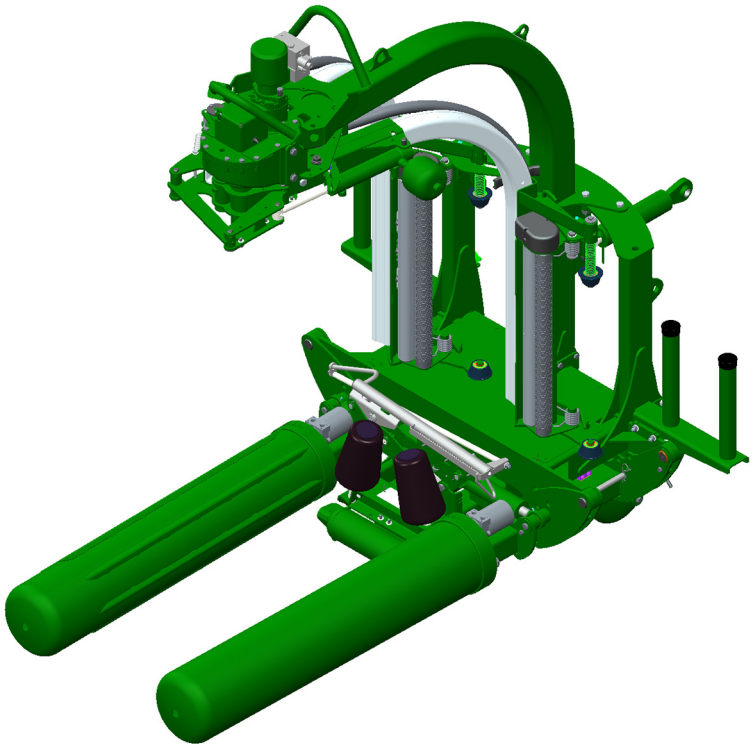
McHale W2020



W2020
Round Bale Wrapper
Operator Instruction Manual
Issue 4

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QUALITY
I.S. EN ISO 9001:2015
NSAI Certified

CLT00392_7.03

ENVIRONMENT: Reduce paper consumption

Think before printing documents! Is a PDF on a laptop or tablet sufficient? If a printed copy is required, always select ‘Print on both sides of paper’ and always try to limit the number of printed pages by selecting a specific page range or just select ‘Current page’ if that is sufficient.

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

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

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

Warranty/Guarantee

Attention End User!

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

It is important to quote the machine serial number when ordering spare parts or requesting technical assistance. Space is provided below to record machine details.
(See 'Safety warnings & instructions explained')

Serial number:	
Year of manufacture:	
Date of delivery:	

If you require further copies of this instruction manual,
please quote part number: CLT00392

Due to a policy of continuous product development and improvement, **McHale** Engineering reserves the right to alter machine specifications, including the contents of this manual, without prior notice or any obligation to make changes or additions to the equipment previously sold. Images and screenshots used in this manual may differ in appearance from the actual product.

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

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

Table of contents

1

Introduction

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 machine will provide years of reliable and dependable performance.

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

- Safety instructions
- Functions
- Controls (hydraulic & 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.

ENVIRONMENT: Reduce paper consumption

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2

Product information

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

2.1 Designated use of the machine

The machine is exclusively designed for normal use in agricultural applications. The machine has been designed to wrap cylindrical bales of forage with plastic stretch film for the purpose of storing as fodder for feeding livestock. This designation includes the movement of the machine, between fields by track or road, incidental to the wrapper's main use. The machine is designed to be used on a tractor three-point linkage or mounted on an industrial type loader. 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.

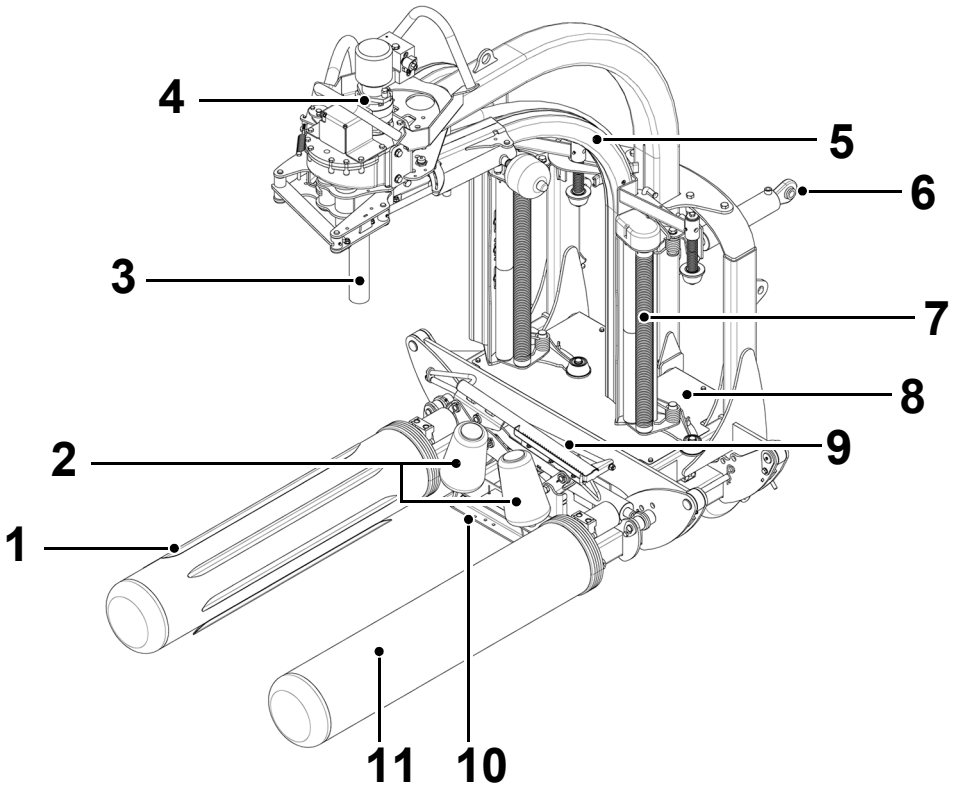
The designated use of the machine includes that:

- 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	Lift arm (ribbed)
2	Bobbins
3	Dispenser trip arm
4	Dispenser motor and brake unit
5	Satellite dispenser arms (folded)
6	Top link
7	Dispenser
8	Hydraulic control valve (under panel)
9	Cut & hold
10	Side-tip (optional)
11	Lift arm (plain)

2.3 General specifications

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

Transport width	1.43 m (56”)
Transport length	2.47 m (97”)
Transport weight (unladen)	845 kg (1,863 lbs)
Maximum bale weight	1,200 kg (2,646 lbs)

2.4 Tractor requirements

Attachment	Front/rear mounting
Electrics	12 V, 10 A socket approx (min. specification)
Hydraulic systems	Open-Centre, Closed-Centre, Load-Sensing
Minimum hydraulic pressure	170 bar (2,465 psi)
Minimum hydraulic flow rate	20 l/min @ 170 bar (2,465 psi)

2.5 Optional equipment *

Spare film roll holders	2 x film roll holders, accommodating 4 rolls
Side-tip	Retracting side-tip
Reverse valve	Allows dispenser arms to reverse
Radio remote	Allows remote control of the machine
Wired remote	Remote hand piece
64% gears	Alternative to standard 70% film stretch

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

Side-tip option

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

3

General safety

3.1 Be aware of all safety information

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

Warning, caution, note & environment messages:

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

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

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

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

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

3.2 Follow all safety instructions

Using this manual, read all safety instructions and messages, and be aware of the meanings of all safety decals. *(See 'Safety warnings & instructions explained')*. The spare part codes for each decal are also listed, which are available from your **McHale** dealer. If safety decals are damaged or missing due to wear and tear or component replacement, ensure that they are replaced.

As with all machinery, learn all operations and use controls by reading this manual thoroughly. Do not attempt to let anyone operate this machine without being fully instructed.

3.3 Store all items carefully

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

3.4 Personal protective equipment (PPE)

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

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

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

3.5 In case of emergencies

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

3.6 Stay clear of rotating elements

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

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

3.7 Trained operator criteria

Age related requirements		General requirements
18 +	The operator needs to be fully trained in the use of this machine and have a valid tractor driver's licence.	■ The operator must be in full control of his/her senses and must not be under the influence of any alcohol or drugs, prescribed or otherwise. ■ The operator must have read and understood all aspects of the operator manual in order to operate, maintain and clean the machine. Ideally, they should also receive training from their **McHale** Dealer. ■ It is only acceptable to have more than one person in the tractor cab, if it has a second seat.
16 - 18	An operator between the age of 16 and 18 years old must have a provisional licence and must be accompanied by an experienced driver/operator, at all times, even during maintenance and cleaning!	
< 16	Persons younger than 16 years of age are not allowed to operate, clean or carry out maintenance on this machine, under any circumstances!	

3.8 In the event of a fire

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

1. 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.
3. Remove all hosing and electrical looms from the machine, assuming it is safe to do so.
4. With all connections removed, disengage the machine from the tractor.
5. Drive the tractor away from the machine.
6. Using a suitable fire extinguisher, put out all the fires or call the fire brigade.

WARNING: Fire prevention

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

3.9 General safety warnings

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

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

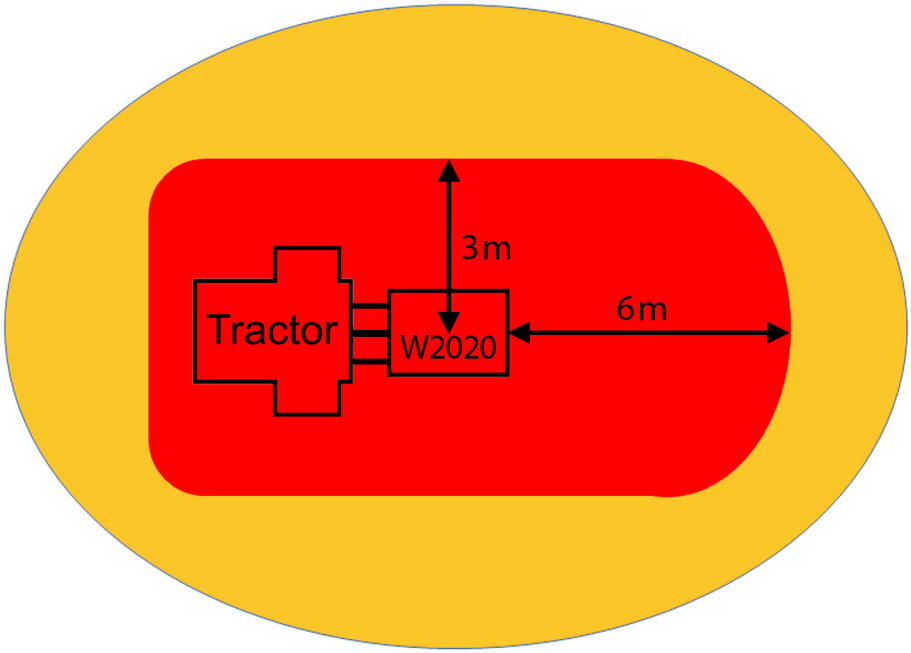
Only competent persons who have read and fully understood this manual are qualified to operate this machine. *(See 'Trained operator criteria')*. The owner of this machine is obliged, by law, to ensure that every operator understands all of the functions, controls, working processes and safety warnings, 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 all around the rotating dispensers (approx. 3 m radius from the rotating centre axis) & (a minimum of 6 m) at the back of the machine to allow for safe bale discharge.



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.

Before repair or reassembly

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

Before operation

- Never operate farm machinery while under the influence of drugs or alcohol. The physiological effects of drugs and alcohol impair performance and can lead to operators taking risks or putting others at risk. This includes over-the-counter cold/flu and allergy medications or prescription drugs that are not recommended to be taken whilst driving a car or operating machinery.
- The operator must ensure that the manufacturer's instructions for attaching and detaching the machine are followed. This includes the 3-point linkage and the hydraulic lines.
- The operator must ensure that all covers are closed and all safety devices are in operating mode.
- The operator must ensure that there is no person in the 'Danger Zone'.
- Always be familiar with the health and safety requirements that may be in force in the country of use.

During operation

- While operating this machine on hilly, rough or sloping ground the operator must take extra precautions. The 'Danger Zone' is increased in such conditions. Always travel at a speed suitable for the ground conditions.
- Adjust driving speed to suit ground conditions. Allow for mounted machines reducing the front end weight of tractor.
- 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.
- Precaution must be taken when travelling over sloping or rough ground due to the risk of overturning. Always travel at a speed suitable for the ground conditions.
- The operator must ensure that there is a minimum of 4 m clearance between the machine and any obstacle above, in particular electrical high voltage lines.
- Particular care must be taken, if the machine is left idle for any extended period, to ensure that all sensors and safety features are working correctly.
- Never operate machine with dispenser safety guards damaged or missing.
- Never increase the speed of the dispenser rotation arms.

WARNING: Do not carry people or animals on the machine

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

Before travelling on public roads

- The owner of this machine is obliged by law to ensure that every operator has a valid driving licence and is familiar with the road traffic regulations relating to the country of use.
- Always ensure that the electronic control box and oil supply are switched off.
- Always ensure that the side guards are fully retracted.
- Ensure the machine is in the correct transport position.
- The operator must ensure that there is a minimum of 1 m clearance between the machine and any obstacle above, like low bridges, arches or tunnels. But in the case of electrical high voltage lines a minimum clearance of 4 m should be allowed.

Performing maintenance

- Maintenance and repair work on the machine should always be carried out in accordance with this manual.
- 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. Rotating machinery parts can entangle loose clothing, long hair or dangling jewellery faster than a victim can react. If these items were to get caught, severe injury could result.
- Before working on this machine or altering any setting, the operator must ensure the following:
  (a) The tractor has definitely stopped moving
  (b) The hand brake is applied
  (c) The engine is shut down
  (d) The ignition key is removed
  (e) Hydraulic oil supply is switched off
  ***** *It is forbidden to open any safety guards or to carry out any work on the machine, unless the above specified precautions have been carried out.*
- When conducting maintenance work always support the machine properly. Where possible, lower the attachment or implement to the ground before you work on the machine. If it is not possible to lower the machine or attachment to the ground, always securely support the machine or attachment. Do not work under a machine that is solely supported by a jack. Never support the machine with props that may break or crumble under continuous load.

- Never disable any electrical safety circuits, tamper with safety devices or carry out any unauthorised modification to the machine.
- Replace any electrical or hydraulic devices immediately, at the first sign of malfunction or failure, as these components affect the functionality, sequencing and thus safety of operation. Never use a machine where a malfunction exists! Contact your **McHale** dealer to achieve a solution. Always think 'Safety First'!
- Avoid heating near pressurised fluid lines, as pressurised lines can be accidentally damaged when heat goes beyond the immediate flame area.
- Regular clean down is recommended in order to maintain the machine in a safe and reliable working condition. **McHale** recommend that the machine be blown down with an air line, as opposed to a pressure washer, due to the dangers involved with pressure washing and to protect the overall paint work on the machine. If, despite our advice, a pressure washer is used then take extreme caution and operate from ground level only. Never climb onto any part of the machine, while pressure washing, due to the fact that all metal surfaces become extremely wet and slippery and always ensure that the tractor has been shut down, with the ignition key removed.

During inspection

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

Guidance for safety of children on farms

- All adults working or present on farms are required, by law, to do everything reasonably practical to ensure the safety and health of children and young people on the farm.
- Children must be supervised at all times! Remember, farms are not playgrounds!
- Store farm machinery with safety & stability in mind. Lower any implements or loaders to the ground and apply the hand brake.
- Always exclude children from potentially dangerous areas (they will often get into apparently inaccessible places). Do not allow them in farm yards on busy days. Contractors should always be made aware of the presence of children.

- Never leave children alone in a tractor cab as they can interfere with controls and many children have been killed falling from the door or rear window of a tractor.
- Children under 16 years of age should never operate power-driven machinery. Keys should be removed from vehicles and controls left in neutral.
- Do not allow children to use bales of any description for playing. It is very easy to fall from stacked bales resulting in serious injury, or fall between them leading to suffocation. Make sure there is no evidence of children burrowing under stacked bales.
- Children under 16 should never handle chemicals. Always keep them in their correct containers and securely stored out of sight under lock and key.
- Keep matches in a safe place.

Danger of lightning strike

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

4

Specific safety warnings

4.1 Hydraulic safety warnings

- The maximum pressure in the hydraulic system of this machine should not exceed 210 bar.
- Always ensure the system is not under pressure before working on the machine. Oil under pressure can penetrate the skin and cause injury. Beware of pipes under accumulator pressure, depressurise lines by unthreading connections extremely slowly.
- Hydraulically actuated devices must be blocked mechanically against movement, before working on the machine.
- If any hoses are removed or replaced ensure they are marked and re-installed to the correct position during re-assembly.
- Check hoses monthly for signs of leakage or wear. Use a piece of card when checking for leaks. Fine jets of hydraulic fluid can penetrate the skin. Never use your fingers or face to check for leaks. If in doubt always replace. The recommended maximum working time of hoses should not exceed 5 years. Only use exact specification **McHale** genuine replacement parts.
- 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.

4.2 Noise level

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

4.3 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.
- Equipment being refuelled should have its engine turned off before refuelling. Personnel should be instructed on how to properly refuel equipment: do periodic maintenance checks on the tank, pump, hose and nozzle; and abide by safety rules, such as not smoking when around the refuelling area.

