V660 Belt Baler
Operator Instruction Manual
Issue 6
(Valid From Serial Number 801350 - 805000)

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1. Introduction

The McHale V660 round baler is a completely new product. The design has been carried out on the basis of long term constant research and development in the field of round bale wrappers and round balers. Given proper care and attention, the McHale V660 will provide years of reliable and dependable performance. However it is also important that everybody who operates this machine reads and understands this manual before operating the machine. If any of the instructions appear unclear do not hesitate to contact your McHale dealer. 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 specification as the original machine. These may be obtained through your McHale dealer.

Description of a fully trained operator: The McHale V660 will require a fully trained operator. This is someone who has read and fully understood all of the contents of this instruction manual. They must be aware of all safety instructions, of all functions and controls, both hydraulic and electrical. The operator is solely responsible for the safe use and maintenance of the machine in accordance with this manual. It is highly recommended that training be sought from your local dealer. The operator must be constantly aware of their surroundings and should always think of safety first. The machine is only to be used for it’s designated purpose as is outlined.

Note: The above description is a guideline only, and as a rule, it is highly recommended to get acquainted slowly at first with any new machinery. Take the time to both learn and understand all the features of the machine. Proficiency will increase as more experience is obtained.

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

<table>
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</tr>
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<tbody>
<tr>
<td>Year of manufacture:</td>
</tr>
<tr>
<td>Date of delivery:</td>
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</table>

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

CLT00611*

*Manuals are serial number specific so please quote the relevant machine serial number.

Due to a policy of continuous product development and improvement, McHale Engineering reserves the right to alter machine specifications without prior notice. Please note that all specifications marked with an ☑ in this manual relate to certain models or optional equipment. Also these specifications may not be available in all countries.
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3. Getting familiar with the **McHale V660**

The **McHale V660** is protected against many dangers to itself while being operated from the control box in both manual and automatic cycles. However, it is of utmost importance for the safety of the operator and for others, that the operator pay 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 the machine running. Keep the “danger zone”, (an area around the machine detailed in Section 4.9) free of all persons and animals at all times while the machine is in operation. This manual must be read and fully understood by anyone who will operate the machine.

### 3.1 Designated use of machine

- The **McHale V660** round baler is exclusively designed for normal use in agricultural applications. The machine has been designed to pick up and compact stalks from the ground, to produce bales of forage primarily for feeding livestock. This designation includes the movement of the machine, between fields by track or road, incidental to the round baler. 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 owners/operators risk.

- The designated use of the machine includes that the operating, maintenance and repair instructions given by the manufacturer will be strictly fulfilled.

- The designated use of the machine includes, that exclusively persons who are familiar with it and instructed about the risks are entitled to operate, maintain and/or to repair the machine.

- The designated use of the machine includes that the relevant health and safety requirements, that may be in force in the country of use will be strictly followed.

- The designated use of the machine includes that no other equipment or accessories other than released by the manufacturer are installed in the machine. The use of any other equipment or accessory is entirely at the owners/operators risk in such cases unauthorised modifications/changes exclude any liability of the manufacturer thereof.

By any alteration of safety equipment the declaration of conformity, as well as the CE-sign on the machine, loses it's validity.
McHale V660 round baler operators instruction manual

- Pick up Ground Wheels
- Hose Holder
- Pressure clock
- Density valve/Tailgate safety lock
- Netter Unit
- Netter Tension bars
- Drive Side
- Pick-up Reel Clutch
- Chopper Unit
- Crop Roller
- Pick up Reel
- Belt Tension Arm
- Bale size Potentiometer
- Non - Drive Side
- Pickup/Knives/Floor Valve
- Wheel Chocks
- Tailgate
- Tension Rams
- Bale Kicker
- Drop Floor
4. General Safety

4.1 Be aware of all safety information

The symbol opposite is the symbol used to alert you to safety issues. It appears both in this manual and on some of the safety decals. On the decals it appears on a yellow background while in this manual it appears in black and white. Follow all safety precautions and practice safe operation of all machinery at all times. When reading through this manual, pay particular attention to where you see the above symbol, paying extra care to where you will see the Warning and Caution pointers.

4.2 Follow all safety instructions

Using this manual, read all safety instructions, messages and be aware of the meanings of all safety decals. Ensure, if safety decals are damaged or missing due to wear and tear or due to component replacement, that they be replaced. The Decals are detailed in section 5 of this manual as a handy reference and in the spare parts book which contains the spare part codes of the decals, which are available from your McHale dealer. As with all machinery, learn all operations and use of controls by reading this manual thoroughly. Do not attempt to let anyone operate this machine without being fully instructed.

4.3 Store all items carefully

Store all attachments such as spare net rolls in a secure and safe manner so as to prevent items from falling. If stored incorrectly items can fall and cause serious injury or death. Keep storage areas clear of bystanders and children.

4.4 Protective clothing

Always wear clothing and safety equipment that is fit for the job at hand, never wear loose clothing. Prolonged exposure to loud noises can cause impairment or loss of hearing. In the event of loud noises, wear suitable protective hearing devices such as earplugs or ear muffs. Use of radio headphones, mobile phones and other electronic devices are not recommended while operating machinery as this impairs operators attention.
4.5 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.

4.6 Stay clear of rotating elements

Serious injury or death can result from entanglement of clothing or body parts in PTO shafts, drive lines 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, key removed and that PTO has stopped turning before carrying out any adjustments, connections or cleaning of PTO driven equipment.

4.7 Operating the McHale V660 safely

In order to avoid serious injury or death by being pulled into the machine:

1. **Never** attempt to feed net or crop into the baling chamber or attempt to unplug pick-up area while the baler is running.
2. **Firstly**, disengage PTO, shut tractor engine off and remove the key.
3. Bystanders must stand well clear of the baler and tractor when machine is operating.

4.8 In the event of a fire

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

1. Eject bale from baling chamber by opening the tail gate.
2. Move the tractor and baler away from the flammable material.
3. Disengage PTO, turn off tractor and remove key. Remove all hosing and electrical looms from the machine.
4. With all connections removed, disengage drawbar from tractor. Drive tractor away from baler.
5. Using a suitable fire extinguisher put out all fires.

*Note:* It is recommended that the baler be kept reasonably clean and free of build-up of crop, lubricants etc., as this will help to reduce the risk of fires.
4.9 General safety warnings

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

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

- **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.

- **All safety decals** on the machine must be kept in good legible condition. If they are not they must be replaced by genuine McHale decals from your McHale dealer (part numbers are available in this manual).

- **Before operating** this machine the operator must ensure that all covers are closed and all safety devices are in operating mode.

- **Before operating** this machine the operator must ensure that the manufacturer’s instructions for attaching and detaching the machine are followed. This includes the drawbar attachment, the electric and hydraulic lines, in particular the lighting and brake system.

- **Before operating** this machine the operator must ensure that no persons or animals are carried on the machine or are hidden under the machine (on the tractor persons are only allowed to sit on the relevant seats).

- **Before operating** this machine the operator must ensure that there is no person in the “danger zone” (in front of tractor, between tractor and round baler and a minimum of 10 m behind the machine).  
  **Note:** It is the operator’s responsibility to keep all people out of this area! In this area a person is subject to risk of his/her own health and safety!

- **While operating** this machine on hilly or sloping ground the operator must take extra precautions, in particular the “danger zone” is increased in such conditions as bales are more likely to roll away causing a potential risk.

- **While operating** this machine 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.

- **Before working on** this machine, such as replacing net, clearing forage away from any part of the machine or altering any setting, the operator must ensure that the tractor has definitely stopped moving, hand brake is applied, engine has stopped and ignition key is removed, PTO shaft is removed from PTO stub and electric power supply is disconnected. 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.

- **Warning!** If carrying out inspection during machine operation within the danger zone (highly dangerous and not recommended!), then there should be a trained and fully competent second person operating both the tractor and baler controls. If at any time the second operator loses sight of the inspector, turn off all tractor power immediately! Such inspection should only be carried out if all guards are fully in place, machine on level ground and a safe distance is maintained from any hazards on the machine e.g. pick-up region.

- When conducting **maintenance work** tie long hair behind your head. Do not wear a necktie, necklace, scarf or loose clothing when you work near the machine or moving parts. If these items were to get caught, severe injury could result.

- When conducting **maintenance work** always **support machine properly** where possible always 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.

- When conducting repair work, avoid heating near **pressurised fluid lines** as pressurized lines can be accidentally damaged when heat goes beyond the immediate flame area.

- **Maintenance and repair work** on this 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.

- **Before travelling on public roads** the owner of this machine is obliged by law to ensure that every operator has got a valid driving licence and is familiar with the road traffic regulations relating to the country of use (see section 9).

- **When parking** both wheels of this machine have to be blocked using the wheel chocks and hand brake (if fitted) should be applied according to the road traffic regulations relating to the country of use.

- 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.
5. Specific safety warnings

5.1 Electronic safety warnings

- This machine is equipped with electronic parts and components which comply to the EMC directive 2004/108/CE but still may be influenced by electromagnetic transmissions of other apparatus, such as welding machines, etc.
- Check electric cables regularly for signs of breakage or wear. If in doubt always replace.

5.2 Hydraulic safety warnings

- The maximum pressure in the hydraulic system of this machine should not exceed 210 bar.
- Always ensure system is not under pressure before working on the machine.
- Oil under pressure can penetrate the skin and cause injury. Beware of pipes under accumulator pressure, depressurise lines by unthreading connections extremely slowly.
- Hydraulically actuated devices, such as pick-up and cutting device must be blocked mechanically against movement, before working on the machine.
- If any hoses are removed or replaced ensure they are marked and re-installed to the correct position during re-assembly.
- Check hoses regularly for signs of leakage or wear. 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.

5.3 Noise level

The European regulation 86/188/EEC directs employers and employees to control the noise level at work. The noise level at field work may differ according to the tractor, to the ground, to the crops and other environmental conditions.
In normal conditions the noise level next to the drivers ear of the McHale V660 round baler 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.
5.4 Fire precautions

- Be aware that crops are easily flammable.
- 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 cleaned of oil, grease, crops or any other flammable material at all times.
- Do not continue work with overheated parts, cables or pipes unless you have identified and eliminated the reason for overheating.

5.5 Special safety devices / instructions

- According to the European safety regulations the covers of this machine are designed to be opened only by the aid of a special tool and to be closed without a tool. For unlocking the covers the locks should be turned slightly anti-clockwise with a 13 mm-spanner; for locking the covers push cover towards the chassis until the fasteners lock into place. It is forbidden to operate the machine without covers or with the covers open. The owner of this machine is obliged by law to ensure that all covers are installed on the machine and are in good functioning condition.

- When maintenance or repair work has to be carried out on the open bale chamber the tail gate lever valve must always be in the locked position, before the tail gate can be closed it has to be unlocked again. For further information, please see section 10.13.

- Before replacing the knives of the chopping system make sure that all knives are in the upper position. Always use protective gloves when working on the chopping system.

- Caution should always be taken when feeding in the net roll or making any adjustments to the netter configuration as the netter knife is extremely sharp!
5.6 Safety instruction decal locations

![Safety instruction decals on McHale V660 round baler operators instruction manual](image-url)
5.7 Description of safety warnings and instructions

Danger areas which cannot be protected by any devices are marked by yellow safety decals. Therefore one must ensure that all safety warnings and instructions are understood and followed. If any of the decals are damaged or are missing they are available from your McHale dealer. The relevant part numbers are shown in brackets. **Note:** The most important instructions are shown as pictographs. The accurate meanings are explained as follows:

- The return line must have a free flow return to tank.
  
