Count on it.

Part No. 111-3933 Rev A

Operator's Manual

TM5490 and 7490 Trailed Gang Mower

Model No: 02700-Serial No. from 311000001
Model No: 02701-Serial No. from 311000001

CE

Original Instructions (EN)
Date: 30.11.10

ATTENTION

THIS SYMBOL MEANS

BE ALERT!

YOUR SAFETY IS INVOLVED

READ THIS MANUAL BEFORE USING THE TM5490 AND TM7490 MOWERS.
IT IS ESSENTIAL THAT OPERATORS STUDY IT FOR THEIR OWN SAFETY.

ALL OPERATORS SHOULD SEEK AND OBTAIN PROFESSIONAL AND PRACTICAL INSTRUCTIONS ON THE SAFE USE OF THE MOWER. THESE SERVICES ARE AVAILABLE THROUGH TORO OR TORO AUTHORISED COMMERCIAL DEALERS.

CONTENTS

CONTENTS	Page No.

READ THIS MANUAL BEFORE USING THE TRAILED GANG MOWER, IT IS ESSENTIAL THAT OPERATORS STUDY IT FOR THEIR OWN SAFETY.

THE FOLLOWING PRECAUTIONS MUST BE TAKEN TO HELP PREVENT ACCIDENTS. A CAREFUL OPERATOR WHO USES COMMON SENSE IS THE SAFEST OPERATOR.

Training

Read the instructions carefully. Be familiar with the controls and the proper use of the equipment. Learn how to stop the mower quickly in an emergency.

Never allow children or people unfamiliar with these instructions to use the mower. Local regulations may restrict the age of the operator.

Never mow while people, especially children, or pets are nearby.

Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.

Do not carry passengers.

All drivers should seek and obtain professional and practical instruction. Such instruction should emphasise:

The need for care and concentration when working with this machine.

The need to slow down when making tight turning manoeuvres. Failure to take adequate care can affect stability leading to loss of control of the machine particularly when operating in transport mode.

Control of the trailed mower sliding on a slope will not be regained by application of the brakes.
The main reasons for loss of control are:

- Insufficient wheel grip.
- Being driven too fast.
- Inadequate braking.
- The type of machine is unsuitable for the task.
- Lack of awareness of the effect of ground conditions, especially slopes.
- Incorrect hitching and load distribution.

Never attempt to disconnect any part of the hydraulic system before de-pressurisation. This may be achieved by lowering all cutterheads to the ground, turning off the tractor engine and disconnecting the PTO shaft.

Preparation

Check that the machine complies with all applicable regulations, including those in force when used on the public highway. Check that the lights are in full working order and function correctly from the tractor.

While mowing, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals. Eye protection should be worn.

Thoroughly inspect the area where the equipment is to be used and remove all objects which can be thrown by the machine.

Before using, always visually inspect to see that the blades, blade bolts and cutter assembly are not worn or damaged. Replace worn or damaged blades and bolts in sets to preserve balance.
On multi-bladed machines, take care as rotating one blade can cause other blades to rotate.

Ensure that the cutterheads are fully raised with the transport latches and safety locks engaged in position, and that the PTO drive is disengaged and correctly stowed when disconnected before transporting the mower.

When transporting the mower with the PTO shaft assembly disconnected from the tractor PTO drive, the PTO shaft assembly must be stowed securely to the mower chassis or tractor.

Check that the PTO shaft is fully engaged to the drive, driven shafts and that the guard safety chains are secure.

Check the condition of the tyres and ensure that they are inflated to the correct pressures, refer to **SPECIFICATIONS**. This is particularly important if the machine is to be taken on the public highway.

Check that the mower is in good working order, paying particular attention to the brakes, drawbar, tyres and lights. Check that all safety guards are in position and that the tractor complies with all applicable regulations including those in force when used on a public highway.

Ensure that the automatic breakaway cable is secured correctly between the tractor and the machine brake operating system.

Replace a broken, frayed or damaged breakaway cable.

Ensure that the parking brake operates correctly through its full travel without interference.

Ensure that the brakes are kept clean and adjusted regularly.

Ensure that the brake coupling mechanism is mounted securely in position, is correctly adjusted and maintained, and operates through its full working travel without interference.

Replace the towing unit if the sliding mechanism or towing eye is excessively worn.