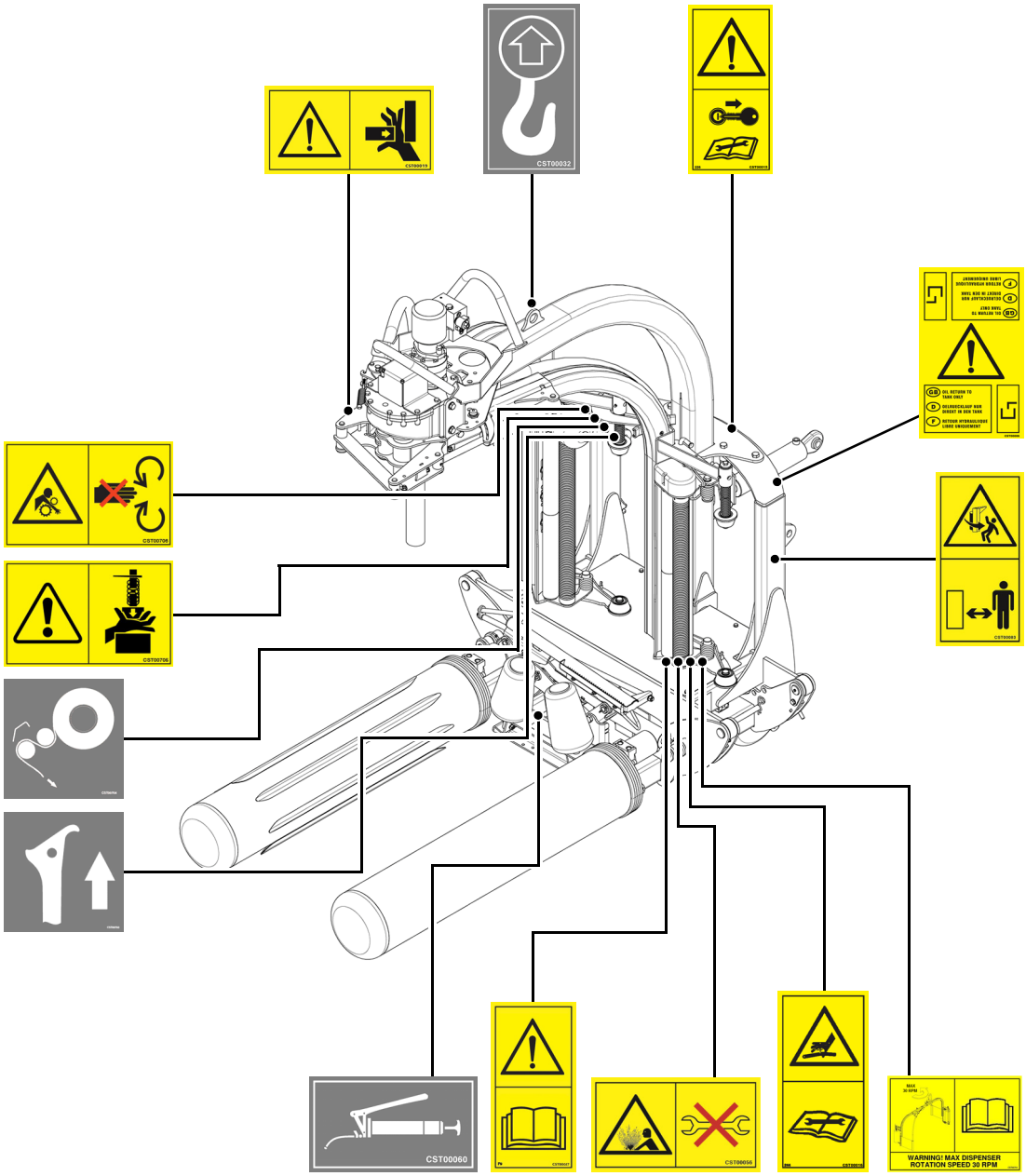
4.4 Special safety devices/instructions

- When maintenance or repair work has to be carried out on the machine, the hand brake must be applied, engine shut down with ignition key removed. The hydraulic and electric power supply must be disconnected. It is forbidden to open any safety guards or carry out any work on the machine unless the specified precautions have been carried out.
- Always use protective clothing and gloves when working with blades or sharp objects.

WARNING: The machine must be completely shut down before carrying out maintenance!

Ensure the engine has been shut down and machine has been disconnected before carrying out maintenance on the machine. Never attempt to go near the machine until it and the tractor have both come to a complete stop.

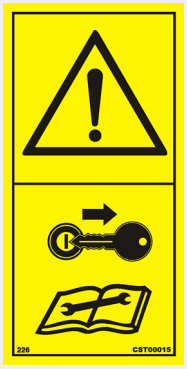
4.5 Safety instruction decal locations

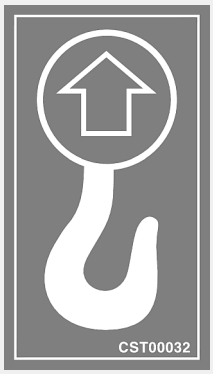
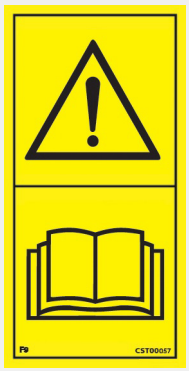
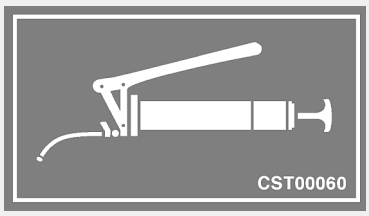


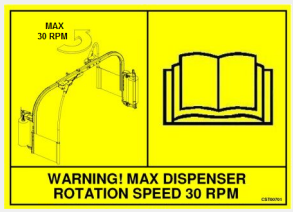
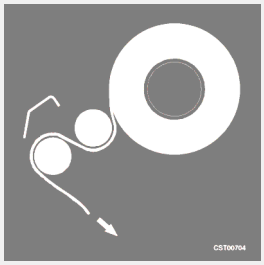
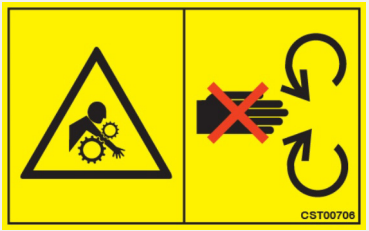
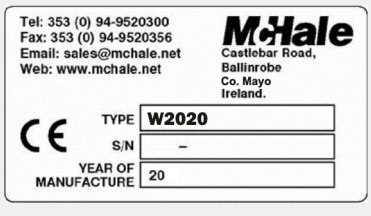
4.6 Safety warnings & instructions explained

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

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

	Free flow return to tank **(CST00006)**
	Turn off and remove key from tractor. 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)**
	Keep hands out of crush area. **(CST00019)**

	Lifting hook location. **(CST00032)**
	Do not dismantle. High pressure always. **(CST00056)**
	Read instruction manual before use **(CST00057)**
	Grease daily. **(CST00060)**
	Keep clear of rotating dispenser arms. **(CST00083)**

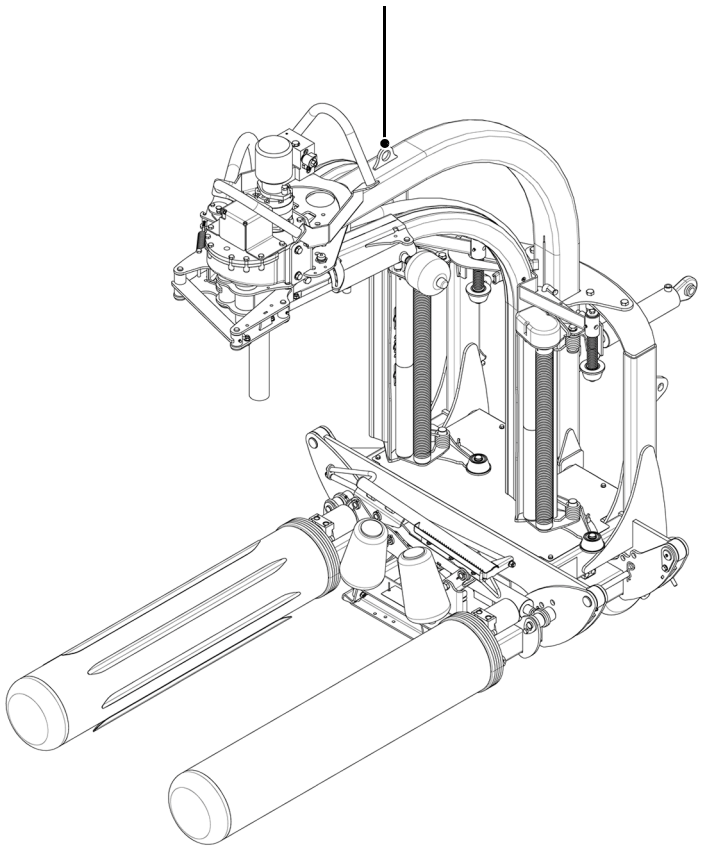
	Warning! Never operate dispenser above 30 rpm. **(CST00701)**
	Insert dispenser latch handle here. **(CST00703)**
	Diagram of plastic film path through dispenser. **(CST00704)**
	Keep hands out of trap area. **(CST00705)**
	Keep hands clear of rotating rollers. **(CST00706)**
	Serial Number Plate

4.7 Machine lifting guidelines

WARNING: Machine lifting

- Only use chains or strapping that are rated for a minimum load of 1.0 tonne (1,000 kg) when using the lift eye location on the chassis, shown below.
- The crane or lifting device must be capable of lifting a minimum load of 1.5 tonnes (1,500 kg).
- Never go under a suspended machine or attempt to try and stop it if moving erratically, death or serious injury may result.
- Always be observant of people and objects around the suspended machine and do not allow the machine to impact heavily on the ground after suspension or movement.

Lift at arch lift eye



Machine lifting point

5

Tractor requirements & preparation

5.1 Tractor requirements

The minimum recommended size of tractor for operating the machine comfortably depends mainly on the forage being raked. On flat ground **McHale** recommends a tractor size of approximately 45 to 55 kW. On hilly ground or difficult conditions, an additional 10 to 15 kW is advisable.

NOTE: Use good quality oil

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

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

1. 3-point linkage CAT 2
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. 12 V/ 20 A socket or battery power cable

The following items are required for fitment of the wrapper to an industrial loader:

1. Loader bracket frame and set of suitable mounting brackets.
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. 1 loom extension for the electronic control box

5.2 Control box installation

The control box is to be connected to a 12 V, 20 A power supply either using the supplied socket or the battery power cable. A good power supply is critical for proper machine operation as the electronic control box is the main interface between the operator and the machine.

CAUTION: Electrical power supply

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

5.3 Machine set-up & the tractor hydraulic system

CAUTION: Hydraulic system setup

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

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

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

In its most ideal configuration, the tractor will have a 'Power Beyond' connection, i.e. oil comes direct from the pump, by-passing the tractor auxiliary valves, to a 'female ¾" quick-release' connection, which becomes the machine feed.

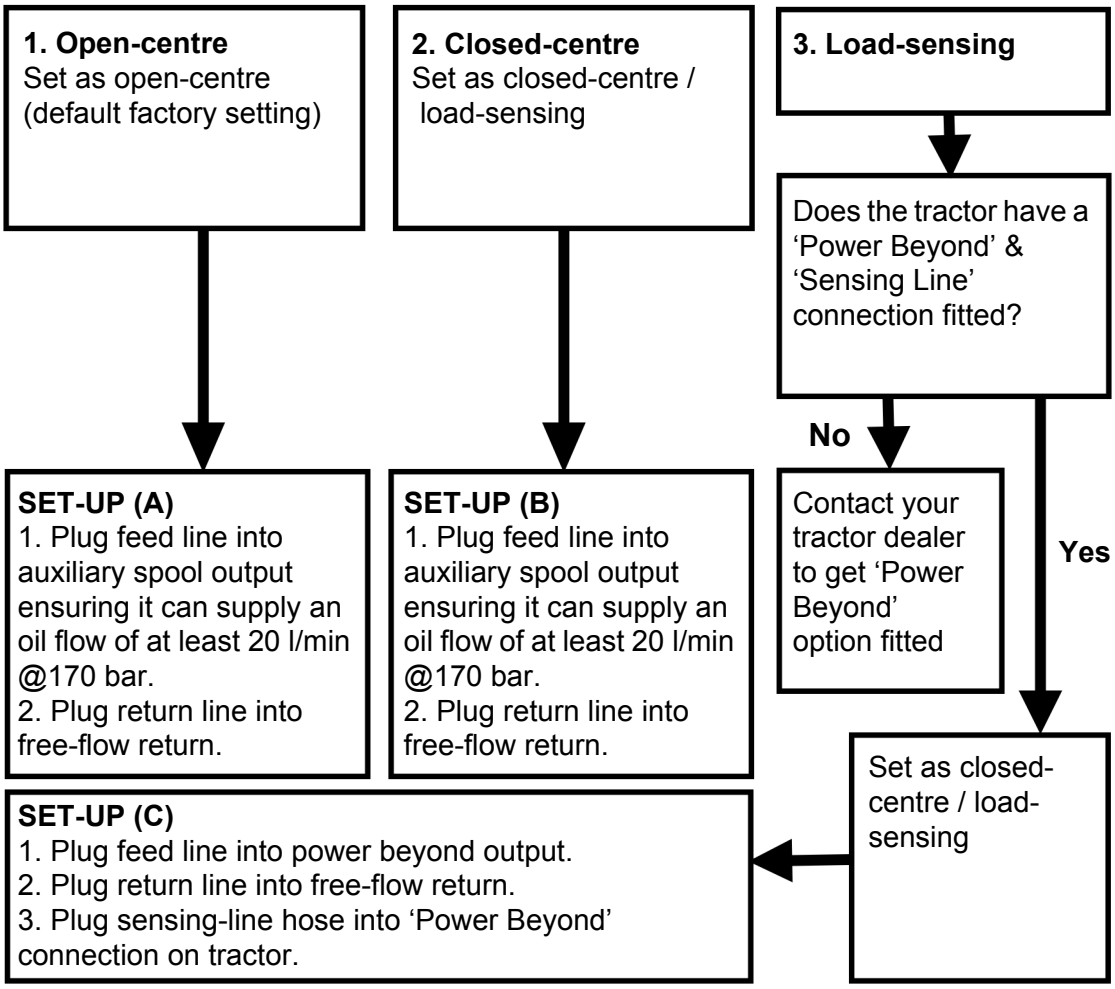
It will also have a 3rd connection to the tractor, called the pilot sensing line, and this pipe sets the correct oil flow for the tractor to pump for each operation.

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

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

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

5.4 Which hydraulic system is used?



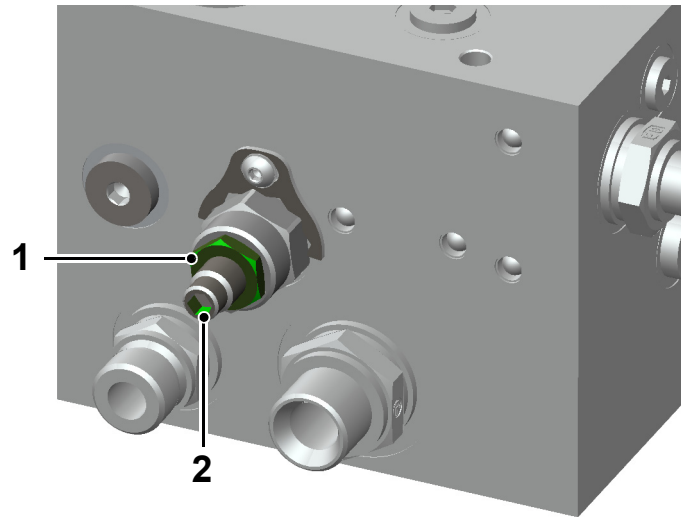
5.5 Hydraulic spool valve setup

Procedure to select open/closed centre valve configuration.

1. Using a 19 mm spanner, loosen locknut (1), as shown below.
2. With a ¼'' Allen Key, tighten or unscrew the bolt according to the following guidelines:

   - **Open (Factory Default):** Unscrew fully.
   - **Closed**: Screw in fully. (Do not over tighten) Tightening torque = 6.0 Nm

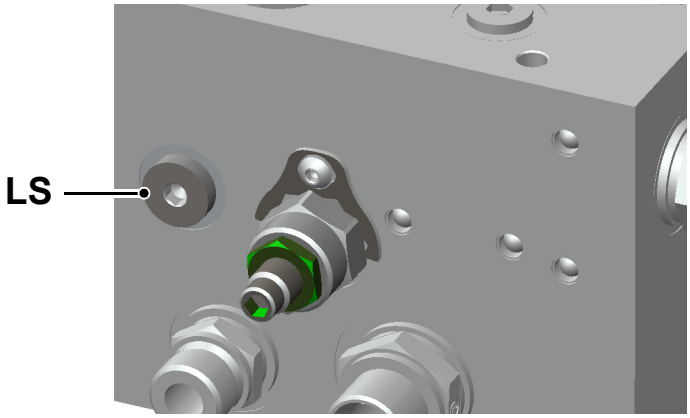
3. Re-tighten 19 mm locknut.
   Tightening Torque = 20 Nm



5.6 Fitting load-sensing hose

This only applies for connection to tractors equipped with 'power-beyond'.