  (CST00006)

- Danger of rotating parts, foreign objects. Keep clear of machine while working.
  
  (CST00014)

- Keep hands clear of rotating rollers.
  
  (CST00017)

- Keep hands out of crush area.
  
  (CST00019)

- Check wheel nuts daily.
  
  (CST00020)
| Lifting-eye / lift-hook location.  

(CST00032) |
|---|
| Grease daily.  

(CST00060) |
| Do not dismantle. High pressure always.  

(CST00056) |
| Do not stand on the platform or elsewhere on the machine when the machine is moving or working.  

(CST00107) |
| Keep clear of pickup area as long as the engine is running and the PTO shaft is connected to the tractor.  

(CST00108) |
| Read instruction manual before use.  

(CST00110) |
| Avoid fluid escaping under pressure. Escaping fluids can penetrate the skin causing serious injury. If an accident occurs, consult a doctor immediately. To reduce the risk of coming into contact with escaping fluid relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.  

(CST00111) |
<table>
<thead>
<tr>
<th>Image</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td>Knives from the cutting device should only be removed with an appropriate tool and wear protective gloves. (CST00112)</td>
</tr>
<tr>
<td><img src="image2.png" alt="Image" /></td>
<td>Turn off and remove key from tractor, read and understand operators manual before working, or performing maintenance, on the machine. (CST00113)</td>
</tr>
<tr>
<td><img src="image3.png" alt="Image" /></td>
<td>Close protective covers before operating the machine. (CST00114)</td>
</tr>
<tr>
<td><img src="image4.png" alt="Image" /></td>
<td>Hydraulic accumulator is under high pressure. Slowly release hydraulic pressure before carrying out any maintenance. (CST00115)</td>
</tr>
<tr>
<td><img src="image5.png" alt="Image" /></td>
<td>Knife release lever, horizontal position-locked, vertical position-unlocked. (CST00118)</td>
</tr>
<tr>
<td><img src="image6.png" alt="Image" /></td>
<td>Ensure tyre pressure is at 1.38 bar (20 psi) pressure. (CST00119)</td>
</tr>
<tr>
<td><img src="image7.png" alt="Image" /></td>
<td>Keep hands out of crush area between roller &amp; chassis rail. (CST00120)</td>
</tr>
</tbody>
</table>
Maximum hydraulic pressure & maximum PTO speed. This machine must not be connected to hydraulic systems with pressure higher than 210 bar.

*(CST00121)*

**General Warnings!**

*(CST00134)*

Do not step under the raised tailgate or attempt to do any adjustments on the machine while the tailgate is raised before the safety lock is applied. To avoid injury stay clear of the tailgate while it is being raised and lowered. Also ensure that bystanders are outside the “danger zone” before operating the tailgate.

*(CST00140)*

Do not stand in the articulation area while the tractor engine is running. To avoid injury stay clear of the “danger zone” while machine is operating.

*(CST00141)*

Never perform any adjustments or reach into the netter unless the PTO has been disengaged and the tractor has been shut down, with the key removed. It is also recommended that the tension be released from the netter knife to avoid it being tripped accidentally.

*(CST00142)*
Stay clear of rotating PTO shaft. Never use the machine if the PTO guarding is missing or damaged. Entanglement in rotating drive line can cause serious injury or death. It is important to ensure that the rotating guard on the drive line rotates freely. Always stop the engine and ensure the drive line has stopped before making connections, adjustments or cleaning out PTO driven equipment.

(CST00143)

Crush Hazard. Keep hands clear of rotating elements. Do not remove the guard while the engine is running.

(CST00144)

Disconnect the power supply to the control box and turn off the tractor before commencing work on the electrical system or welding on the machine.

(CST00145)

Do not stand in the swashing area of the tailgate while the tractor is running. To avoid injury stay clear of the tailgate while it is being raised and lowered. Also ensure that bystanders are outside the “danger zone” before operating the tailgate.

(CST00146)

Float decal. Indicating that during operation of the baler, the control lever of the spool operating the pick-up reel should be in the ‘float’ position.

(CST00609)
The PTO wide angle joint must never exceed 80 degrees, both when stationary or during operation. Permanent damage may result otherwise.

(CST00658)

Always lock the tailgate in place before working on the open bale chamber.

(CST00675)

Wheel direction.

(CST00711)

Diagram of net path through feeding rollers.

(CST00713)

Decal indicating the settings on the variable pulley to adjust the tension on the net.

(CST00716)

Always use correct specification chain oil for automatic chain lubrication.

(CST00776)
5.8 Description of the serial number plate

The following is a description of the serial plate meanings:

A - Serial number of the machine
B - Year of manufacture of the machine
C - Model Name/Number of the machine
D - Maximum vertical drawbar load (Newton’s)
E - Maximum horizontal drawbar load (Newton’s)
F - Maximum road speed (kilometres per hour)
G - Maximum gross weight at 10 kilometres per hour
H - Net Weight of the machine
I - Maximum axle load at maximum road speed of 40 kilometres per hour
J - Vehicle width: with standard size tyres/ with optional specification tyres
K - Vehicle height in metres
L - Vehicle length in metres

* Width will depend on tyre selection.
5.9 Machine lifting guidelines

**Warning!**

Only use chains or strapping that are rated for a minimum load of two and a half tonnes (2,500 kg) per chain or strap when lifting the machine using the two lifting eye locations on the chassis, shown below.

- The crane or lifting device must be capable of lifting a minimum load of four and a half tonnes (4,500 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.

*Fig. 5.9.1 Lifting Points*
6. Tractor requirements and preparations

6.1 Tractor requirements

The minimum recommended size of tractor for operating the McHale V660 comfortably, depends mainly on the crop condition and the required cut length of the forage. On flat ground McHale recommends a tractor size of approximately 60 kW on hilly ground or difficult conditions, an additional 5 to 10 kW are advisable.

**Note:** 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 manufacturers service instructions. Avoid dirt getting in to the hydraulic couplings.

The following items on the tractor are required for attachment of the McHale V660 behind the tractor:

1. Low/High drawbar hitch* that is suitable for an imposed load of minimum 4000 kg.
2. Two double acting spools [½” - female quick release] one with float position for the pick-up reel.
3. One ½” female quick release for return line. (Must be free flow to tank.)
4. One hydraulic-brake coupling (or two air-brake couplings) If brakes fitted.
5. One 12 V / 7 pin socket for lighting.
6. One 12 V / 20 Amp euro socket or battery power cable*.
7. A 1 ⅜”, 6 spline PTO shaft (set to a speed of 540 rpm).

* Depending on country of use.

6.2 Control box installation

The electronic control box must be located inside the tractor cab in the operator’s field of vision, and within easy reach of the red emergency stop button. It is secured to the glass using the suction pad on the rear. Ensure that the cable to the machine is not under tension and not near sharp edges etc. The electric power supply is obtained from the euro socket in the tractor.

The control box is not waterproof, it must be protected from rain.

See section 8. on Electronic control system.

**Caution:** Do not use any other electric power supply for the electronic system, otherwise damage may occur!
6.3 Attaching to drawbar

The drawbar is to be attached so that the McHale V660 is horizontal to the ground as in section 7.11, “Drawbar adjustment”. Machines are set up for hitching to the tractor drawbar as shown in Fig. 6.3.1 below. Once the tractor is attached to the drawbar attach the PTO shaft. Depending on the country of use a safety chain may also be required. Detach in reverse order of attachment.

Fig. 6.3.1
Drawbar attachment

6.4 Attaching the V660 to the PTO (540 rpm)

Caution: The McHale V660 should be driven with a standard PTO speed of 540 rpm (max. PTO speed = 610 rpm, a PTO speed above 610 rpm is likely to cause damage to machine components). Do not use any faster PTO speed other than the above specified! All mechanical functions are related to the correct PTO speed. Follow the instructions as supplied with the PTO unit for correct assembling of the PTO shaft to the tractor. (See section 7.12.) Ensure PTO cover-guards are prevented from rotating, by securing chain to tractor.

6.5 Lighting system

The 7 pin plug of the lighting system on the machine must be connected to the 7 pin socket on the tractor. Note: Before travelling on a public road the operator must ensure that the complete tractor and machine lighting system is in a fully functioning condition.
6.6 Attaching the hydraulic hosing to the tractor

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

There are five hydraulic hoses that must be connected to the tractor, as follows:

1. One ½” male quick release for door open (max. flow 70 litres per minute).
2. One ½” male quick release for door close (max. flow 70 litres per minute).
3. One ½” male quick release for Pick-up Up (Drop Floor/Knives Up*).
4. One ½” male quick release for Pick-up Down (Drop Floor/Knives Down*).
5. One ½” male quick release for the Tank Return (Must be Free-flow).
6. One hydraulic brake coupling or two air-brake couplings (If brakes fitted).
7. One 12 V / 7 pin lighting socket.
8. One 12 V / 20 Amp euro socket. (Machine looms to control box shown.)

*With either the drop floor or the knife diverter valve activated.

**Fig. 6.6.1 Possible layout of hydraulic hosing and electric looms**

**Warning!** The **McHale V660** must be connected to a free flow tank return at all times during it’s operation, otherwise damage to the machine components may occur.

6.7 Connecting the control box

The control box is to be connected to a 12 V / 20 Amp power supply using the supplied euro lead. 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:** Do not attempt to connect control box to a power supply greater than 12 V as machine component damage will result.
7. Baler requirements and preparation

7.1 Net requirements

In order for the **McHale V660** to produce well-shaped bales of excellent density a top quality net, that is as similar as possible, to the specification recommended below should be used. It is of the utmost importance that the net is stored and used according to the instructions of the net manufacturer. **Note:** For netting silage a minimum of two revolutions of net is recommended, but when material is drier, netting amount should be increased to four or more revolutions. A general rule to follow is to apply the amount of net that will maintain the bale size. The maximum bale size recommended is a 1.68 m diameter bale. In order to achieve the best possible performance, **McHale** recommend the use of a net roll which meets the following specifications:

- Material: High quality, high density polyethylene
- Density: Minimum of 10 g/m² ±10%
- Elongation: 15% ±3%
- Strength (In direction of wrap): 900 N/ 500 mm
- Material Length: 2000 – 4000 m ±200 m
- Material Width (Ideal): 1230 mm, **Note:** 1260mm max.

7.2 Care of the net roll

The net roll should be protected from damage and moisture. Do not remove protective cover until ready for use. Net damage can cause undesired netter performance and affect bale weatherability.

7.3 Care of the net wrapping system

Before operating the baler ensure that the following procedure is followed to ensure improved netter operation:

- Clean off rubber and metal feed rollers and check for any tacky material. **Note:** Never use cleaning agents such as benzene, petrol, turpentine oil or similar cleaning solvents to clean rubber feed roll, otherwise damage may occur!

**McHale** recommend to use any of the following:

- A cloth soaked in dish washing liquid
- Soapy water

**Note:** Once roller cleaning is carried out, dry off and apply talcum powder to the rubber feed roller.
7.4 Loading and operating the netter system

**Warning!** Pay attention to the heavy weight of the net roll! It is recommended that full net rolls should be handled by two persons.

