by the arrows.
2. Loosen the 4 x motor retaining bolts.
3. Tighten the adjuster until chain has adequate tension.
4. Tighten the 4 x motor retaining bolts.
5. Replace chain guard with the 4 x bolts.



10.7 Table rollers/belts adjustment

If the table rollers need to be adjusted for any reason they may be adjusted as follows:

1. Loosen the 4x M16 nyloc nuts and bolts holding bearings on idle roller at both ends as shown.
2. Move roller as desired ensuring both ends are moved by the same amount.
3. This adjustment is correct when the bale can be rocked 50mm between rollers.
4. Tighten the 4x M16 nyloc nuts and bolts.



10.8 Proximity sensor adjustment (on top arch)

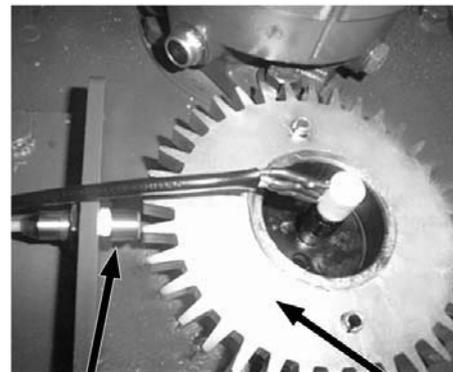


WARNING: Disconnect power

Never carry out any adjustments without completely disconnecting the hydraulic hosing and the machine from the tractor or baler.

In the event that the proximity sensor does not work use the following procedure:
(see “Trouble shooting overview” on page 78)

1. Remove the top sensor guard.
2. Remove and replace, if necessary, the proximity sensor ensuring to reconnect the sensor to the loom. The sensor can be inspected for proper operation by checking if it flashes red as the dispensers are rotated. Ensure to stand outside the ‘danger zone’ while inspecting this.
3. The sensor is to be located at a distance of $2\text{ mm} \pm 1\text{ mm}$ away from the sensor encoder. This distance is crucial to the proper operation of the sensor.
4. Replace the top sensor guard.



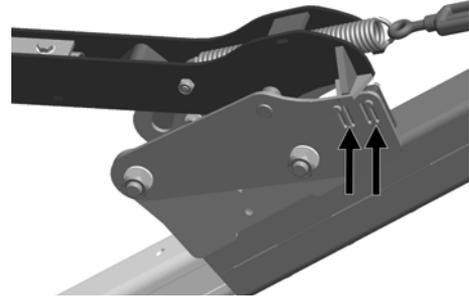
Proximity sensor

Sensor encoder

10.9 Trip arm switch

The trip arm switch needs to be properly adjusted if it is replaced or moved for any reason. This can be adjusted as follows:

1. Loosen the 2x M5 nyloc nuts just enough to be able to move the switch.
2. Ensure that the arm is in working position.
3. Move the switch against the tab until the plunger is protruding 1-2 mm outside the main switch body.
4. Tighten the 2x M5 nyloc nuts.



NOTE: Do not bypass the circuit in any way

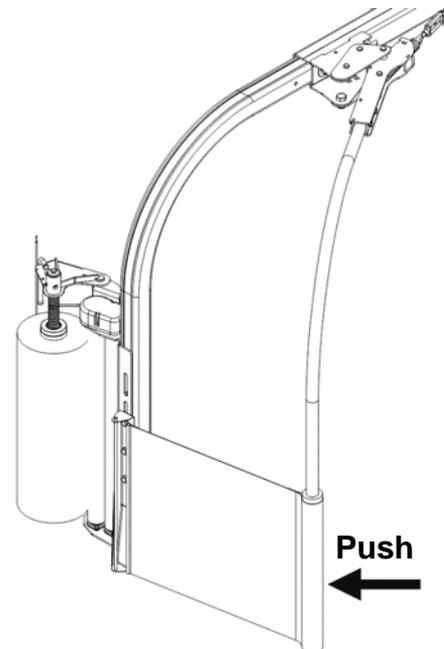
The switch must be set correctly to ensure the proper functioning of the trip arm.

10.10 Testing trip arm operation

The trip arm safety feature needs to be checked periodically in accordance with the machine maintenance schedule. See “Dispenser trip arms” on page 75.

10.10.1 Check the force required to trip the trip arm

1. Ensure that the tractor is stopped, handbrake is applied, engine is stopped, and the ignition key is removed.
2. Manually, with one hand, push the trip arm into the tripped position using small to medium force (approx. less than 5 kg). If any difficulty or stiffness is encountered see “Dispenser trip arms” on page 75.
3. Repeat check on the second dispenser trip arm.



10.10.2 Check the trip arm safety switch operation

1. Ensure that the tractor is stopped, handbrake applied, engine stopped and ignition key removed.
2. Push only one of the trip arms into the tripped position.
3. Ensure that all persons are well clear of the machine. Start up machine, go to manual mode and try to operate the dispenser.
4. There must be no dispenser movement.
5. Turn off the machine and tractor and repeat the procedure for the second dispenser.



WARNING: There must be no dispenser movement while an arm is tripped

If there is any dispenser movement while an arm is tripped there is a serious safety issue with the switch. Do not operate the machine. Contact a **McHale** authorised dealer for further assistance.

10.10.3 Check that wrapping arm does not exceed 30 rpm

See section 12.4 to adjust.



WARNING: Dispenser arm rotation speed must not exceed 30 rpm

The dispenser must never be operated above a maximum of 30 rpm otherwise the dispenser arm kinetic energy is above what the trip arm design is capable of stopping in an emergency situation.

