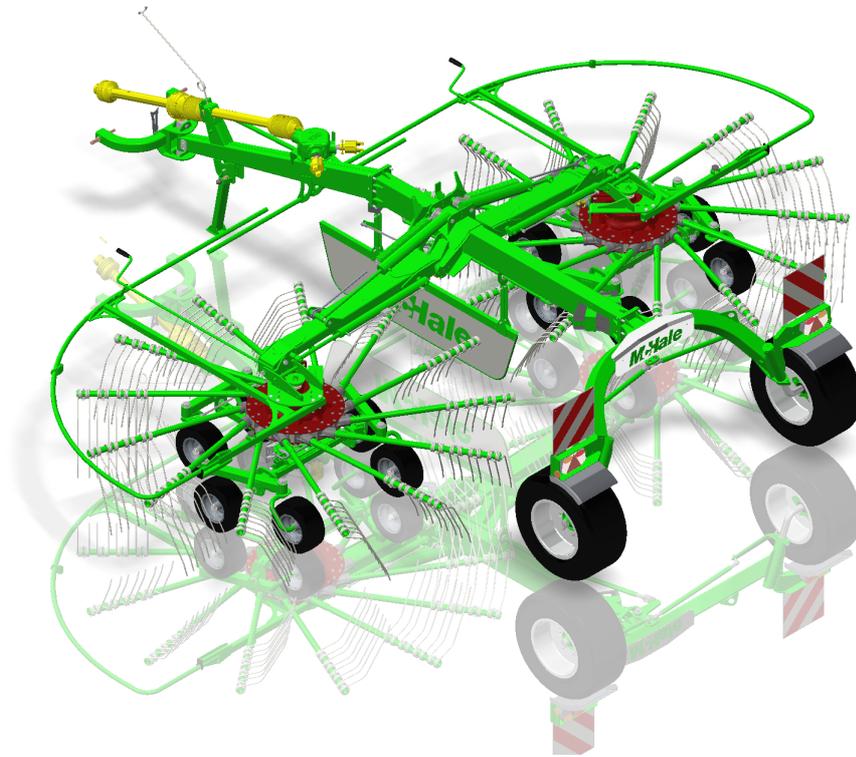


McHale R62-72 & R68-78



R62-72 & R68-78 Twin-Rotor Rake Operator Instruction Manual Issue 3

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

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

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McHale R62-72 & R68-78 Twin-Rotor Rake

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

Warranty/Guarantee

Attention End User!

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

It is important to quote the machine serial number when ordering spare parts or
requesting technical assistance. Space is provided below to record machine details.
(See 'Description of the serial number plate')

Serial number:	
Year of manufacture:	
Date of delivery:	

If you require further copies of this instruction manual,
please quote part number: CLT00965

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

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

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

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1

Introduction

The **McHale R62-72 & R68-78** Twin-Rotor Rake is a completely new product. The design has been developed based on years of extensive research and development in the field of mowers and balers. Given proper care and attention, the machine will provide years of reliable and dependable performance.

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

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

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

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

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



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2

Product information

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

2.1 Designated use of the machine

The machine is exclusively designed for normal use in agricultural applications. The machine has been designed to gather grass and other forage crops into suitable swaths for agricultural harvesting. This designation includes the movement of the machine, between fields by track or road, incidental to the machine's main use. The field or pasture being raked should be even and smooth and free of stones. The manufacturer will not be held responsible for any loss or damage resulting from machine applications other than those specified above. Any other use the machine may be put to is entirely at the owner/operator's risk.

The designated use of the machine includes that:

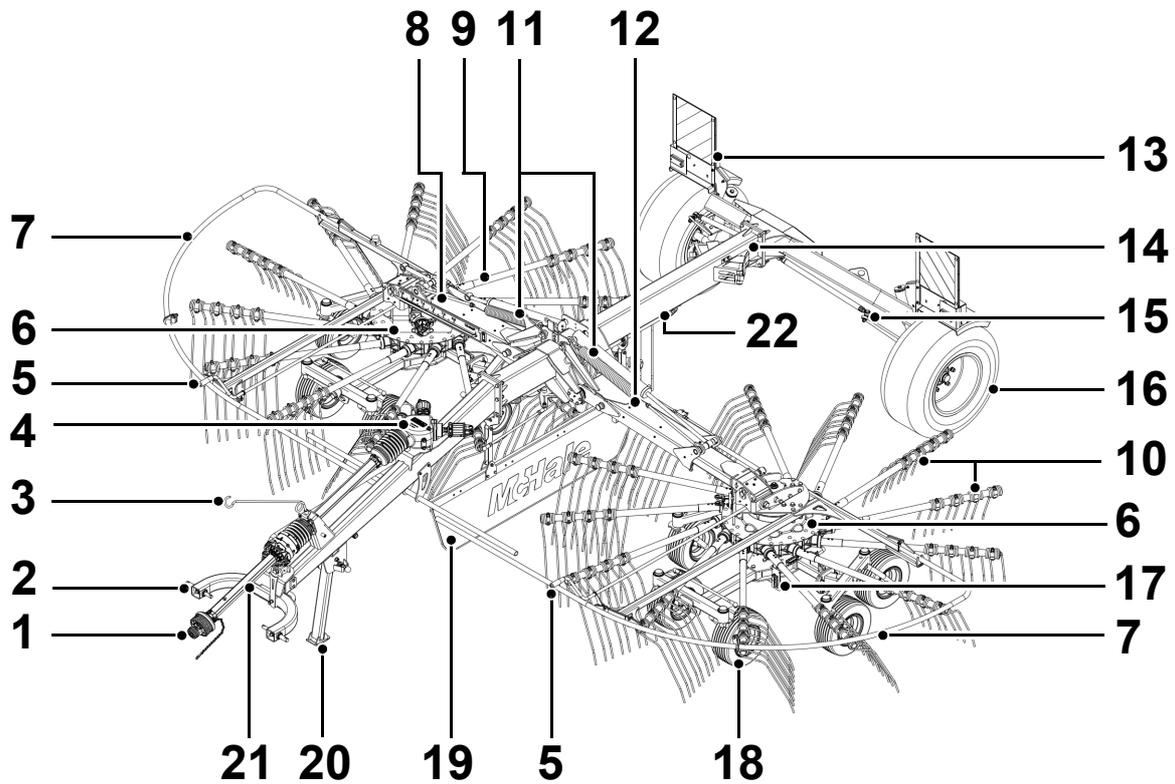
- The operating, maintenance and repair instructions given by the manufacturer will be strictly fulfilled.
- Exclusively persons who are familiar with it and instructed about the risks are entitled to operate, maintain and/or repair the machine.
- The relevant health and safety requirements that may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



WARNING: Loss of machine validity

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

2.2 Front view



No.	Machine function	No.	Machine function
1	PTO shaft (wide angle)	12	Rotor arm
2	Swivel headstock	13	Rear lights & marker boards
3	Hose carrier	14	Wheel chock
4	PTO Y-drive gearbox	15	Steering linkage
5	Tine height adjuster	16	Chassis wheel (steered)
6	Rotor unit	17	Tine height indicator
7	Guard rail	18	Bogie wheel (rotor)
8	Width indicator	19	Centre curtain
9	Tine arm	20	Drawbar stand
10	Double tines	21	PTO shaft stand
11	Suspension springs	22	Steering adjuster link

2.3 General dimensions & specifications

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

Model	R62-72	R68-78
Transport length	6.1 m (240")	6.1 m (240")
Transport width	2.85 m (112")	2.85 m (112")
Transport height*	3.65 m (144")*	3.91 m (154")*
Transport weight	1,900 kg (4,189 lbs)	2,100 kg (4,630 lbs)
Axle weight	1,075 kg (2,370 lbs)	1,188 kg (2,619 lbs)
Maximum road speed**	40 km/h (25 mph)**	

*This can be reduced by 0.5 m with 3 upper tine arms removed (from each rotor) and stored in the tine arm holder

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

2.4 Tractor attachment

Model	R62-72	R68-78
Tractor capacity	45 kW (61 HP)	55 kW (75 HP)
Attachment	CAT 2 lower linkage (SAE 6 spline PTO shaft)	
PTO speed	540 rpm	
Lighting	12 V / 7-pin socket	
Hydraulic systems	Double-acting hydraulic supply & single-acting hydraulic supply with float	
Minimum pressure	180 bar (2,610 psi)	
Minimum flow rate	20 l/min (4.54 gal/min) @ 180 bar (2,610 psi)	

2.5 Machine specifications

Model	R62-72	R68-78
Rotor diameter	2.9 m (114")	3.2 m (126")
Working width	6.2 - 7.2 m (244" - 284")	6.8 - 7.8 m (268" - 307")
Swath width	0.8 - 1.6 m (31" - 63")	0.9 - 1.8 m (35" - 71")
Number of tine arms	11	13
Number of tines per arm	4	
Chassis tyres (380/55-17)	2	
Bogie tyres (170/60-8)	8	12

2.6 Tyre specifications

Details	Type	Field Pressure	Road Pressure	Part No.
380/55-17 133 A8 (Vredestein)	Flotation+	1.5 bar	2.4 bar	CWH00268
170/60-8 71 A8 (Vredestein)	Bogie	1.1 bar	N/A	CWH00037

2.7 Optional equipment*

Spare bogie wheel	Mounting bracket and spare wheel for rotor bogies
-------------------	---

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

3

General safety

3.1 Be aware of all safety information

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

Warning, caution, note & environment messages:

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



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



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



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



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

3.2 Follow all safety instructions



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

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

3.3 Store all items carefully



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

3.4 Personal protective equipment (PPE)



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

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

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

3.5 In case of emergencies



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

3.6 Stay clear of rotating elements

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

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

3.7 Trained operator criteria

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

3.8 Operating the machine



WARNING: Never clear a blockage while the machine is in operation!

Never attempt to clear a block while the machine is in operation. You could be pulled in by the rotating tines, which could be extremely hazardous!

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

- Never attempt to clear a blockage while the machine is running.
- Disengage the PTO, apply the hand brake, shut the tractor engine off and remove the key from the ignition.



WARNING: Stand well clear of the machine while it is in operation!

Stand well clear of the machine and tractor when the machine is operating. Objects such as loose tines, stones and other debris may be discharged from the machine.

3.9 In the event of a fire



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

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1. Switch off the PTO.
2. Move the tractor and machine away from the flammable material.
3. Disengage the PTO, turn off the tractor and remove the key from the ignition.
4. Remove all hosing and electrical looms from the machine, assuming it is safe to do so.
5. With all connections removed, disengage the machine from the tractor.
6. Drive the tractor away from the machine.
7. Using a suitable fire extinguisher, put out all the fires or call the fire brigade.



WARNING: Fire prevention

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

3.10 General safety warnings

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

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

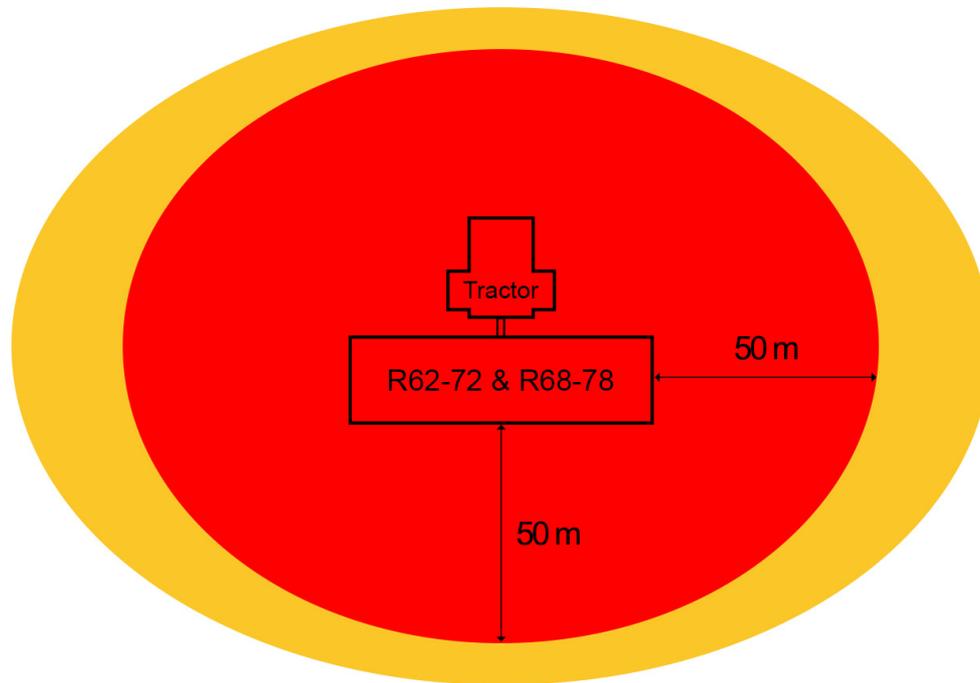
Only competent persons who have read and fully understood this manual are qualified to operate this machine. (*See 'Trained operator criteria'*). The owner of this machine is obliged, by law, to ensure that every operator understands all of the functions, controls, working processes and safety warnings,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

Safety devices

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

Danger Zone

- The 'Danger Zone' is the area all around the machine and tractor of 50 m radius.