**Warning!** Ensure PTO is disengaged, tractor shut-down and ignition key removed.

The following is the procedure for fitting the first roll or for changing a roll:

1. Slide the new roll of net onto the net storage space on the platform.
   - Note: Ensure that the roll is orientated in the correct direction.

2. Lift the net roll brake bar upwards and roll the roll of net into the net box.

3. With the roll of net positioned in the net box, lower the brake bar down onto the roll of net.
   - Adjust the net roll stops at either end to secure the roll of net central in the net box.
Before threading the net, ensure that the net knife is in the re-set position. The net knife can be re-set using the handle provided on the net unit. Insert the handle into the hole provided on the net knife frame & pull upwards, until the hook sits on the net adjustment handle.

Press the roller tension release lever downwards until it locks in position, which results in the two steel rollers being spread apart from the black net feed rubber roller.

Thread the net as shown. The net should be routed underneath the first steel roller and over the black rubber drive roller. When the net is threaded, pull upwards to release the roller tension lever which will compress the three net rollers together. The roll of net is now threaded and ready for baling.
### 7.4.1 Net layer adjustment setting

In an automatic cycle, the netter starts feeding net, once the set bale diameter has been reached. The bale is then wrapped with the pre-determined net length.

The amount of net applied can be adjusted between 1.1 and 6.0 layers per bale, using the control box. (See section 8.4.)

Once set, the number of net-layers is automatically calculated, regardless of bale diameter or size.

In manual mode, the net is fed, by pushing and holding button 5 until the bale catches the net. When the pre-set amount of net has been applied, the red light beside button 6 will flash. The operator then cuts the net by pushing and holding button 6 until the netter knife trips, otherwise net will continue to feed until button 6 is activated.

It is recommended that a **minimum** of two (2) layers of net are applied to the bale. Dry conditions and very high densities require up to four (4) or more layers to ensure a good bale shape.

The passage of net through the netting unit is monitored; if the net breaks or does not feed, or if the roll of net runs out, then the alarm sounds, the **net error symbol** is displayed in the control box display and the cycle is halted. (See section 8.8.2.)
7.5 Chopper unit knife removal and installation

**Warning!** Incorrectly installed knives can cause irreparable damage to both the knives and the rotor, leading to serious destruction within the machine!!

**Caution!** Use protective gloves for any manual work in this area!

The number of knives installed determines the cut length of the material.

Knife installation/removal should be carried out in the following way:

1. Ensure the knives are in the UP/ON position before beginning.
2. Lower chopper unit floor half way. Press floor diverter (button 7), while using the tractor pick-up spool for one to two seconds approximately.
3. Open the tail gate fully.
4. Using the lever valve A, lock tail gate in position by rotating it 90° to the right horizontal position as shown.
5. Shut down tractor, remove key, apply parking brake and prevent any machine movement by using wheel chocks.
6. The knife lock /unlock lever B, is located on the left hand side of the chopper unit just behind the pick up reel. It must be pulled outwards at first, to disengage from the lock-pin, then turned 90° downwards, to the unlock position, as shown below. Reverse this procedure to return to the ‘locked’ position.
7. Removal of knives/knife blanks is the reverse of the following installation procedure. Pay particular attention to all decal warnings and safety advice.
8. Rotating lever ‘B’ exposes ‘flats’ on the lock-shaft which allows either knives or knife-blanks to be added or removed. Remove old knives with a pair of pliers.

9. A new knife (C) can be installed by inserting into back of slot in drop-floor (D), so it engages with ‘raised’ actuator arm (E). Next rotate knife downwards (F) whilst continuing to hold towards back of slot, until front toothed area looks like it will clear front end of slot by 5 - 10 mm (G), as shown.

10. Now push knife forwards, continuing to maintain this 5 to 10 mm clearance under front of slot. The keyhole-slot on the front end of the knife should now guide itself over the ‘flats’ of the lock-shaft (H).

11. Continue to push the knife forward until fully home, which should leave a gap between the knife and back end of slot of approx. 65 mm (J), with maximum protrusion of approx. 190 mm (K) [assuming knife-actuators are fully up]. The retaining magnets will hold knives in position until knife lock-shaft is closed.
12. After installing, push the top of each knife forward as shown, in direction of arrow (M) to ensure proper engagement within both lock-shaft and actuator-arm. If knife moves, then it is not positioned correctly. Correct position is shown at (N).

13. If knives are removed, for whatever reason, always replace with knife blanks to prevent crop catching in the ‘open’ slots. These are stored in the knife holster.

14. Installation is simpler, in that they only engage with the lock-shaft in front and not with the actuator-arm. The knife-blank is dropped into slot towards front, again maintaining the 5 to 10 mm gap (G), push forward (P), allowing the keyhole-slot to engage with lock-shaft. Then rotate downwards (O) and push forward fully.

15. Always observe the row of knives after installation, they should all be perfectly in line and at the exact same height. If one or more do not line up, then they are not correctly positioned. Typically the lowest and furthest forward are correct.

16. Here the knives are shown fully down/retracted, with lock-shaft returned to the ‘locked’ position (R). Knife tips should protrude 20 to 30 mm Maximum (T).
17. Rotating lever B back up 90° onto lock-pin, locks all knives/blanks securely.

18. The knife blanks are stored in the knife/knife blank holster. See section 7.5.1 below.

**Warning!** Do not forget to turn the levers back into their working position(s), but only after completing all work on the machine as shown.

**Warning!** Always keep the compartment door panels closed while the machine is running, danger of rotating components! Take note of all warning decals and ensure that all safety measures and precautions are implemented, before attempting to carry out any maintenance work.

### 7.5.1 Chopper unit knife storage

If knives from the chopper unit are being removed they can be stored on the drive side of the machine in the knife storage area. Knifes/Blanks are secured in the storage area by tightening clamp-lever shown below.

![Clamp-Lever](image)

**Fig. 7.5.1 Chopper unit knife storage**

### 7.5.2 Knife sharpening

The knives in the chopper unit should be sharpened on the flat side using either a file or a mopping disk. The knife should never become hot while sharpening, otherwise it will lose its' tensile. (See Fig. 7.5.2)

![Sharpen along the flat edge on this side only.](image)

**Warning: Never use a grinding disk**

**Fig. 7.5.2 Knife sharpening**
7.6 Automatic lubrication system

The McHale V660 is equipped with a continuous oiling system, which is responsible for the oiling of all the chain systems. All grease points must be greased as specified in section 7.7, along with the machine maintenance section 12.1.

The oil reservoir tank (A) can hold approximately 3 litres of oil and this is enough oil for approximately 12 working hours, it should be kept between the min. and max. markings at all times. McHale recommend the use of only top quality chain oil and grease, this will prolong the life of the machine components. On the control box an alarm is provided to remind the operator to top up the lubrication oil after a preset number of cycles. This counts down from 300 and gives a reminder at zero. It may be reset sooner if desired, see section 8.2.8 for instructions on how this is done.

**Warning!** Ensure that the tractor engine has been shut down, the key removed and the brakes applied before carrying out the following procedure.

To add oil:

1. Unscrew top cap and add chain oil to the oil reservoir tank (A), up to the max. level mark shown.
2. Replace cap and tighten fully.

**Note:** Oil in oil reservoir tank, should always be clean, strained and free of any impurities during top-up, as this will ensure proper operation and lubrication.
7.7 Greasing

The *McHale V660* is equipped with a manual greasing system.

The majority of the balers greasing points are greased from two centralised blocks, one on either side of the machine. (See Fig. 7.7.1 & 7.7.2)

These serve the bearings on:
(i) the chamber rollers
(ii) the rotor
(iii) the pick-up drive gears

Figures 7.7.3 and 7.7.4 highlight other very important grease nipple locations on the tension arm and the door hinges. Above figures show several additional grease points, like door hooks, which are not served from the central greasing blocks and must also be greased separately. These points should be greased on a daily basis.

The above instructions only cover the main components that must be greased daily (250 bales). Please refer to section 12.1 to see all greasing points and their associated scheduling as part of the machine maintenance program. *McHale* recommend using a Multipurpose, extra high performance grease, this will prolong the life of the machine components.
7.8 Gear box oil

**Warning!** Before attempting to change gear oil ensure that the tractor engine has been switched off, the key removed and the brakes applied.

The PTO shaft should also be removed.
The gearbox is located to the rear of the PTO shaft.

**Note:** After the first 5 hours of use the gear box oil must be completely drained and filled with SAE 90 grade oil.

To drain and add oil to the gear box carry out the following procedure:

1. Remove the drain plug (B), (located on lower front of gearbox) drain oil into a suitable container, this is best carried out while the oil is still warm, i.e. soon after use. Replace drain plug, tighten securely and dispose of waste oil responsibly.

2. Remove the breather plug (A), (located on top of gearbox towards the rear) using a 17 mm spanner. Add 2L of SAE 90 grade oil. After this, replace oil once per season or every 10,000 bales, whichever comes first.

3. Replace breather plug (A) and tighten securely.

**Note:** Do not overfill as this will result in overheating and oil leakage.

7.9 Tyre inflation pressures

**Caution!** The tyres used on the McHale V660 machine are to be inspected weekly for the following pressures:

<table>
<thead>
<tr>
<th>Tyre type</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>500/50 - 22.5</td>
<td>1.38 bar (20 psi)</td>
</tr>
<tr>
<td>460/65 - 20 (Optional specification)</td>
<td>1.38 bar (20 psi)</td>
</tr>
<tr>
<td>560/45 - R22.5 (Optional specification)</td>
<td>1.38 bar (20 psi)</td>
</tr>
<tr>
<td>170/60 - 8 (Pick-up tyre)</td>
<td>2.07 bar (30 psi)</td>
</tr>
</tbody>
</table>
7.10 Drawbar and PTO shaft stand usage

There are three types of drawbar stands available on the V660, a swing down fixed length stand (Low Hitch) type A, a swing down screw type stand (Low Hitch) type B or a fixed screw down type (high hitch) type C, depending on the country of use one will come as standard. The drawbar stands are to be used any time the machine is disconnected from the tractor. [Caution] All stands must be rested on a solid footing, on level ground and also the supplied wheel chocks must be used.

- The following applies to swing stand-fixed, Type A (Low Hitch): [See Fig. 7.10.1]
  Transport Working Position: While using the machine, ensure that the drawbar stand (1) is raised fully with stand pin (3) in alternate hole position and ensure PTO shaft stand (2) is in the lowered horizontal position.
  Storage Position: Ensure that the stand pin (3) is properly placed in the lower slot to prevent the stand from collapse. Then place PTO shaft stand (2) in an upright position in order to support the PTO shaft (4).

- The following applies to swing stand-screw, Type B (Low Hitch): [See Fig. 7.10.2]
  Similar to type ‘A’, except stand-pin (3) is in the upper slot, in the transport [Working] position. It should be wound up and retracted fully as shown,* before removing the handle. The main difference being, that the drawbar height is now fully adjustable and the PTO shaft stand (5) in an integral part of the assembly.