1. Remove ¼" Blanking Cap from port marked 'LS' on end of valve block.
2. Fit hose supplied including ⅜" Quick-Release Coupling.
3. Plug this hose into load-sensing line of tractor.



5.7 Connecting the control box

The electronic control box must be located inside the tractor cab in the operator's field of vision and within easy reach of the red emergency stop button. *(See 'Electronic control system')*. Secure the control unit in the tractor cab, using the V-brackets and fasteners provided. The male half attaches to the control box and the female half attaches to the tractor cab allowing for quick placement/removal, every time it is used. 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 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.

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

Do not attempt to connect the control box to a 24 V power supply, as machine component damage will result.

5.8 Attaching wrapper to tractor

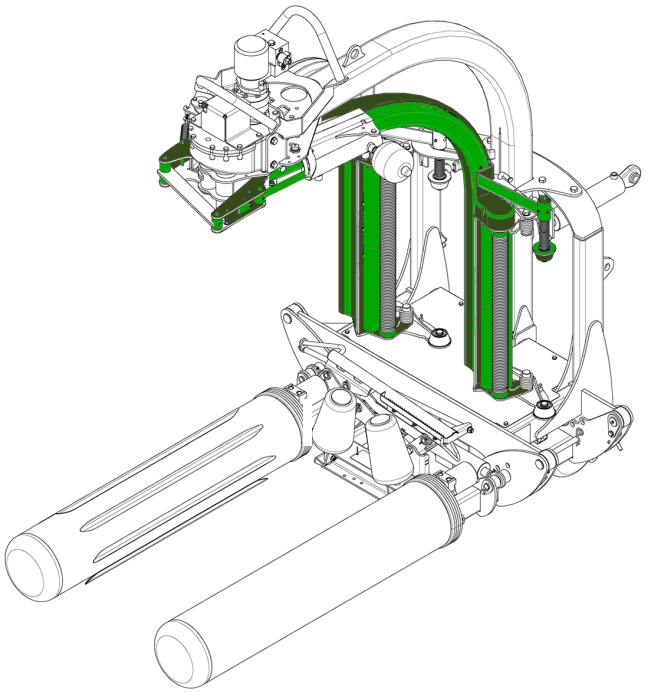
WARNING: Turn off tractor before connecting hosing

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

1. Reverse tractor up to wrapper lining up the lift arms of the tractor with the lower link pins of the wrapper.
2. Fit lower link pins ensuring they are secured with linchpins. On tractors with quick attach lift arms ensure mechanisms are in the locked position.
3. Attach top link. Again ensure all pins are secured using linchpins.
4. Connect all hydraulic connections securely.
5. Screw the 37-pin socket on the electronic box and the 37-pin plug on the machine together.
6. Connect control box to tractor socket **or** battery using the power cable provided. There must be a good 12 V supply to the control box.
7. Check that all functions operate correctly.
8. The machine is now ready to work.

When detaching the machine, ensure the following safety measures are adhered to:

- Make sure the ground is level and solid before parking the machine.
- The dispensers must be in the home position (folded up), which is in a central location under the dispenser arch. The manual rotate function can be used to achieve the correct parking position.



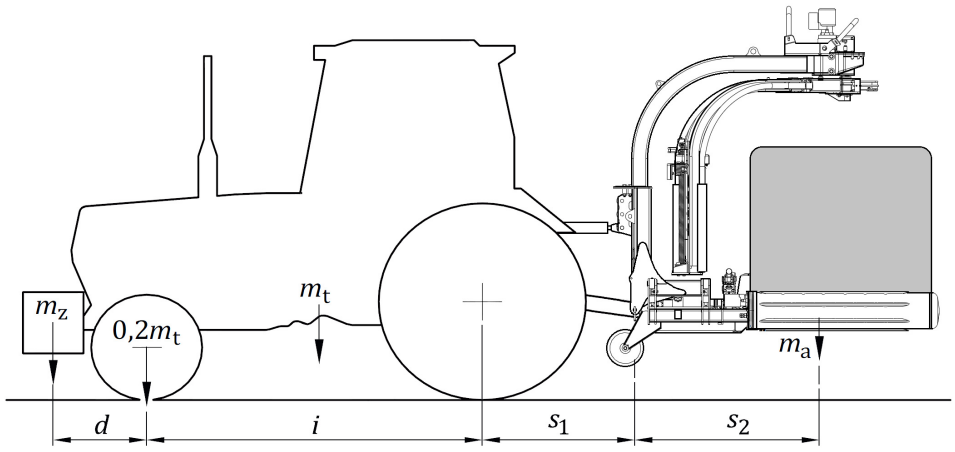
5.9 Machine and tractor stability

In order to ensure the stability of the combination of W2020 and tractor, it may be necessary to add ballast to the tractor. If there is insufficient ballast the W2020-tractor combination may become unstable. The ballast requirement (m_z), which should be at least 20% of the unladen mass of the tractor on the front axle, can be calculated using the Formula.

$m_z \geq (m_a \times (s_1 + s_2) - 0.2 \times m_t \times i) / (d + i)$		
Where:	m_a = 2,045 kg	s_2 = 1.24 m

NOTE: Reference tractor operator manual

Tractor's operator manual will need to be referenced to obtain the relevant figures.



Key:	
m_t	Unladen mass of the tractor (kg)
m_a	Mass of W2020 and bale on the rear linkage (kg)
m_z	Front ballast (kg)
d	Distance from centre of gravity of front ballast to front axle centre (m)
i	Tractor wheelbase (m)
s_1	Distance from the rear axle centre to the centre of the lowest points of the three point linkage (m)
s_2	Distance from the centre of the lowest points of the three point linkage to the centre of gravity of the W2020 and bale (m)

WARNING: The above calculations are a guide only

Travelling over rough or sloping ground may require additional ballast to ensure machine-tractor stability.

6

Bale & film requirements

6.1 Bale requirements

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

- Bale width - Between 1,200 mm and 1,270 mm wide
- Bale height - Diameter from 1,200 mm up to 1,600 mm

6.2 Film requirements

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

It is recommended that a minimum of four (4) layers of film be applied to the bale. If the material being wrapped is of a hard stemmy nature it may be necessary to apply six (6) or eight (8) layers to ensure a good airtight package. 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 adjustment')*

Only 750 mm film is to be used, unless otherwise stated.

NOTE: Operator must check to ensure bales are wrapped correctly

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

6.2.1 Care of the film roll

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

6.3 Number of wrapping arm rotations

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

Example:

- Number of ‘Wrapping arm rotations’ to cover bale: 3.5 = (x)
- Number of rotations to apply 4 layers of film to bale = (3.5 + 0.5) x 2 = 8

Important Notes:

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

NOTE: Check bale diameter for enough wrapping ring rotations

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

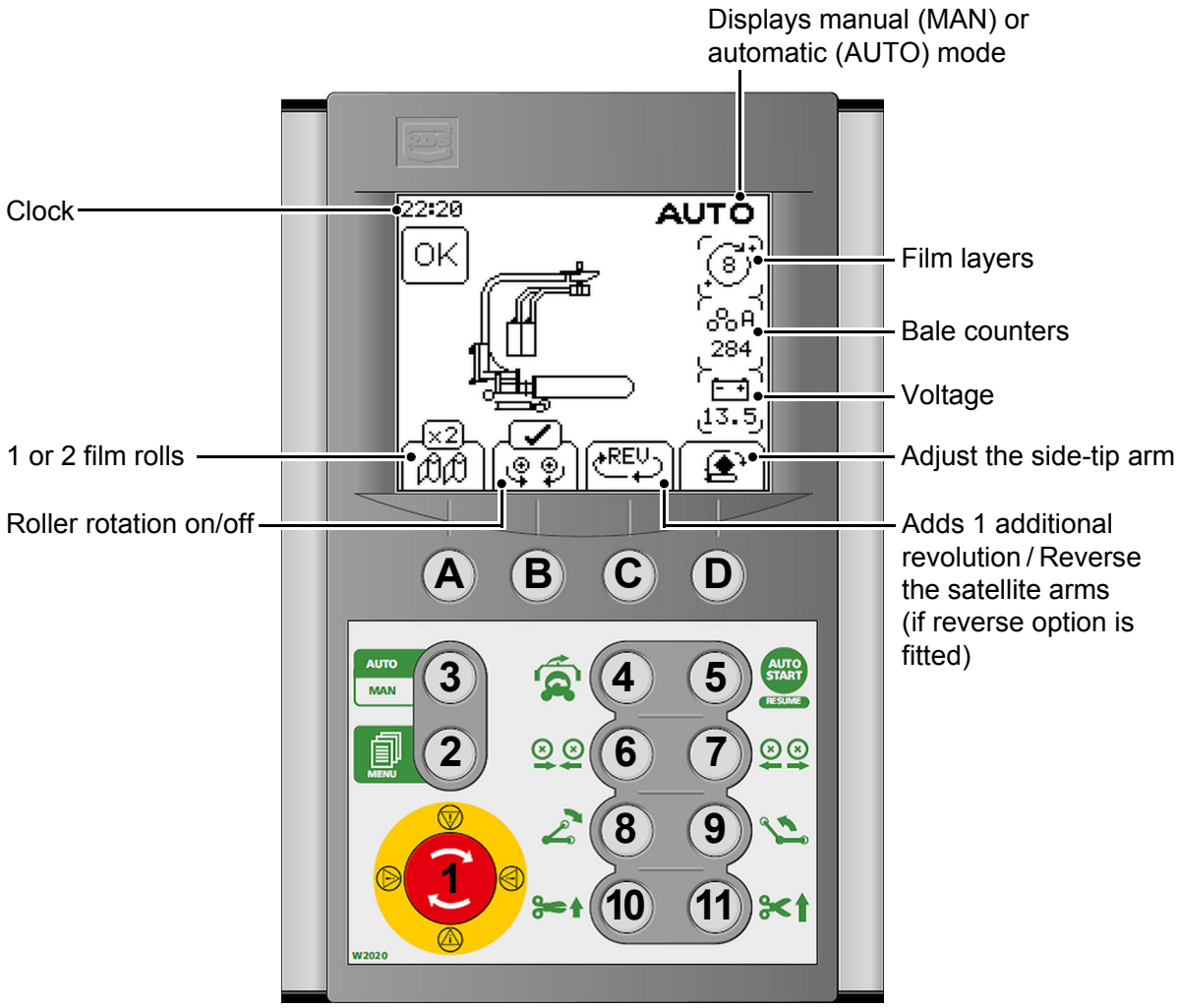
ENVIRONMENT: Recycling of film roll

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

7

Electronic control system

(Software version EP348-120 onwards)



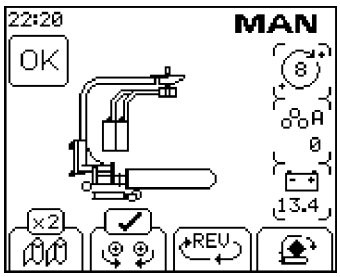
Please see the pull-out guide for this electronic control system at the end of this chapter. This can be removed and laminated to keep in your tractor and familiarise yourself with the functions of the controller.

7.1 Control box functions

No.	Function	
	Manual (MAN)	**Automatic (AUTO)**
1	Emergency stop button. Push to stop. Turn clockwise to reset.	
2	Menu button. Press once to enter the machine menu.	
3	AUTO/MAN button. Press to switch between manual and automatic modes.	
4	Rotate forward (slow/fast) Press once for slow rotate. Press twice for fast rotate. NOTE: to use fast rotate the leading dispenser must be opened out to the wrapping position beforehand	When wrapping: used to bypass the rollers. (Useful for applying extra plastic to parts of the bale. Only the satellite dispenser arms rotate)
		When not wrapping: used to rotate the rollers only. (Useful for repositioning the bale or pressing plastic tails into the bale)
5		AUTO START: Automatic cycle start Resume: Press and hold button to resume AUTO cycle after film break or safety arm trip
6	Rotation rollers inwards - Load bale	
7	Rotation rollers outwards - Unload bale	
8	Leading dispenser fold up to rest position	
9	Leading dispenser open out to wrapping position	
10	Cut & hold release	
11	Cut & hold open	
	‘Soft keys’ A, B, C & D used for various functions displayed on screen	
A	Switches between wrapping with two film rolls or one film roll	
B	Switches roller rotation on/off for bale loading	
C	Each time this button is pressed, adds one additional revolution of satellite arms for that bale only. Also used to reverse the satellite arms if the dispenser reverse option is fitted.	
D	Press once to extend the side-tip. Press twice to retract the side-tip.	Enable/Disable the side-tip arm at the end of wrapping
	The side-tip icon will flash and a direction arrow will show when the side-tip arm is extending or retracting.	

7.2 Control box features

When the control box is first switched on it displays '**McHale**' followed by the software version number.



After a short delay, the working display appears. The working display features an image of the machine, which is surrounded by general working information.

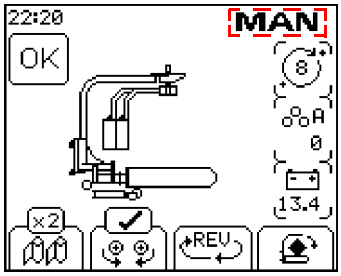
NOTE: The four soft key buttons are used for multiple functions

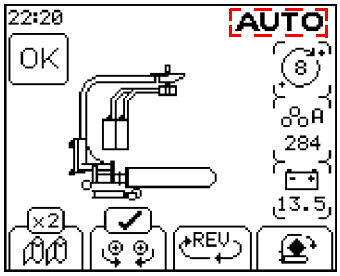
The four soft key buttons are used for multiple machine functions and menu navigations. Their function changes depending on the current screen and relates to the corresponding symbol directly above each button, across the bottom of the screen.

AUTO/MAN

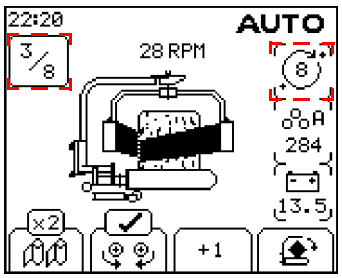
The machine has two operating modes; manual (MAN) or automatic (AUTO).

AUTO is selected by pressing the AUTO/MAN button. The selected mode is displayed in the top right corner of the screen.





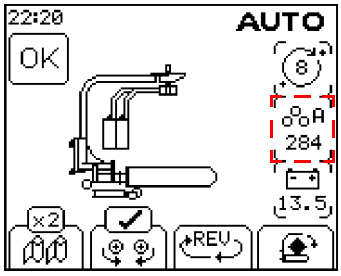
Film layers



The selected number of rotations is displayed on right side of the screen.

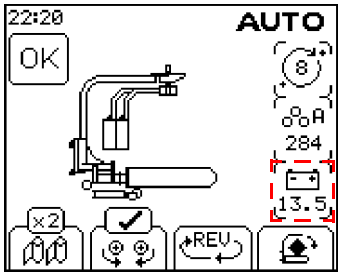
On the left side of the screen the number of completed wraps over the target number of wraps is displayed in the status box when the wrapper is rotating.

Bale counters



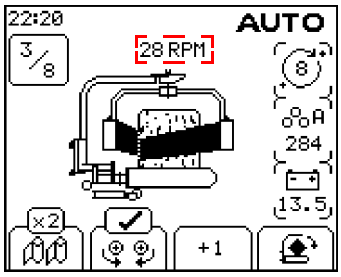
The bale sub total is displayed on the right side of the screen. The control box contains ten different bale counters (A - J) which can be reset and a grand total counter which can not be reset. *(See 'Counters')*

Voltage monitor



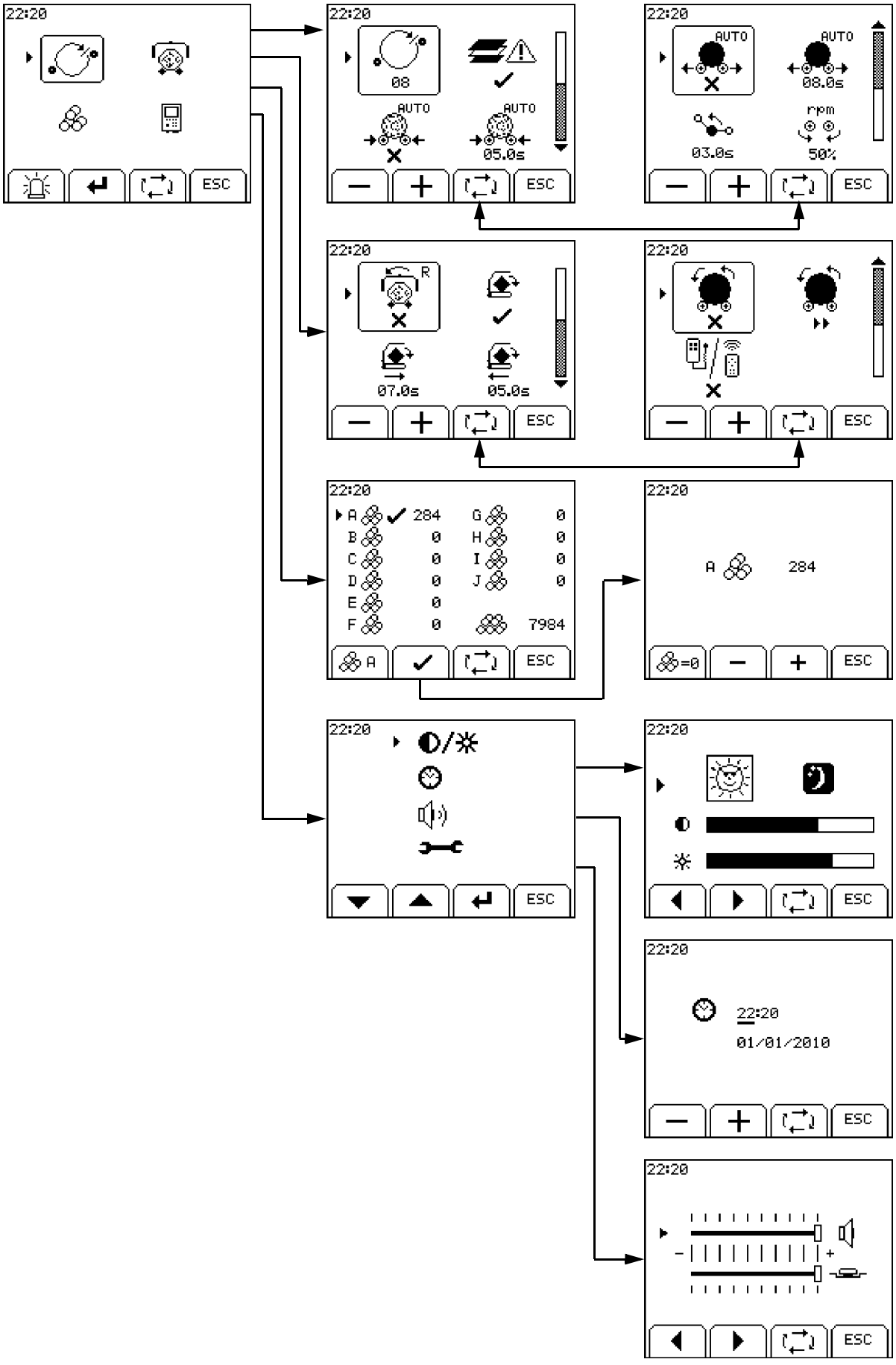
The control box monitors its operating voltage and displays it on the lower right side of the screen. If the voltage falls below 10.5 V the 'Low battery' warning is flashed on the display.