In the event of a breakaway cable being activated ensure that there is no interference on the brake coupling mechanism.

Replace damaged or worn brake coupling mechanism components with the correct Toro service parts.

Never make an unauthorised modification to any part of the machine or brake coupling mechanism.

Ensure that the hydraulic brake actuating system operates through its full working travel without interference.

Preparation *continued*

Check the mower hydraulic system, particularly the hydraulic hoses, fittings and hose supports. Worn, crushed or damaged hoses can burst, with risks to health and damage to the machine and surrounding turf areas.

After refuelling and adding oil to the hydraulic oil tank ensure that the caps are replaced securely.

Check that all linkages, connections and pivot nuts are secure and that wheel nuts are torqued correctly, refer to **SPECIFICATIONS**.

Electric lift only:
Check the mower electrical system, particularly the condition of the umbilical cable and electrical connections between the tractor and the mower. Ensure that the system is in full working order and that the electrical emergency stop system is fully operational.

Operation

Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.

Mow only in daylight or in good artificial light.

Never start the tractor engine with the PTO engaged.

Stored energy devices are charged when the outer wing units are in transport position. Always operate the relevant lift controls to provide hydraulic support for the wing units suspensions before attempting to release the transport latches.

Use care when towing:
- Use only approved drawbar hitch points.
- Do not turn sharply.
- Use extreme caution when reversing.

Watch out for traffic when crossing or near roadways.

Disengage the cutterhead drive system before crossing surfaces other than grass.

When using the machine, never direct discharge of material towards bystanders or allow anyone near the machine while in operation.

Never operate the mower with defective guards, shields or without safety protective devices in place and in good working order.

Take care whilst manoeuvring in tight turns n forward and reverse gear to avoid contact between the mower and the tractor.

Operation *continued*

Disengage the PTO drive, change into neutral, set the tractor parking brake, stop the engine and remove ignition key. Block the mower suddenly and operate the mower handbrake before performing any service or maintenance procedure:
- Before releasing blockages.
- Before checking, cleaning or working on the mower.
- After striking a foreign object. Inspect the mower for damage and make repairs before restarting and operating the equipment.
- If the machine starts to vibrate abnormally (check immediately).
- Before refuelling.
- Before making cutterhead adjustments.
- Before disconnecting the machine and the PTO from the tractor.

Always disengage the PTO drive when transporting or not in use.

Never work on the mower when the tractor engine is running.

Always keep feet and hands well away from the cutting cylinders when making adjustments.

Slopes

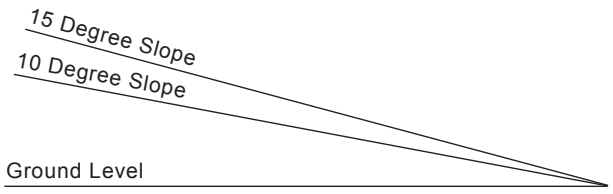
Do not use on a slope of more than 15 degrees when in use or 10 degrees with cutterheads raised. Care should be taken when using the mower on any slope where ground conditions are such that there may be a risk of the mower rolling over. The requirements of 89/355/EEC, as amended by 95/63/EEC 'Provision and Use of Work Equipment Directive' should be considered.

Stability angles given are maximum figures for a machine and are for guidance only. Particular conditions such as wet grass or uneven ground may not permit safe operation on the slope limits stated.

The slope angle may be reduced if the stability angle of the towing tractor is less than that of the mower.

Ground conditions affect traction. Particular conditions may not permit safe operation on the slope limit stated. Remember there is no such thing as a 'safe' slope. Travel on grass slopes requires particular care. To guard against overturning or loss of traction when travelling or mowing on a slope:
- Exercise extreme care when changing direction on a slope.
- Do not stop or start suddenly.
- Engage clutch slowly. Always keep the tractor in gear, especially when travelling downhill.
- Keep machine speed low.
- Avoid tight turns.
- Stay alert for humps, hollows and other hidden hazards.
- Keep away from sharp inclines and steep drops.
- A thorough risk assessment should be carried out by a competent person before travelling or mowing on a slope.
- Never park on a slope.

Fig 1



Handling and Storage of Fluids

Hydraulic Oil
- Avoid contact with eyes and prolonged contact with skin.
- Protective goggles should be worn when pouring.
- Use of gloves or barrier cream is recommended.
- Wash hands thoroughly after contact.
- Store under cover, away from heat and sources of ignition.