10.10.4 Check the wrapping arm stopping performance

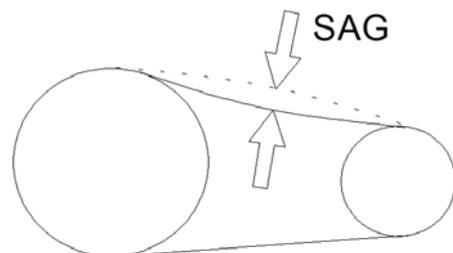
1. In manual mode, run the wrapper at full speed (i.e. press the rotation button twice) with two new film rolls fitted on the dispenser.
2. Upon releasing the rotation switch, the arm rotation should stop immediately.

If there is run-on, do not operate the machine. Contact your **McHale** dealer for assistance.

10.11 Chain adjustments

It is important for the efficient operation of the machine that all drive chains are kept correctly tensioned. The following is a general guide to chain adjustment.

The sag is measured at the midpoint of the chain between the sprockets. Always ensure one side of the chain is tight so that the correct reading is obtained. Even though some drives differ in detail the basic adjustments stay the same.



10.12 Operation of film roll holder



WARNING: Be aware of the location of film roll holder

Operator must always be aware of the location of the film holder as in any position, other than the transport position, it protrudes out past the general width of the machine.



NOTE: Always ensure that both springbolts are in the 'fully home' position

Ensure that both springbolts are in the 'fully home' position (i.e. bush is against the stop) before moving the machine.

See below for location and function for each positional hole:

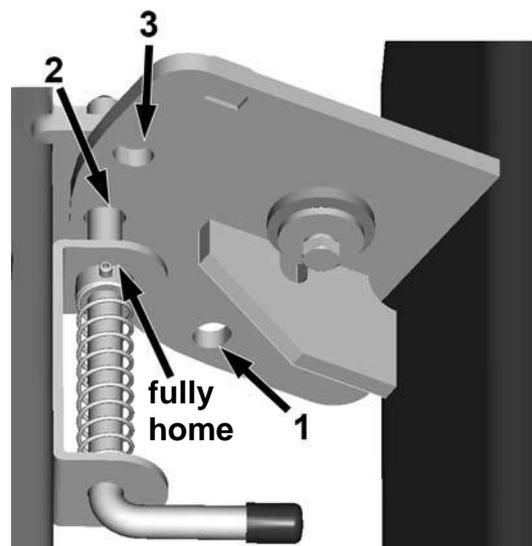
1. Transport position: Roll holder is fully within width of wrapper.



WARNING: While film holder is in transport position

Do not raise or lower the lift arm or activate the 'Auto Park' or 'Auto Unpark' while the film holder is in the transport position, otherwise damage will result

2. Optional working position: Can be used in this position when in confined working areas, but be aware of the possibility of poorly shaped bales causing damage to rolls of film that are carried on the inside holders while bale is being loaded.
3. Normal working position: Best position for carrying the complete 8 rolls, while working.



Top latch of film roll holder

11

Accessories & Optional Equipment

11.1 Accessories & optional equipment

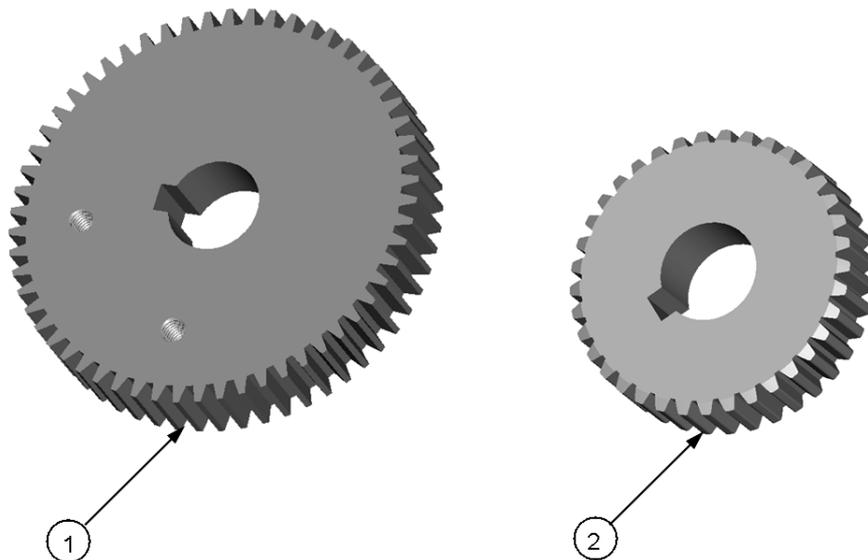
Certain accessories and optional equipment may or may not be available in all countries, depending on varying circumstances. The following key symbols help to explain what is sold as standard and what is optional equipment, or may not be available on the **McHale HS2000**. They are only correct at the time of print and may vary.

Key symbols	
Standard equipment	●
Optional equipment	⊙

11.2 Remote control kit ⊙

The remote control kit is used for static wrapping.