NOTE: 'Danger Zone' can vary in size

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

- It is the operator's responsibility to ensure that there is no person in the 'Danger Zone' while operating the machine, especially during start up.

Before repair or reassembly

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

Before operation

- Never operate farm machinery while under the influence of drugs or alcohol. The physiological effects of drugs and alcohol impair performance and can lead to operators taking risks or putting others at risk. This includes over-the-counter cold/flu and allergy medications or prescription drugs that are not recommended to be taken whilst driving a car or operating machinery.
- The operator must ensure that the manufacturer's instructions for attaching and detaching the machine are followed. This includes the 2-point linkage, the hydraulic lines and in particular the lighting system.
- The operator must ensure that all covers are closed and all safety devices are in operating mode.

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- The operator must ensure that there is no person in the 'Danger Zone'.
- Always be familiar with the health and safety requirements that may be in force in the country of use.

During operation

- While operating this machine on hilly, rough or sloping ground the operator must take extra precautions. The 'Danger Zone' is increased in such conditions. Always travel at a speed suitable for the ground conditions.
- Precaution must be taken when travelling over sloping or rough ground due to the risk of overturning. Always travel at a speed suitable for the ground conditions.
- The operator must ensure that there is a minimum of 4 m clearance between the machine and any obstacle above, in particular electrical high voltage lines.
- Particular care must be taken, if the machine is left idle for any extended period, to ensure that all sensors and safety features are working correctly.



WARNING: Do not carry people or animals on the machine

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

Before travelling on public roads

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

Performing maintenance

- Maintenance and repair work on the machine should always be carried out in accordance with this manual.
- Maintenance and repair work exceeding the content of this manual should only be carried out by qualified persons or your **McHale** dealer.

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

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

During inspection

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

Guidance for safety of children on farms

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

Danger of lightning strike

- If there is a risk of lightning in the area, stop all work.
- Ensure that the rotor arms are lowered to the working position.
- Do not leave the tractor cab or start work until the risk of lightning has passed.
- If there is a risk of lightning when travelling, find a safe place to pull over and stop the tractor. If there is sufficient space to safely lower the rotor arms, do so.
- Do not leave the tractor cab until the risk of lightning has passed.

4

Specific safety warnings

4.1 Hydraulic safety warnings

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

4.2 Noise level

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

4.3 Fire precautions

- Be aware that crops are easily inflammable.
- Do not smoke or make use of any open fire next to the machine.
- A functioning fire extinguisher should always be available on the tractor.
- The machine is to be kept clear of oil, grease, crops, string, plastic or any other flammable material at all times.
- Do not continue to work with overheated parts, cables or pipes, unless you have identified and eliminated the reason for overheating.
- Equipment being refuelled should have its engine turned off before refuelling. Personnel should be instructed on how to properly refuel equipment: do periodic maintenance checks on the tank, pump, hose and nozzle; and abide by safety rules, such as not smoking when around the refuelling area.

4.4 Special safety devices/instructions

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



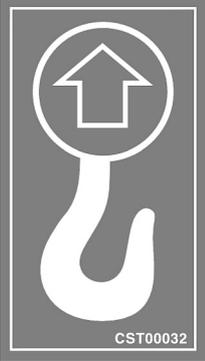
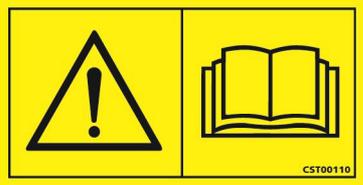
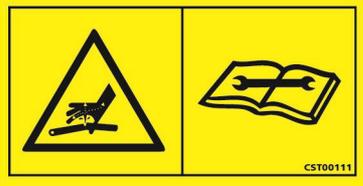
WARNING: The machine must be completely shut down before carrying out maintenance!

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

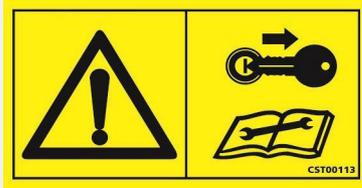
4.6 Safety warnings & instructions explained

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

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

	<p>Keep hands out of crush area (CST00019)</p>
	<p>Lifting hook location (CST00032)</p>
	<p>Grease daily (CST00060)</p>
	<p>Read instruction manual before use (CST00110)</p>
	<p>Beware of high-pressure hoses, even when the machine is switched off. Also, read and understand manual before working on any part of the hydraulic system. (CST00111)</p>

McHale R62-72 & R68-78 Twin-Rotor Rake



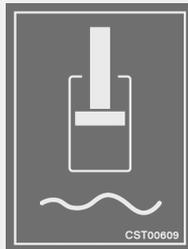
Turn off and remove key from tractor.
Read and understand the manual before working on or performing maintenance on the machine.
(CST00113)



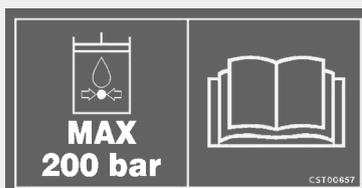
Keep hands out of the crush area between the roller and chassis rail
(CST00120)



Stay clear of the 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 driveline rotates freely. Always stop the engine and ensure that driveline has stopped before making connections, adjustments or cleaning out PTO driven equipment.
(CST00143)



Float decal.
Indicates that the control lever of the spool operating the machine, should be in the float position.
(CST00609)



This machine must not be connected to hydraulic systems with pressure higher than 200 bar
(CST00657)



Close protective covers before operating the machine
(CST00817)

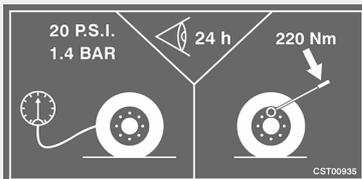
McHale R62-72 & R68-78 Twin-Rotor Rake

 <p>CST00817_2</p>	<p>Danger of projectiles. Keep clear of the 'Danger Zone'. Minimum of 50 m radius. (CST00817)</p>
 <p>CST00817_3</p>	<p>Ensure all of the components of the machine have stopped rotating completely before carrying out any maintenance (CST00817)</p>
 <p>CST00901</p>	<p>Tie down points (CST00901)</p>
 <p>CST00906</p>	<p>Overhead hazard (CST00906)</p>
 <p>CST00923</p>	<p>Jacking points (triangle) (CST00923)</p>

McHale R62-72 & R68-78 Twin-Rotor Rake



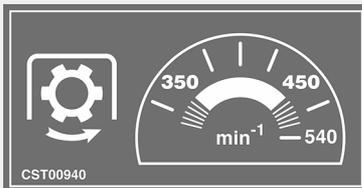
Be careful of overhead power lines
(CST00934)



Check tyre pressure and wheel nuts
(CST00935)

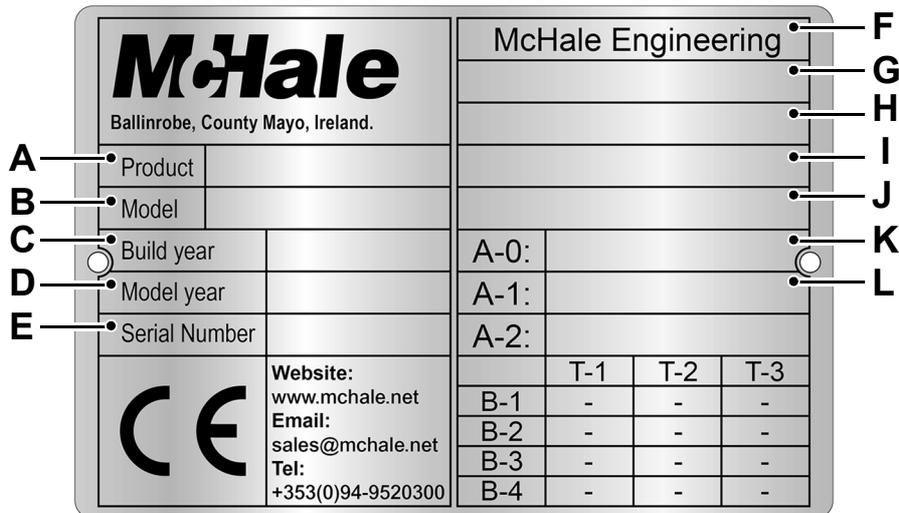


No entry when in the working position
(CST00939)



PTO rotation and speed
(CST00940)

4.7 Description of the serial number plate



The following is a description of the serial plate content:

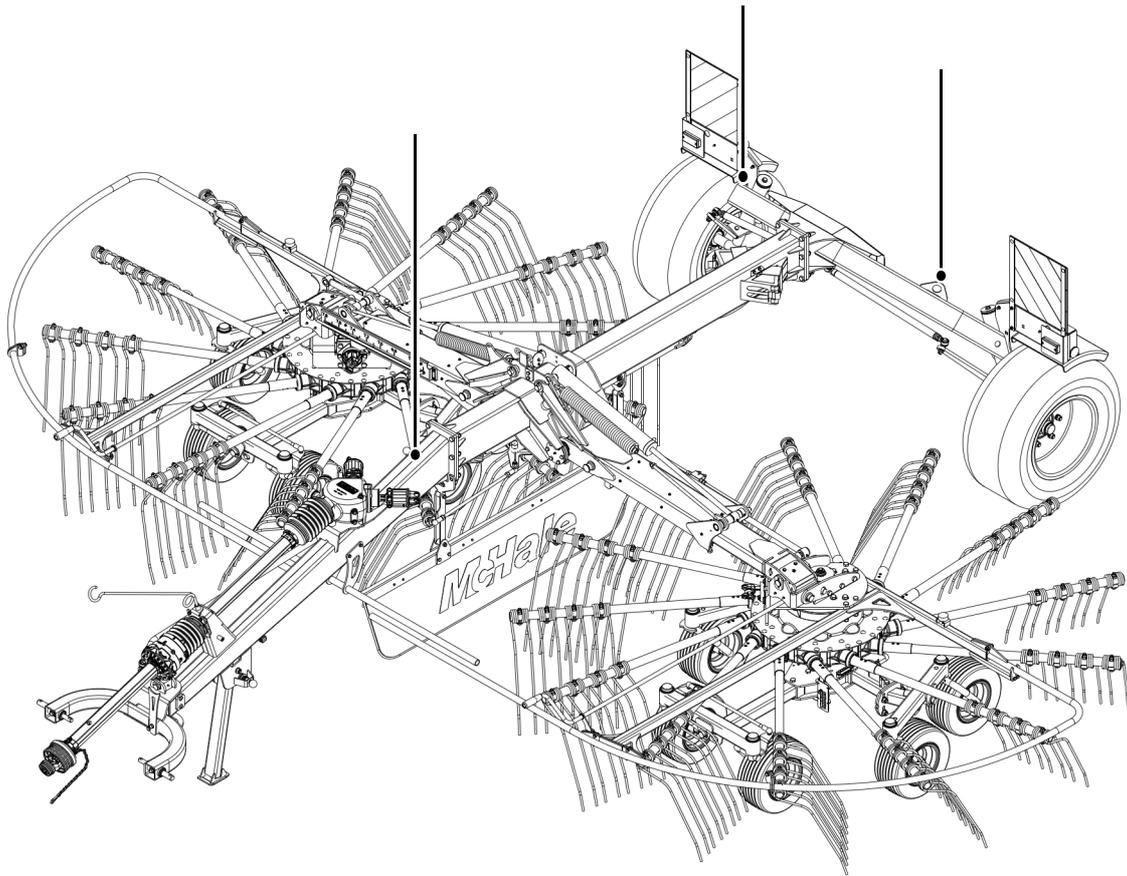
- A. Product description
- B. Model name/number of the machine
- C. Year of manufacture of the machine
- D. Model year of the machine
- E. Serial number of the machine
- F. Name of the manufacturer
- G. Vehicle category
- H. Machine type approval number
- I. Vehicle identification number (VIN)
- J. Technically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

4.8 Machine lifting guidelines

WARNING: Machine lifting

- Only use chains or strapping that are rated for a minimum load of 1.0 tonne (1,000 kg) per chain or strap when using the three lift eye locations on the chassis, shown below.
- The crane or lifting device must be capable of lifting a minimum load of 3.5 tonnes (3,500 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.