Lubricating Oil
- Avoid skin and eye contact.
- Wear impervious gloves when regular contact is likely and goggles when there is risk of splashing.
- Wash hands thoroughly after contact.
- Store in a cool dry well ventilated place away from heat and sources of ignition.

Maintenance and Storage


Take care when rotating a cutting cylinder as this can cause other cylinders to rotate.


When the machine is to be parked, stored or left unattended, lower the cutterheads to the ground or ensure that they are correctly latched in the transport position with the safety locks engaged. Always engage the tractor parking brake.


Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.


Replace worn or damaged parts for safety.


Ensure that all safety decals are properly secured and in good condition.


Be careful during adjustment of the machine to prevent entrapment of the fingers between moving blades and fixed parts of the machine.


Never dismantle the cutterheads or suspension unit without first lowering the cutterheads to the ground, releasing the hydraulic system pressure and ensuring that the tractor engine is turned off.


Never adjust the cutterheads in the raised position unless the transport latches and safety locks are engaged.


Avoid skin or eye contact with hydraulic fluids. Wear protective clothing.


Leaking fluids under pressure can penetrate the skin or eyes, causing serious injury. Always use a piece of cardboard or paper when searching for leaks.


Disengage the PTO drive, change into neutral, set the tractor parking brake, stop the engine and remove the ignition key. Block the mower securely and operate the mower handbrake before performing any service or maintenance procedure.


Never allow anyone near the machine while performing any service or maintenance procedure.

Maintenance and Storage continued

When disconnecting the machine from the tractor, ensure that:

- The PTO drive is disengaged, the tractor parking brake is applied, the engine is stopped and the ignition key is removed.
- The mower handbrake is applied.
- The jockey wheel jack is in a safe working condition and securely adjusted to support the front of the machine.
- The PTO shaft is disconnected from the tractor and stored on the rest provided.
- Never rest the PTO shaft on the ground.
- The brake hose is disengaged and connected to the parking boss on the machine front bulkhead.
- Never allow the brake hose to rest on the ground.
- The brake breakaway cable is disconnected from the tractor.

Ensure that the handbrake lever is firmly strapped to the towing device in the ‘release’ position prior to replacing a brake cable and do not release until the replacement cable is correctly tensioned. Failure to do so can result in serious injury.

The Trailed Gang Mowers have been designed and constructed so that, in so far as is reasonably practical, they meet the safety requirements of the Machinery Directive 2006/42/EC, they will not endanger the safety and health of those working with them. This is, however, subject to the machine being properly used and maintained according to the conditions stated in this manual and elsewhere, which have been found necessary as a result of the research and testing.

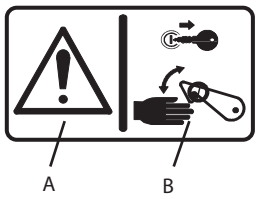
Transport Speed

UK road traffic regulations limit the maximum speed of these machines to 40 km/hr (25 mph) and it is advised that the local road traffic legislation is checked where this machine is used outside of the UK.

Decals

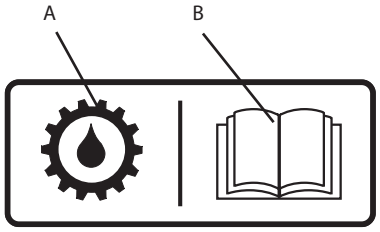
Decal - Danger Latch
Part No: 70-13-077 (0)
Location: Pivot arms - front face (centre arm - top face)

A) Caution
B) Stop tractor engine/remove ignition key before releasing or operating transport latches.



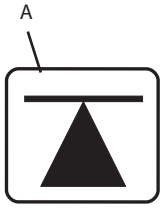
Decal - Hydraulic Oil
Part No: 111-3901 (A)
Location: Topside of tank - behind filler / breather.

A) Transmission Oil
B) Read and understand the Operators Manual.