11.3 Dispenser gear options



McHale HS2000 Round Bale Wrapper

70% Gear option ●

Item	Part Code	Description	Qty
	ADP00018	Kit dispenser gears 70%	1
1	CMH00055	Gear spur 1.5 m 60t dispenser	1
2	CMH00175	Gear spur 1.5 m 35t dispense	1

64% Gear option ○

Item	Part Code	Description	Qty
	ADP00020	Kit dispenser gears 64%	1
1	CMH00056	Gear spur 1.5 m 59t dispenser	1
2	CMH00096	Gear spur 1.5 m 36t dispenser	1

55% Gear option (Hot climates)

Item	Part Code	Description	Qty
	ADP00019	Kit dispenser gears 55%	1
1	CMH00057	Gear spur 1.5 m 58t dispenser	1
2	CMH00174	Gear spur 1.5 m 37t dispenser	1

12

Machine Maintenance

To maintain the **McHale HS2000** 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.



WARNING: Wear proper safety gear and follow all instructions

Ensure to wear proper safety gear 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” during machine operation require a second trained operator at the controls

McHale recommend that nobody is ever in the “Danger Zone” at any time during machine operation, but in the event of carrying out inspections when the machine is in operation (contrary to our safety recommendations!), there must always be a second operator at the tractor controls (who is fully competent in the operation of both the tractor and machine), in case an emergency stop action is required.



ENVIRONMENT: Health and safety rules re. environmental damage

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.

12.1 Maintenance intervals

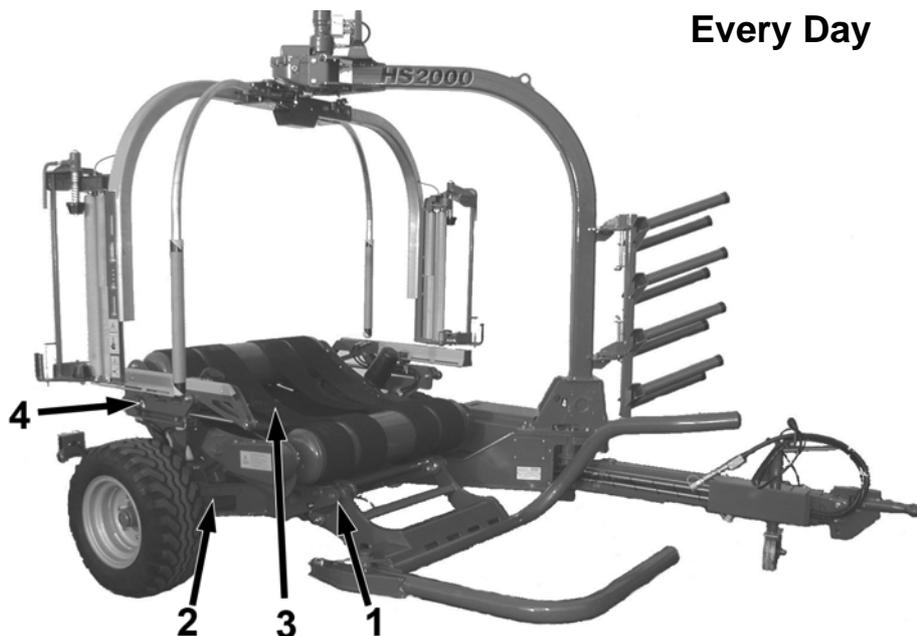
The following intervals should be adhered to, in order to ensure a long and efficient life for the machine and maximum safety of personnel. They assume constant working during the wrapping season.

First 5 working hours

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

Every day

1. Grease bale lift arm hinges
2. Grease table pivots
3. Grease bale tip hydraulic cylinder ends
4. Grease cut and hold plunger
5. Check wheel-nuts
6. Check all guards and safety related components
7. Check for any oil leaks and damaged pipes
8. Check dispenser trip arm function, see "Testing trip arm operation" on page 65 and "Dispenser trip arms" on page 75.