Dispenser speed rpm



The wrapper satellite arm rotation speed in revolutions per minute (rpm) is displayed over the wrapper image on the screen. This must never exceed 30 rpm.

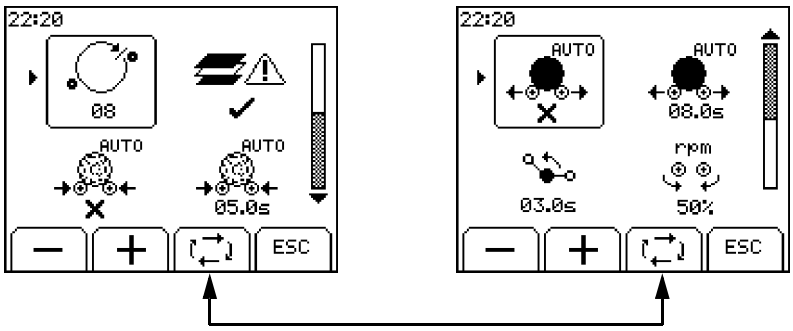
7.2.1 Menu structure



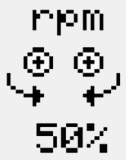
Machine settings 1

This menu allows the user to adjust settings in relation to bale wrapping. The toggle key (button C) can be used to scroll between each setting. When the arrow is beside the required setting then the + and - soft keys can be used to increase/decrease the value.

Press ‘ESC’ to return to the main menu.



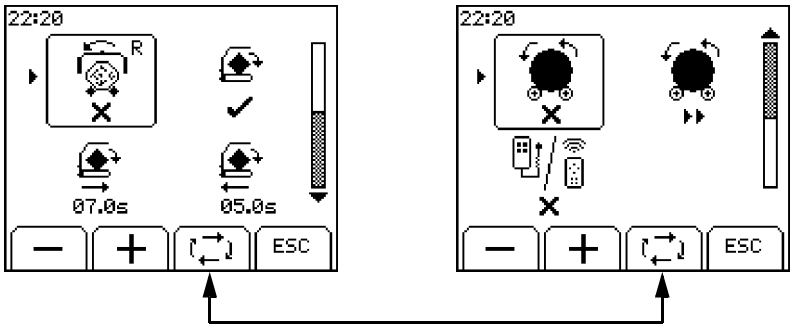
	**Number of wrapping revolutions** Film layers are set by the number of dispenser rotations. Count the number of rotations required to cover the bale once and add 0.5 of a rotation, then multiply this resultant figure by half the number of layers required, e.g. (3.5 + 0.5) x 2 = 8 rotations for four layers. Use the + and - soft keys to adjust this figure. The setting ranges from 1 (min) to 36 (max). The default setting is 8.
	**Film sensor** The film sensor monitors the passage of film through the dispenser rollers. The film sensor may be switched off, if desired.
	**Auto load** In AUTO mode with Auto load turned on, one touch of load bale (Button 6) loads the bale into a wrapping position. The load button must be pressed and held if Auto load is set to off or when in MAN mode.
	**Auto load time** When picking up a bale, this sets the time in seconds from the fully-out position to the fully-in position for Auto load.

	**Auto unload** In AUTO mode with Auto unload turned on, one touch of unload bale (Button 7) brings the roller arms to a fully open position. The unload button must be pressed and held if Auto unload is set to off or when in MAN mode.
	**Auto unload time** When dropping off a bale, this sets the time in seconds from the fully-in position to the fully-out position for Auto unload.
	**Satellite arm out time** This sets the time in seconds for the satellite arm to open out fully, from the folded or home position to the working position.
	**Load rotation speed** This sets the speed of the bale-roller rotation, while loading a bale, assuming roller rotation is enabled (Button B set to ON).

Machine settings 2

This menu allows the user to adjust settings in relation to the machine setup. The toggle key (button C) can be used to scroll between each setting. When the arrow is beside the required setting then the + and - keys or the left and right arrows can be used to increase/decrease/change the value.

Press ‘ESC’ to return to the main menu.



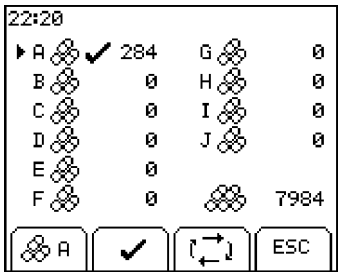
	**Dispenser reverse option** This allows the wrap-arm to be reversed at the end of wrapping. There are three options to reverse the dispensers: On (✓): The operator can press Button C to reverse the dispensers. Off (×): This disables the Button C for machines that do not have this option fitted. Auto: The dispensers reverse automatically at the end of wrapping.
	**Bale tip option** This enables/disables the Button D to operate the side-tip arm.
	**Bale tip extend** This is the time the side-tip arm stays extended after unloading has been completed.
	**Bale tip retract** This is the time the bale tip retracts for after the bale has been unloaded and tipped.
	**Unload rotate** Sets the time to rotate the rollers before unloading the bale. Set to X to disable roller rotation.
	**Unload rotate direction** Sets the direction to rotate the rollers when unloading the bale.
	**Remote type** Sets the type of remote to use. There are two remote options, wired or radio. The radio remote must be paired with the control unit before it will operate. *(See 'Remote options')*

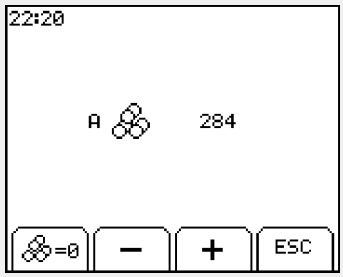
Counters

This menu allows the user to manage bale counters. The toggle key (button C) can be used to scroll between each counter.

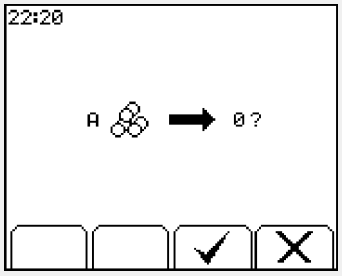
Press ✓ to select a new subtotal.

Press ‘ESC’ to return to the main menu.

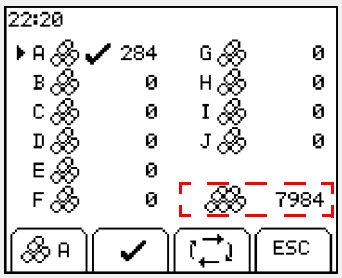




Subtotals
Press Button A to enter the selected subtotal. Subtotals can be adjusted or reset. Press the + and - keys to adjust the selected subtotal.

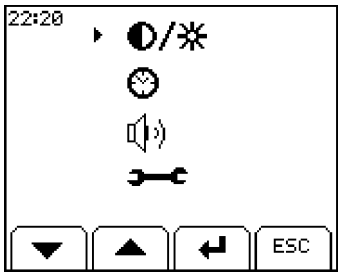


To reset a subtotal press Button A. Then press ✓ to confirm or × to cancel.



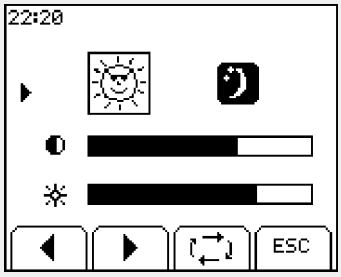
Grand total
The bale grand total cannot be reset and has no letter or symbol displayed.

Control unit setup



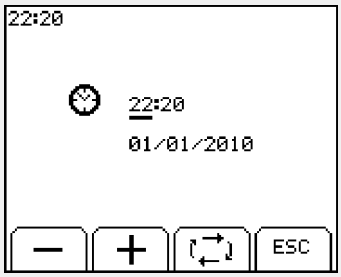
This menu allows the user to adjust settings in relation to the controller. Use the up and down keys to move the arrow up/down, then press enter to select the current option.

Press ‘ESC’ to return to the main menu.



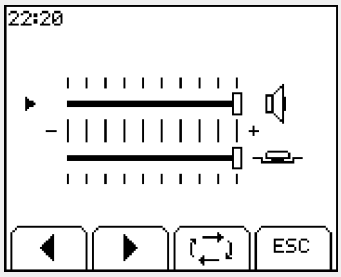
Contrast
Extremes of temperature may affect the contrast of the display, which is adjustable from the contrast menu. There is a night and day option so the operator can store 2 different settings, a bright one for day and slightly darker for night use.

Use the left and right arrows to select between day and night. When you have selected day/night, press button C to move to brightness/contrast. Use the left and right arrows to adjust the setting.



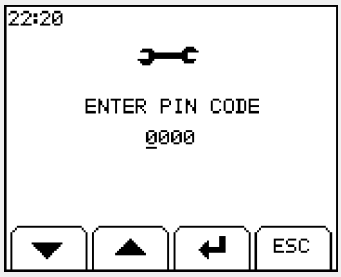
Clock adjust
This is used to set the time on the clock, which is always displayed on the top left of the screen. A date setting is also available.

Press button C to select a setting. Use the + and - buttons to increase/decrease the setting.



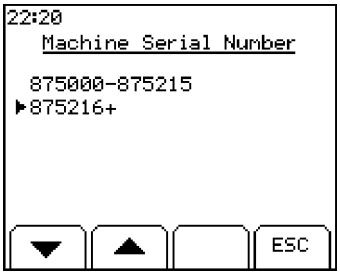
Volume
The beeper and key tone volumes are both adjustable.

Press button C to select the beeper/key tone volume. Use the left and right arrows to adjust the setting.



Technician menu
Reserved for **McHale** technicians. This menu is password protected as settings in it are critical to correct machine operation.

7.3 Remote options

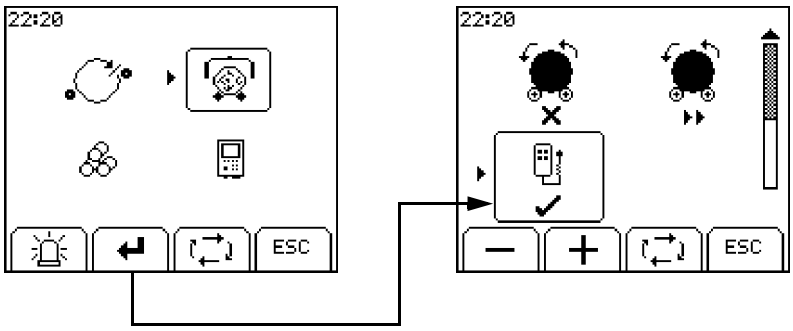


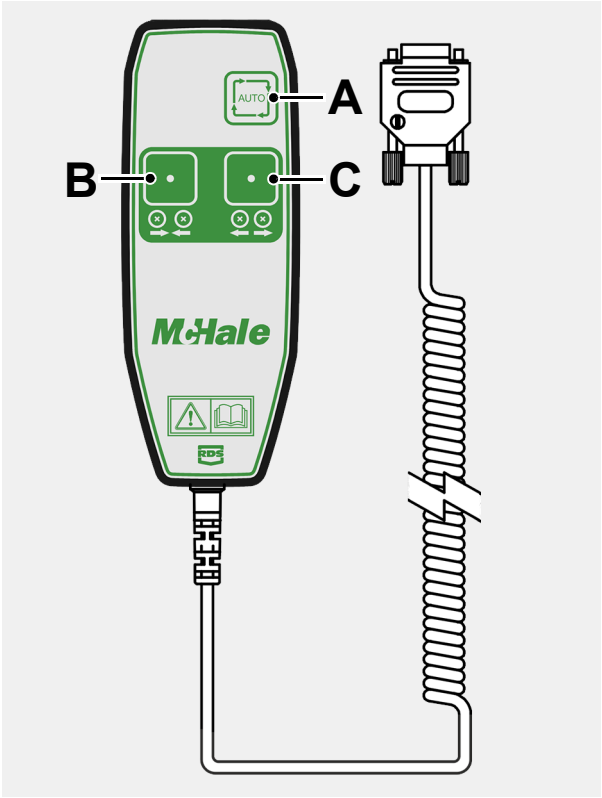
Press and hold the menu button to access the Machine Serial Number menu. The radio remote can only be fitted to machines from serial number 875216 onwards.

There are two remote options, wired or radio.

7.3.1 Wired remote

Select Machine settings 2 in the main menu. Scroll through the settings to remote setting. Using the + and - buttons set the remote setting to wired remote.

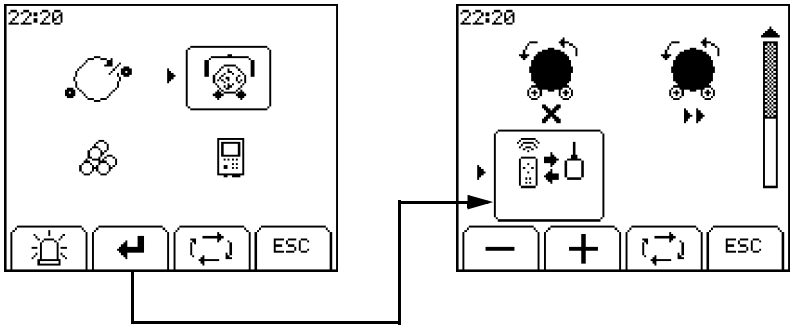


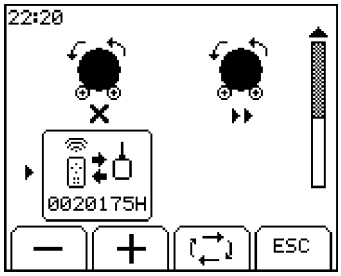


A. Wrap/Pause/Resume/Rewrap
B. Load bale
C. Unload bale

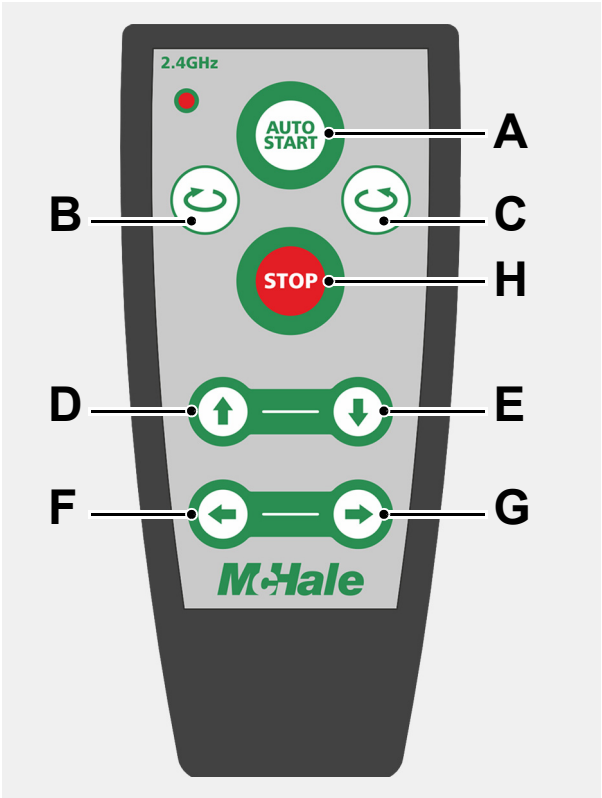
7.3.2 Radio remote

Select Machine settings 2 in the main menu. Scroll through the settings to remote setting. Using the + and - buttons set the remote setting to pair.