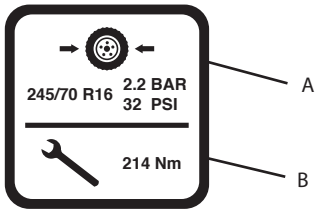
Decal - Jacking/Support Point
Part No: 70-13-072 (0)
Location: Pump mounting plate bottom (1)
Rear axle (2)

A) Jacking and Support Point



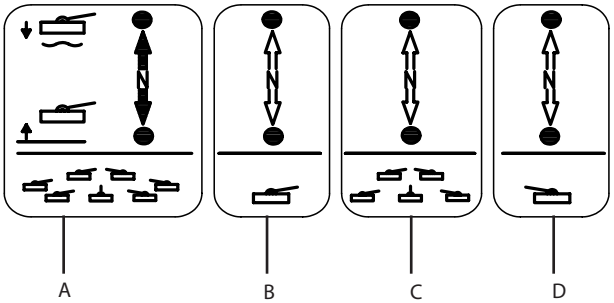
Decal - Tyre Pressure
Part No: 767810 (0)
Location: Mudguards

A) Recommended tyre pressure
B) Recommended wheel nut torque



Decal - Manual Control Lever (TM5490 / TM7490)
Part No: 66-13-013 (1)
Location: Adjacent to control levers

A) Override lift control
B) LH wing arm lift control
C) Centre three/five arms lift control
D) RH wing arm lift control

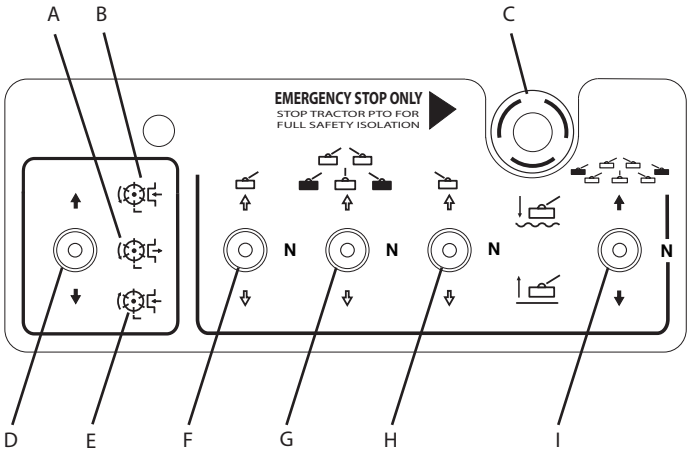


Decals continued

Decal - Electric Controls
(Electric lift only)
Part No: 111-1777 (A)

Location: Adjacent to control levers

A) Cutting cylinder disengage
B) Cutting cylinder engage forward rotation
C) Emergency stop
D) Cutterhead rotation control
E) Cutting cylinder engage reverse rotation
F) LH wing arm lift control
G) Centre three/five arms lift control
H) RH wing arm lift control
I) Override lift control