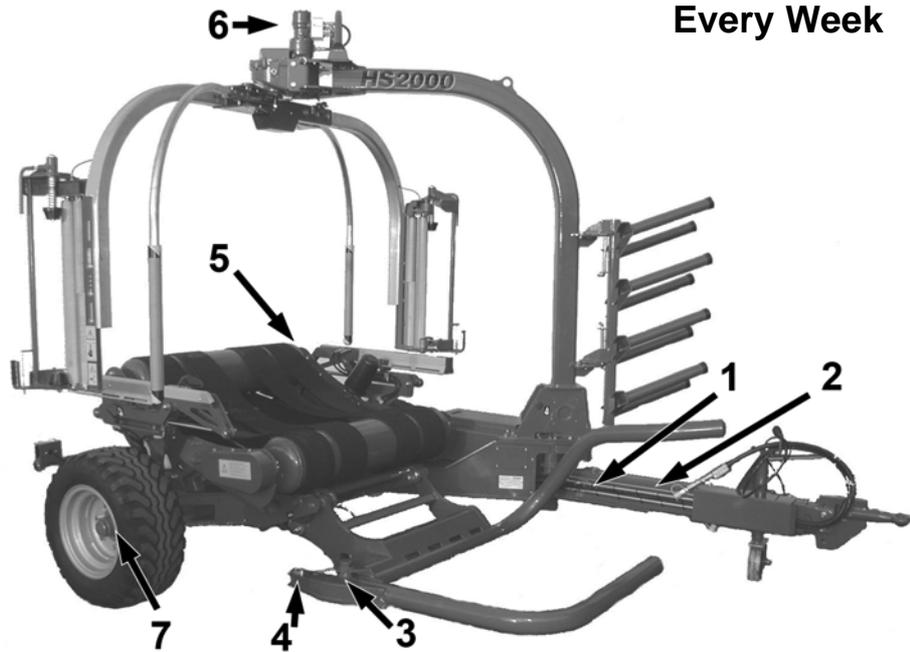


Every Day

McHale HS2000 Round Bale Wrapper

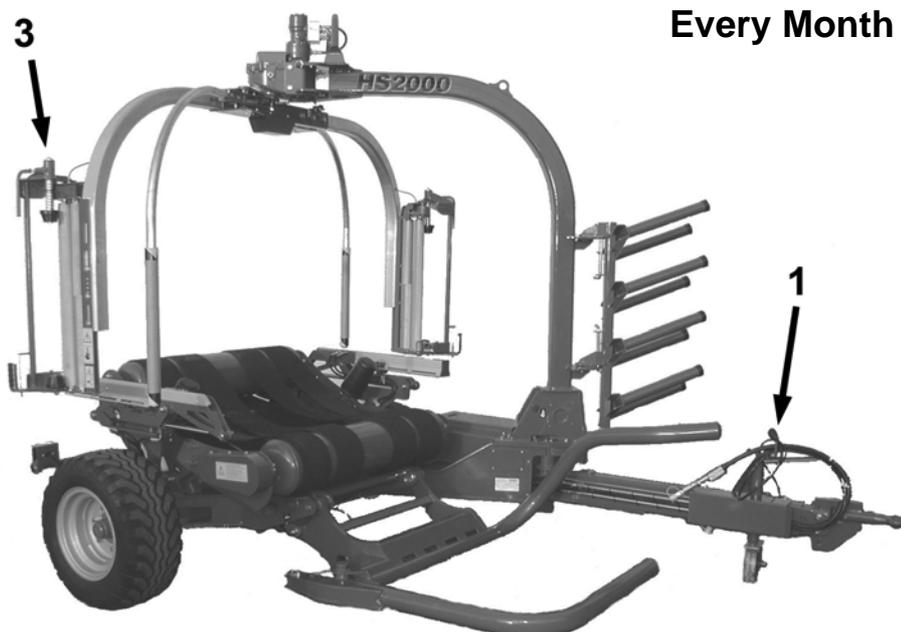
Every week

1. Grease drawbar pivot
2. Grease drawbar hydraulic cylinder ends
3. Grease bale lift arm outer pivot
4. Grease bale lift arm outer pivot ends
5. Grease table roller bearings
6. Check dispenser drive gearbox oil level
7. Grease steering axle



Every month

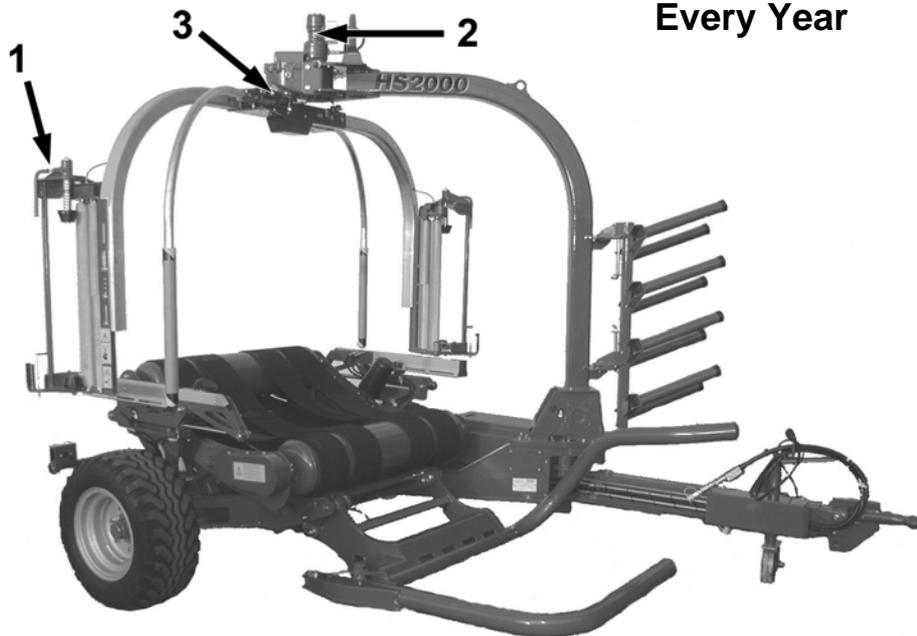
1. Grease parking jack
2. Check oil level in brake unit
3. Grease dispenser top coil roller shaft
4. Check all chain tensions



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Every year

1. Clean and lubricate dispenser gears
2. Change oil and grease on the brake unit
3. Change dispenser drive gearbox oil level



Every 2 years

- Change hydraulic oil



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.