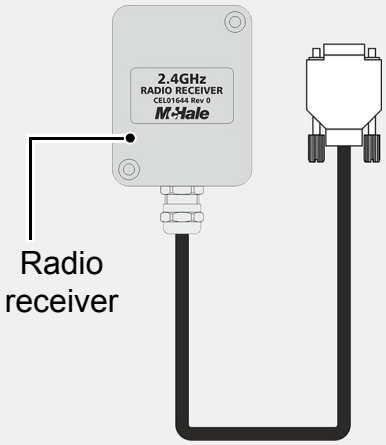




- Press the stop button on the remote. A code will be shown when the remote has been paired with the control unit.
- The radio remote only works machine functions when the control unit is in Auto mode. Press the red button on the rear of the remote when pressing any button, except the stop button. The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



A. Wrap/Pause/Resume/Rewrap
B. Dispenser reverse
C. Dispenser forward
D. Load bale
E. Unload bale
F. Close dispenser
G. Open dispenser
H. Stop



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

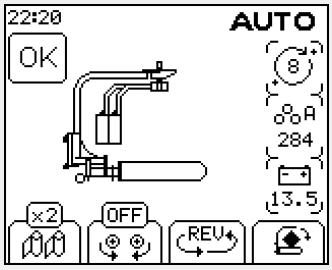
These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

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

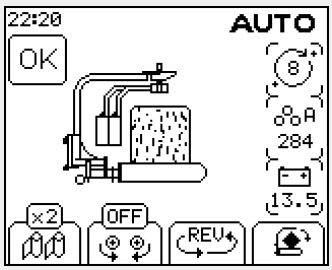
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

7.4 Automatic wrapping of bale

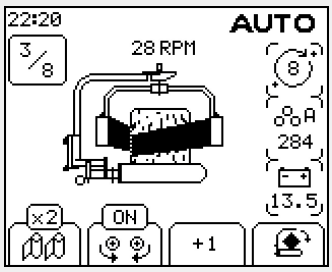
The following details a typical sequence for wrapping a bale:



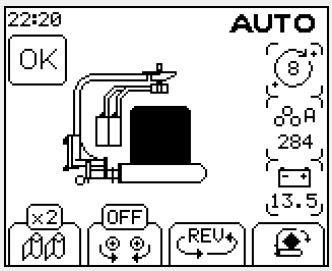
1. Switch from MAN to AUTO by pressing button 3.



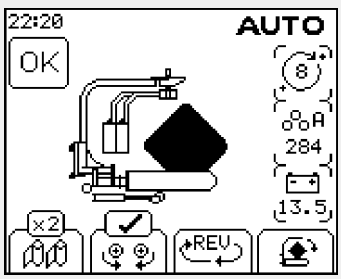
2. Press button 6 to load the bale. The rollers will load the bale onto the wrapper.



3. When bale is loaded correctly. Press button 5 to begin wrapping. The satellite arm will unfold and rotate to wrap bale.

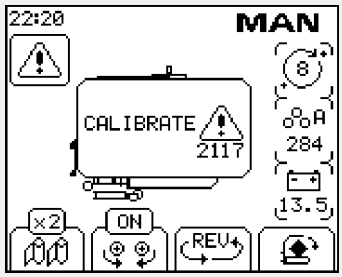


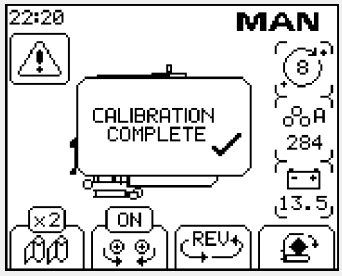
4. When wrapping is complete the satellite arm will fold inward and the plastic will be cut and held in place for the next bale. The completed bale will be displayed. Press button 7 to unload the completed bale. The rollers will release the bale from the wrapper. Repeat the same steps for the next bale.



5. If the side-tip option is fitted and enabled then the side-tip will extend at the end of wrapping and the bale will be shown at 45° when it is ready to be unloaded.

7.5 Calibration procedure

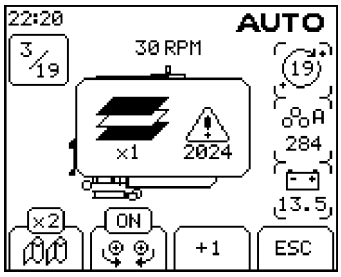




1. From time to time the machine may need to be calibrated. This can be necessary after the software is updated or the settings have been reset to defaults.
2. Update the control unit to software version EP348-084 or higher.
3. Switch on the hydraulics on the tractor.
4. Switch on the control unit and select manual mode (MAN). A calibrate warning will be displayed on screen if the machine has not been previously calibrated.
5. Press and hold button 9 to open out the leading dispenser into the working position for a minimum of 3 seconds. Release the button.
6. Press and hold button 4 to rotate the satellite. The satellite should be rotating at slow speed of approximately 7 rpm. Release the button when the calibration complete message is displayed on screen. Note that it normally takes a minimum of 3-4 revolutions to complete the calibration.
7. Switch to auto mode and check the wrapper operates correctly.
8. Calibration can be repeated if necessary by following steps 3 - 7.

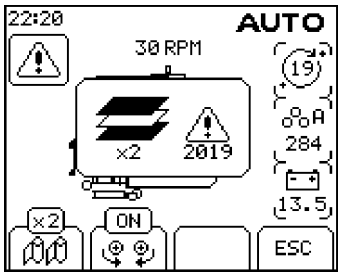
7.6 Warning messages

1 dispenser error



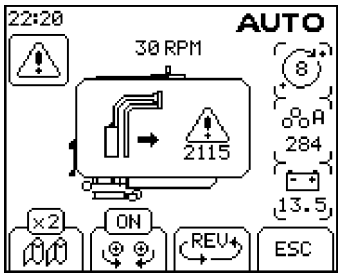
When the film sensor is switched on, failure of one dispenser to feed film will flash this warning on the display and the wrapping rollers will operate in 50/50 mode giving a correct wrap with the remaining film roll. Press ‘ESC’ to silence the alarm.
(2024)

Net feed error



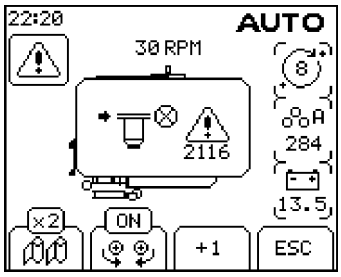
When both film rolls empty, this warning is shown on the display and the dispenser rotates slowly to the loading position. Press ‘ESC’ to silence the alarm.
(2019)

Safety switch



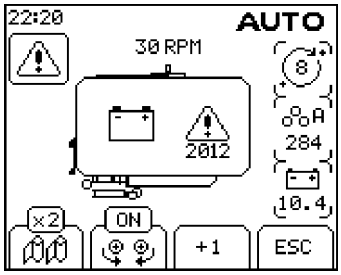
If either of the safety arms are tripped a warning will be displayed and the satellite will stop. When the safety arm is released, press and hold ‘Resume’ to continue wrapping.
(2115)

Filter blocked



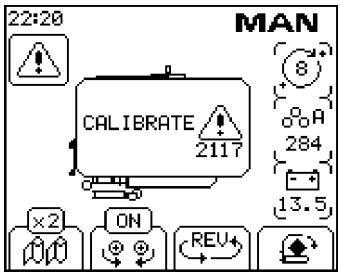
If the filter is blocked a warning will be displayed. Check if oil filter needs replacing. Press ‘ESC’ to silence the alarm.
(2116)

Low voltage



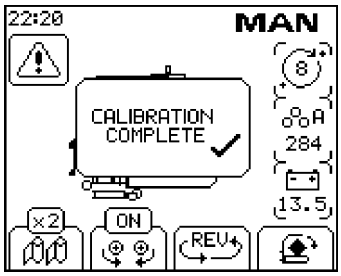
If the voltage drops below 10.5 V, then a warning will be displayed. The usual causes are nearly always either an inadequate power lead cable or corroded connections. Ensure the cable connection to 12 V socket is of good quality.
(2012)

Calibrate



This warning message is shown if the wrapper slow speed has not been calibrated.
(2117)

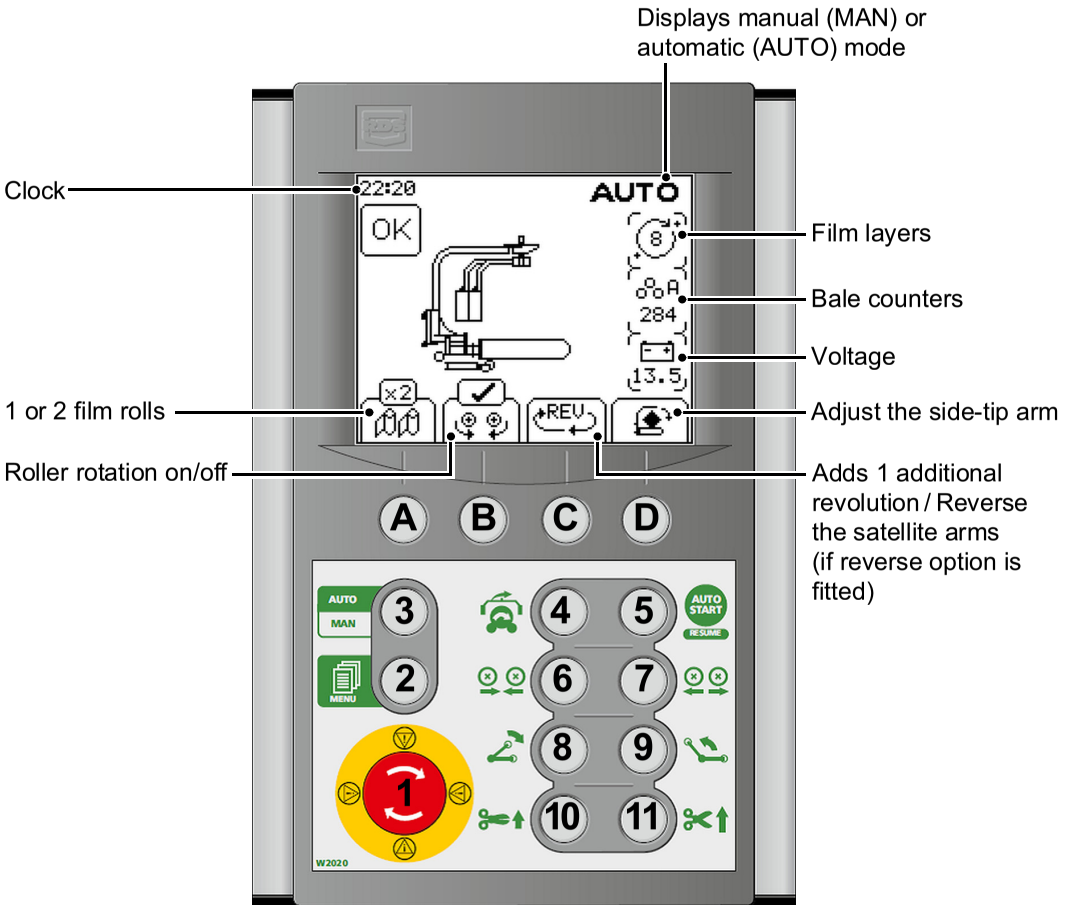
Calibration complete



This warning message is shown when calibration has been completed (Satellite has been rotated for 3 revolutions and the slow speed target has been achieved).

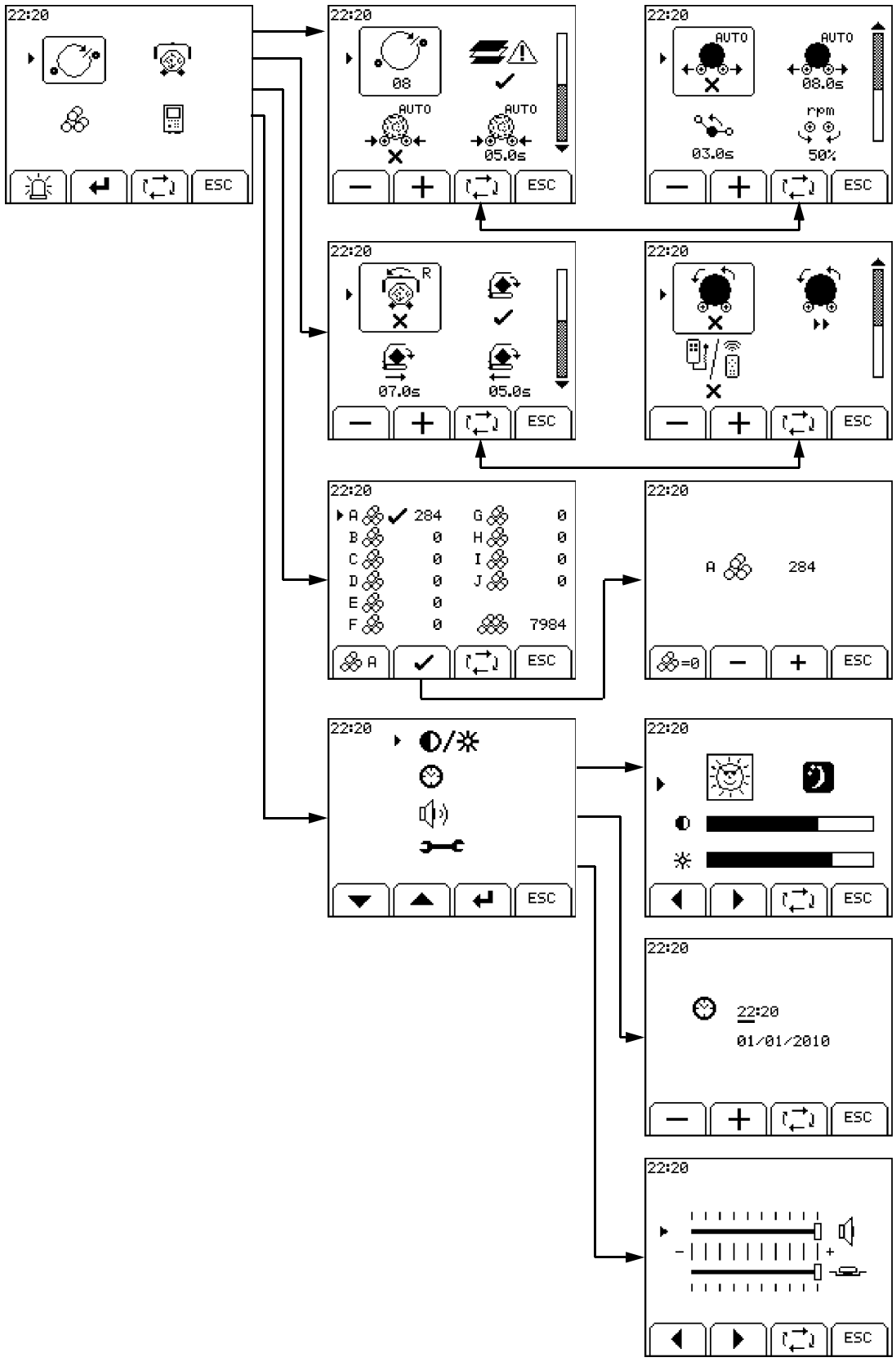
W2020 CONTROL UNIT OVERVIEW

(Software Version EP348-120)



No.	Function	
	Manual (MAN)	**Automatic (AUTO)**
1	Emergency stop button. Push to stop. Turn clockwise to reset.	
2	Menu button. Press once to enter the machine menu.	
3	AUTO/MAN button. Press to switch between manual and automatic modes.	
4	Rotate forward (slow/fast) Press once for slow rotate. Press twice for fast rotate. NOTE: to use fast rotate the leading dispenser must be opened out to the wrapping position beforehand	When wrapping: used to bypass the rollers. (Useful for applying extra plastic to parts of the bale. Only the satellite dispenser arms rotate) When not wrapping: used to rotate the rollers only. (Useful for repositioning the bale or pressing plastic tails into the bale)
5		AUTO START: Automatic cycle start Resume: Press and hold button to resume AUTO cycle after film break or safety arm trip
6	Rotation rollers inwards - Load bale	
7	Rotation rollers outwards - Unload bale	
8	Leading dispenser fold up to rest position	
9	Leading dispenser open out to wrapping position	
10	Cut & hold release	
11	Cut & hold open	
	‘Soft keys’ A, B, C & D used for various functions displayed on screen	
A	Switches between wrapping with two film rolls or one film roll	
B	Switches roller rotation on/off for bale loading	
C	Each time this button is pressed, adds one additional revolution of satellite arms for that bale only. Also used to reverse the satellite arms if the dispenser reverse option is fitted.	
D	Press once to extend the side-tip. Press twice to retract the side-tip.	Enable/Disable the side-tip arm at the end of wrapping
	The side-tip icon will flash and a direction arrow will show when the side-tip arm is extending or retracting.	

W2020 Menu structure



8

Road traffic safety & operation

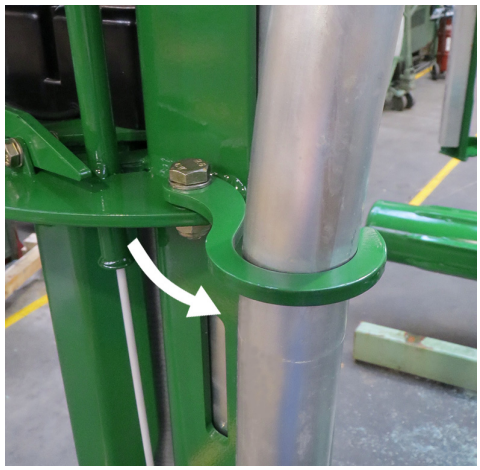
8.1 Before travelling on any public roadway

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!