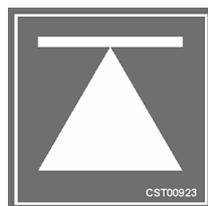
McHale R62-72 & R68-78 Twin-Rotor Rake



Machine lifting points

4.9 Jacking guidelines

Ensure the machine is on flat solid ground and attached to a tractor. Lower the rotor arms to the working position. Apply the tractor hand brake, switch off the tractor and remove the key, disconnect the hydraulics and PTO. Use wheel chocks on the opposite wheel to secure against unexpected movement. Suitable well maintained equipment shall be used to raise the machine. Never go under the machine while it is raised off the ground. The jacking points are at the rear of the machine. Only approach the machine with the jack from the rear, to ensure that there is adequate working room. Ensure the jack makes solid contact with the plate below the jacking point decal, before raising the machine off the ground.



WARNING: Do not rely solely on a hydraulic jack!

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

5

Tractor requirements & preparation

5.1 Tractor requirements

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

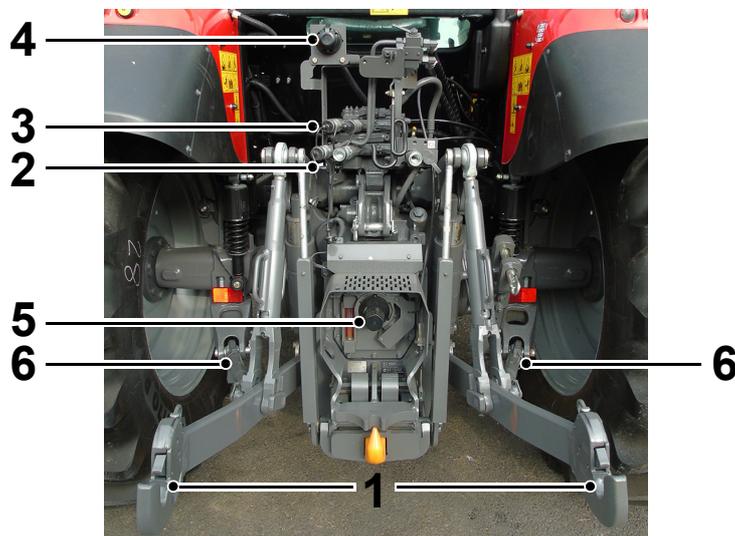


NOTE: Use good quality oil

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

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

1. CAT 2 linkage
2. Double-acting hydraulic function (minimum 20 l/min @ 180 bar)
3. Single-acting hydraulic supply with float function
4. 12 V / 7-pin socket for lighting
5. 1 3/8", 6-spline PTO shaft (set to a speed of 540 rpm)
6. Lower link stabilisers
7. Suitable location to attach safety chain. The safety chain must be attached in such a way that if the coupling breaks, the hitch or drawbar cannot make contact with the ground.

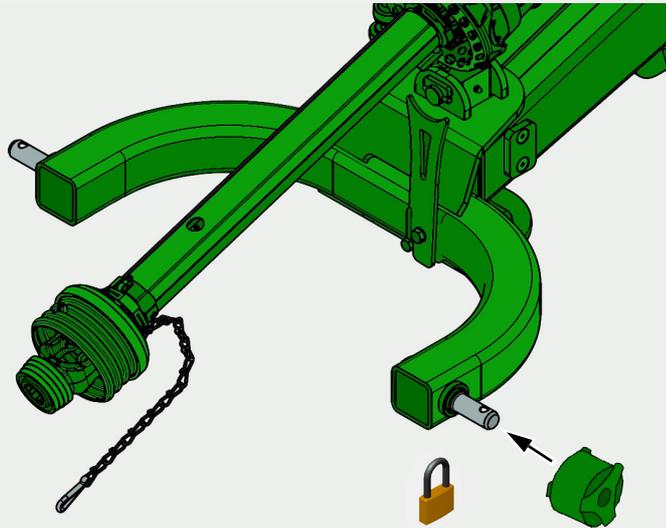


5.2 Preventing unauthorised use

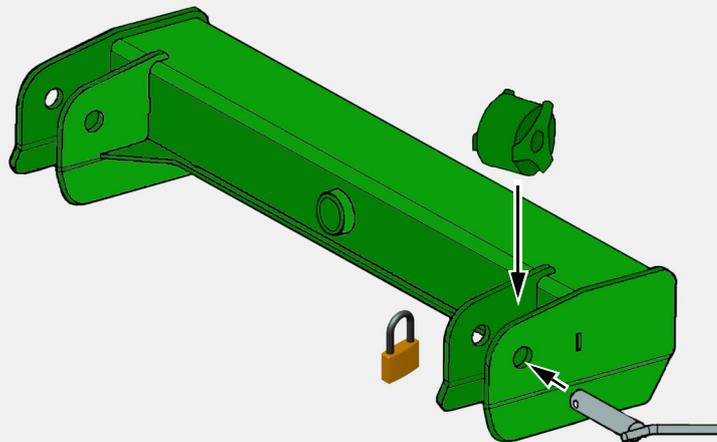
To prevent unauthorised use, **McHale** recommend using the padlock and the locking device provided. Both items are stored in the tool box on the machine and should be fitted to the drawbar coupling when the machine is not in use.

Linkage attachments (Cat. 2 and Cat. 3)

- Place lock out device on headstock pin
- Secure with padlock through the linch pin hole
- Linch pin can also be secured with the padlock to prevent loss
- Once the padlock is locked, the machine should be secure



- Place lock out device in between clevis
- Thread pin through and secure with padlock in the linch pin hole
- Linch pin can also be secured with the padlock to prevent loss
- Once the padlock is locked, the machine should be secure



5.3 Attaching to lower linkage

Ensure both lower link arms are adjusted equally in height. If you are using tractor quick couplers, secure the lower link balls onto the CAT 2 headstock, using linch pins. Line up the tractor with the machine and reverse slowly until the lower link arms are aligned under the link-arm pins on the machine CAT 2 headstock. Then, raise the lower link arms until they are latched securely on the quick couplers. If quick couplers are not being used, secure the lower link arms directly to the headstock pins, using linch pins. The lower link stabilisers will have to be loosened to make above connections and then tightened to ensure there is no lateral movement. Attach the safety chain to the tractor. Then, connect the hydraulic hose (with tap) to a single acting hydraulic supply with float function. Connect the other two lift-ram hoses to a double-acting hydraulic function. The PTO shaft may have to be altered the first time it is fitted to a specific tractor. First, fit the PTO shaft to the machine and then check if the PTO can be connected to tractor stub. If not, then the PTO shaft is too long and must be altered. (See 'Adjusting the PTO shaft to the tractor')



WARNING: Measure distance between PTO stub shafts first

Never connect a PTO shaft on a new machine/tractor combination without first measuring the shortest distance between PTO stub shafts, otherwise severe damage can occur.

Once the machine is attached to the tractor with all connections secured, the lower link arms should be adjusted and set such that the main central frame (and curtain) is horizontal and level. The stand can then be moved from the storage position to the transport position by retracting the spring loaded pin and rotating it up against the underside of the drawbar until the pin re-engages. Always ensure the pin is positively engaged in the stand, in either position. A swivelling headstock provides steering to the back wheels, allowing the machine to automatically track the movements of the tractor.

When the machine is being removed from the tractor, first lower the leg stand and secure it in the storage position. Lower the lower link arms until the leg stand rests on the ground.

After all hydraulic pressure is released, disconnect all hydraulic lines from the tractor. Disconnect the safety chain, lift-latch pull cords, lighting socket and any other connections between the machine and the tractor. Finally disconnect the PTO shaft followed by the lower link arms and drive away from the machine.

5.4 Attaching the machine to a 540 rpm PTO

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 'PTO shaft adjustment & maintenance'). Ensure PTO cover guards are prevented from rotating, by securing the chain to the tractor.



CAUTION: Ensure safety chains are attached to machine and tractor

Ensure the safety chains on the PTO cover sleeves are attached to both machine and tractor to prevent them from spinning.



CAUTION: Standard PTO of 350 - 450 rpm, maximum = 450 rpm

The 540 rpm PTO speed should be selected on the tractor. The machine should be driven at a PTO speed between 350 and 450 rpm. A PTO speed above 450 rpm is likely to cause damage to machine components. Do not use any faster PTO speed other than specified above!



WARNING: Measure distance between PTO stub shafts first

Never connect a PTO shaft on a new machine/tractor combination without first measuring the shortest distance between PTO stub shafts, otherwise severe damage can occur.

5.5 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: Check lighting system before travelling on the road

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

5.6 Attaching hydraulic hosing to the tractor



WARNING: Turn off tractor and remove key before connecting hydraulic hosing

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

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

1. Double-acting hydraulic function (minimum 20 l/min @ 180 bar)
2. Single-acting hydraulic supply with float function

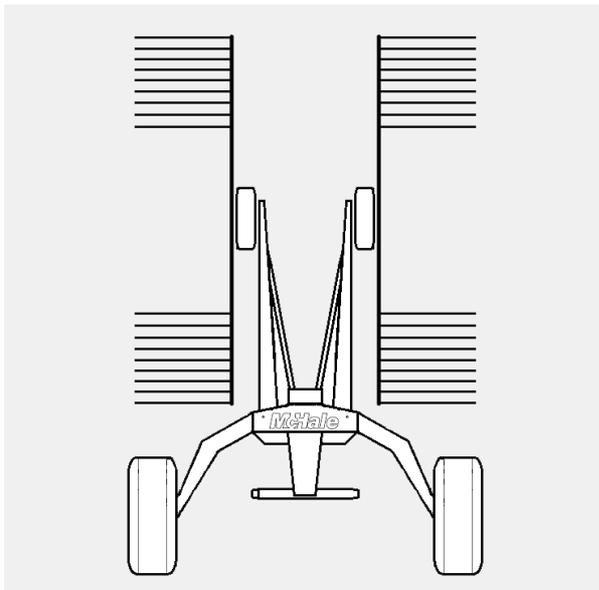
6

Machine requirements & preparation

6.1 Raising the rotor arms (transport position)

The following sequence must be followed to go from the working position into the transport position. (Ensure the PTO is turned off)

1. Unlatch the guard rails on both sides and fold into the transport position.
2. Ensure the hydraulic tap is in the open position on the single-acting hydraulic supply line!
3. Raise the rotor arms just enough so that the rotor wheels are off the ground.
4. Retract the rotor arm extension sliders to the narrowest work setting (6.2 for the R62-72 model and 6.8 for the R68-78 model) or until they hit the stops.
5. Pull the lift-latch cord while continuing to raise the rotor arms fully into a vertical position. The rotor arms should only be raised/lowered in one smooth continuous movement. Stop/starting in between can lead to machine instability and risk of overturning.
6. Retract the rotor arm extension sliders to the transport setting which locks each rotor arm and lowers the overall height of the machine.
7. Close the hydraulic tap on the single-acting hydraulic supply line!
8. The machine is now in the transport position.