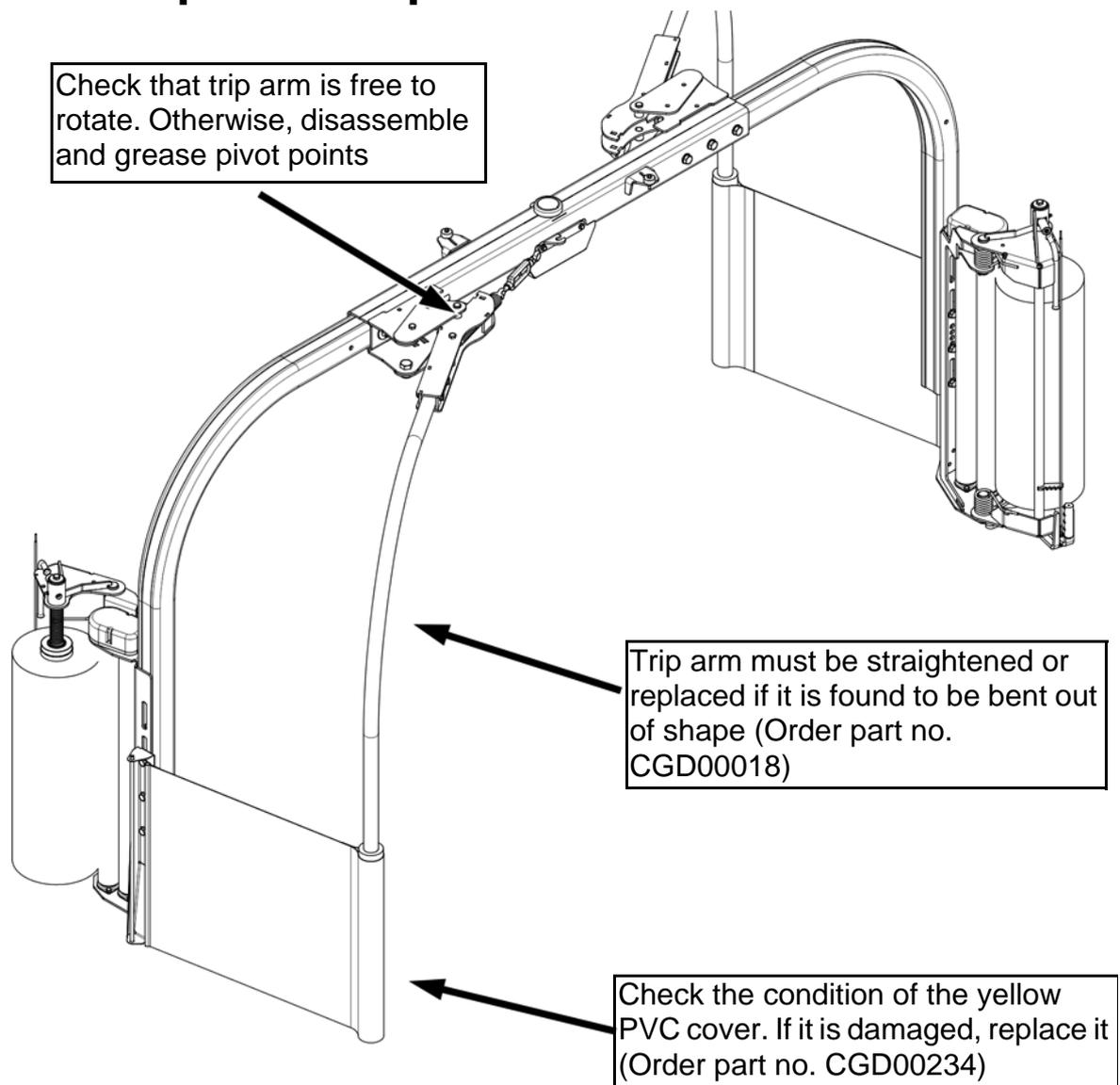
At the end of the wrapping season the machine should be washed and cleaned. Any damaged paintwork should be touched up. Any maintenance or repairs should be carried out at this stage. The electronic control box is not waterproof, so it must be always be stored in a dry environment (see “Storage” on page 77). All exposed hydraulic cylinder rods should be greased.

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. (All torques are in Newton Metres - Nm.)

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	1080
	M27	980	1400	1650
	M30	1260	1800	2160
	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	1000	1200
	M27 x 2	1050	1500	1800
	M30 x 2	1450	2050	2500
NOTE:	For cadmium or copper plated bolts and nuts a torque value must be used that is 25% lower than the value stated above			

12.3 Dispenser trip arms



WARNING: Before working on this machine

Always ensure that the tractor is stopped, the hand brake is applied, and the ignition key is removed.

12.4 Adjusting dispenser arm rotation speed



WARNING: Before working on this machine

Always ensure that the tractor is stopped, the hand brake is applied and the ignition key is removed.

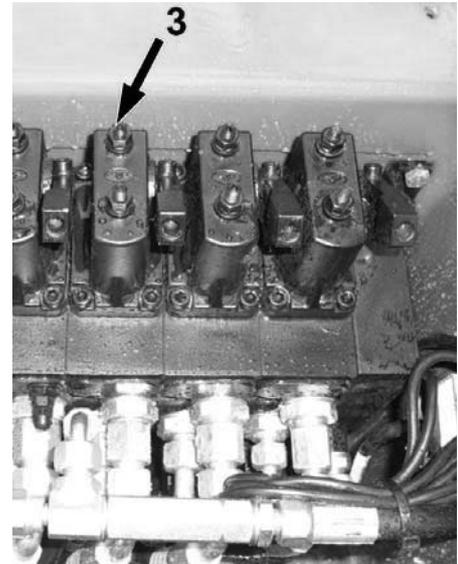
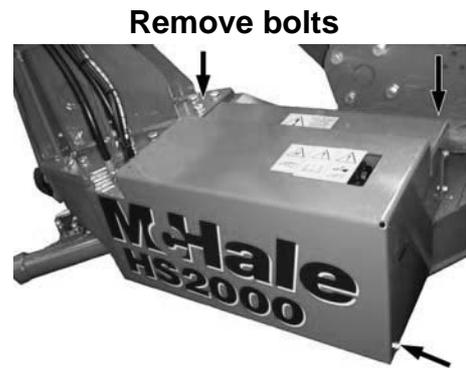


WARNING: Maximum speed

The dispenser must never be operated above a maximum of 30 rpm.