*Fig. 7.10.1 Swing down stand - Fixed. Type A

[Diagram of Swing down stand - Fixed. Type A]

Fig. 7.10.2 Swing down stand - Screw. Type B

[Diagram of Swing down stand - Screw. Type B]
➢ The following applies to the screw down stand-fixed, Type C (high hitch): [See Fig. 7.10.3]

Note that stand type C is the only type supplied with the high drawbar hitch option and is available as an option on the low drawbar hitch machines.

In order to elevate the drawbar, rotate the jack handle (1) in a clockwise direction as shown in the figure below. In order to lower the drawbar, rotate the handle in a counter-clockwise direction.

When the drawbar has been safely connected to the hitch on a high hitch style tractor and the machine-weight taken off the stand [by rotating jack handle (1) in a counter-clockwise direction] the lower part of the stand (2) can be retracted quickly by removing the quick-release pin (3) [having first removing the R-clip (4)] and sliding up the lower part of the stand, fully into position. Align bottom hole and replace pin (3) followed by R-clip (4).

The “PTO chain support” (5) holds the PTO shaft when disconnected from tractor, in the storage position.

Depending on the height of the windrow being baled, the stand may need to be elevated further, in order to avoid catching crop. This is done by rotating jack handle (1) in a counter-clockwise direction until fully retracted.
7.11 Drawbar adjustment

**Warning!** This work should only be carried out by qualified persons or your McHale dealer!

This adjustment should be carried out on a level concrete surface, with the tractor drawbar aligned such that the exact adjustment can be monitored. Ensure that the tractor engine has been shut down, the ignition key removed and the brakes applied. The main machine wheels must be chocked, both sides, with front end of machine [under chopper-unit] supported on axle stands. The drawbar should be adjusted so that the machine is level and horizontal to the ground when in the working position. (See Fig. 7.11.1 below). To adjust, first remove the safety-bolts, then slacken hinge-bolts C but do not remove. Hitch-eye can be adjusted to different height positions by repositioning bolts B in alternating hole positions. It can then be re-adjusted locally by loosening bolts A & D to ensure it is level. Once the desired height is achieved, ensure that bolts A & B are tightened to a torque value of 540 Nm and the 30 mm top drawbar hinge-bolts C tightened to a torque value of 1060 Nm. Tighten bolt D and reposition and tighten safety-bolts.

**Warning!** The main drawbar bolts A & B along with hinge-bolt C must be inspected once every two weeks.

Tractors typically are either low-hitch or high hitch and drawbar on the machine should be set up accordingly. When changing from a low to a high drawbar set-up, the drawbar is inverted and the hitch-eye is adjusted horizontally, in the orientation shown.
Once the height of tractor hitch (T) is measured in mm, then allowing for hitch-eye offset (E) the height (H) to centre of pivot point A can be established (H ≈ T + E).

The closest value of H can be selected from table above to determine the most suitable bolt hole position for B, depending on whether low or high drawbar set-up. Once adjusted, ensure safety bolt is re-installed and all bolts tightened securely.
7.12 PTO shaft adjustment and maintenance

The length of the PTO shaft is suitable for all known tractor conditions. However, before the machine is operated for the first time with a new tractor combination, it must be ensured that there is a minimum sliding clearance of 200 mm left during all angles between the tractor and the machine. In a case where there is not sufficient sliding clearance the shaft length must be adjusted according to the PTO shaft manufacturers recommendations that are either attached to the PTO shaft or included with this manual or both. Maximum 80° angle of movement should never be exceeded, otherwise permanent damage will result. (See Fig. 7.12.2).

The recommended quantities of grease in grams for each grease-point are shown below. (See Fig. 7.12.1). Note: The lower 3 PTO shaft grease points on diagram are to be greased at 8 hour intervals. All other grease points are to be serviced at 60 hour intervals.

![Fig. 7.12.1 PTO Grease points](attachment:fig7121.png)

ATTENTION: PTO wide angle joint must never exceed 80 deg. both during operation and when stationary, otherwise permanent damage will result.

![Fig. 7.12.2 Max PTO angle](attachment:fig7122.png)
7.13 Zeroing the bale fill potentiometer

This is used to set the centre position of the bale shape indicator potentiometer. Normally this is only required with a new machine or when the sensor is replaced. To set the zero position, make sure the chamber is fully closed with no crop in the chamber, then select ‘Bale shape indicator zero’ and press ‘Enter’ (button 2). (See Fig. 7.13.1). Press the √ (button3) to confirm the reset.

Fig. 7.13.1 Zeroing the bale fill
8. Control box overview and features
Software version EP660-021+

8.1 Control box functions

All the buttons on the control box are numbered 1-15 above and their functions are listed below and on the next page. Buttons 1 - 4 are soft-keys and can have multiple functions which are always displayed directly above on the screen. These four buttons are mainly used to navigate through the machine menu and change settings.

<table>
<thead>
<tr>
<th>Manual function</th>
<th>Automatic function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Release density pressure</td>
<td>Release density pressure</td>
</tr>
<tr>
<td>2 No function</td>
<td>No function</td>
</tr>
<tr>
<td>3 No function</td>
<td>No function</td>
</tr>
<tr>
<td>4 Information button. Press to toggle between the displayed information on the right of the screen (Density, Net layers, Diameter, Total and Voltage.)</td>
<td></td>
</tr>
<tr>
<td>Manual function</td>
<td>Automatic function</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>5 Net feed</td>
<td>Press once to start netting bale early. Hold to delay net feeding. Press to feed net after a net error.</td>
</tr>
<tr>
<td>6 Cut net</td>
<td>Cut net after a net error.</td>
</tr>
<tr>
<td>7 Floor diverter</td>
<td>Floor diverter</td>
</tr>
<tr>
<td>8 Knife diverter</td>
<td>Knife diverter</td>
</tr>
<tr>
<td>9 Not used</td>
<td>Not used</td>
</tr>
<tr>
<td>10 Not used</td>
<td>Not used</td>
</tr>
<tr>
<td>11 Not used</td>
<td>Not used</td>
</tr>
<tr>
<td>12 Not used</td>
<td>Not used</td>
</tr>
<tr>
<td>13 Automatic button.</td>
<td>Press to switch between Manual and Auto.</td>
</tr>
<tr>
<td>14 Menu button.</td>
<td>Press once to enter the machine menu. Also used to do a factory reset on the control box by keeping held and switching on the power to the box.</td>
</tr>
<tr>
<td>15 Emergency stop button.</td>
<td>Press to turn off the box. Twist clockwise to turn on.</td>
</tr>
</tbody>
</table>
8.2 Control box operation

8.2.1 Auto cycle

The V660 has two operating modes; Manual or Automatic.
AUTO is selected by pressing the auto button. The selected mode is displayed in the top right corner of the screen. (Auto cannot be selected if the chamber is not closed, or if the net knife is tripped.)

As the bale is being formed, the diameter can be seen to increase on the bar-graph. At a pre-set size a warning beep will sound to say the bale is nearly full (see section 8.5). Once the full bale diameter is reached, the operator is warned by a series of beeps.

In MAN, the operator must complete the net feeding and net cutting functions manually. The net is fed in by pushing and holding button 5 until the bale catches the net. When the preset amount of net has been applied, the red light beside button 6 will flash. The operator then cuts the net by pushing and holding button 6 until the netter knife trips, otherwise net will continuously be applied to the bale.

In AUTO, net is automatically fed into the chamber and automatically cut when the preset number of layers have been applied to the bale. If the net runs out or fails to feed, the net feed warning is displayed and the red light beside button 5 will flash. Replace the net and hold button 5 to restart netting.

If the preset diameter has not been reached, pushing the ‘Net feed’ (button 5) will start the Auto netting cycle.

Pushing and holding the net feed (button 5) during the bale full warning beeps will delay the auto feeding of net giving a chance to feed more crop into the chamber if desired.

Using the tractor spool lever, the chamber door can then be opened to eject the bale and at this point a bale is displayed on screen. (See section 8.8.8) Once the bale has rolled clear and the bale-kicker has returned to it’s normal position, a short beep will sound and the bale on the screen will disappear to indicate when the bale has rolled clear of the chamber.

8.2.2 Unblock floor operation

When a blockage occurs, the PTO should be stopped immediately.
The unblock floor can then be lowered by holding the floor diverter (button 7) and operating the pick-up spool lever in the down direction.

The PTO can then be re-engaged and when the blockage is cleared the floor can be raised again by holding the floor button and operating the pickup spool lever in the up direction. This works the same in MAN or AUTO mode.
(Note: the knives will also be retracted when the floor is lowered and they will be re-engaged when the floor is raised.)
A sensor on the floor indicates when it has dropped from its working position. The warning below (Fig. 8.1) will be shown when the floor is down and the red light beside button 7 will flash.

Fig. 8.1

8.2.3 Knife operation

8.2.3.1 Standard Knives Operation

The knives can be lowered or raised by holding the knife diverter (button 8) and operating the pickup spool lever in the tractor. The knives will be raised until the pressure reaches 50 bar, at which point the solenoid switches off preventing any further pressure increase. This works the same in MAN or AUTO mode.

The knife position is monitored by a sensor which displays an indicator on the main screen if the knives are fully engaged in the chopping position. (See Fig. 8.3 below).

The hydraulic pressure keeping the knives up can be monitored on the second main working screen (See Fig. 8.3). Normal operating pressure, when knives are raised, is limited to 50 bar to protect the knives against foreign objects. Occasionally if the knives have not been activated for a long time, maximum tractor hydraulic pressure may be needed to raise them. To do this, raise knives until the pressure reaches normal operating level and stops increasing, then release the knife button and press again while operating tractor hydraulics. The pressure display will be seen to go to the tractor maximum (usually about 180 bar) and the knives will raise. A warning will flash to indicate that knife pressure is too high for baling (See Fig. 8.2) and the red light beside the knife button will flash. Lower knives, then raise again to reset pressure to normal.

The machine must not be used when the knives are up under full hydraulic pressure as damage may occur if a foreign object is taken into the pick-up.
8.2.3.2 Selectable knives operation

Selectable knives are an optional extra where the chopper unit has two sets of knives which can be independently controlled. The operator can easily activate either set or both sets of knives. On the V660 this is selected by means of a 3-way tap mounted on the machine.

The selected knife set(s) can be lowered or raised by holding the knife diverter (button 8) and operating the pickup spool lever in the tractor. The knives will be raised until the pressure reaches 50 bar, at which point the solenoid switches off preventing any further pressure increase. This works the same in MAN or AUTO mode.

To change the number of chopping knives, lower all knife sets fully, select the desired knives with the tap on the machine, then raise the knives from the control unit.

The knife position is monitored by two sensors, one for each set. There are 2 separate indicators which will appear on the screen when either set of knives are fully engaged in the chopping position. (See Fig. 8.4 below).

8.2.4 Density release

Sometimes the density pressure on the belts may need to be released manually when servicing the machine. This can be done by holding button 1.
8.2.5 Main working screens

The V660 control unit has all vital information displayed on the screen. The main working screen displays the most important information. The second working screen displays some extra information on the right-hand-side which can be accessed by pressing the ‘i’ soft-key (button 4).

8.2.6 Bale shape indicators

These are used to tell the operator which side of the bale needs to be filled with crop when baling narrow swathes. Normally, there will be no arrows displayed, just a centre dot which means the bale shape is even.

When the bale shape starts to become uneven, the arrows will point in the direction that the operator needs to steer the tractor to fill the smaller side of the bale. The more arrows that appear, the more uneven the bale shape is becoming.