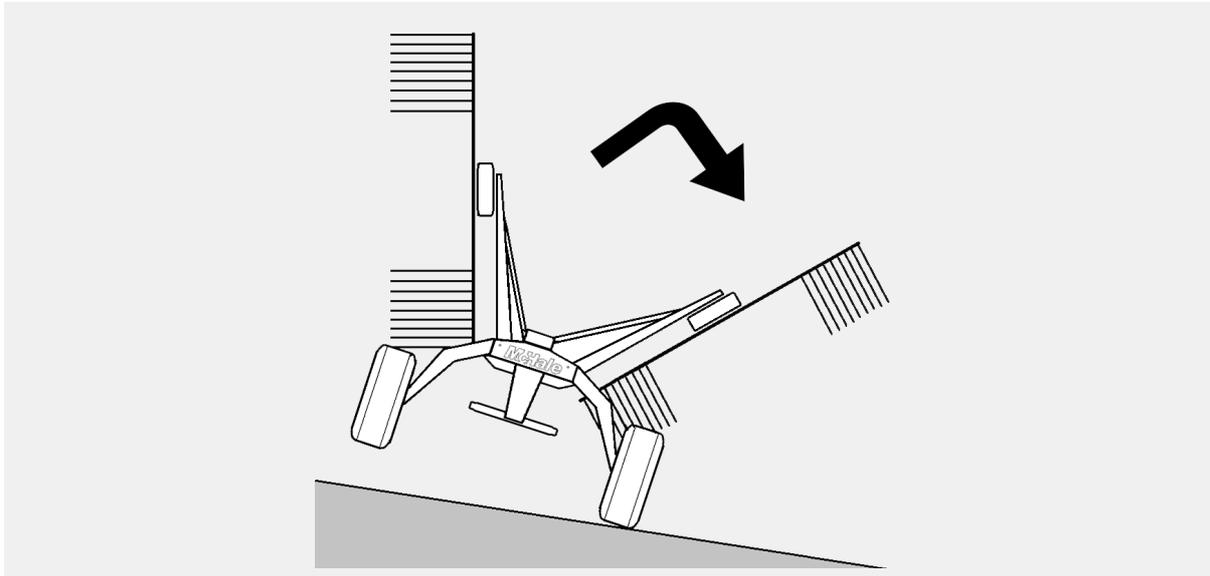


Transport position



WARNING: Only change position on level, firm ground

Avoid raising or lowering the rotor arms to or from the transport position when the machine is positioned across a slope, as there is a risk of the machine overturning. The operator must ensure that there is no person in the 'Danger Zone'.



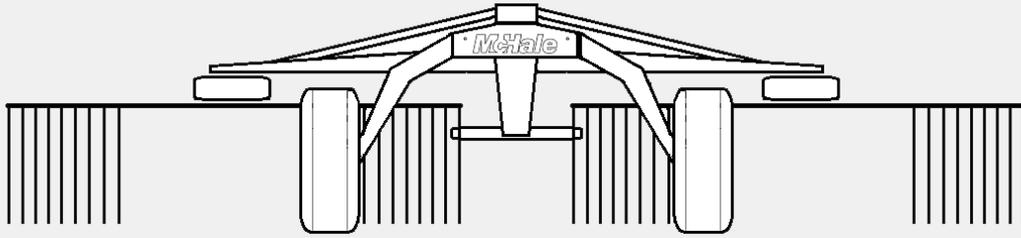
Risk of machine overturning

6.2 Lowering the rotor arms (working position)

The following sequence must be followed to go from the transport position into the working position.

1. Ensure the hydraulic tap is in the open position on the single-acting hydraulic supply line!
2. Extend the rotor arm extension sliders from the transport to any setting within the working range (6.2 - 7.2 for the **R62-72** model and 6.8 - 7.8 for the **R68-78** model). CAUTION: This will raise the overall height of the machine!
3. Lower the rotor arms until the rotor wheels are just off the ground. The rotor arms should only be raised/lowered in one smooth continuous movement. Stop/starting in between can lead to machine instability and risk of overturning.
4. Adjust the rotor arm extension sliders to the desired rake/swath width setting.
5. Lower the rotors arms fully so that all the rotor wheels are on the ground.
6. Extend and latch the guard rails on both sides to ensure that the rotation area of the tines is protected to the front and side.
7. The machine is now in the working position.

McHale R62-72 & R68-78 Twin-Rotor Rake



Working position



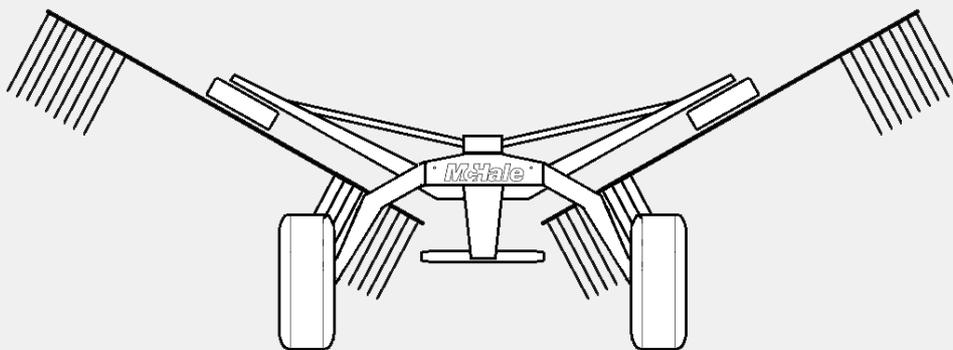
WARNING: Only change position on level, firm ground

Avoid raising or lowering the rotor arms to or from the transport position when the machine is positioned across a slope, as there is a risk of the machine overturning. The operator must ensure that there is no person in the 'Danger Zone'.



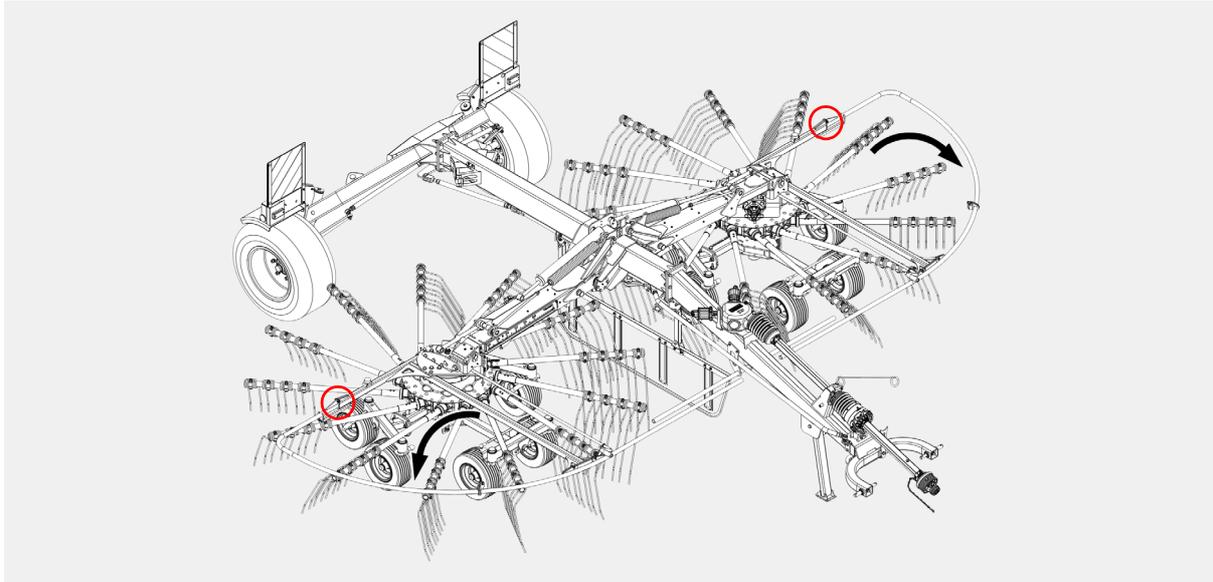
CAUTION: Engage/disengage the PTO in the headland position only

The PTO should only be engaged/disengaged when the rotor arms are in the headland position. The rotor arms can then be lowered slowly into the working position, monitoring the conditions carefully.



Headland position

McHale R62-72 & R68-78 Twin-Rotor Rake



Side guard rails latched in the working position

6.3 Adjusting flow control valves (LH & RH)

The control valves are preset at fully open with equal oil flow through each. It may be necessary to adjust these valves if the rotor arms are not raising and lowering evenly.



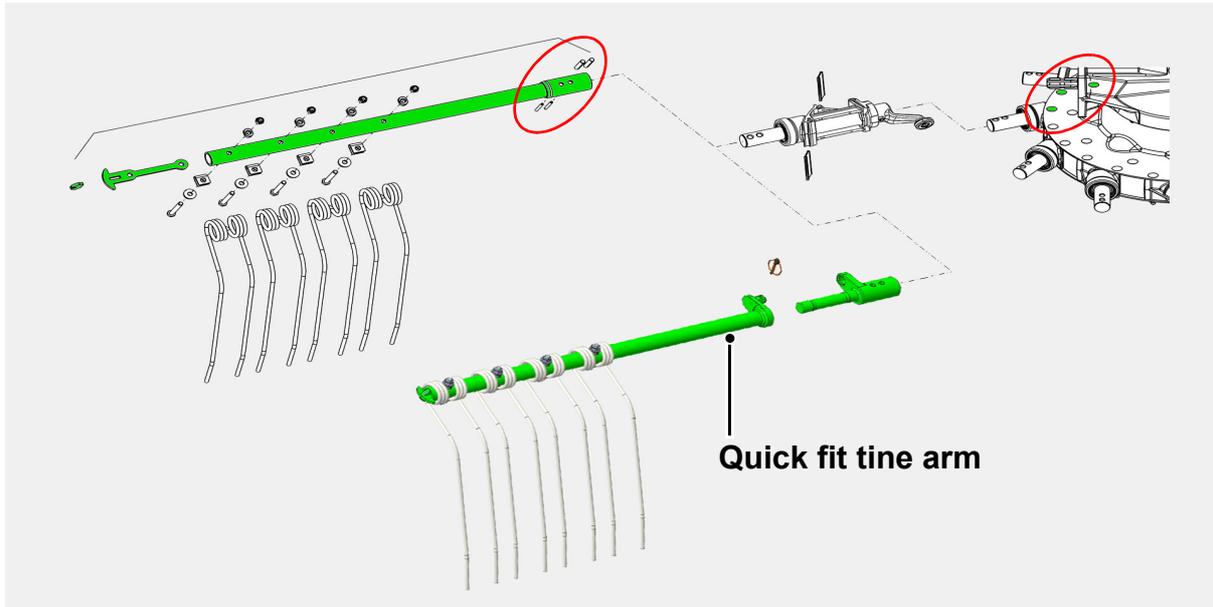
1. When raising or lowering the rotor arms between the work and transport positions, there may be a noticeable difference in ram speed (oil flow) between the LH and RH sides. If this is the case, then the control valves can be used to throttle back the faster ram until both arms move at a similar speed.
2. The oil flow on the faster side can be reduced by turning the blue knob on the control valve clockwise. Adjust in very small increments, raising and lowering the rotor arms each time until they both move at a similar speed.

6.4 Tine arm replacement

Tine replacement should be carried out in the following way:

1. Lower the rotor arms to the ground and make sure the machine is secure.
2. Shut down the tractor, remove the key and apply the parking brake.

Rotate each arm to be worked on, to the rear outer quadrant of the rotor. Each arm can be replaced by simply removing the 4 roll pins at the inner end of the tube. Quick-fit tine arms can be swapped out quickly and easily using linch pins. For a complete arm replacement, including cam follower, remove the corresponding 3 bolts on the gearbox and slacken the bolts of the neighbouring arms. Then, pull the complete arm and cam follower from the gearbox. Note the orientation of the cam follower and save the cover spacers on either side for reassembly. Before replacing the complete tine arm, it is a good opportunity to add plenty of grease into the cam itself. The cam follower should also be well greased. Assemble in the reverse order of disassembly and ensure all spacers, bolts, washers and nuts are replaced and tightened securely.



6.5 Tine replacement



CAUTION: Broken or bent tines should be replaced

Broken or bent tines should be replaced as soon as possible as they can cause damage to the machine, crop or could potentially cause an accident.



WARNING: Ensure the tractor is shut down

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



CAUTION: Wear proper safety equipment & follow all instructions

Always wear protective clothing and gloves, beware of sharp edges!

Tine replacement should be carried out in the following way:

1. Lower the rotor arms to the ground and make sure the machine is secure.
2. Shut down the tractor, remove the key and apply the parking brake.

Check all tines on each arm. Rotate each arm to be worked on, to the rear outer quadrant of the rotor. Remove the M12 bolt holding on each tine, working from the outside in. Replace any bent or broken tines and secure using bolts and washers, in the reverse order of removal. Ensure the outer tines have the tine retainer(s) fitted on the outer end of each arm. Replace any damaged bolts, washers or retaining clips. All tines should be in line with each other on any one arm. Check linch pins that lock the quick fit tine arms in place.