From the tractor cab, engage the tractor hydraulics and operate the arm rotation in manual mode. Check the speed of the arm rotation. The correct speed is 30 rpm. If higher, see below for details to achieve the correct speed:

1. Turn off the tractor before making any adjustments on the machine.
2. Using a 13 mm spanner, unscrew all of the bolts that hold the valve guard as shown.
3. The third from right valve section operates the dispenser arm, and the lower setting screw sets the flow/speed of the arm. Using a 10 mm spanner, loosen the sealing/locking nut as shown.
4. Using a 3 mm Allen key, turn clockwise to reduce the speed. In practice the adjustment required is very small, usually max 1/4 turn clockwise. Tighten the locking nut. Re-check the arm speed. Repeat until the correct arm speed of 30 rpm is achieved.
5. Replace the valve cover.



13

Storage

13.1 End of season

- Carefully clean the wrapper sections inside and out. Dirt and foreign objects are likely to draw moisture and cause rusting of steel components. In the case of using a high pressure washer, do not point pressurized water at or near electrical components, pivot points, valves or bearings. **McHale** recommend that the machine be blown down with an air line, as opposed to a pressure washer, in order to protect the overall paint work on the machine.
- On electronic control machines, 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.

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” on page 74).
- Check oil level in dispenser gearbox using sight glass on side of gearbox housing.
- 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” on page 43).
- Inspect and modify, if necessary, all machine adjustments (see “Field Operation & Wrapper Adjustments” on page 61).
- Check film wrapping adjustments and replace cut and hold knife. 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

Trouble Shooting

14.1 Trouble shooting overview

This section has been compiled by **McHale** service personnel in conjunction with **McHale** importers and dealers.

It outlines some common problems which can occur and acts as a quick reference section or check list to resolve the problem. It is important to note that it outlines the common problems and to this effect it is not exhaustive.

Should you experience additional problems which you need help with; please do not hesitate to contact your **McHale** dealer.

14.2 Side lift arm operation

Symptom	Reason	Solution
Side lift arm does not go out or in	No oil feed	Turn on oil and check the quick release coupling (ensure oil feed is set at 35l/min)
	No oil return	Ensure that the 'tank return' line is connected "to tank" and check quick release coupling. Check tractor manual for hydraulic connections on tractor
	Return hose not connected	
	Electrical power supply fault, e.g. loose connections, poor battery and/or charging system	Ensure that a 13V supply is available and check all electrical connections
	Delay in pressing side lift arm button	Press this button within two seconds as after two seconds the diverter operation is cancelled
Side lift arm remains out and fails to grab bale	Electrical power supply fault, e.g. loose connections, poor battery and/or charging system	Ensure that a 13V supply is available and check all electrical connections

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Symptom	Reason	Solution
Side lift arm fails to go out at end of 'continuous cycle'	No oil feed	Turn on oil and check the quick release coupling (ensure oil feed is set at 35l/min)
	No oil return	Ensure that the "tank return" line is connected "to tank" and check quick release coupling. Check tractor manual for hydraulic connections on tractor
	Return hose not connected.	
	Electrical power supply fault, e.g. loose connections, poor battery and/or charging system	Ensure that a 13V supply is available and check all electrical connections

14.3 Main lift arm operation

Symptom	Reason	Solution
Main lift arm will not lift up or down	No oil feed	Turn on oil and check the quick release coupling (ensure oil feed is set at 35l/min)
	No oil return	Ensure that the "tank return" line is connected "to tank" and check quick release coupling. Check tractor manual for hydraulic connections on tractor
	Return hose not connected	
	High pressure on return line	
	Incorrect line connection	
	Electrical power supply fault, e.g. loose connections, poor battery and/or charging system.	Ensure that a 13V supply is available and check all electrical connections
Diverter button "d" was pressed prior to action, while in MAN cycle	Do not press "d" button (button 11) for main lift arm operations, see section 8.3.	
Main lift arm fails to lift bale onto table	Insufficient oil pressure and/or flow.	Set oil flow to 35l/min. and ensure oil pressure is at a minimum of 170 bar
	Too high of an oil flow to the machine	
	Insufficient oil flow	
	The table magnet is not positioned properly	Please refer to section 10.4, for magnet positioning
	The table/ dispenser magnet is missing or has been damaged	

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Symptom	Reason	Solution
No bounce on main lift arm	High pressure on return line	Ensure that the “tank return” line is connected “to tank” and check quick release coupling. Check tractor manual for hydraulic connections on tractor
	Too high of an oil flow to the machine	Set oil flow to 35l/min and ensure oil pressure is at a minimum of 170 bar

14.4 Table operation

Symptom	Reason	Solution
Table does not come forward enough to accept bale	There is an obstacle blocking the table from returning, e.g. grass	Clear the blockage
Table does not level properly	The table magnet is not positioned properly	Please refer to section 10.4, for magnet positioning
Table tips bale off machine before wrapping starts	The table/ dispenser magnet is missing or has been damaged.	
	Table levelling sensor is damaged	
Table rollers do not rotate when dispensers do	Sensor connection is loose	Check all sensor connections
	The proximity sensor cable is disconnected	Check electrical connection
Table fails to tip automatically	The proximity sensor is damaged or has incorrect clearance with encoder	See section 10.8, for set-up and replacement procedure
	Electrical power supply fault, e.g. loose connections, poor battery and/or charging system	Ensure that a 13V supply is available and check all electrical connections
Table fails to tip automatically	Failure to press “Auto tip” button (“Continuous Cycle” off) or “Continuous Cycle” set to off	Ensure that desired cycle is selected, see section 7.4
	Table fails to return from ‘tip cycle’	The blue magnet(s) has been damaged/ broken