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

- Ensure satellite arms have automatically returned to the home position.
- Bring the bale rotation rollers into the fully closed position.
- The hydraulic supply must be turned off and protected from accidental activation.
- The electronic control box must be switched off or disconnected from the power supply. *(See 'Electronic control system')*
- Lower wrapper to rest on the ground.
- Switch off tractor and apply the hand brake.
- Attach trip arm catch to leading dispenser, see the image below.
- Switch on the tractor again and raise the wrapper.



WARNING: Height clearance

The operator must ensure that there is a minimum of 1 m clearance between the machine and any obstacle above, like low bridges, arches or tunnels. But in the case of electrical high voltage lines a minimum clearance of 4 m should be allowed.

9

Field operation & machine adjustments

Detailed instructions on how to operate the machine are outlined in the following pages. These should be used along with learning the precise functionality of each adjustment.

WARNING: Check before starting or moving the machine

Before starting or moving the machine, ensure there is nobody in the vicinity, especially children, that may be out of view.

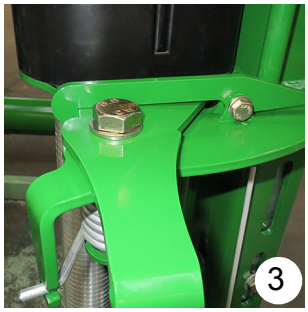
If adjustments are necessary, then shut down the tractor and ensure all motion has ceased before approaching the machine.

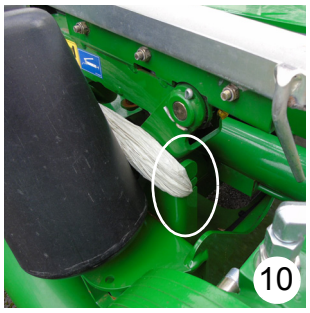
9.1 Loading plastic film

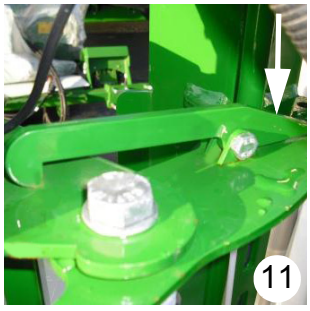
WARNING: Turn off power source before loading plastic film rolls

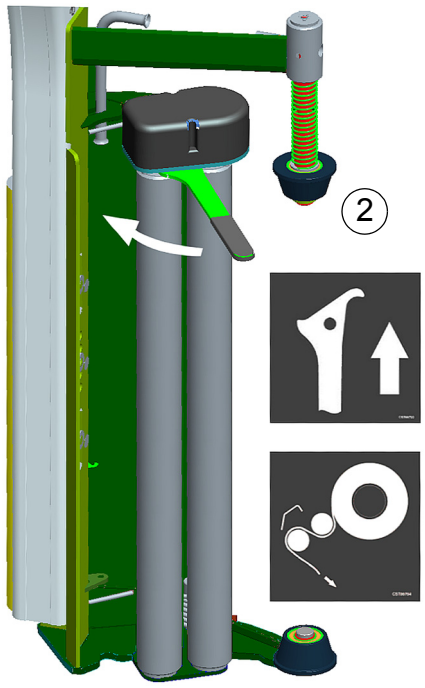
Always turn off the oil supply to the wrapper, apply the parking brake before changing the film rolls or at any time the operator needs to go near the dispensers. Turn off the electronic control box and shut down the tractor.

1. Locate the dispenser handle stored on the machine chassis.
2. Insert the handle between the aluminium rollers and plastic dispenser cap.
3. Pull back fully on handle until the latch holds the aluminium rollers in the open position.
4. Release the film roll lock by locking the cable, in the notches provided, just enough, to release the roll lock. (Usually works in the 2nd from outside notch).
5. To remove the old roll, push upwards to latch top roll holder in the ‘up’ position, and discard the old core responsibly.
6. Sit the new film roll onto bottom roll holder and centralise with top roll holder.
7. While still holding film roll, pull cable to release top roll holder. The roll of plastic film is now secured.
8. Re-engage the film roll lock, by releasing the cable from the notch.
9. Thread the film through the dispenser rollers as per the threading diagram, taking care not to trap fingers between rollers.
10. Tie ends of plastic film together and insert in film catch. Do not attempt to clamp plastic film in cut & hold itself.
11. Close the dispenser by releasing the latch. The roll should now rest against one of the aluminium rollers.
12. Re-position the dispenser handle back in it’s stored position on the machine chassis.









ENVIRONMENT: Recycling of the plastic film

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

9.2 Preparing machine in field for wrapping

1. Remove trip arm catch from leading dispenser.
2. Switch on hydraulic supply.
3. Switch on electronic control box.
4. The machine is now ready to wrap.

9.3 Wrapping process

The following is the recommended method for working the wrapper on the rear three-point linkage of a tractor. 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 procedure.

WARNING: Keep out of the 'Danger Zone'

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

1. Set dispenser rollers in working position.
2. Release trip arm catch on leading dispenser.
3. Turn on hydraulic supply and switch on the electronic control box.
4. Select AUTO on the control box.
5. Open out bale rotation rollers to the widest position.
6. Reverse into bale to be wrapped.
7. Close in bale rotation rollers fully.

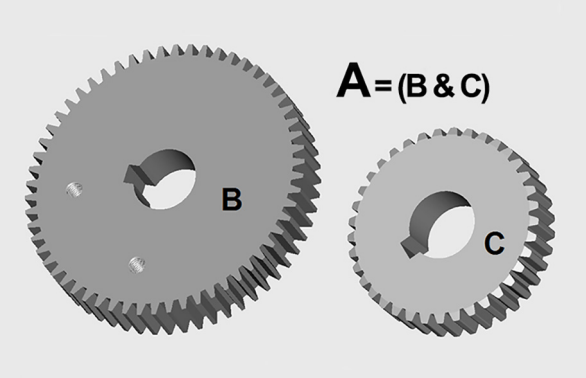
NOTE: Ensure the machine is level

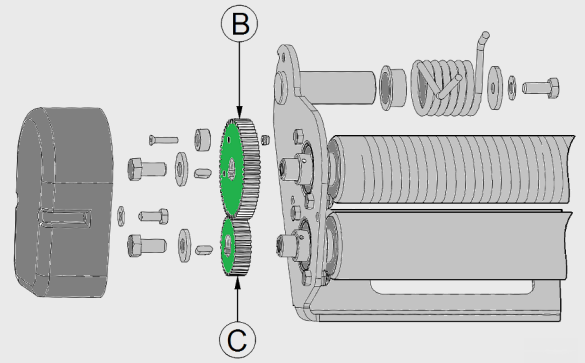
Adjust the top-link so that the machine is level, or tilting slightly towards the tractor. This is to prevent the bale from gradually moving towards the end of the rollers during wrapping, especially if dealing with misshapen bales.

8. Press 'AUTO START' on the control box.
9. The wrapper should go through a sequence as follows:
   - **a.** The leading dispenser should extend outwards until it is located 180° from the 'fixed' dispenser.
   - **b.** Then film dispensers begin rotating and plastic film is applied to the bale.
   - **c.** After one full revolution the cut & hold releases the film.
   - **d.** The dispensers slow down one revolution before the end.
   - **e.** The leading dispenser should drop back until it is again located beside the 'fixed' dispenser. Simultaneously the cut & hold unit opens upwards to grip the film as the dispensers complete the set number of rotations.
   - **f.** The dispensers come to a complete stop and the cut & hold unit will lower, gripping and cutting the film.
   - **g.** The operator pushes the 'rollers out' button to release the bale and complete the cycle.
     NOTE: All tractor movement should stop, when a bale is being released from the rollers.
   - **h.** During release, the bale rotation rollers open outwards. At the same time both rollers rotate inwards, allowing the bale to rest on the ground gently.
   - **i.** With the roller arms fully open the wrapper is now ready to receive another bale.
10. The cycle can then be repeated on the next bale.

9.4 Dispenser gears

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





70% Gear option

Item	Part Code	Description
A	ADP00311	Kit dispenser gears 70%
B	CMK00001	Gear spur 1.5 m 60 t dispenser
C	CMH00175	Gear spur 1.5 m 35 t dispenser

64% Gear option

Item	Part Code	Description
A	ADP00276	Kit dispenser gears 64%
B	CMK00002	Gear spur 1.5 m 59 t dispenser
C	CMH00096	Gear spur 1.5 m 36 t dispenser

9.5 Releasing cut and hold oil pressure

WARNING: Only competent operators should carry out this task

It is very important that care is taken in carrying out the following procedure to protect both the operator and any personnel that may be nearby. If you are unsure how to carry out this procedure please entrust the job to your **McHale** dealer.

The cut and hold is held closed by a hydraulic accumulator which is primed as the cut & hold is opened. If for whatever reason the pressure drops it will prime again the next time the cut and hold is opened. Anytime work is being carried out on the cut and hold system, the hydraulic pressure from the accumulator should be released. Remove the cover panel over the hydraulic control valve using a 13mm spanner.

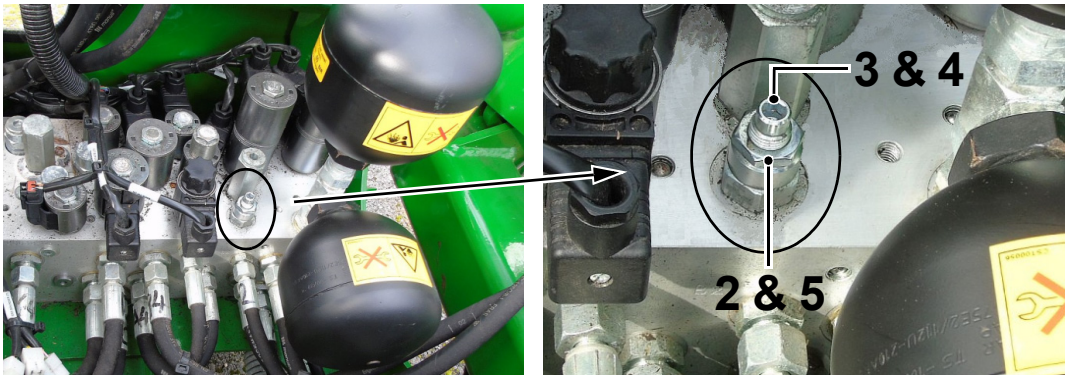
The cut and hold oil pressure can be released as follows:

1. Connect hydraulic return line to tractor free flow return connection.
2. Using a 19mm spanner, loosen locknut.
3. With a ¼" Allen Key, unscrew valve. The mechanism will pop up slightly and escaping oil will travel back through the return line. The mechanism can now be moved upwards and downwards by hand.

WARNING: Only competent operators should carry out this task

Extreme caution is required when working on the cut and hold in order to avoid contact with the knife and mechanism pinch points. Use a crane or other suitable lifting device to support the cut and hold in an up position.

4. Re-tighten the screw in valve. (Do not overtighten) Tightening torque = 6 Nm
5. Re-tighten the lock nut. (Do not overtighten) Tightening torque = 20 Nm
6. The cut and hold system will recharge itself during first operation.



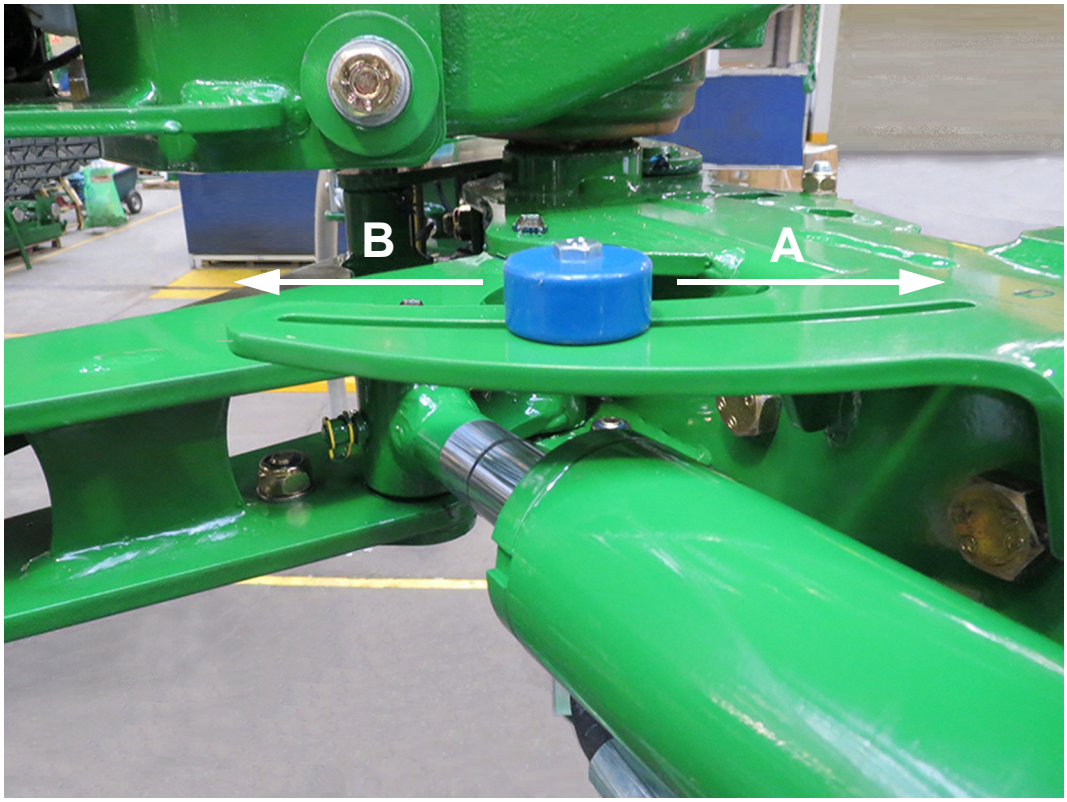
WARNING: Beware of knives & accumulators during maintenance

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

9.6 Dispenser stop-position magnet adjustment

In the unlikely event of the dispenser not finishing in the correct position such that the cut & hold cannot get a firm grip on the plastic, then it may be necessary to adjust the magnets as shown below (bale dimensions can also be a factor).

Adjusting magnet in direction of arrow 'A' gives less time and adjusting magnet in direction of arrow 'B' allows more time for the cut & hold to grip the plastic.



9.7 Bale height adjustment

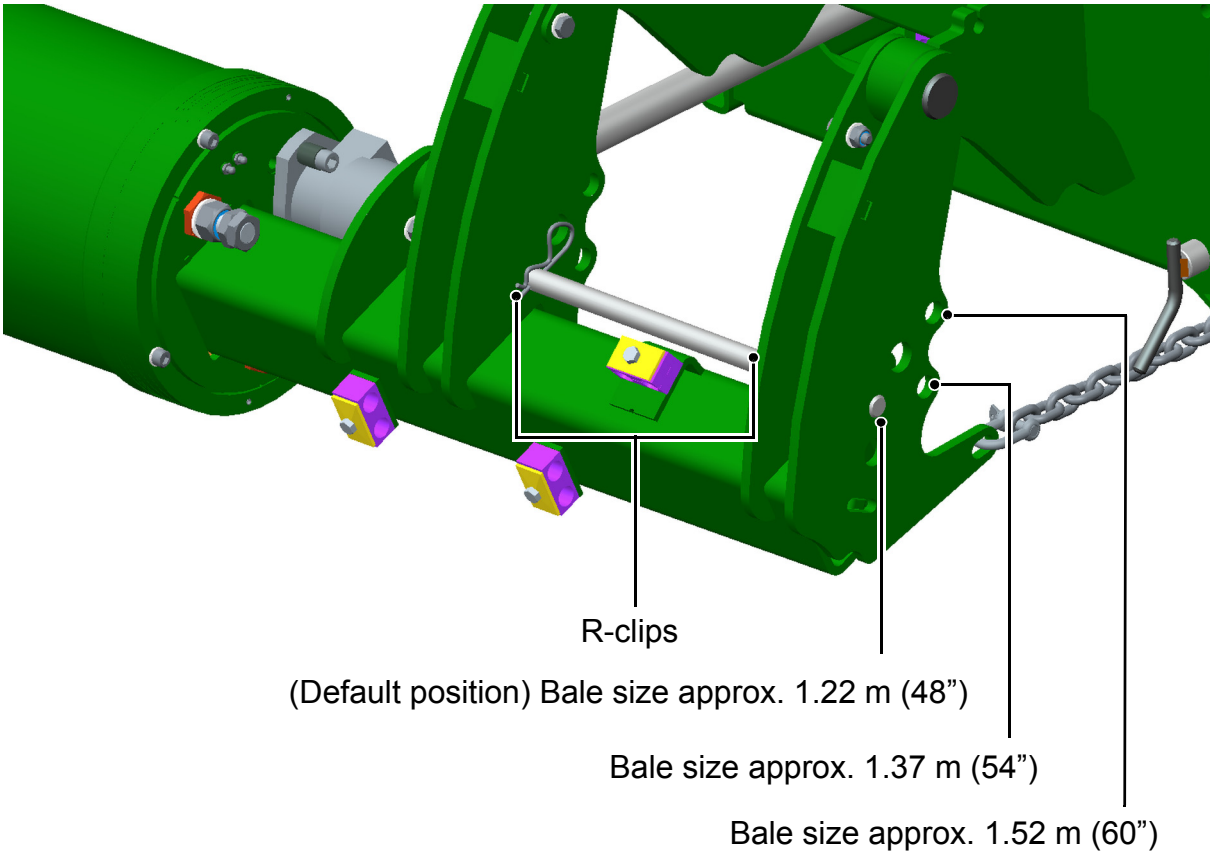
In order to wrap bales of different diameters the closed width of the rollers arms can be adjusted to lower the bale centre of rotation for larger diameter bales. This means a bale up to 1.52 m (60”) can be wrapped without having to adjust the height of the dispensers or the cut & hold.