A series of beeps accompany the direction arrows so that the operator doesn’t need to watch the screen. A low tone is emitted when the operator needs to steer left and a higher tone for the right. The frequency of the beeps will increase with the number of direction arrows displayed.

The bale shape indicators and beeper can be turned on or off in the machine menu (see section 8.5).

If any arrows are displayed when the chamber is empty and closed, then the rollers may need to be cleaned of any loose material or the sensor zero position may need to be set (see section 8.5).
8.2.7 Net metres

The total amount of net used is displayed in metres on the main screen. The amount of net used on each bale is added to the total and displayed on the screen just below the rotating net symbol.

This counter can be reset in the ‘Machine Setup’ menu (see section 8.5).

![Metres of net used](image)

Fig. 8.6

8.2.8 Lube counter

This is a counter to remind the operator to check the chain oil and grease levels. This counts down from 300 bales and when zero is reached the alarm sounds and a lubrication symbol is displayed on the screen.

When the alarm sounds, ‘RESET’ will appear above button 3 which should be pressed to reset the counter after oil and grease levels are checked. (See Fig. 8.7 below). To reset the alarm early, go into the ‘Bale Count’ menu and press the reset button.

![Check lube warning](image)

Fig. 8.7

8.2.9 Voltage monitor

The control box monitors the supply voltage and displays it on the second working screen. If the voltage falls below a safe operating level, this warning screen is displayed (See Fig. 8.8). The usual causes are a bad battery, defective charging system on the tractor or loose/corroded connections on the power lead.

![Voltage monitor](image)

Fig. 8.8
8.3 Menu structure
8.4 Bale setup

Once in the bale setup menu, the toggle key (button 3) can be used to scroll between each setting. When the arrow is beside the required setting then the + and - soft-keys (buttons 1+2) can be used to increase/decrease the value. Press ‘ESC’ (button 4) to return to the main menu.

Bale profile
The bale profile setting has 5 options; A, B, C, D and E. Each bale profile will retain its own density/net/diameter settings so that the machine can easily be changed to work in different crops without needing to change a lot of settings. By default the “A” setting is for maximum density heavy bales, ranging through to “E”, which is for minimum density light bales. However these profiles can be adjusted to suit individual requirements.

Core diameter
The core diameter can be set from 60-130 cm and the scale is the same as that used for the overall bale diameter in bale profile. This adjusts the maximum size of the centre bale core.

Bale diameter
The bale diameter can be adjusted on the control box from 60-168 cm. The preset diameter setting is displayed on the bottom information block on the main screen. There is also a vertical bar graph which shows progress as the bale is being made. (See “Control box functions” on page 45)

Core density
The core density can be set from 0-200 bar. This sets the density for the core diameter setting (Bale Profile), then the ‘Bale Density’ setting is used for the remainder of the bale formation.
8.5 Machine setup

Once in the Machine setup menu, the first 3 soft-keys (buttons 1 - 3) are used to navigate and adjust all settings. Press ‘ESC’ (button 4) to return to the main menu.

- **Bale density**
  The density can be set from 1-200 bar from the control unit. Normally a maximum of 160 bar is adequate to produce good dense bales. A higher setting may be required in wet crop conditions. The selected value is displayed as shown on the main screen.

- **Net layers**
  The amount of net applied to the bale is set from the control unit. This can be adjusted from 1.1 to 6 layers per bale. The amount of net is automatically adjusted for different bale diameters. The selected amount of layers are displayed as shown on the second working screen which can be seen by pressing the “i” soft-key (button 4).
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter correction</td>
<td>This is used to increase/decrease overall bale size to achieve desired bale diameter. It can be set to +/- 20cm.</td>
</tr>
<tr>
<td>Net delay</td>
<td>This is used to set the time delay between the bale full alarm sounding and the net actually feeding into the chamber. Some operators prefer a longer time delay to ensure adequate warning when baling at higher speeds.</td>
</tr>
<tr>
<td>Net metres</td>
<td>This is used to reset the net metres total. Press ‘RESET’ (button 1), then press the ✓ (button 3) to confirm the reset. (See section 8.2.7.)</td>
</tr>
<tr>
<td>Pre-warning beep</td>
<td>This is a single warning beep to indicate when the bale is nearly full. The setting is a percentage of the selected bale size. Set to 99% if this function is not desired.</td>
</tr>
</tbody>
</table>
| Bale shape indicator         | This is used to turn on/off the bale shape indicators and beeps. (See section 8.2.6.)  
On ✓ = Bale shape indicators are shown on the screen but no beeps are active.  
Off × = No bale shape indicators or beeps are active.  
Beep ⬤ = Bale shape indicators are shown on the screen and the beeps are active. |
| Bale shape indicator zero    | This is used to set the centre position of the bale shape indicator potentiometer.  
Normally this is only required with a new machine or when the sensor is replaced. To set the zero position, make sure the chamber is fully closed with no crop in the chamber, then select ‘Bale shape indicator zero’ and press ‘Enter’ (button 2). Press the ✓ (button 3) to confirm the reset. |
8.6 Bale count

Once in the Bale Count menu, use the toggle soft-key (button 3) to navigate all settings.
Press ‘ESC’ (button 4) to return to the main menu.

8.6.1 Subtotals

Once the menu is entered, the subtotals A-J can be seen with their total displayed to the right.
To reset any of the subtotals, scroll the arrow to it using the toggle key (button 3) and then press ‘RESET’ (button 1). You will then be asked ‘Reset Total X?’ and the (button 3) needs to be pressed to confirm as shown below.

8.6.2 Lube count

The lube count is after bale sub total J and has an oil can symbol. It is an alarm that activates every 300 bales to remind the operator to check oil levels and to grease the machine. The remaining bale count before the alarm sounds is shown to the right of the screen. It can be reset in the same way as the subtotals above or from the main screen once the alarm sounds. (See section 8.2.8.)

8.6.3 Grand total

The grand total cannot be reset and has no letter or symbol displayed.
8.7 Control unit setup

Use the up and down keys (button 1 + 2) to scroll up or down through the menu, then press enter (button 3) to select that option.

8.7.1 Contrast

The screen contrast and brightness can be adjusted from this menu. There is a night and day option so the operator can store two different settings, a bright one for day and slightly darker for night use. Extreme temperatures can affect the display screen contrast.

8.7.2 Clock adjust

The clock time is displayed in the top left corner of the screen and it can be adjusted from this menu. The date is also displayed and adjusted from here.

8.7.3 Volume

The beeper and key tone volumes are both adjustable from this menu.

8.7.4 Technician menu ( )

The technician menu is reserved for McHale engineers only. A pin code needs to be entered to access the menu.
8.8 Control box warning screens

8.8.1 Net knife position
This warning is displayed when entering Auto mode to tell the operator if the net knife is in the cut position. Net cannot be fed if the knife is already tripped.

8.8.2 Net feed error
This error is displayed when the roll of net runs out or if the net fails to feed into the chamber. The red light beside button 5 will also flash. Press net (button 5) to restart netting and the warning will disappear once net starts feeding again.

8.8.3 Cut net
This warning is displayed to tell the operator to press button 6 to cut the net. It is shown when the preset amount of net has been applied during manual netting, or after a problem during automatic netting.

8.8.4 Density pressure too high
This warning is displayed if the density pressure is seen to go above 240 bar. Stop baling immediately to prevent machine damage. This can happen if the free flow return hydraulic line is not connected properly.

8.8.5 Chamber open
This screen is displayed when either the left or right-hand door latch sensor is detected open. AUTO mode cannot be selected when the chamber is open. If the chamber opens inadvertently during an 'Auto' cycle, a warning beeper will sound to alert the operator.
8.8.6 Drop floor sensor
As soon as the drop floor moves away from the working position, this warning will be displayed to alert the operator. The red light beside button 7 will also flash.

8.8.7 Knife pressure too high
This is displayed when the knife pressure is too high for baling (above 60 bar hydraulic pressure). It is normal for this warning to be displayed during knife activation with maximum tractor pressure but it must be lowered again before baling (see section 8.2.3).

8.8.8 Bale not ejected
This screen is always shown as soon as the chamber is opened after netting. As the bale ejects from the chamber and rolls off the kicker, a beep will sound and the bale image will disappear to indicate that the chamber door can be closed.
9. Road traffic safety and operation

9.1 Before travelling on any public roadway

**Warning!** Ensure that all of the following are inspected each time before attempting to go on to a public roadway, always think and practice safety.

- Ensure that the tyres are set to the correct pressure as per safety decals and according to the specifications as outlined in section 14.4.
- Ensure that all doors are securely closed and fastened, ensuring that primary catches are fully engaged, these should be kept clear of all foreign objects to ensure proper and trouble free operation.
- The bale forming chamber should be emptied.
- The machine must be safely cleared of all loose forage, to carry this out, firstly turn off the tractor and fully isolate the machine by disconnecting all of the connections to the tractor unit.
- The PTO shaft must be fixed safely to the tractor PTO stub shaft.
- The lighting system of the machine must be connected to the tractor and must be in a fully functioning condition.
- The electronic control box must be disconnected from the power supply.
- The oil supply must be turned off and protected from accidental activation by disconnecting the hydraulic feed line, support all loose lines in a safe manner.
- The pick-up guide wheels must be removed and secured to the machine.
- Attention must be paid to the maximum travelling speed-limit [40 km/hr] printed on the chassis plate on the left hand side of the machine. Other speed limits that may be printed, on the drawbar plate or axle plate, for example are not relevant.
- Ensure that all the national road traffic regulations relating to the country are fulfilled i.e. the use of safety chains may be mandatory in certain countries.
9.2 Road transportation

- Close and secure all doors and panels.
- Empty the baling chamber.
- Clear the machine of loose forage.
- Lift the pickup reel completely and close lever on hydraulic line (if fitted).
- Take the pick up guide wheels off the machine and securely attach them to the machine for transportation as shown in Fig. 9.2.1.

Fig. 9.2.1 Pick up wheel transport position
10. Baler field operation and baler adjustments

10.1 Break in period

*McHale* recommend a break in period of approximately the first 50 bales or until the paint within the baler chamber has lost its shine. After the initial break in period the tension of all the chains on the baler should be checked and adjusted as required, see section 10.16. Ensure that all grease points are adequately greased to prevent rapid wear of components.

10.2 Swath preparation

An optimum baler performance of the *McHale V660* requires a good swath preparation in advance. **The optimum swath width is 1.5 m.**

*Note:* Swath width is the single most important factor in the preparation for proper bale formation. A swath narrower or wider than 1.5 m will lead to an uneven bale formation, with lesser or greater amounts of material, leading to greater bale deformation, respectively.

In the case where narrower swaths are unavoidable it is recommended that the swath be periodically directed to either side of the pick-up, in turn, over a distance of 30-40 m as the baler is driven over the swath, i.e. fed into the right hand side of the reel for 30-40 m then into the left hand side for 30-40 m. (See Fig. 10.2.1).

Collect the material into one side of the pick-up for 6 to 8 seconds. Then cross over the windrow and collect material for the same duration. Reduce the length of time for heavy windrows and increase for lighter windrows.

Continuous weaving is not recommended as this will result in excessive material being placed towards the centre of the bale. (See Fig. 10.2.2).

Baling of swaths wider than 1.5 m should be avoided, as in this case a greater amount of material will continue to be fed to the outside of the baler. This will result in concave-shaped bales.