On completion, remove damaged bolts and tines and dispose of responsibly.

6.6 Gearbox oil

There is one oil-filled gearbox on the machine, the PTO Y-drive.



WARNING: Ensure the tractor is shut down before changing oil

Ensure that the tractor engine has been shut down, the key has been removed from the ignition and the brakes have been applied before changing oil.



NOTE: Oil must be drained & filled after the first 50 hours of use

After the first 50 hours of use, the gearbox oil must be completely drained and filled with SAE 80W/90 grade oil.



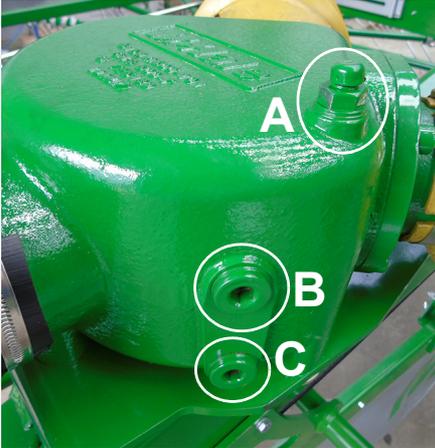
ENVIRONMENT: Safe disposal of oil

Respect the environment! Never spill oil or grease on the ground, never pour them down the drain and never discard them where they can pollute the environment. Always take waste materials to a recycling centre.

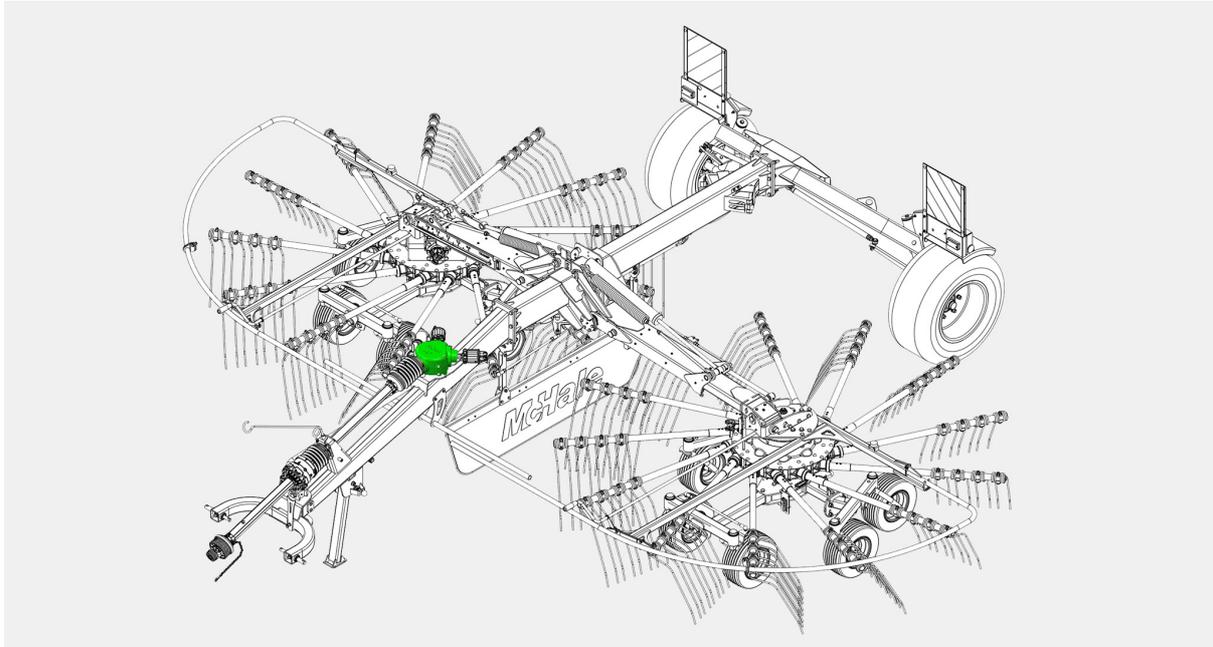
Gearbox	Capacity	A (A/F Hex)	B (A/F Hex key)	C (A/F Hex key)
PTO Y-drive	1.5 L	17 mm	10 mm	10 mm

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To drain and add oil to the gearbox, carry out the following procedure:



1. Remove the drain plug (C) and drain oil into a suitable container. This is best carried out while the oil is still warm, i.e. soon after use. Replace the drain plug (C), tighten and dispose of waste oil responsibly.
2. Remove the breather (A) and plug (B). Add approx. 1.5 litres of SAE 80W/90 grade oil or until oil begins to flow from the sight-level hole (B) when the correct quantity of oil is added. (After this replace the oil once per season or once per 250 hours, whichever comes first)
3. Replace the level-plug (B) and breather (A) and tighten securely.



6.7 Tyre inflation pressures



CAUTION: Check the tyre pressure weekly

Check the machine tyres weekly for the pressures outlined in the following table.

Details	Type	Field Pressure	Road Pressure	Part No.
380/55-17 133 A8 (Vredestein)	Flotation+	1.5 bar	2.4 bar	CWH00268
170/60-8 71 A8 (Vredestein)	Bogie	1.1 bar	N/A	CWH00037

6.8 Drawbar stand

The drawbar stand must be used every time the machine is disconnected from the tractor.

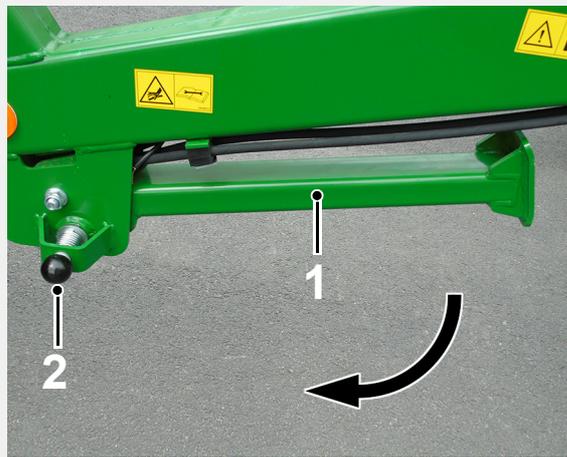


CAUTION: The drawbar stand must be rested on a solid footing

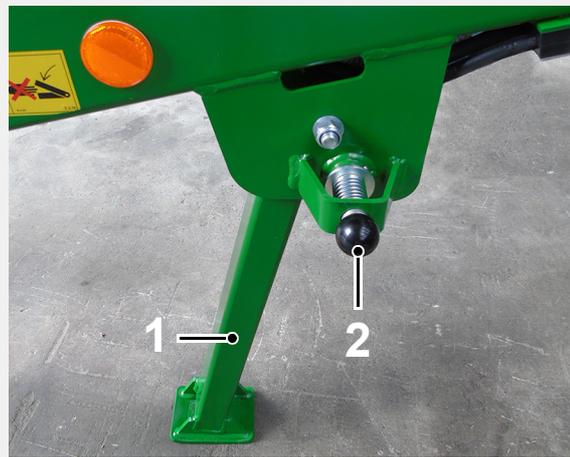
The machine and stand must be rested on a solid footing, on level ground and pinned securely before disconnecting from the tractor.

Before disconnecting from the tractor, lower the leg stand using the spring-loaded lock pin, into the storage position, as shown.

Ensure that the stand lock pin is properly secured in the hole provided to prevent the stand from collapse. While using the machine, ensure that the stand (1) is fully elevated against the drawbar with the spring-loaded lock pin (2) secured in the transport position.



Drawbar stand up (transport position)



Drawbar stand down (storage position)

Once the drawbar is elevated, the stand can be moved easily between positions by simply retracting the spring loaded pin and rotating the stand until the pin re-engages. Always ensure the pin is positively engaged in the stand, in either position.

6.9 PTO shaft adjustment & maintenance



CAUTION: Ensure the tractor is shut down

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

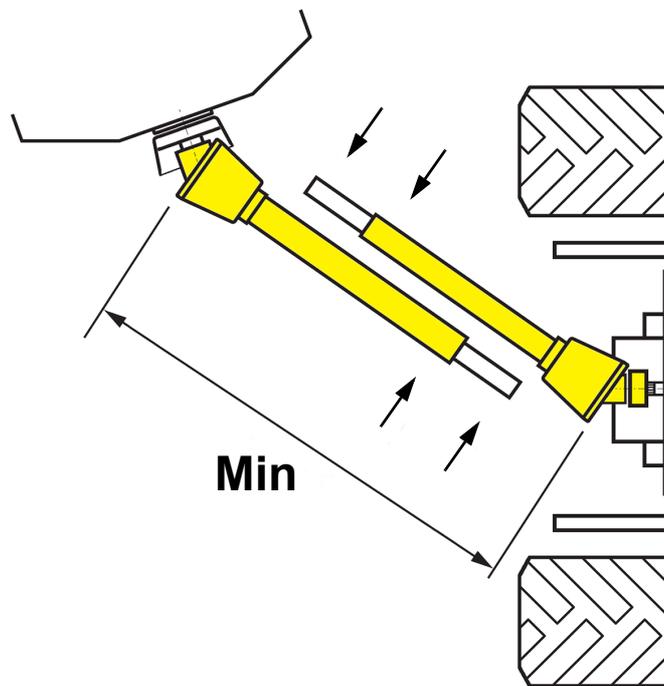


WARNING: Measure distance between PTO stub shafts first

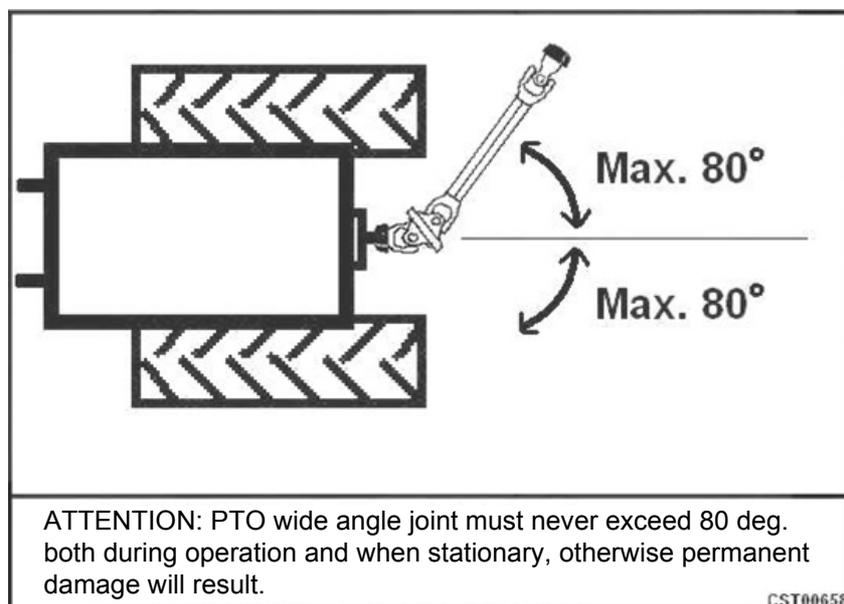
Never connect a PTO shaft on a new machine/tractor combination without first measuring the shortest distance between PTO stub shafts, otherwise severe damage can occur.

McHale R62-72 & R68-78 Twin-Rotor Rake

The length of the PTO shaft is suitable for all known tractor conditions. However the PTO shaft must be checked/adjusted to suit the tractor combination it is being fitted to. First, fit the PTO shaft to the machine and then check if the PTO can be connected to the tractor stub. If not, then the PTO shaft is too long and must be altered. Typically the shortest distance on a trailed machine is when the tractor is turned at the maximum angle from the machine. Operating on very hilly ground can also reduce this further. The shortest distance on a linkage machine is when the PTO stubs of both tractor and machine are aligned horizontally. (See 'Adjusting the PTO shaft to the tractor')



After measuring carefully, the PTO shaft halves should be cut equally so that the PTO shaft assembly is kept as long as possible, whilst just allowing enough room for its removal. This will ensure that a maximum overlap (ideally 200 mm minimum) is maintained, when extended. Maximum 80° angle of movement should never be exceeded, otherwise permanent damage will result.