14.5 Dispenser operation

Symptom	Reason	Solution
Dispensers do not rotate	No oil feed	Turn on oil and check the quick release coupling (ensure oil feed is set at 35l/min)
	No oil return	Ensure that the “tank return” line is connected “to tank” and check quick release coupling. Check tractor manual for hydraulic connections on tractor.
	Electrical power supply fault, e.g. loose connections, poor battery and/or charging system	Ensure that a 13V supply is available and check all electrical connections
Dispensers come to an abrupt halt	One or both safety arms have been activated (arm is pressing against aluminium box section)	Reposition safety arm(s) into the working position and press the Resume button on the control box.
Dispensers come to a halt too slowly	Slow down time set to ‘long’	Set to ‘short’, see section 7.4
Dispensers come to a halt too quickly	Slow down time set to ‘short’	Set to ‘long’, see section 7.4
Dispenser roller lock fails to engage in the ‘up’ position	Roller release cable has become too loose	Adjust nuts at bottom of cable until roller engages in “up” position, see section 8.2 for cable position
Plastic not stretching properly	Build up of tack/glue on dispenser rollers	Clean off with kerosene
	Torsion springs gone weak on dispenser	Replace springs
Dispensers do not rotate properly when ‘auto-park’ is selected	The proximity sensor cable is disconnected	Check electrical connection
	The proximity sensor is damaged or has incorrect clearance with encoder	See section 10.8, proximity sensor adjustment, for set-up and replacement procedure

14.6 Cut and hold operation, upper ram

Symptom	Reason	Solution
Ram fails to open	No oil feed	Turn on oil and check the quick release coupling (ensure oil feed is set at 35l/min)
	Electrical power supply fault, e.g. loose connections, poor battery and/or charging system	Ensure that a 13V supply is available and check all electrical connections
Ram opens, but will not open fully	Insufficient oil pressure and/or flow	Set oil flow to 35l/min. and ensure oil pressure is at a minimum of 170 bar
Ram will not close	No oil return	Ensure that the “tank return” line is connected “to tank” and check quick release coupling. Check tractor manual for hydraulic connections on tractor
	Return hose not connected	
	High pressure on return line	
	Incorrect line connection	
	No power supply for solenoid on CVA00091 (the cut and hold valve block)	Check connections leading to the solenoid on the valve block
Film is not being cut properly	Blade has gone blunt	Carefully replace blade
Cut and hold does not hold plastic film	Dispenser ‘stop position’ sensor is misaligned	Refer to section 10.5. for sensor adjustment

14.7 Cut and hold operation, lower ram

Symptom	Reason	Solution
Cut and hold assembly does not rise	No oil feed	Turn on oil and check the quick release coupling (ensure oil feed is set at 35l/min.)
	No oil return	Ensure that the “tank return” line is connected “to tank” and check quick release coupling. Check tractor manual for hydraulic connections on tractor.
	Electrical power supply fault, e.g. loose connections, poor battery and/or charging system	Ensure that a 13V supply is available and check all electrical connections
	This function is not possible in MAN cycle.	The cut and hold will only rise in an AUTO cycle, switch to automatic cycle, see section 7.4, Menu Structure.
Cut and hold will not lower	No oil feed	Turn on oil and check the quick release coupling (ensure oil feed is set at 35l/min)
	No oil return	Ensure that the “tank return” line is connected “to tank” and check quick release coupling. Check tractor manual for hydraulic connections on tractor.
	Electrical power supply fault, e.g. loose connections, poor battery and/or charging system	Ensure that a 13V supply is available and check all electrical connections

14.8 Drawbar operation

Symptom	Reason	Solution
Drawbar will not move with valve chest lever	No oil feed	Turn on oil and check the quick release coupling (ensure oil feed is set at 35l/min)
	No oil return	Ensure that the “tank return” line is connected “to tank” and check quick release coupling. Check tractor manual for hydraulic connections on tractor.
Drawbar will move with lever but not with the control box	Electrical power supply fault, e.g. loose connections, poor battery and/or charging system	Ensure that a 13V supply is available and check all electrical connections
	Box is in AUTO cycle	Switch to MAN cycle, see section 7.4
	Improper use of control box	Select operator set-up and then Drawbar, see section 7.4

14.9 ‘Auto’ control box operation

Symptom	Reason	Solution
Auto start cycle will not run when pressed	No oil feed	Turn on oil and check the quick release coupling (ensure oil feed is set at 35l/min)
	No oil return	Ensure that the “tank return” line is connected “to tank” and check quick release coupling. Check tractor manual for hydraulic connections on tractor
	Return hose not connected	
	The incorrect cycle is selected	Press Auto/Man (button 13), until the desired cycle is displayed on the control box display
Table will not ‘auto tip’	Failure to press “Auto tip” button (“Continuous Cycle” off) or “Continuous Cycle” set to off	Ensure that desired cycle is selected, see section 7.4

Symptom	Reason	Solution
Resume button will not work after the stop button is pressed	This resets the control box memory	Use "MAN" control to index the dispensers to over the wheel, switch to "Auto" mode and then press "Auto-start"