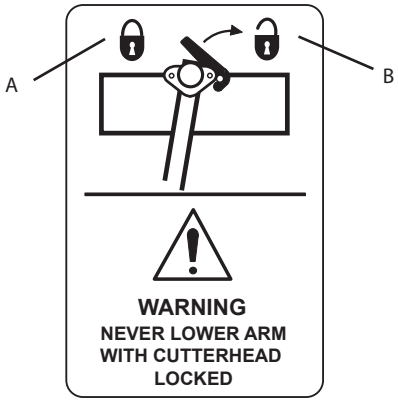


Decal - Serial Number
Location: Front and side of bulkhead

Decal - Warning Cutterhead Latch TM7490

Part No:111-3908 (A)
Location: Outside of each wingarms

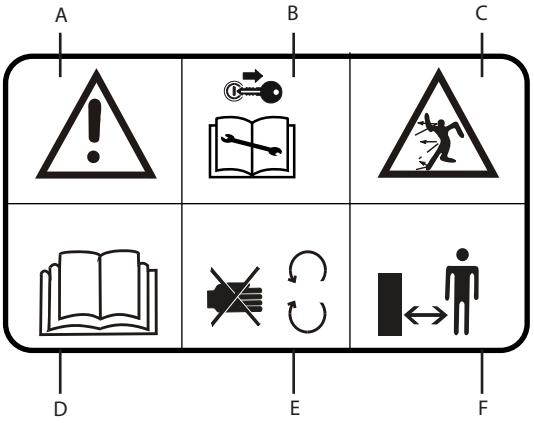
A) Locked position
B) Unlocked position



Decals continued

Decal - Warning Various

Part No:61-13-019 (0)
Location: Top of pump cover - towards front



A) Caution

B) Stop tractor engine and remove ignition key before servicing or maintenance

C) Beware of flying objects

D) Read and understand the Operators Manual

E) Do not remove guards while tractor engine is running

F) Keep bystanders clear

Decal - Grease PTO/540

Part No:65-13-079 (0)
Location: Pump mounting plate - front face

A) Caution

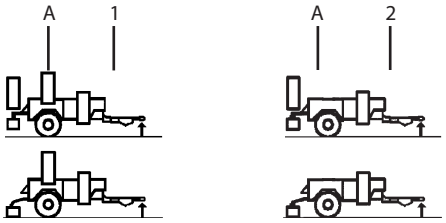
B) Do not operate PTO shaft without all guards in place

C) Lubricate PTO shaft every 8 hours

D) Rotational speed of PTO shaft

Decal - Drawbar

Part No:66-13-015 (2)
Part No:66-13-016 (2)
Location: Pump mounting plate - front face



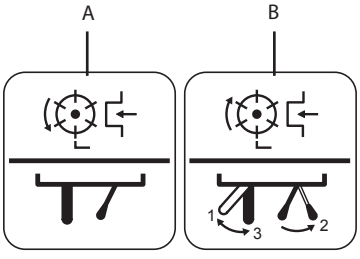
A) Minimum and maximum drawbar loads

1) TM7490

2) TM5490

Decal - Backlap Controls

Part No:767811 (0)
Location: Top of backlap cover - read from front of machine



A) Normal position of rotary valve controls for forward cutterhead rotation

B) Unlatch lock and move rotary valve controls for reverse (backlap) cutterhead rotation

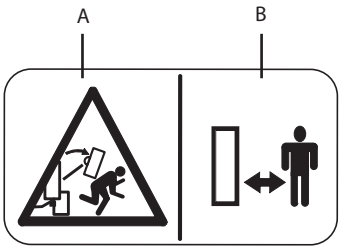
***Decals** continued*

Decal - Stored Energy Device

Part No:749804 (0)
Location: Underside of each wing arm

A) Beware of stored energy device

B) Keep bystanders clear

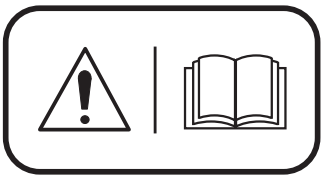


Decal - Warning - Towing/Parking

Part No: 111-3910 (A)
Location: Pump cover

A) Warning

B) Read and understand the Operators Manual



Noise Levels

The operator ear noise level for the Toro Trailed Gang Mowers is approximately 87.5dB(A) Led.

The operator ear noise level stated above refers only to the noise level generated by the mowing equipment. This measurement was taken outside the tractor cab at a point close to the rear screen and in line with the operator ear position. The tractor noise was eliminated from the measurement by use of an acoustic screen.

This noise level figure is of limited use when assessing daily noise exposure levels for operators. Such assessments will need to take into account the actual noise level at the operator ear position due to the tractor and mower combination. This will be affected by a number of factors i.e. type or tractor, engine speed, whether a cab is fitted, whether windows are open or closed, site conditions, etc.

EC Declaration of Conformity

EC DECLARATION OF CONFORMITY

Manufactured by: HAYTER LIMITED,

Address: Spellbrook, Bishop's Stortford, Herts. CM23 4BU. ENGLAND

declare that the lawnmower :

Model name:	**TM5490**	**TM7490**
Type:	Trailed Gang Mower	Trailed Gang Mower
Model No:	02700	02701
Cutting width:	350 cm	478 cm
Speed of rotation of the cutting device:	1000 rpm	1000 rpm

Complies with the provisions of Directive: 2004/42/EC Essential Health & Safety Requirements relating to the Design & Construction of Machinery and Safety Components and the regulations transposed into national law.

Also Directive 2004/108/EC Electromagnetic Compatibility and the regulations transposed into national law.

Authorised Signatory:

S.A Maryniak
(Technical Director)

Date: 12.04.10
Declaration done and technical documentation kept at:
HAYTER LIMITED
Spellbrook, Bishop's Stortford,
Herts. CM23 4BU ENGLAND

Introduction

This manual has been provided to ensure that safe operating practises and procedures are adhered to.
The Toro TM5490 and TM7490 Trailed Gang Mowers are fully independent hydraulically powered machines suitable for tractors having a power range in excess of 33 kW (45 bhp). It is easily attached to the tractor ring-hitch and powered from the rear 540rpm PTO. All cutterheads can be lowered into work from the tractor seat by cable operated or electrically operated hydraulic valves (available as an optional extra) and will automatically shut off when lifted.