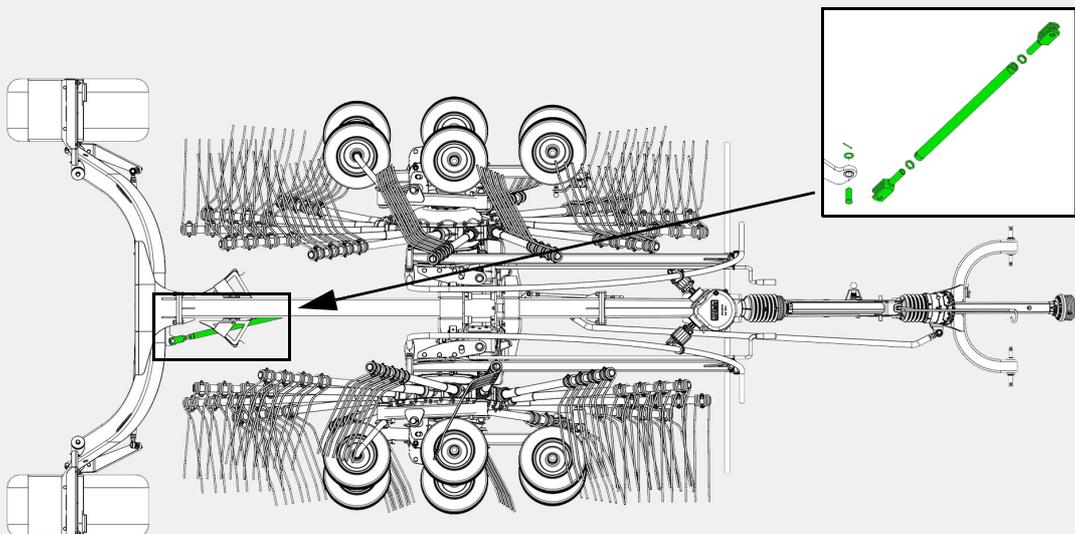


CAUTION: Ensure safety chains are attached to machine and tractor

Ensure the safety chains on the PTO cover sleeves are attached to both machine and tractor to prevent them from spinning.

6.10 Steering linkage adjustment

Normally, the machine should track perfectly, with the tractor, in a straight line and should never require adjustment. However, if it is noted that the machine is tracking off to either the left or the right side, when viewed from behind, then the adjustable link shown can be adjusted. Disconnect the clevis on one end and loosen the lock nut. Rotate the clevis either in, to shorten, or out, to lengthen, before reconnecting. If the machine is tracking to the right, then the link should be lengthened. If the machine is tracking to the left, then the link should be shortened. A small adjustment will make a noticeable difference. Once the machine is tracking straight ahead, ensure all locknuts are tightened securely and all other pins and fasteners are secure, before moving the machine onto a public roadway.

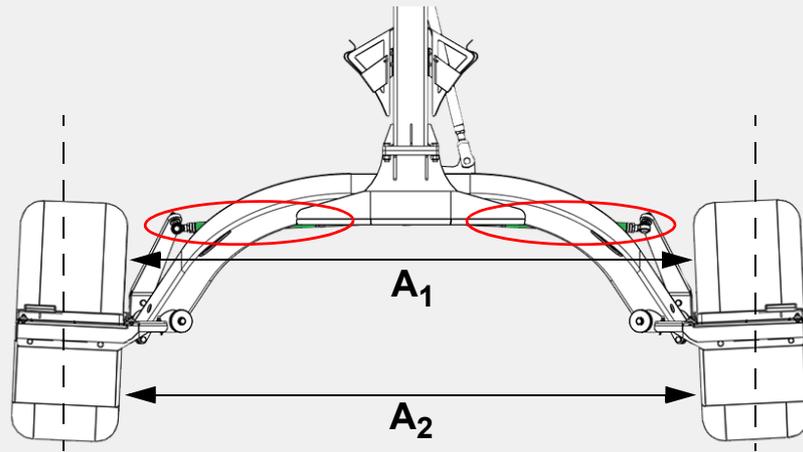


6.10.1 Toe-in adjustment

The toe-in on the main chassis wheels may need to be adjusted if abnormal tyre wear is observed, even with the tyres set to the correct pressure.

Before checking or adjusting the toe-in, ensure that the machine is tracking correctly behind the tractor.

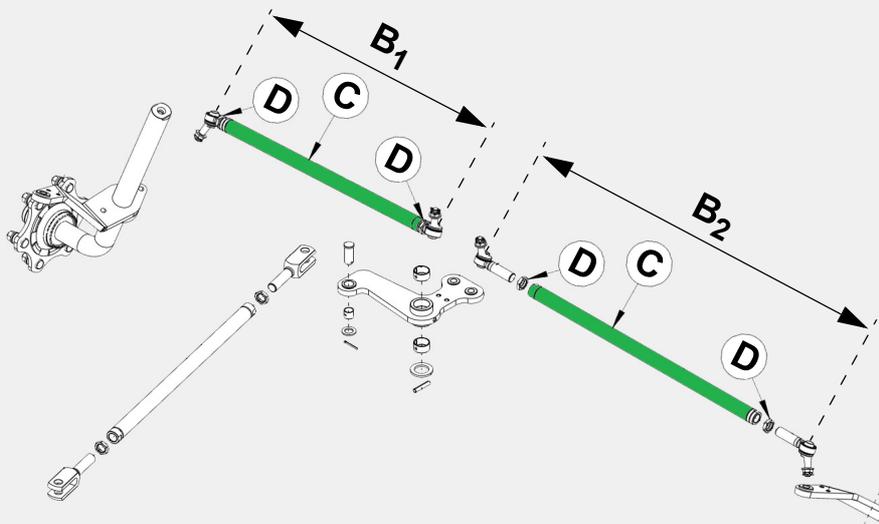
Check measurements **A1** and **A2** between the main wheels. The measurements should be taken at the wheel rim edges, front and rear, as shown. The toe-in is set correctly when **A2** dimension is between 1.5 mm and 4.5 mm wider than **A1** dimension.



If adjustments are required, then the rear steering rods **C** must be altered.

1. Loosen the locknuts **D** on each end (Note LH & RH threads).
2. Rotate the steering rod **C** either clockwise or anti-clockwise.
3. Adjust both rods in small increments until desired toe-in is achieved.
4. Tighten all locknuts **D** ensuring **B1=B2**

After adjusting the toe-in, ensure that the machine is tracking correctly behind the tractor.



NOTE: Ensure both steering rods are adjusted equally so that **B1=B2**.

7

Road traffic safety & operation

7.1 Before travelling on any public roadway



WARNING: Complete a full inspection before travelling on the road

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

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

- Ensure that the tyres are set to the correct pressure as per safety decals and according to the specifications. (*See 'Tyre specifications'*)
- Ensure the side guard rails are unlatched and swung in over the rotor gearbox, on both sides of the machine.
- The twin rotor arms must be raised fully into the upright position and then retracted so that the width indicator is in the transport position, as shown.
- The hydraulic supply must be turned off and protected from accidental activation.
- The PTO shaft must be fixed securely 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. Lower front reflector rails to the horizontal transport position.
- Attention must be paid to the maximum travel speed limit (40 km/h).
- The drawbar stand must be raised and secured in the transport position, using the spring-loaded lock pin provided.
- 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.
- Ensure that all the national road traffic regulations relating to the country are fulfilled i.e. the use of safety chains is mandatory in EU countries when air brakes are not installed. The safety chain must be attached in such a way that if the coupling breaks, the hitch or drawbar cannot make contact with the ground.
- Ensure the safety chains on the PTO cover sleeves (if fitted) are attached to both machine and tractor to prevent them from spinning.

McHale R62-72 & R68-78 Twin-Rotor Rake



WARNING: Height clearance

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



**Road transport position
(Rotor arms locked in the upright position)**

8

Field operation & machine adjustments

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

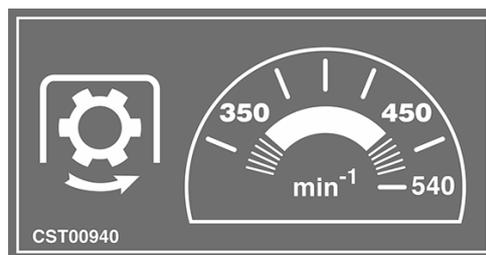
Once the machine is attached to the tractor with all connections secured, the lower link arms should be adjusted and set such that the main central frame (and curtain) are horizontal and level.



WARNING: Check before starting or moving the machine

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

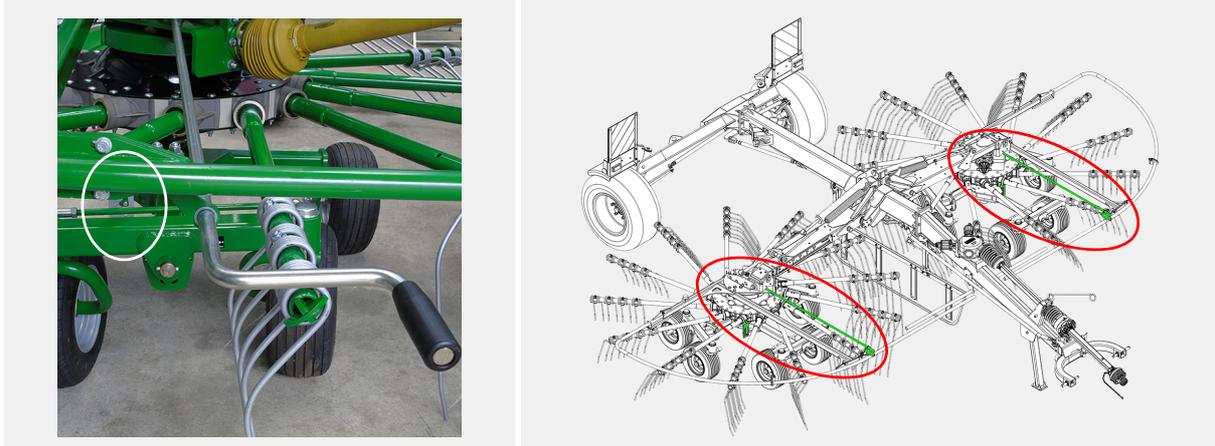
The leg stand must be returned to the raised position and pinned securely, either for working or transportation. Ensure the side guard rails are fully extended and latched securely, when in the working position. Ensure that the lift-ram spool is set in a float position. Then engage the PTO, set at 540 rpm and drive forward at approximately 10 km/h (PTO speed of 350 - 450 rpm), checking swath width and raking height. If adjustments are necessary, then shut down PTO and tractor and ensure all motion has ceased before approaching the machine.



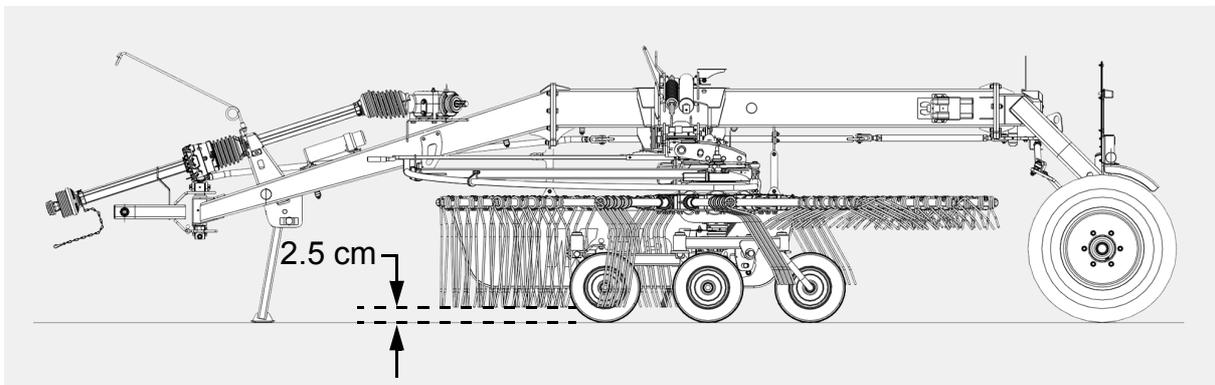
8.1 Rake height adjustment

All adjustment regarding raking height is achieved by varying cranked handles on each rotor unit. Turn the crank handle clockwise to raise the tines away from the ground. Turn the crank handle counterclockwise to lower the tines towards the ground.