14.10 Control box display

Symptom	Reason	Solution
"Dispenser position" is displayed	Incorrect dispenser position	Switch to "MAN" mode and move dispensers to their "home" position (directly over the wheels)
	Dispenser 'stop position' sensor is misaligned	Refer to section 10.5 for sensor adjustment
"Dispenser safety" is displayed	One or both safety arms have been activated (arm is pressing against aluminium box section)	Reposition safety arm(s) into the working position and press the Resume button on the control box
"LOW BATT" is displayed	Supply voltage too low/poor connection	Check connections, battery and charging system

14.11 Hydraulic operation

Symptom	Reason	Solution
Hydraulics under pressure when wrapper is idle	Valve set to closed centre on open centre system	Change valve setting, see section 5.10, Hydraulic spool valve setup
Dump valve near main valve block is leaking	Return hose not connected	Ensure that the "tank return" line is connected "to tank" and check quick release coupling. Check tractor manual for hydraulic connections on tractor
	Incorrect line connection	
	Too high of an oil flow to the machine	Set oil flow to 35l/min. and ensure oil pressure is at a minimum of 170 bar

14.12 Remote operation

Symptom	Reason	Solution
Remote control receiver not accepting signal	Supply voltage too low/ poor connection	Check connections, battery and charging system
	Sunlight shining directly into receiver	Turn away/shade from sunlight
	Batteries exhausted on handpiece	Replace batteries
	Not pressing start button for long enough	Press button for 2-3 seconds
	Operating through tinted glass	Operate where glass cannot come in the way

15

Certification & Warranty

15.1 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 the Declaration of Conformity on the next page.

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

15.2 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 with the machine to the customer.
- Machine is reassembled correctly.
- Tyre pressure is correct.
- Hydraulics, electrics, and lighting are working.
- New owner has been instructed on how to operate and maintain the machine.

The PDI is included in the operator manual, please see page 89.

15.3 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.

15.4 Limited Warranty

Limited Warranty conditions are supplied with each **McHale** product. They cover the terms and conditions associated with abnormal failure under normal working conditions. Please see page 90 for more detail.

Declaration of Conformity



EC MACHINERY DIRECTIVE: 2006/42/EC DECLARATION OF CONFORMITY

We hereby certify that the machinery stipulated below complies with all the relevant provisions of the EC Machinery Directive 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: Square Bale Wrapper for wrapping bales of agricultural fodder with agricultural bale film wrap.

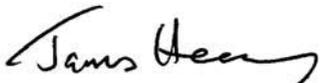
Model: **HS2000** Serial Number: _____

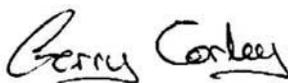
Name of Manufacturer: **McHale Engineering**
Address: Ballinrobe, Co. Mayo. Rep. of Ireland

Is in conformity with the provisions of the following other EC directives:
2004/108/CE - EMC for the control unit

Technical file compiled by: James Heaney
c/o **McHale Engineering**
Ballinrobe, Co. Mayo. Rep. of Ireland

Harmonized standards applied:
EN ISO 12100: Safety of machinery - Basic concepts, general principles for design
Part 1: Basic terminology, methodology
Part 2: Technical principles and specifications
EN ISO 4254 Part 1: Agricultural Machinery - Safety and general requirements

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

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

Pre-delivery inspection form

CLT00466



**PRE-DELIVERY INSPECTION (PDI)
HS2000 Round Bale Wrapper**

Castlebar Road, Ballinrobe, Co. Mayo
Tel: +353 (94) 95 20300 Fax: +353 (94) 95 20356
E-mail: sales@mchale.net Web: www.mchale.net

DEALER:.....

Model: HS2000 Round Bale Wrapper

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!

1. Check that all accessories are with the Owner/ Operator. Check Operator Instruction Manual and Parts List.		11. Check that dispenser trip arms work.	
2. Ensure machine is re-assembled correctly. (Refer to all assembly instructions supplied)		12. Check the dispenser rotation speed. Warning: Max 30 rpm.	
3. Ensure that the wheels are correctly fitted (i.e. valve to the outside). Torque wheel nuts correctly.		13. Ensure plastic is applied to the centre of the bale.	
4. Check for correct tyre-type, tread and pressure. (Tyre inflation pressure is 1.75 BAR or 26PSI)		14. Check that dispensers are running smoothly & free from damage or grit.	
5. Adjust drawbar to ensure wrapper is parallel to the ground when coupled to tractor/baler.		15. Run the automatic programme on the control unit.	
6. Hitch machine to tractor/baler. Set transportation bar and ensure all pins are secure. Attach 7pin plug for lighting system.		16. Check that all electrics and lights function correctly.	
7. Connect hydraulic hosing to tractor ensuring proper hydraulic setup. See section 6. Note: Ensure free flow return to tank.		17. 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 12v direct from battery otherwise the machine may malfunction.		18. 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 programme (Combi / Trailed). Check all manual functions from the control unit.		19. Instruct operator on machine maintenance i.e. Check chain tensions, adjustments, tyre pressure and wheel nuts, also areas to be greased daily along with other routine functions.	
10. Adjust drawbar-swing/safety transportation-bar, to suit trailed or combi arrangement.]			

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:.....

This machine must be registered on www.mchale.net by the Dealer in order to qualify for Warranty!

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.

McHale HS2000 Round Bale Wrapper

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.
- Damaged parts should be held by the dealer until credit has been given, or a returns request has been issued.
- Parts must be returned to **McHale**, with the **McHale** 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.