![Fig. 10.2.1](image1)

![Fig. 10.2.2](image2)
10.3 Pick-up reel height adjustment

Before working in the field attach the pick up guide wheels and lock them securely in place. Use the appropriate hole in the adjusting bar so that the pickup is at the optimum working height with the pick-up tines being approximately 2 cm above the ground. (See Fig. 10.3.1). **Note:** Working with the pickup tines set too low will leave them susceptible to breakage and rapid wear.

**Note:** When baling with the *McHale V660* ensure that the control lever for the spool operating the pick-up reel height adjustment is in the float position. If the lever is not in the float position then the reel will be fixed in a set position and will be unable to follow the ground contour.

10.4 Crop roller adjustment

The function of the crop roller and fingers is to hold down and spread out the baling material in order to achieve a smooth crop flow into the pick up unit. The crop roller height should be adjusted, by engaging the chain-links in the keyhole slots, so that the stops do not rest on the rubber bumpers as shown. Once this initial height is set, it is then self adjusting depending on crop conditions. (See Fig. 10.4.1). Ensure linchpins are used to secure chain links together.
10.5 Unblocking system

The McHale V660 is equipped with an unblock system. In case of a blockage in the feeding channel, the PTO overload clutch will disengage and a loud clicking noise will be heard. Once this sound is heard, immediately turn off the tractor PTO, then push and hold the drop floor diverter (button 7) on the control box, while using the tractor pick-up spool lever in the down direction, to lower the channel floor. (See Fig. 10.5.1). Then restart the tractor PTO at a slow speed, increasing speed slowly up to 540 rpm and not exceeding 610 rpm. Any lumps of material can now be easily transported into the bale chamber.

After having cleared the blockage, reset the channel floor closed, by pushing the drop floor diverter (button 7) on the control box, while using the tractor pick-up spool lever in the up direction, to raise the channel floor back up into the working position. Baling can then resume as normal. (See section 8.2.2 for more information.)

Warning! Never attempt to go near the pick up reel with the reel still rotating and the tractor running. In the rare case that the reel cannot be unblocked from using the procedure above, then the pickup reel will require manual unblocking, by removing the excess blocked material. To do this safely ensure PTO is disengaged, tractor shut down, key removed and all parts have stopped rotating. Also ensure machinery can't roll by parking machinery on level ground with the brakes applied. Remove excess material carefully. Always wear protective clothing and gloves, beware of sharp edges!

Fig. 10.5.1 Unblock mode, knives retracted & channel floor lowered
10.6 Chopping system

The McHale V660 is equipped with a 15 knife chopping system for fine cutting. If a coarser chop is required, a reduced number of knives can be used by removing knives from the knife floor, (see section 7.5 on knife removal and installation). The knives can be raised or lowered by holding the knife diverter (button 8) and operating the pickup spool lever in the tractor, in the ‘Up’ or ‘Down’ direction. It is recommended to switch the chopping device off when baling very dry material. (See section 8.2.3.)

In order to protect the chopping device against overload and damage, the knives are hydraulically protected. If they become overloaded or if a foreign object passes through the rotor and puts undue pressure on the knives, they are able to momentarily retract from the position they are in, to let the material which is causing the overload to pass into the baler.

10.6.1 Selectable knives

Selectable knives are available as an option on the McHale V660 baler. The operator can select between 0, 7, 8 or 15 knives by turning the tap on the RHS of the chopper unit. The knives must be fully down [retracted], before selecting the desired set of 7, 8 or 15 knives. (See section 8.2.3 for knife operation.)
10.7 Knife position and pressure display

The knife pressure on the McHale V660 is monitored from the control box. (See section 8.2.3)

The knife position & pressure, as shown on display in Fig.10.7.1 is used to indicate the pressure applied to the knife operating rams.

![Fig. 10.7.1 Knife position & pressure display](image1)

When the knives are being switched on, the pressure will increase to and stop at the normal working pressure of 35-60 bar which is displayed on the screen. The knife sensor symbol should also appear on the screen to indicate that the knives are fully raised into the chopping position. (On machines with the selectable knife option, a separate indicator is displayed for each sets of knives.)

⚠️ **Warning!** Do not bale if the knife pressure is too high as machine damage will occur. The warning in Fig. 10.7.2 will always be shown when the knife pressure is above working pressure. Lower the knives, then raise again to reset to the normal working pressure.

![Fig. 10.7.2 Knife pressure too high](image2)
10.8 Net wrap system

In an automatic cycle the control box emits a single beep when the bale reaches 90% (adjustable) of the set diameter. Further to this when the bale diameter reaches 95% of the diameter the moving roller under the netter unit is triggered and the roller moves to it’s inward or netting position. The box will then emit a series of beeps when the bale has reached it’s predetermined diameter, this alerts the operator that netting is about to start. Note: The operator must stop the forward movement of the tractor at once!

Next a continuous beep informs the operator that the netting has started. After the preset number of net layers are applied to the bale, the net is cut. The tailgate can then be opened to eject the bale from the bale chamber, this will also reset the netter knife and the moving roller. Once the bale is ejected the tailgate can then be closed and once the tailgate is fully closed a single beep will inform the operator that the door locks are engaged and baling can resume. Please refer to sections 7.1 through to 7.4 and section 8, for netter requirements, settings and adjustments.

10.9 Net tensioning system

The tension on the net is achieved by means of a variable pulley. The net can be tensioned from 0% to 7% stretch, depending on the quality of net used and the percentage dry matter of the material being baled. The machines are pre-set at 2% stretch. McHale recommend using a lower percentage stretch when baling dry matter material like hay and straw and a higher percentage stretch for material like grass. These percentages will vary depending on bale density and type of crop being baled. The following steps show how to adjust the variable pulley.

Warning! Never adjust the net tension while the baler PTO shaft is engaged and the tractor is running. Shut down tractor, remove key, apply parking brake and prevent any machine movement by using wheel chocks.

The variable pulley is the inner one located closest to the net unit side.

Using a 19 mm spanner loosen the belt tension pulley wheel on the variable pulley and slide the tension pulley towards the tractor.

Remove the belt from the pulley.

Fig. 10.9.1 Net tension adjustment
The variable pulley is in two halves, with one side threaded into the other. The pulley side is secured in place using (2) M8 grub screws fastened onto the flat sides of the inner pulley.

Using a 4 mm Allen-key, loosen back the grub screws 6 turns.

With the grub screws loosened, the pulley can be threaded inwards or outwards depending on the net tension setting required.

**Fig. 10.9.2 Variable pulley adjustment**

By referencing to the diagram, the desired net tension can be achieved by measuring the distance ‘x’ as indicated in the diagram.

With the required tension setting achieved, tighten the grub screws.

**Warning!** Ensure that the grubs screws are tightened onto the flat surfaces on the inner pulley and not on the threads.

**Fig. 10.9.3 Net tension settings**

With the grub screws tightened, fit the belt to the pulley wheel and tighten back the tension pulley until there is sufficient tension on the belt.

The machine is now ready to bale at the new net tension setting.

**Caution:** Always exercise care when removing and fitting belts onto pulley wheels.

**Note:** The variable pulley V-belt needs to be replaced every year or after 10,000 bales.

The belt tension needs to be checked weekly or after every 1,000 bales.

**Fig. 10.9.4 Net tension adjustment**
10.10 Net brake adjustment

The net brake is designed to prevent net run-on and is applied immediately the net-knife trips. If problems exist with net run-on, or if net is being drawn into the chamber while baling, then it is likely that the brake needs adjusting.

**Warning!** Before attempting to carry out brake adjustment, ensure that the tractor engine has been switched off, the key removed and the brakes applied.

**Warning!** Always wear protective clothing and gloves, beware of sharp edges! Caution must always be taken when making adjustments in this area as the netter knife is extremely sharp!

After every 1500 to 2000 bales, a quick check should be carried out as follows:-
Firstly tension must be removed from the inner belt, as shown at Fig. 10.9.1 on page 67.

A. **Net-knife reset:** The brake should be off in this position. Disc moves freely.
With the net-knife in the re-set position as shown, it should be possible to rotate the brake disc freely, without the brake causing any noticeable drag.

B. **Net-knife tripped:** The brake should be on in this position. Disc is locked.
With the net-knife in the tripped position as shown, it should not be possible to rotate the brake disc, without exerting a lot of force.

If the above conditions are not met, then adjust using the following procedure:-

Insert a flat blade screwdriver in the screw-slot and use a 10 mm spanner to loosen off the M6 nut, as shown. Then using the screwdriver turn the screw clockwise to tighten (apply the brake sooner) and anti-clockwise to loosen (back the brake off). Adjust the brake using only a ¼ turn at a time, as it is quite sensitive.

The brake should be set so that it is as close to the disc as possible without causing any drag. Tighten the M6 nut, holding the screwdriver in screw-slot to stop it turning.

After performing an adjustment, carry out above checks at A and B to ensure brake is fully off, at step A and fully on, at step B. If not repeat adjustment C until conditions at
A and B are satisfied. A small movement of the brake arm should apply the brake fully. Finally re-tension inner belt, as shown at Fig. 10.9.4 on page 68.

10.11 Bale density gauge

The bale density gauge, shown in Fig. 10.11.1, is used to indicate the pressure applied to the belt tension rams (on the small side). When the tailgate is closed, and no material in the baling chamber, the pressure shown on the gauge is known as “starting pressure”. This pressure will then increase due to the oil in the cylinders being forced through the density valve as material begins to fill up the baling chamber. **Note:** Pressure should never go above 210 bar, if so consult your *McHale* dealer.

![Fig. 10.11.1 Chamber pressure zones](image)

10.12 Setting the bale density

The bale density gauge is divided up into increments of 20 bar per increment and has a yellow zone, green zone and a red zone as a quick reference during machine operation. When baling drier materials such as straw or hay *McHale* recommend setting the bale density pressure between 70 and 110 bar pressure. When baling wetter materials such as grass for silage a pressure of between 110 and 160 bar is recommended.

Bale density is set from the control box (see section 8.4).

**Caution:** The bale density pressure should never be adjusted above 200 bar pressure, if 200 bar is exceeded, damage to the machine components may result.

The bale density can be controlled from the control box. The density can be set from 1-200 bar. Normally a maximum of 160 bar is adequate to produce good dense bales. A higher setting may be required in wet crop conditions. The selected density setting is displayed on the main screen, as shown.
The density setting can be changed by accessing the Machine Menu and going into the Bale Setup. Once the density is selected, the setting can be changed using the + or - soft-keys (buttons 1+2).

### 10.13 Tail gate safety lock

The tail gate lock should be used at all times when the operator wishes to enter the chamber for example in order to change the cutter knives. The lock (A) is located on the left hand side of the platform at the front of the machine. See Fig. 10.13.1 for safety decal and location of the door lock valve. The locks work by way of a hydraulic on/off valve, while locked the valve is in the “off” (horizontal) position and the hydraulic rams will remain locked open, securing the door in a fixed position.

**Warning!** The operator must be aware of all related warnings, safety decals and dangers before attempting to carry out any work or maintenance from within the baling chamber. Please refer to and follow carefully, section 7.5 for instructions on how to enter the baling chamber.