McHale R62-72 & R68-78 Twin-Rotor Rake



The forward facing tines should be set so that they are between 1 and 2.5 cm off the ground, where they begin raking.



The height indicators show the tine height adjustment on both sides of the machine and both should be set equally. There is approximately 10 cm of tine height adjustment which is indicated by numbers 1 to 5, or approximately 2 cm per number. With a setting of 3, as shown, the tines are approximately 6 cm off the ground. Check the setting frequently and adjust the working height to suit the ground conditions. Never allow tines to make contact with the ground as this will lead to inefficient operation, machine damage and crop contamination.

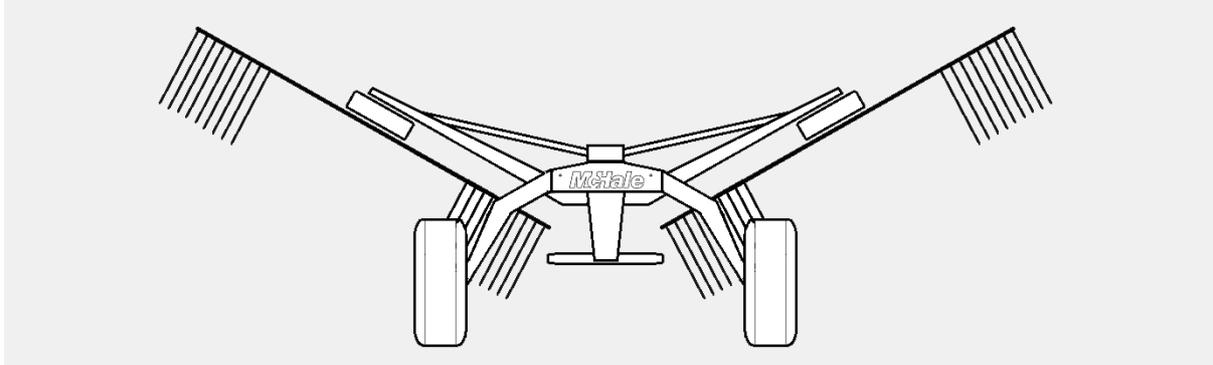


McHale R62-72 & R68-78 Twin-Rotor Rake



CAUTION: Engage/disengage the PTO in the headland position only

The PTO should only be engaged/disengaged when the rotor arms are in the headland position. The rotor arms can then be lowered slowly into the working position, monitoring the conditions carefully.



8.2 Rotor cam adjustment



CAUTION: Wear proper safety equipment & follow all instructions

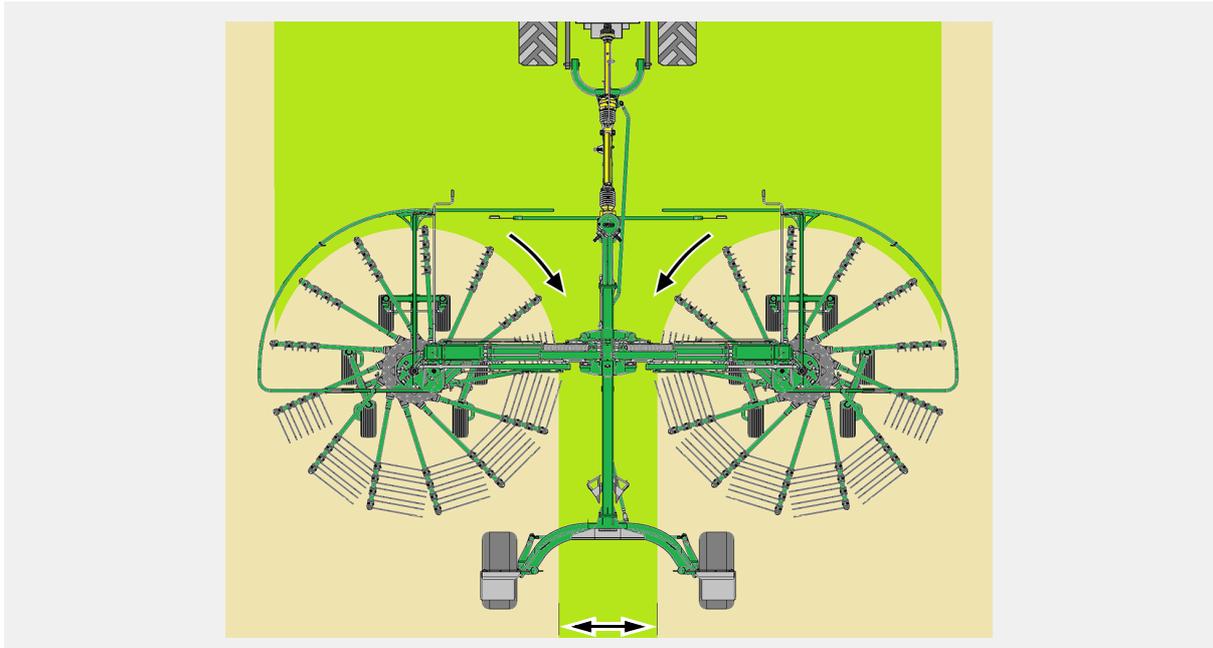
Always wear protective clothing and gloves, beware of sharp edges!

There are a variety of positions for the link arm which sets the start point of raking. Once the desired position has been achieved, ensure both sides are set in the exact same hole position.



8.3 Swath width adjustment

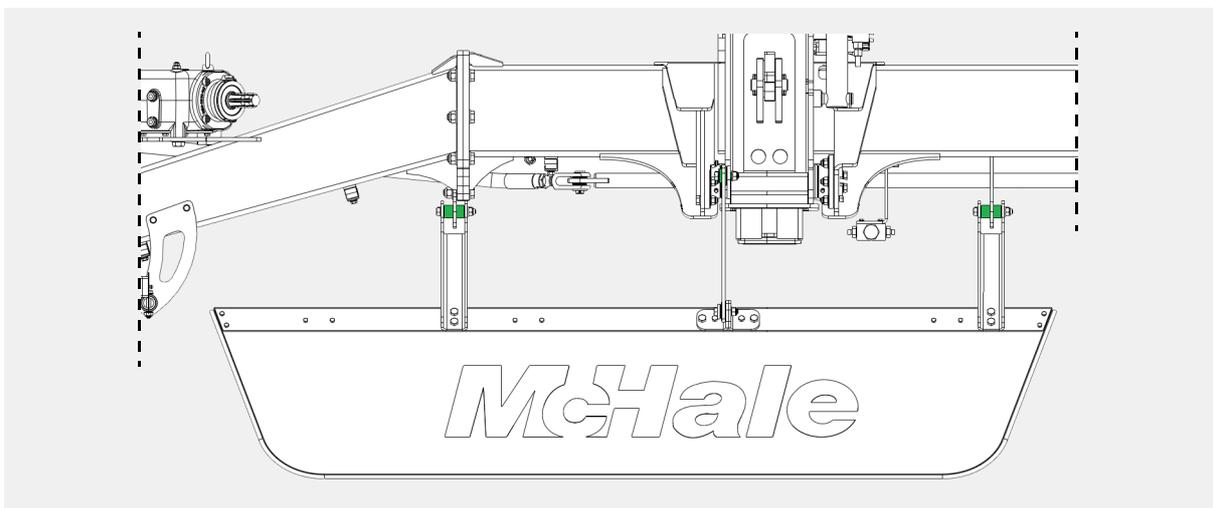
The swath width can be adjusted between 0.8 and 1.8 m wide. This also affects the raking width which can be easily adjusted hydraulically by extending the rotor arm extension sliders from the narrowest to the widest work setting. (Between 6.2 and 7.2 m for the **R62-72** model and between 6.8 and 7.8 m for the **R68-78** model.) This is done using the double-acting hydraulic lever, either in or out, until the desired setting is reached.



8.3.1 Centre curtain

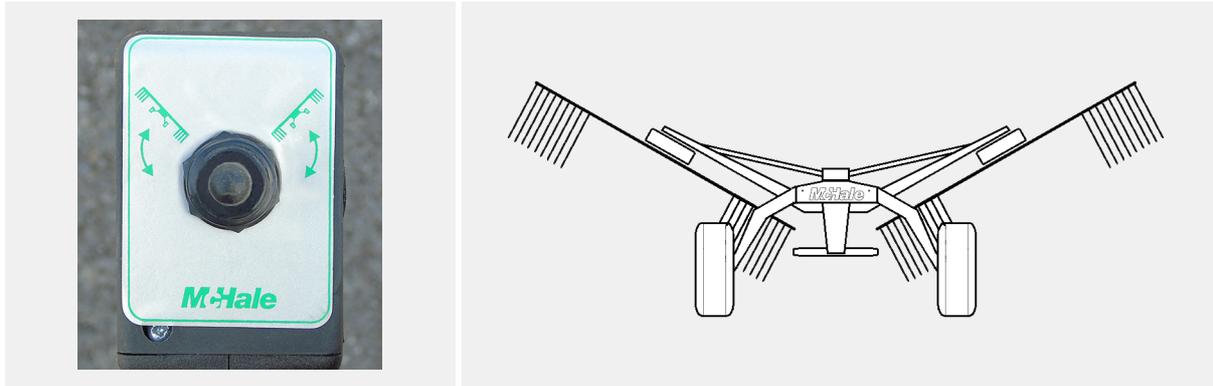
When working in heavy crop conditions, it may be necessary to remove the centre curtain completely. The centre curtain can be removed by loosening the 3 bolts highlighted using two 19 mm spanners.

Ensure all bolts, nuts, washers and spacers are stored in the toolbox, or kept with the curtain, for refitting in the future.



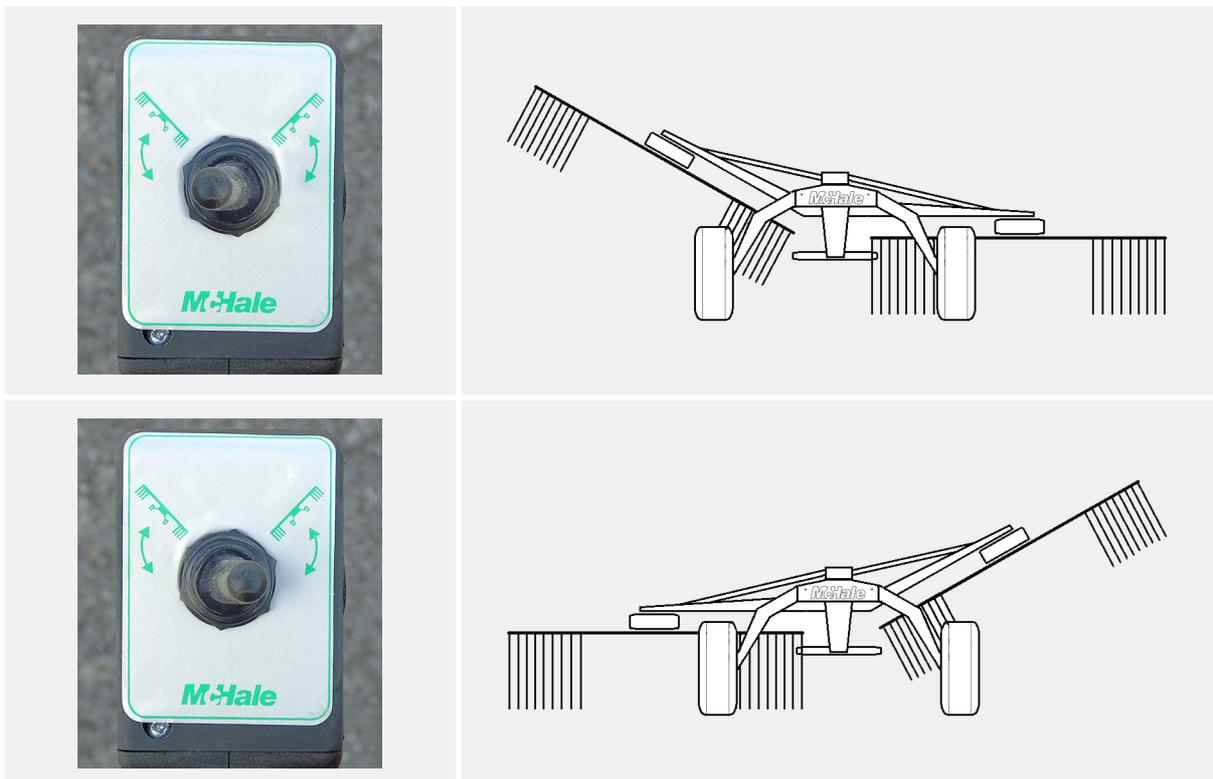
8.4 Headland position

This is where both rotor arms are elevated temporarily, to avoid other crop swaths at field headlands, etc. when turning or manoeuvring. This is done by activating the single acting hydraulic lever to raise the rotor arms until they hit the lift latch stops. NOTE: The offset toggle switch must be in a central position on the control unit for both rotor arms to raise together!