1. Open out roller arms into the fully open position.

WARNING: Ensure safety first before making any adjustments

Before carrying out adjustments apply tractor handbrake, turn off the hydraulic supply and switch off control box.

2. Remove the two R-clips and then the pin can be removed.
3. Insert pin into the desired hole making sure to re-attach both R-clips.
4. Repeat procedure for second lift arm roller on opposite side, ensuring pin is positioned in corresponding hole position.



9.8 Trip arm switch

The trip arm switch will need to be properly adjusted if it ever needs replacement or has been moved for any reason. This may be adjusted as follows:

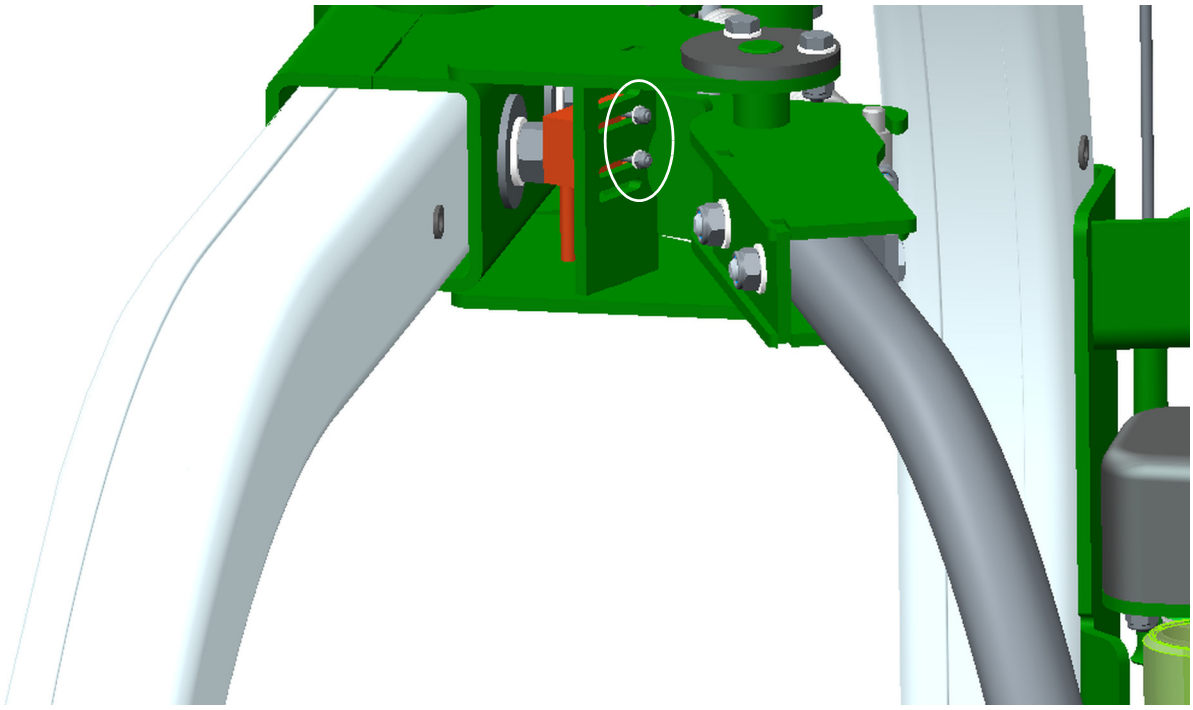
1. Loosen two M4 bolts just enough to move switch.
2. Ensure arm is in the correct working position.
3. Move switch against tab until plunger is protruding 1 - 2 mm outside the main switch body.
4. Tighten the two M4 bolts.

NOTE: Switch must be set correctly to ensure proper functioning of trip arm.

Do not bypass circuit in any way.

CAUTION: Switch must be set correctly for trip arm to function

Switch must be set correctly to ensure proper functioning of trip arm. Do not bypass circuit in any way.



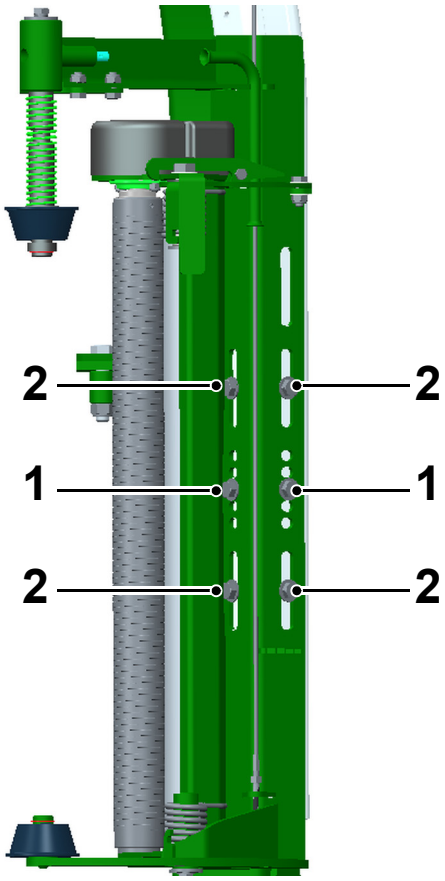
9.9 Dispenser height adjustment

The plastic film needs to be applied around the centre of the bale to ensure optimum coverage. To adjust this the dispenser may need to be adjusted up or down as necessary.

CAUTION: Do not adjust the dispenser too low!

Do not adjust the dispensers too low as there is a danger they may touch the chassis.
Ensure both dispensers are set at the same height adjustment.

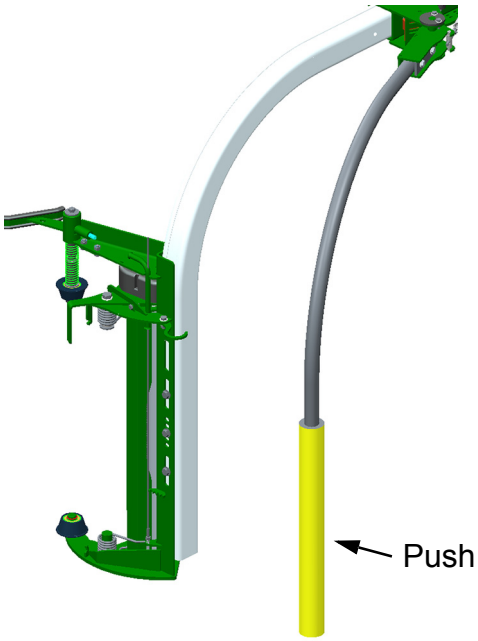
1. Remove the two centre bolts and washers.
2. Slacken the top and bottom sets of bolts back a few threads, but do not remove them as they support the full weight of the dispenser unit.
3. There are three height positions for the dispenser unit. Move the dispenser up or down as required. Insert the centre bolts when the required height has been selected.
4. Tighten all bolts fully.
5. Ensure both dispensers are set at the same height adjustment.



9.10 How to test trip arm operation

The trip arm safety feature needs to be checked periodically in accordance with the machine maintenance schedule. *(See 'Maintenance intervals')*

9.10.1 To check the force required to trip the trip arm



1. Ensure tractor is switched off, hand brake applied, engine stopped and ignition key removed.
2. Manually with one hand try to push the trip arm into the tripped position. The arm should go into the tripped position using only small to medium force (approx. less than 5 kg). If any difficulty or stiffness is encountered refer to trip arm maintenance. *(See 'Dispenser trip arms')*
3. Repeat check on 2nd dispenser.

9.10.2 To check trip arm safety switch operation

1. Ensure tractor is switched off, hand brake applied, engine stopped and ignition key removed.
2. Push only one of the trip arms into the tripped position and tie it back temporarily, using a cable tie or cord for the duration of the test.
3. Ensure all persons are well clear of machine, start up machine go into MAN mode and try to operate the dispenser.
4. There must be no dispenser movement.
5. Turn off machine and tractor, then release temporary cable tie or cord and repeat procedure for 2nd dispenser.

WARNING: Do not operate machine with switch malfunction

If there is any dispenser movement while an arm is tripped there is a serious safety issue with the switch. The machine must not be operated and a **McHale** authorised dealer should be contacted for further assistance.

WARNING: Do not operate the dispenser above 30 rpm

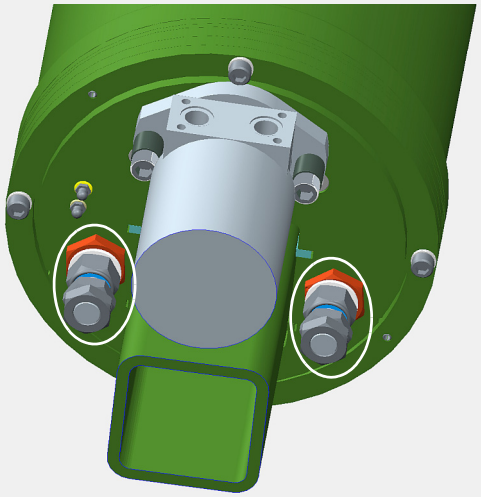
The dispenser must never be operated above a maximum of 30 rpm, otherwise the dispenser arm kinetic energy is above, what the trip arm design, is capable of stopping in an emergency situation.

9.10.3 To check wrapping arm stopping performance

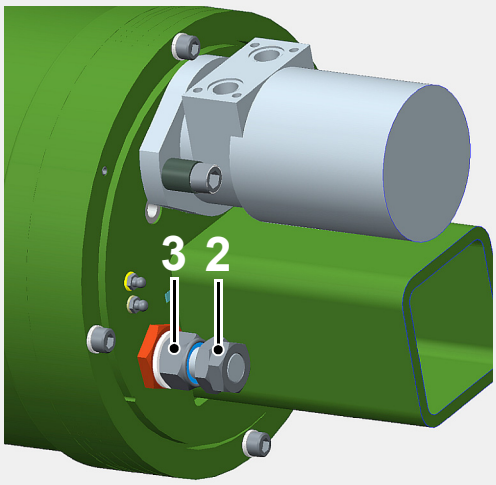
In MAN mode, run wrapper at full speed (i.e. press the rotation button two times) with two new film rolls fitted on the dispenser. Upon releasing the rotation button, the arm rotation should stop immediately. If there is any run-on, then do not operate the machine and contact your **McHale** dealer for further assistance.

9.11 Lift arm roller adjustment

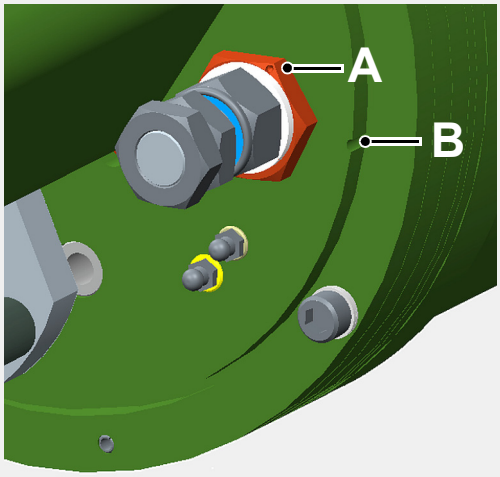
This slack adjustment should be carried out if excessive movement is found at the motor end of the lift arm rollers.



1. The two large 20 mm bolts at the bottom of each roller are used to carry out this adjustment.

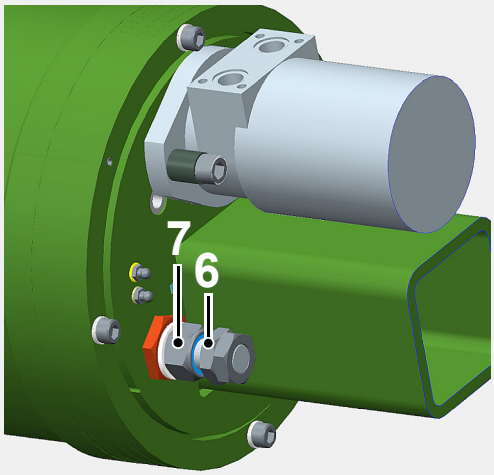


2. Use a size 30 spanner to hold the outside half nut.
3. Now use another size 30 spanner to loosen the main nyloc nut by approximately half a revolution.



4. Use a size 38 spanner to rotate the eccentric nut. Note the location of the indication hole ‘A’. Rotating this towards the notch ‘B’ on the fixed plate reduces roller free play.
5. Both eccentric nuts each side of the box section should be adjusted by an equal amount until there is minimal roller movement.

WARNING: Do not over adjust as excessive load will be put on bearings



6. Use a size 30 spanner to hold the inside half nut.
7. Tighten up the main nyloc nut, ensuring the eccentric nut does not move.

10

Machine maintenance

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

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

WARNING: Wear proper safety equipment & follow all instructions

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

WARNING: Inspections in the 'Danger Zone' 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 (contrary to our safety recommendations!) when the machine is in operation, 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.

10.1 Maintenance intervals

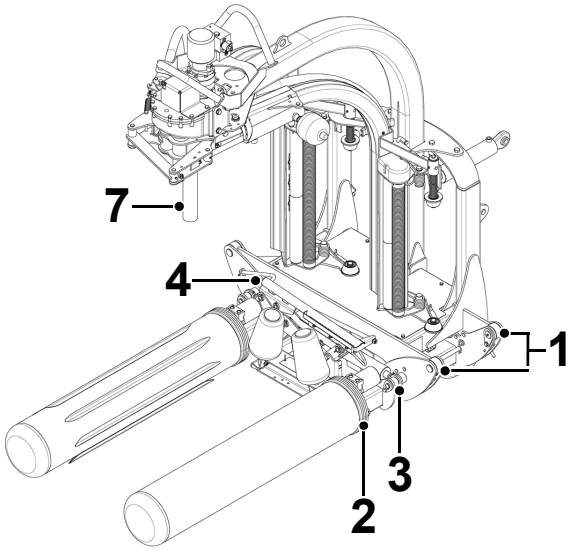
The following intervals should be adhered to, in order to ensure a long and efficient life for the machine and maximum safety of personnel. They assume constant working during the season.

First 5 working hours

1. Check all nuts and bolts for tightness and tighten, if necessary.

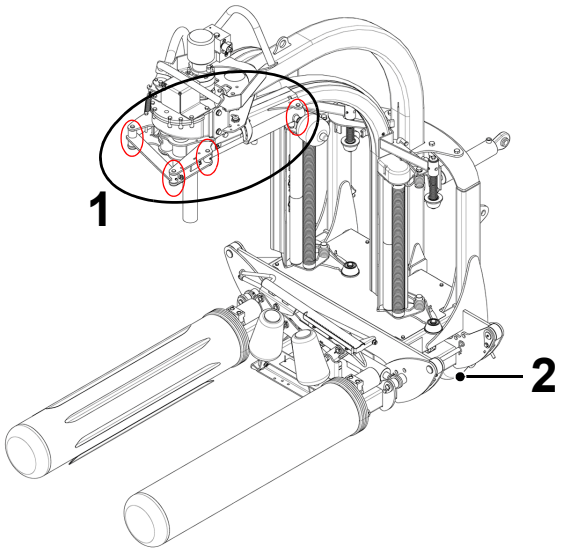
Every day

1. Grease bale lift arm hinges.
2. Grease bale roller gears.
3. Grease bale lift arm hydraulic cylinder ends.
4. Grease cut and hold assembly.
5. Check all guards and safety related components.
6. Check for any oil leaks and damaged pipes.
7. Check dispenser trip arm function. *(See 'To check trip arm safety switch operation')*



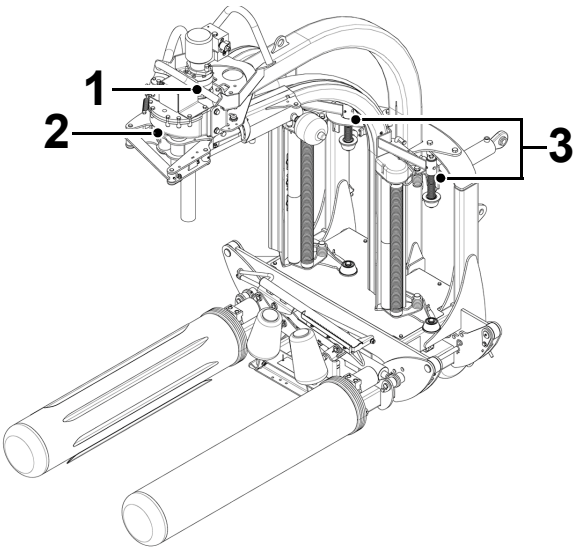
Every week

1. Grease folding dispenser pivots.
2. Grease ground support roller.



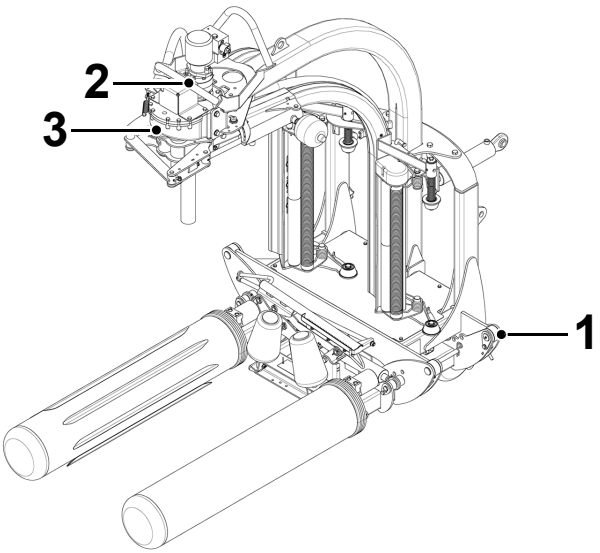
Every month

1. Check oil level in brake unit.
2. Check dispenser drive gearbox oil level.
3. Grease dispenser top coil roller shaft.



Every year

1. Clean and lubricate all moving parts.
2. Change oil and grease on the brake unit.
3. Check dispenser drive gearbox oil level.