![Fig. 10.13.1 Tailgate lock and CST00675, “door lock” safety decal](image)

### 10.14 Tension arm lock

The tension arm lock is provided so that the hydraulic and spring pressure can be released from the belts when clearing a blockage within the machine or carrying out specific maintenance operations. (See following decal CST00689)
Operate the tension arm lock, using the following procedure.

1. Move the lock lever ‘B’ from the normal working position to the maintenance position, this will cause the stop to move into the bale chamber. (See Fig. 10.14.1)

2. Next the tailgate of the machine should be opened fully so that the tension arm passes the stop.

3. In order to release the pressure from the belts the tailgate must now be closed approximately half way so that the tension arm rests on the stop inside the bale chamber, allowing the belts to hang loose.

4. Close the tailgate lock ‘A’ immediately. (See section 10.13)

   **Caution:** Ensure the tailgate safety lock is engaged before carrying out any work inside the chamber or under the tailgate. (See section 10.13.)

5. Release hydraulic pressure.
   (See Fig. 10.14.2)

   Release the hydraulic pressure from the tension arm by pressing the density release (button 1) on the control box until the pressure on the clock falls to zero before carrying out any work inside the chamber or under the tailgate.

   The hydraulic and spring pressure is now released allowing the operator to clear any blockage inside the chamber or carry out specific maintenance operations.
To release the tension arm lock, once work has been completed inside the chamber, the lock lever ‘B’ should be returned to the working position, before opening the tailgate fully to release the stop and then closing the chamber again. (See Fig. 10.14.3) The belts are now re-tensioned and the machine can resume as normal.

Fig. 10.14.3 Tension arm working position

10.15 Adjusting pick-up float springs

The spring retainer collars which are used to adjust the pick-up float springs are located on either side underneath the chopper unit. (See Fig. 10.15.1). To adjust follow the procedure below:

1. Using the tractor spool handle hydraulically raise the pickup, in order to release float spring pressure.
2. Ensure that the tractor engine has been shut down, the key removed and the brakes applied, before carrying out the following procedure.
3. The method of adjustment can be either Type A or Type B, which are shown below.
   a) **Type A:** Loosen the collar by slacking off the bolts (2 arrows below), then tap the collar in the direction (R) if increased float is required, or in direction (F) if less float is required. Remember to fully tighten the bolts on the collar when adjustment is complete.
   b) **Type B:** Loosen the collar by moving the circlip to another groove (see below). The ram body on type B has a series of grooves allowing the circlip and collar to be moved at 10 mm intervals of adjustment. Tap the collar in the direction (R) if increased float is required, or in direction (F) if less float is required. Ensure circlip is positioned fully in the nearest groove to complete adjustment.
4. Lower the pick-up reel. Both left-hand and right-hand “float spring” rams should be adjusted in exactly the same way so that the load is balanced and equal.

**Note:** This adjustment should enable the pickup to drop completely while in the lowered position. If not, re-adjust by lowering the spring tension, i.e. move the collar in direction (F).

**Note:** If operating at heights other than the fully lowered position, then additional spring force will be required to obtain adequate float, i.e. move the collar in direction (R).
Warning! When baling with the McHale V660 ensure that the control lever for the spool operating the pick-up reel height adjustment is in the float position. If the lever is not in the float position then the reel will be fixed in a set position and unable to follow the ground contour.

10.16 Chain adjustments

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

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

All roller chain adjustments will require two 24 mm spanners for adjustment, unless otherwise stated. The following chains will require an inspection for sagging after the first 500 bales and must be inspected once per 1000 bales after this.

10.16.1 Main drive chain adjustment:

Adjust turn buckle (A) until the gap between the coils of the spring is 2-3 mm. As the chain wears the gap (D) will need to be reduced. If there is no more adjustment available in the turn buckle (A) the end of spring (B) can be moved to location (C) on the chain tensioner bracket. Always inspect chain tension after adjustment.
10.16.2 Pick-up reel tine chain adjustment
To adjust the reel chain, use a 17 mm spanner and socket.
1. Loosen (A) and turn tine sprocket (D) anti-clockwise as shown below.
2. Apply upward pressure (along slot B) to nylon chain slide (C), while continuing to hold sprocket (D) in position.
3. Tighten (A) and ensure that sagging is kept to a minimum.

10.16.3 Reel drive chain adjustment
To adjust the reel drive chain, the use of both a 17 mm and 19 mm spanner and socket are required.
1. Using 17 mm tools loosen (A) anti-clockwise by approx. 1 turn.
2. Using a 19 mm spanner loosen nut (B).
3. Tighten setscrew (C) until there is little or no sagging of the chain and retighten bolt (A).
4.Retighten lock nut (B).
10.16.4 Chopper unit duplex chain adjustment

To adjust the duplex chain, use two 24 mm spanners

1. Hold the lower nut and loosen the upper nut.
2. To tighten—screw down the lower nut in the T direction.
3. When the chain is at the required tension, screw down the upper nut.
4. Lock the two nuts together to secure in place.
10.16.5 Cleaning roller drive chain adjustment

To adjust the chain, use a 17 mm spanner and a 17 mm socket and ratchet.

1. Remove the bolt “B” from the locking plate “C”.
2. Using the socket, loosen the bolt on the back of the tensioner “A”. This bolt is accessed through a hole in the chamber wall.
3. To tighten the chain rotate the body of the tensioner in an anti-clockwise direction.
4. Tighten the bolt on the back of the tensioner “A” when the desired tension is reached and refit the bolt “B” to the locking plate “C”.

*Note: when leaving the factory this chain is fitted with a half link. After the machine has been worked the chain will stretch and it may be necessary to remove this link.

10.17 Adjusting belt alignment

Assuming crop is fed evenly into the bale-chamber, generating consistent good profile bales, the belts should run smoothly and remain in-line. All machines are checked during production, to ensure the belts are properly aligned and tracking correctly. However once the machine has been bedded in (50 to 150 bales) and periodically thereafter, if the belts are touching off the side-walls or each other, then adjustment may be necessary.
This check should be made with the tailgate opened approximately 30° (600 - 900 mm) to ensure belts are clear of other influencing factors, then close the tailgate lock ‘A’ immediately, (See section 10.13).

**Warning!** Ensure PTO is disengaged, tractor shut-down, ignition key removed and tailgate chamber lock closed.

Before carrying out the following procedure, make sure that the bale chamber is empty and that all rollers and belts are free of any loose debris or crop.

The bottom roller on the tailgate has adjusters on each end to alter tracking.

1. Using a 19mm open end spanner, back off locknuts “B & C” as shown below.
2. Adjustment should only be necessary on one end of roller. (i.e. either left or right hand side)
3. By adjusting locknut “B or C” the roller centre can be moved either rearwards (R) or forwards (F).
4. Moving the roller-end forwards will encourage the belts away from the side being adjusted and moving the roller-end rearwards will encourage the belts towards that side.
5. Once adjusted, tighten the remaining locknut and with the danger-zone clear, run machine to see if belts are tracking evenly. If not repeat steps 1 through 4 (ensuring tractor is shut down, PTO disengaged and ignition key removed) until tracking is aligned.

When adjustment is complete, open the tailgate lock ‘A’ (See section 10.13) then close the tailgate and baling can resume as normal.
11. Accessories and Optional Equipment

11.1 Accessory and optional equipment available

Certain accessories and optional equipment may or may not be available in all countries, depending on varying circumstances. The following key symbols, are to aid in what equipment is sold as standard, optional and not available on the McHale V660. They are only correct at time of print and may vary.

Key: Standard Equipment = ●
Optional Equipment = ○

11.2 Wheel chocks ●

Wheel chocks are provided to secure the baler wheels anytime the baler is to be detached from the tractor, or if the machine is to be stored or parked up. They are located on both the LHS and RHS of the back panels on the tailgate of the machine.

11.3 Drawbar hitch options

- Low drawbar hitch ●
  Depending on the country of use this drawbar type is standard but the high drawbar hitch is available as an option. See section 11.5 for available stands.

- High drawbar hitch ○
  Depending on the country of use this drawbar type is standard but the low drawbar hitch is available as an option.

11.4 Tyre options

- Tyre type A ●
  BKT 500/50 - 22.5 (Part No: CWH00058)

- Tyre type B ○
  Vredestein 460/65 - 20 [Flo +] (Part No: CWH00083)

- Tyre type C ○
  Vredestein 560/45 - R22.5 [Flo Pro] (Part No: CWH00077)

  Standard Equipment = ●  Optional Equipment = ○
11.5 Stand options

- **Stand type A**
  Stand type A is a static swing-down stand [fixed] and is suitable for use on the low drawbar hitch only!

  *Fig. 11.5.1 Swing-stand type A*  
  *(Part No: ADB00068)*

- **Stand type B**
  Stand type B is a hand operated swing-down stand [adjustable-screw] and is suitable for raising or lowering the machine for tractors that have static drawbar hitches. This stand type is available on the low drawbar hitch only.

  *Fig. 11.5.2 Swing-down screw-stand type B*  
  *(Part No: CTP00294)*

- **Stand type C**
  Stand type C is a hand operated fixed stand [adjustable-screw] that comes as standard on the high drawbar hitch option. This is raised and lowered by means of a crank-handle.

  *Fig. 11.5.3 Fixed high screw-stand type C*
11.6 Brake options

- **Hydraulic brakes**
  This system utilises one hose for connection to the tractors hydraulic brake coupling. This is the most common brake system option.

- **Air brakes**
  This system utilises two air brake couplings and the use of which, may be mandatory in certain countries. Always obey local road regulations!

![Fig. 11.6.1 Braked axle](image1)

11.7 Heavy duty PTO shaft

- The heavier duty PTO shaft has a longer greasing interval (60 hrs) and heavy duty profile tubing.

![Fig. 11.7.1 Heavy duty PTO](image2)

Standard Equipment = ● Optional Equipment = ○
11.8 Selectable knives

Selectable knives
This system gives the operator the option of using 0, 7, 8 or 15 knives.

Fig. 11.8.1 Selectable knife chopper unit

11.9 Crop roller

The crop roller aids the crop transfer from the pick-up reel in to the rotor.

Fig. 11.9.1 Crop Roller

Standard Equipment = ● Optional Equipment = ○
12. Machine Maintenance

To maintain the McHale V660 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.

**Caution:** 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, etc.

### 12.1 Maintenance intervals

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

1. **First 5 working hours:**
   - Check all nuts and bolts for tightness and tighten if necessary.
   - Check and correct, if necessary, the air pressure in the tyres.
   - Drain and change gear box oil. Please refer to section 7.8.
   - Carry out adjustment of chopper unit duplex chain, please refer to section 10.16.4. Inspect all other chains.

2. **Every day (250 bales):** (See section 7.7.)
   - Check wheel nuts.
   - Check all guards and safety devices.
   - Check road traffic equipment.
   - Check for any oil leaks or damaged pipes.
   - Grease 3x heavy duty grease-points on PTO shaft. (See section 7.12.)
   - Fill chain lubrication container.
   - Grease tension arm and rocker arm pivot points.
   - Grease door hinge points.
   - Grease pick-up bearings.
   - Grease all roller bearings from central grease blocks.
   - Check all chain adjustments, and adjust as necessary.

3. **Every week:**
   - Check for correct air pressure in the tyres.
   - Grease 5x standard duty grease-points on PTO shaft. (See section 7.12.)