Hydraulically operated brakes are fitted as standard and are designed to function in conjunction with the tractor service brake system. An overrun braking system is available as an option and can be used if hydraulic services are not available on the towing tractor.

Toro cylinder mowers are precision built machines designed solely for all weather cutting, a high standard of finish and long life within the limitations stated in this manual. Use in any other way is considered as contrary to the intended use. Compliance with and strict adherence to the conditions of operation, service and repair as specified in this Operators Manual also constitute essential elements of the intended use. The way in which this machine is operated and maintained will have a profound effect on its performance and reliability.

This manual contains advice on the TM5490 and TM7490 Trailed Gang Mowers which should be operated, serviced and repaired only by persons who are familiar with their particular characteristics and who are acquainted with the relevant safety procedures.

The safety precautions listed herein and all other generally recognised regulations on safety and all road traffic regulations must be observed at all times.

Any unauthorised modifications carried out to this machine may relieve Toro of liability for any resulting damage or injury.

In the pursuit of continuous product development Toro reserve the right to alter specifications without notice.

Cutterhead Variants: The Trailed Gang mowers can be fitted with a range of cutterhead configurations and optional extras:

Cutterhead	Cylinder diameter	Number of blades	Fixed Heads	Floating Heads with smooth or grooved front rollers
MK3 Cutterhead	200mm (8″) 254mm (10″)	4, 6, 8, 10 4, 6	Yes Yes	Yes No

Optional Extras:

Electric Lift Kit - Converts manual operated machine to electric lift.
Floating Cutting Unit Kit (TM5490 only) - Follows ground contours and provides an improved cut.
Overrun Drawbar Kit - Allows the machine to be used on a tractor without hydraulic brakes.

When fitting optional extra kits to the mower be sure to fix the serial number decal supplied with the kit. This will help the spare parts department to supply the correct spare parts throughout the service life of the mower.

Left and right: Throughout this manual the terms ‘left’ and ‘right’ refer to the machine when looking in the direction of forward travel.

Specifications

ALL FIGURES ARE NOMINALLY QUOTED AT THE RATED PTO SPEED OF 540 RPM UNLESS OTHERWISE STATED.

Hydraulic System

Drive Type:	PTO gearbox / twin tandem gear pumps
Hydraulic Oil Type:	Refer to **RECOMMENDED LUBRICANTS AND HYDRAULIC FLUIDS**
Tank Capacity:	133 Litres
Total System Capacity:	142 Litres
Suction Line Filtration:	125 micron no bypass mesh filter
Return Line Filtration:	10 micron with bypass check valve, 2 bar (29 psi)
Delivery Rate to Cutterheads:	29.5 Litres/min
Delivery Rate to Lift Controls:	15 Litres/min
Cleanliness Level:	ISO Code 18/13 or better (ISO 4406) 1300 - 2500 Particles/ml <15μ 40 - 80 Particles/ml >15μ
Maximum Oil Temperature:	95˚ C (203˚ F)

Recommended Lubricants and Hydraulic Fluids

Grease Points: A good quality medium grease

Cutterhead Grease Points: A good quality medium grease

PTO Gearbox: EP90 gear oil.

Hydraulic System:

Ambient Temperature Range	
0 - 30˚ C (32 - 86˚ F)	15 - 40˚ C (59 - 104˚ F)
ISO viscosity grade 46 hydraulic oil	ISO viscosity grade 68 hydraulic oil

Should you be in any doubt please contact your Toro dealer. Using incorrect grades will cause premature wear of hydraulic components and invalidate warranty.