8.5 Offset headland (single rotor operation)

This allows even more refined control in tight corners or triangles as either the left (LH) or right (RH) rotors can be elevated independently while the rotor on the ground continues raking on one side only. This is done the same way as the previous headland position, except the toggle switch (shown) on the control unit is pushed either left or right to select which rotor should be raised. Once the offset headland work is complete, the toggle switch should always be returned to the central neutral position.



8.6 Lift latch

The lift latch must be bypassed when changing from the working position to the transport position. While working, the lift latch automatically limits the height of the rotor arms in the headland position. In order to raise the rotor arms fully, into the transport position, the latch cord must be pulled to disengage the lift latch hook from the pin. NOTE: If the machine is already locked in the headland position, it may be necessary to lower the rotor arms slightly at first in order to pull the latch cords. Once past this point, the latch cord can be released and the rotor arms can be elevated fully and then retracted into the transport position.



8.7 Wheel chocks

Wheel chocks are provided to secure the machine wheels anytime the machine is to be detached from the tractor, or if the machine is to be stored or parked up. They are located on the centre rear frame near the main chassis wheels.



8.8 Front reflector rails

To avoid collision or damage, the front reflector rails can be elevated when manoeuvring through narrow gateways or openings. The spring loaded plungers must be retracted, which lock the arms in either the raised or lowered positions. These rails must always be in the lowered position before moving the machine onto a public roadway.



NOTE: Lower into horizontal transport position before travelling

The front reflector rails must always be lowered into the horizontal transport position before travelling on public roadways.

9

Machine maintenance

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

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



WARNING: Wear proper safety equipment & follow all instructions

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



WARNING: Inspections in the 'Danger Zone' during machine operation require a second trained operator at the controls

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

9.1 Maintenance intervals

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

First 5 working hours

- Check all nuts and bolts for tightness and tighten, if necessary.
- Check sufficient oil level in the gearbox.

Every day

- Check all guards and safety devices.
- Check for any oil leaks and damaged pipes.
- Grease PTO shafts and all other grease points.

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- Check raking tines and arms.
- Check wheel nuts and tyre pressure.

Every week

- Grease PTO shafts and all other grease points.
- Grease ram pivots.

Every month

- Check sufficient oil level in the gearbox.
- Check sufficient grease in the rotor gearboxes.

Every year

- Clean and lubricate all moving parts.
- Drain and change gearbox oil. (*See 'Gearbox oil'*)
- Top up grease in the rotor gearboxes.

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

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

Any damaged paintwork should be touched up. Any maintenance or repairs should be carried out at this stage. The exposed hydraulic cylinder rod should be greased. The rotor units as well as the rotor arms should be cleaned and lubricated. (*See 'Storage'*)



ENVIRONMENT: Health and safety rules for the environment

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

9.2 Tightening torque values

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

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

10

Storage

10.1 End of season

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

10.2 Start of season

- Fully review this operators instruction manual.
- Check and fill gearbox oil level, if necessary. (*See 'Gearbox oil'*)
- Lubricate all pivot points.
- Tighten all bolts, nuts and setscrews. (*See 'Tightening torque values'*)
- Inspect and modify, if necessary, all machine adjustments. (*See 'Field operation & machine adjustments'*)
- Replace any broken or damaged tines.

11

Certification & Warranty

11.1 Declaration of Conformity

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

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

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

11.2 PDI form

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

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

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

11.3 Change of ownership pre-checks

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

11.4 Limited Warranty

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

Declaration of Conformity



DECLARATION OF CONFORMITY

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

Machine description and function: The machine has been designed to gather grass and other forage crops in suitable swaths for agricultural harvesting.

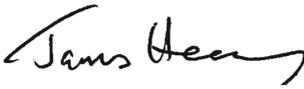
Model: R62-72 & R68-78 **Serial Number:** _____

Name of manufacturer: McHale Hungária Kft.
Address: 5000 Szolnok, Tószegi út 47, Hungary

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

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

Harmonised standards applied:
EN ISO 12100 Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 4254 - 1 Agricultural machinery - Safety - Part 1: General requirements
EN ISO 4254 - 10 Agricultural machinery - Safety - Part 10: Rotary tredders and rakes

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

Signed: 
Date: **Place:** Szolnok, Hungary
Name: Csaba Sulyok
Position: Quality Manager



Pre-delivery inspection form

 PRE-DELIVERY INSPECTION (PDI)	
Dealer:.....	Model: R62-72 & R68-78
Full address:.....	Serial No:.....
.....	Date delivered:.....
Fitter:.....	Date inspected:.....
Customer:	
Full address:.....	Tel:.....
.....	Mobile:.....
.....	E-mail:.....
<p>ENSURE THAT THE TRACTOR IS OF THE CORRECT SPECIFICATION FOR THIS MACHINE. REFER TO THE OPERATOR INSTRUCTION MANUAL BEFORE MAKING ANY ADJUSTMENTS!</p>	
<p>This machine must be registered on www.mchale.net by the dealer in order to qualify for warranty!</p>	
<p>1. Check that all accessories are with the owner/operator. Check operators instruction manual and parts lists.</p>	<p>9. Connect hydraulic hosing to the tractor and ensure proper hydraulic setup. Main lift ram hydraulic supply must have float.</p>
<p>2. Ensure machine is re-assembled correctly. (Refer to all assembly instructions supplied)</p>	<p>10. Check all manual & hydraulic functions.</p>
<p>3. Ensure that all items are properly installed and check all bolts & nuts, especially wheel nuts, are torqued correctly.</p>	<p>11. Check for hydraulic leaks, both internal (Creep) and external.</p>
<p>4. Ensure that the wheels are correctly fitted (i.e. valve to the outside). Torque wheel nuts correctly.</p>	<p>12. Check for smooth operation of all moving parts. Ensure LH and RH rotor unit cams are functioning correctly.</p>
<p>5. Check for correct tyre type, tread and pressure. (Tyre inflation pressure is 1.4 bar (20 psi))</p>	<p>13. Use extreme caution when working around sharp tine-points. Always wear protective clothing and gloves!</p>
<p>6. Use minimum CAT 2 link pins when coupling the machine to a suitably sized tractor.</p>	<p>14. The operator must be fully aware of all hazards, controls (hydraulic), all functions & safety features of both the machine and the tractor.</p>
<p>7. Ensure guards, lights and hydraulic hoses are fitted correctly, before coupling the machine to a tractor.</p>	<p>15. Ensure that the owner/operator reads the operator instruction manual and understands fully all safety & operating aspects of the machine, as described.</p>
<p>8. When mounted on a tractor check that the main frame is horizontal. Then adjust to set the required raking height.</p>	<p>16. Instruct operator on maintenance i.e. check mountings, adjustments and areas to be greased daily along with other routine functions.</p>
<p>I am satisfied that the above checks have been carried out, and that the machine is complete with all accessories and manuals.</p>	
Signed:.....	(Dealer) Date:.....
Signed:.....	(Owner) Date:.....
<p>A signed copy of this form is to be retained by both the dealer and the customer!</p>	

McHale Limited Warranty

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

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

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

These conditions are subject to the following exceptions:

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

The customer will be responsible for the following costs:

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

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The importer will be responsible for the following costs:

- All warranty labour charges.

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

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

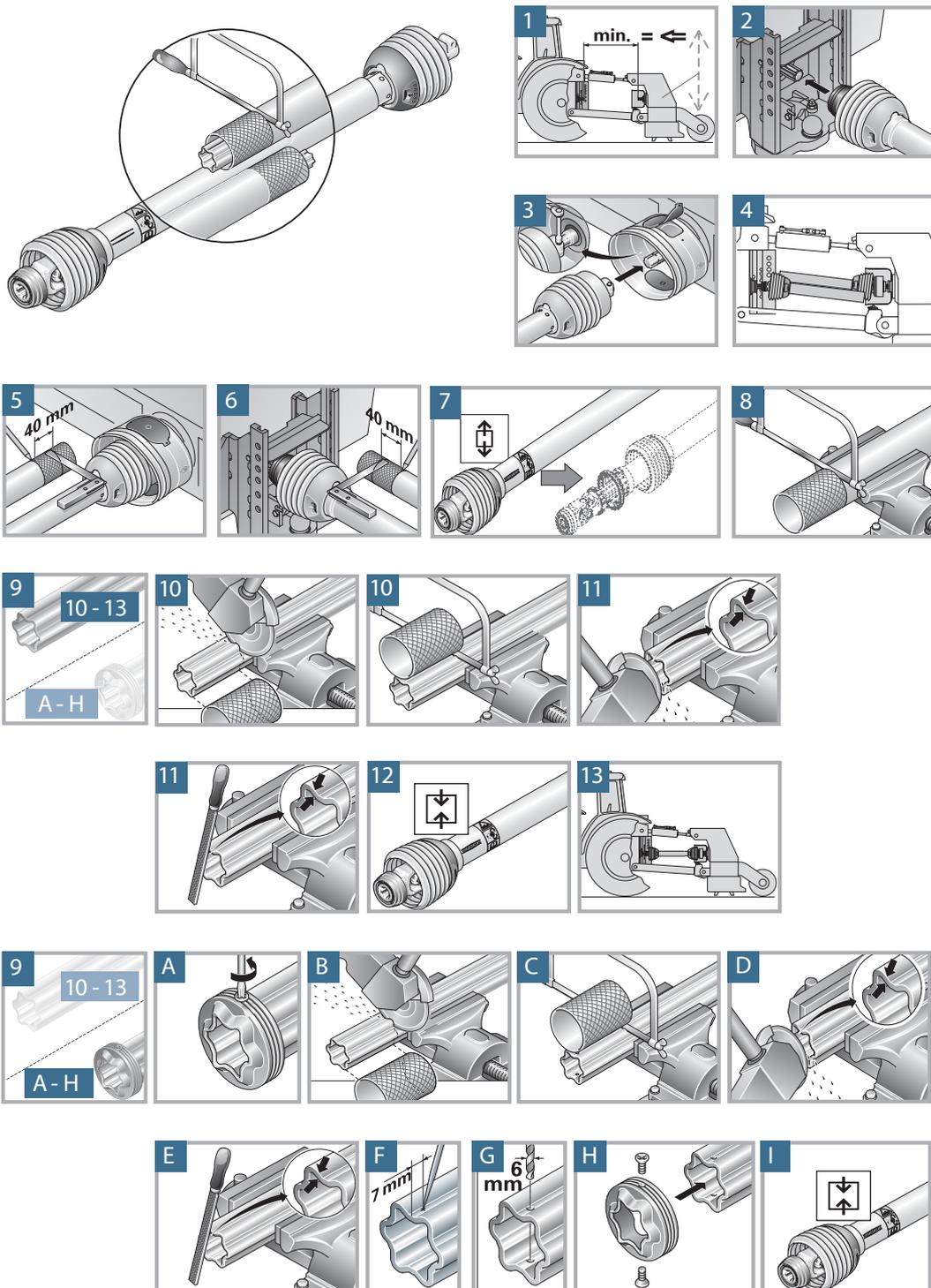
Further conditions - limits of application and responsibility:

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

12

Appendix

12.1 Adjusting the PTO shaft to the tractor



12.2 Unit conversion tables

Length

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

Area

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

Volume

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

Mass

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

Flow rate

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

Pressure

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

Speed

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

Torque

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

Temperature conversion formulas

Degree Celsius (°C)	$(^{\circ}\text{F} - 32) \times 5/9$	$(\text{K} - 273.15)$
Degree Fahrenheit (°F)	$(^{\circ}\text{C} \times 9/5) + 32$	$(1.8 \times \text{K}) - 459.67$
Kelvin (K)	$(^{\circ}\text{C} + 273.15)$	$(^{\circ}\text{F} + 459.67) \div 1.8$