4. **Every month:**
   - Grease pick-up cam clutch.
   - Check sufficient oil level in the gear box.

5. **Every year:**
   - Clean and lubricate all moving parts of the net tying unit.
   - Drain and change gear box oil. Please refer to section 7.8.
At the end of the baling season the machine should be washed and cleaned. Any damaged paintwork should be touched up. Any maintenance or repairs should be carried out at this stage. The electronic control box is not waterproof so it must always be stored in dry environment. All exposed hydraulic cylinder rods should be greased. The pick-up and the cutting device area as well as the bale chamber should be cleaned and lubricated, see section 13.

**Warning!** 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 as stated in this manual.

McHale recommend that nobody ever be in the danger zone at any time during machine operation. 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 the machine), in case an emergency stop action is required.
12.2 Tightening torque values

It is important that the correct torques for fasteners and fittings are adhered to. Below are tables of recommended torques. These are to be used unless specific torques are otherwise specified. These values are for general use only. Check tightness of all fasteners periodically.

**McHale Torque Specifications**

<table>
<thead>
<tr>
<th>Nuts and bolts</th>
<th>Black, Phosphated or Galvanized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade marking</td>
<td>8.8</td>
</tr>
<tr>
<td></td>
<td>10.9</td>
</tr>
<tr>
<td></td>
<td>12.9</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td><strong>Metric standard thread</strong></td>
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<tr>
<td>M4</td>
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<tr>
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<td>M6</td>
<td>23</td>
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<td>M8</td>
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<td>Cap screws</td>
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<tr>
<td>M24</td>
<td>122</td>
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<td>Hex. nuts</td>
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<td>M16 X 1.5</td>
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<tr>
<td>M20 X 1.5</td>
<td>290</td>
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<td>M22 X 1.5</td>
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<tr>
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<td>415</td>
</tr>
<tr>
<td>M27 X 2.5</td>
<td>415</td>
</tr>
<tr>
<td>M30 X 2.5</td>
<td>585</td>
</tr>
<tr>
<td>NOTE:</td>
<td>For cadmium or copper plated bolts and nuts a torque value must be used that is 25% lower than the value stated above.</td>
</tr>
</tbody>
</table>
13. Storage

13.1 End of season

- Carefully clean all machine sections, inside and out. Dirt and foreign objects are likely to draw moisture and cause rusting of steel components. McHale recommend that the machine be blown down with an air line, as opposed to a pressure washer, due to the dangers involved with pressure washing and to protect the overall paint work on the machine. If, despite our advice, a pressure washer is used then take extreme caution and operate from ground level only. Do not point pressurized water at or near electrical components, pivots points, valves or bearings. Never climb onto any part of the machine, while pressure washing, due to the fact that all metal surfaces become extremely wet and slippery and always ensure that the tractor has been shut down, with the ignition key removed.
- Remove control box from tractor and store in a dry, safe environment.
- Remove net roll and store as per manufacturers instructions. Grease net knife to prevent rusting, use extreme caution when carrying out this operation, ensure to wear protective gloves and clothing!
- Lubricate all pivot points, apply a thin layer of grease to all adjustment bolt threads and exposed ram rods.
- Check all oil and grease lines for damage and repair them if required.
- Any components from which paint has become worn should be touched up or coated with grease to prevent rusting.
- Remove all dirt from all chains and blow dry using compressed air.
- Fill chain oil reservoir with chain oil and run PTO at approx 200 rpm for 10 to 15 minutes, to ensure that all chains have a heavy coating of oil applied. Pump grease into all areas to ensure all bearings and joints are well lubricated.
- Remove the knives from the chopping unit to prevent them from sticking and store them in the spare knife holder.

13.2 Start of season preparation

- Fully review this operators manual.
- Check and fill gear box oil level if necessary, see section 7.8.
- Lubricate all pivot points.
- Tighten all bolts, nuts and setscrews, refer to section 12.2 for tightening torque values.
- Check air pressure of all tyres, refer to section 14.4.
- Connect control box and inspect for correct operation of all functions, see section 8.
- Inspect and modify, if necessary, all machine adjustments as per section 10.
- Check net wrapping adjustments and inspect net knife for sharpness, ensure to wear protective clothing whenever working in this area! See section 7.3 for care of net wrapping device, follow instructions and carry out correct procedure.
- Remove the grease from the net cutting knife.
14. Technical specifications

14.1 General dimensions/specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport length</td>
<td>4.80 meters</td>
</tr>
<tr>
<td>Transport width</td>
<td>2.55 / 2.58 meters *</td>
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<tr>
<td>Transport height</td>
<td>2.96 meters</td>
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<tr>
<td>Transport weight</td>
<td>4,080 kgs</td>
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<tr>
<td>Tyre dimensions</td>
<td>Optional</td>
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<tr>
<td>Tyre pressure</td>
<td>1.38 bar/20 psi</td>
</tr>
<tr>
<td>Tyre dimensions (Pick-up reel)</td>
<td>170/60 – 8</td>
</tr>
<tr>
<td>Tyre pressure (Pick-up reel)</td>
<td>2.07 bar/30 psi</td>
</tr>
<tr>
<td>Maximum road speed</td>
<td>40 km/h (25 mph)</td>
</tr>
</tbody>
</table>

* May depend on tyre selection

14.2 Tractor attachment

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawbar</td>
<td>Low drawbar</td>
</tr>
<tr>
<td></td>
<td>High drawbar**</td>
</tr>
<tr>
<td>PTO Speed</td>
<td>540 rpm</td>
</tr>
<tr>
<td>Lighting</td>
<td>12 V / 7 pin socket</td>
</tr>
<tr>
<td>Electrics</td>
<td>12 V / 20 Amp euro socket</td>
</tr>
<tr>
<td>Hydraulic system</td>
<td>Open-centre, closed-centre or load-sensing</td>
</tr>
<tr>
<td>Min. pressure</td>
<td>180 bar (2610 psi)</td>
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</table>

14.3 Machine specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bale chamber diameter</td>
<td>0.8 - 1.68 m (32” - 66”)</td>
</tr>
<tr>
<td>Bale chamber width</td>
<td>1.23 m (49”)</td>
</tr>
<tr>
<td>Pick-up width</td>
<td>2.00 m (78”)</td>
</tr>
<tr>
<td>Net tying</td>
<td>net width Max. 1.26 m (49.5”)</td>
</tr>
<tr>
<td></td>
<td>net length 2000 m / Max 4000 m</td>
</tr>
</tbody>
</table>

14.4 Tyre specifications

<table>
<thead>
<tr>
<th>Tyre type</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>500/50 - 22.5</td>
<td>1.38 bar (20 psi)</td>
</tr>
<tr>
<td>460/65 - 20</td>
<td>1.38 bar (20 psi)</td>
</tr>
<tr>
<td>560/45 - R22.5</td>
<td>1.38 bar (20 psi)</td>
</tr>
<tr>
<td>170/60 - 8 (Pick-up tyre)</td>
<td>2.07 bar (30 psi)</td>
</tr>
</tbody>
</table>

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

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

We hereby certify that the machinery stipulated below complies with all the relevant provisions of the EC Machinery Directive and the National Laws and Regulations adopting this Directive. Modifications to the machine, without prior approval from the undersigned, will render this declaration null and void.

Machine description and function: Variable chamber round baler for making various sizes of round bales of agricultural fodder.

Model: V6 Serial Number: 80

Name of Manufacturer: McHale Hungária Kft.
Address: 5000 Szolnok, Tőszegi út 47, Hungary.

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

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

Harmonized standards applied:
- EN ISO 12100: Safety of machinery - Basic concepts, general principles for design
- Part 1: Basic terminology, methodology
- Part 2: Technical principles and specifications
- EN ISO 4254 Part 1: Agricultural Machinery - Safety and general requirements
- EN 704: Agricultural Machinery - Pick-up balers - Safety

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

Signed: Csaba Sulyok
Date: ................................... Place: Szolnok, Hungary
Name: Csaba Sulyok
Position: Quality Manager
14.6 Change of ownership pre-checks

Shown below is a copy of the PDI (pre-delivery inspection) form that is filled out on the commissioning of every new machine. The same check list must be completed and any areas requiring attention addressed before the re-sale as a used machine can occur. Pay particular attention to all safety related areas. Take time to familiarise the new owner with machine operation and all safety features.

**PRE-DELIVERY INSPECTION (PDI)**

<table>
<thead>
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<th>Dealer:.........................................................................</th>
<th>Model: F5 &amp; V6 balers</th>
</tr>
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<td>Serial No:-----------------</td>
</tr>
<tr>
<td>..............................................................................</td>
<td>Date delivered:-----------------</td>
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<td>Date inspected:-----------------</td>
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<td>Tel:-----------------</td>
</tr>
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ENSURE THAT THE TRACTOR IS OF THE CORRECT SPECIFICATION FOR THIS MACHINE. REFER TO THE OPERATOR INSTRUCTION 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.

2. Ensure machine is re-assembled correctly. (Refer to all assembly instructions supplied)

3. Ensure that the wheels are correctly fitted (i.e. valve to the outside). Torque wheel nuts correctly.

4. Check for correct tyre type, tread and pressure. (Tyre inflation pressure is 1.65 bar (24 psi) or 2.07 bar (30 psi))

5. Hitch machine to tractor, then connect PTO shaft. Adjust PTO length if required.

6. When hitched to tractor check that the machine is level with the ground. Adjust drawbar if necessary. Attach 7-pin plug for lighting system.

7. Connect hydraulic hosing to tractor and ensure proper hydraulic setup. Note: Ensure free-flow return to tank is fitted where required.

8. Ensure control-unit power supply is 12 V direct from battery otherwise the machine may malfunction.

9. Ensure that the control-unit is on the correct program to suit the machine specification.

10. Check both Manual and Auto functions on the control box. Run machine through automatic cycle on the control unit.

11. Check for smooth operation of the pick-up reel when machine is run at 540 rpm.

12. Check that all electrics and lights function correctly.

13. Ensure netter operation and netter-knife are operating correctly.

14. The operator must be fully aware of all hazards, controls (electric & hydraulic), all functions & safety devices of both the machine and the tractor.

15. Ensure that the owner/operator reads the operator instruction manual and understands fully all safety & operating aspects of the machine, as described.

16. Instruct operator on machine maintenance i.e. check chain tensions, adjustments, tyre pressure and wheel nuts, also areas to be greased daily and oiler/greaser functions.

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

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

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

A signed copy of this form is to be retained by both the dealer and the customer.
15. Limited Warranty

McHale Limited Warranty

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

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

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

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

2. 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.
3. The importer will be responsible for the following costs:
   - All warranty labour charges.

4. The limited Warranty is dependent on the strict observance of the following conditions:
   - 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 McHale when requested.
   - The warranty claim is submitted using the McHale online claims system.
   - The warranty claim must be submitted by the original retailing McHale dealer only.
   - The decision of the Company in all cases is final.
   - Damaged parts should be held by the dealer until credit has been given, or a returns request has been issued.
   - Parts must be returned to McHale with the McHale claim number written clearly on each individual part. These parts must be free from dirt and oil. If a part is returned in an unfit state, the claim will be refused.
   - If damaged parts have been returned to the company and warranty is refused, the dealer is allowed a period of one month from the date of receiving our notification to request the return of the damaged parts to the dealer site.

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