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

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

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

Any damaged paintwork should be touched up. Any maintenance or repairs should be carried out at this stage. The electronic control box is not waterproof so it must always be stored in a dry safe environment. *(See ‘Storage’)* The exposed hydraulic cylinder rod should be greased. The dispenser trip arms should be cleaned and lubricated. *(See ‘Storage’)*

ENVIRONMENT: Health and safety rules for the environment

It is vitally important to observe health and safety rules in order to avoid unnecessary environmental damage or danger to anybody near the machine. This especially applies to the responsible disposal of oil. Never spill pollutants (oil, grease, filters, etc.) on the ground, never pour them down the drain and never discard them where they can pollute. Never throw away or burn waste net or plastic. Burning plastics is toxic as they release dioxins and furans. To inhale dioxins or to be exposed to its fumes can cause deadly results. Respect the environment! Always take waste materials to a recycling centre.

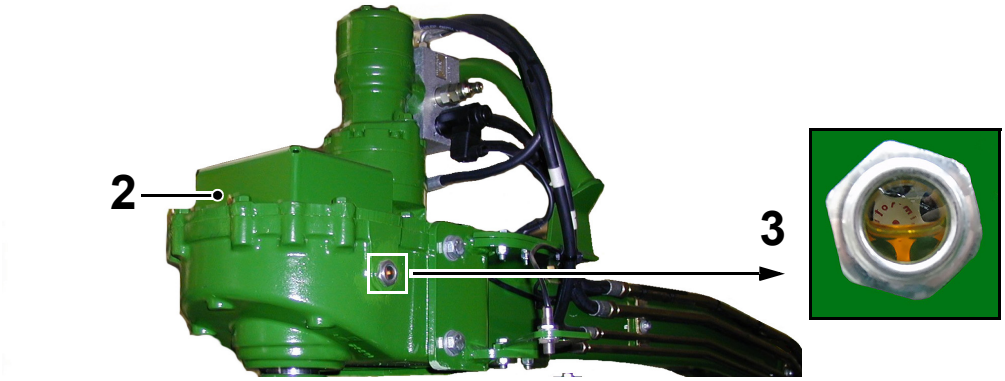
10.2 Dispenser gearbox oil level

WARNING: Before working on this machine

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

The oil can be topped up as follows:

1. Check oil level in dispenser gearbox using sight glass on side of gearbox housing.
2. If there is no oil level showing in the sight glass then top up oil level by undoing the breather cap shown.
3. Fill until oil level is half way up the sight glass.



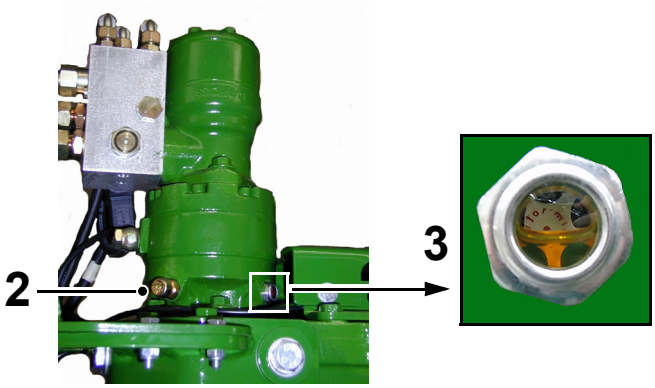
10.3 Dispenser brake oil level

WARNING: Before working on this machine

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

The oil can be topped up as follows:

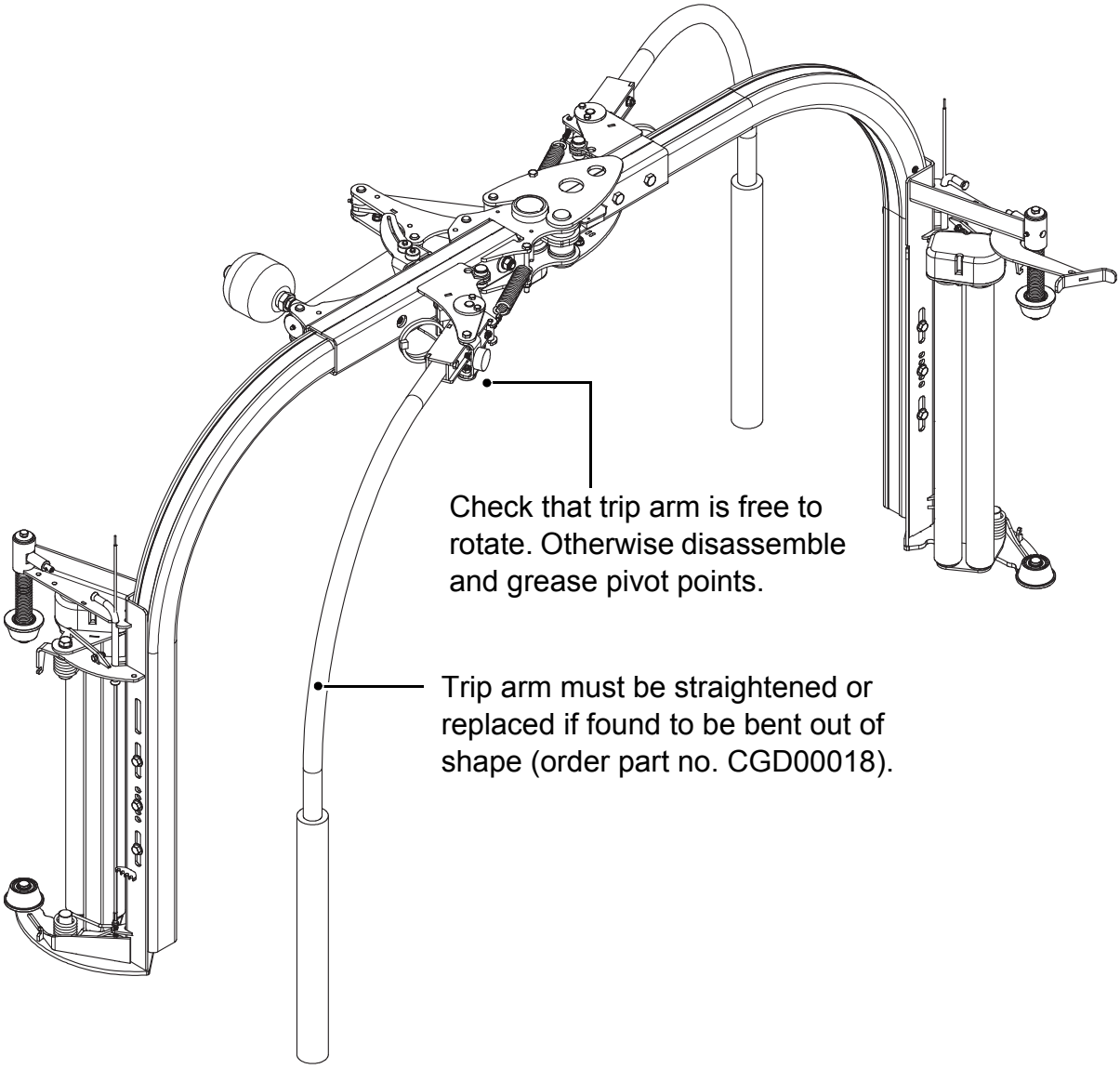
1. Check oil level in dispenser gearbox using sight glass on side of gearbox housing.
2. If there is no oil level showing in the sight glass then top up oil level by undoing the breather cap shown.
3. Fill until oil level is half way up the sight glass.

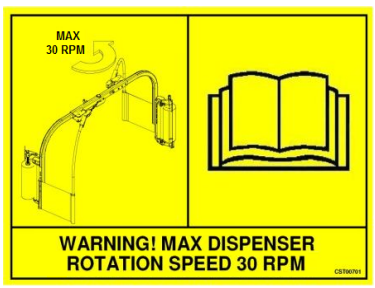


10.4 Dispenser trip arms

WARNING: Always think 'Safety First'!

Always ensure tractor is switched off, hand brake applied, engine stopped and ignition key removed before working on machine.





WARNING: The dispenser must never be operated above a max. of 30 rpm.

10.5 Tightening torque values

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

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

11

Storage

11.1 End of season

- Before disconnecting the machine from the tractor, always ensure the rotor arms are first lowered to the ground for stability.
- Carefully clean all machine sections, inside and out. Dirt and foreign objects are likely to draw moisture and cause rusting of steel components. **McHale** recommend that the machine be blown down with an air line, as opposed to a pressure washer, due to the dangers involved with pressure washing and to protect the overall paint work on the machine. If, despite our advice, a pressure washer is used then take extreme caution and operate from ground level only. Do not point pressurized water at or near electrical components, pivots points, valves or bearings. Never climb onto any part of the machine, while pressure washing, due to the fact that all metal surfaces become extremely wet and slippery and always ensure that the tractor has been shut down, with the ignition key removed.
- 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 the machine and blow dry using compressed air and apply grease to prevent rusting.
- Finally the machine can be returned to the transport position for storage, ideally under cover, on a flat level concrete floor.

11.2 Start of season

- Fully review this operators instruction manual.
- Lubricate all pivot points.
- Tighten all bolts, nuts and setscrews. *(See 'Tightening torque values')*
- Inspect and modify, if necessary, all machine adjustments. *(See 'Field operation & machine adjustments')*

12

Troubleshooting

12.1 Troubleshooting 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.

12.1.1 Roller lift arms do not go out or in

Symptom	Reason	Solution
Roller lift arms do not go out or in	No hydraulic oil flow/ return. (Check tractor manual for hydraulic connections on tractor)	Turn on oil. Ensure that ‘tank return’ line is connected ‘to tank’ and check both quick-release couplings.
	Power supply fault (poor battery or charging system)	Check all electrical connections and ensure a 13 V power supply is available

12.1.2 Dispenser roller lock fails to engage

Symptom	Reason	Solution
Dispenser roller lock fails to engage in the ‘up’ position	Film roll release cable has become too loose *(See ‘Loading plastic film’)*	Adjust nuts at bottom of cable until roller engages in the ‘up’ position

12.1.3 Dispenser rotation or ‘Dispenser Safety’ displayed

Symptom	Reason	Solution
Dispensers do not rotate or ‘Dispenser Safety’ is displayed	No hydraulic oil flow/ return. (Check tractor manual for hydraulic connections on tractor)	Turn on oil. Ensure that ‘tank return’ line is connected ‘to tank’ and check both quick-release couplings.
	Power supply fault (poor battery or charging system)	Check all electrical connections and ensure a 13 V power supply is available.
	Leading dispenser safety arm is activated as trip arm catch is still in place. (Arm is pressing against aluminium box section).	Reposition safety arm(s) into the working position and press the ‘Resume’ button on the control box.

12.1.4 Plastic is not stretching properly

Symptom	Reason	Solution
Plastic is not stretching properly	Build up of tack/glue on dispenser rollers	Clean off with kerosene

12.1.5 Film is not being cut properly in the cut & hold

Symptom	Reason	Solution
Film is not being cut properly in the cut & hold	Blade has gone blunt	Carefully replace blade

12.1.6 Cut & hold does not hold plastic film

Symptom	Reason	Solution
Cut & hold does not hold plastic film	Blade cutting film before it is gripped	Carefully lower knife position. Adjust magnet position. *(See ‘Releasing cut and hold oil pressure’)*

12.1.7 Auto start cycle will not run once pressed

Symptom	Reason	Solution
Auto start cycle will not run once pressed	No hydraulic oil flow/ return. (Check tractor manual for hydraulic connections on the tractor)	Turn on oil. Ensure that 'tank return' line is connected 'to tank' and check both quick-release couplings.
	The incorrect cycle is selected	Press the 'AUTO/MAN' button until the desired cycle is displayed in the control box display

12.1.8 'LOW BATT' is displayed

Symptom	Reason	Solution
'LOW BATT' is displayed	Supply voltage too low/ poor connection	Check connections, battery and charging system

12.1.9 Hydraulics under pressure when wrapper is idle

Symptom	Reason	Solution
Hydraulics under pressure when wrapper is idle	Valve set to closed-centre on open-centre system	Change valve setting *(See 'Hydraulic spool valve setup')*

13

Certification & Warranty

13.1 Declaration of Conformity

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

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

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

13.2 PDI form

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

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

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

13.3 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.

13.4 Limited Warranty

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

Declaration of Conformity

DECLARATION OF CONFORMITY

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

Machine description and function: Round bale wrapper for wrapping bales of agricultural fodder with agricultural bale wrap film. It also operates as a bale handler.

Model: **W2020** **Serial Number:** _____

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

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

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

Harmonised standards applied:

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

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

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

QUALITY
I.S. EN ISO 9001:2015
NSAI Certified

Pre-delivery inspection form

PRE-DELIVERY INSPECTION (PDI)

Dealer:.....	**Model: W2020 Linkage 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!

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

1. **Check that all accessories are with the Owner/Operator. Check Operators Instruction Manual and Parts Lists.**		9. **On electronic machines run the automatic program on the control unit.**	
2. **Ensure machine is re-assembled correctly. (Refer to all assembly instructions supplied)**		10. **Check for smooth operation of all moving parts. Check that dispenser trip arms work. Check the dispenser rotation speed. Warning: Max. 30 rpm.**	
3. **Ensure that all items are properly installed and check all bolts & nuts are torqued correctly.**		11. **Ensure plastic is applied to the centre of the bale.**	
4. **Ensure safety arms and hydraulic hoses are fitted correctly, before coupling machine to tractor.**		12. **Check dispenser(s) are running smoothly & free from damage or grit.**	
5. **When hitched to tractor check that the machine is parallel with the ground. Adjust linkage if necessary.**		13. **The operator must be fully aware of all hazards, controls (electric & hydraulic), all functions & safety devices of both the machine and the tractor.**	
6. **Connect hydraulic hosing to tractor and ensure proper hydraulic setup. Note: Ensure free-flow return to tank.**		14. **Ensure that the owner/operator reads the operator instruction manual and understands fully all safety & operating aspects of the machine, as described.**	
7. **On electronic machines ensure control-unit power is 12 V direct from battery or a malfunction may occur.**		15. **Instruct operator on machine maintenance i.e. check chain tensions, adjustments, also areas to be greased daily along with other routine functions.**	
8. **Check all manual functions on the machine (using control unit on electronic machines).**			

I am satisfied that the above checks have been carried out, and that the machine is complete with all accessories and manuals.

Signed:..... **(Dealer)** **Date:**.....

Signed:..... **(Owner)** **Date:**.....

A signed copy of this form is to be retained by both the Dealer and the Customer!

McHale Limited Warranty

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 warranty system.

These conditions are subject to the following exceptions:

- Parts of the machine which are not of 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 . 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 are used in repair.
- The company take no responsibility for any additional costs, including loss of oil and/ or consumables incurred during the failure and repair of a product.
- The company cannot be held responsible for any claims or injuries to the owner or to the third party, nor to any resulting responsibility.
- Also, on no account can the company be held liable for incidental or consequential damages (including loss of anticipated profits) or for any impairment due to failure, a latent defect or a breakdown of a machine.

The customer will be responsible for the following costs:

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

The importer will be responsible for the following costs:

- All warranty labour charges.

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

- The machine has been put in service by the 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 when requested.
- The warranty claim is submitted using the online claims system.
- The warranty claim must be submitted by the original retailing dealer only.
- The decision of the company in all cases is final.
- Warranty parts must be held by the dealer for a period of two years from the date the warranty claim is submitted to , or until a return request has been issued within the two years.
- When issue a return request, parts must have the claim number written clearly on each individual part. These parts must be free from dirt and oil. If a part is returned in an unfit state, the claim will be refused.
- If damaged parts have been returned to the company and warranty is refused, the dealer is allowed a period of one month from the date of receiving our notification to request the return of the damaged parts to the dealer site.

Further conditions - limits of application and responsibility:

- This Limited Warranty cannot be assigned or transferred to anyone without the prior written consent of the company.
- 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.

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Appendix

14.1 Unit conversion tables

Length

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

Area

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

Volume

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

Mass

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

Flow rate

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

Pressure

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

Speed

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

Torque

Nm	kgfm	ftlb	inlb
1	0.101972	0.737561	8.850732

9.80665	1	7.233003	86.79603
1.35582	0.138255	1	12
0.112985	0.011521	0.083333	1

Temperature conversion formulas

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