PTO Gearbox

Input:	540 rpm 1.3/8″ 6 spline PTO shaft, anti-clockwise rotation (Looking on end of shaft)
Capacity:	1 Litre. Refer to **RECOMMENDED LUBRICANTS AND HYDRAULIC FLUIDS**
Output:	1862 rpm at pump coupling

Cutterhead Drive System

Drive Type:	Hydraulic
Pump:	Hydraulic gear type
Delivery Rate:	29.5 Litres per minute (6.5 UK gallons per minute)
Cutterhead Motors:	Hydraulic gear type, reversible, pressure balanced with integral differential pressure sensing relief check valve. Direct drive
Control:	Tractor PTO drive. Automatic diverter valve safety cut-off
Relief Valve Setting:	250 bar (3625 psi) differential
Backlap facility:	Interlocked lever control for reduced speed reverse rotation

Cutterhead Lift System

Drive Type:	Hydraulic
Pump:	Hydraulic gear type
Delivery Rate:	15 litres per minute (3.3 UK gallons per minute)
Cutterhead Manual Lift Control:	3 ‘Independent’ remote control levers 1 ‘Override’ remote control lever
Cutterhead Electric Lift Control:	Electrohydraulic 3 ‘Independent’ remote control switches 1 ‘Override’ remote control switches
Relief Valve:	115 bar (1668 psi)
Weight Transfer:	Variable hydraulic applied weight transfer acting on all cutterheads

Tractor

Minimum Power:	45 bhp (TM5490 / TM7490)
PTO:	Rear 540 rpm 1.3/8″ - 6 spline
Drawbar:	Ring-hitch

Running Gear

Tyres:	245/70 'General'
Tyre Pressure:	2.2 bar (32 psi)
Wheel Nut Torque Setting:	224Nm
Brakes:	Drum type, cable operated, hydraulic controlled or optional mechanical overrun brakes with integral lever operated handbrake
Maximum Speed:	Road traffic regulations limit the maximum speed of these machines to 40 km/hr (25 mph) TM5490 / TM7490

Cutterheads

	MK3 200 mm Cutterhead	**MK3 254 mm Cutterhead**
Cutting Width:	762 mm (30″)	762 mm (30″)
Cylinder Diameter:	200 mm (8″)	254 mm (10″)
Cylinder Speed:	1000 rpm approx	1000 rpm approx
Height of Cut:	12 mm (0.5″) to 80 mm (3″)	12 mm (0.5″) to 80 mm (3″)
Number of Blades:	4, 6, 8, 10	4, 6
Smooth Rear Roller:	Standard	Standard
Smooth Front Roller:	Optional	-
Grooved Front Roller:	Optional	-
Configuration:	Fixed / Floating* * TM5490 Only	Fixed

Weight and Dimensions

TM5490

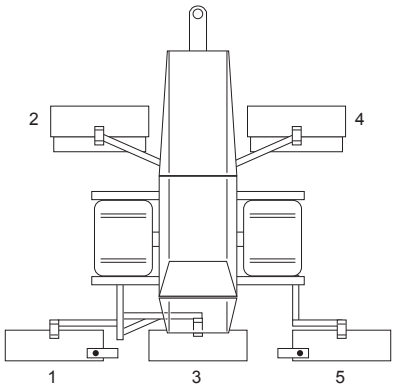
Overall Working Width:	3680 mm (144.9″)
Mowing Width:	3500 mm (137.8″)
Transport Width:	2120 mm (83.5″)
Overall Length:	3600 mm (141.7″)
Transport Height:	1610 mm (63.4″)
Approx. Working Weight:	1385 kg (3053 lb)
Drawbar Weight (Transport):	50 kg (110.2 lb)

TM7490

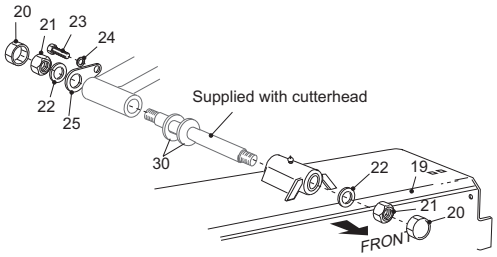
Overall Working Width:	4970 mm (195.7″)
Mowing Width:	4780 mm (188.2″)
Transport Width:	2370 mm (93.3″)
Overall Length:	3600 mm (141.7″)
Transport Height:	1600 mm (63″)
Approx. Working Weight:	1680 kg (3703 lb)
Drawbar Weight (Transport):	55 kg (121.3 lb)

ITEM No.	DESCRIPTION	PART NO.	QTY	ITEM NOTE
1	DEFLECTOR-REAR	876040W	2	
2	BRACKET-DEFLECTOR, LH	876041	2	
3	BRACKET-DEFLECTOR, RH	876042	2	
4	BOLT-CARR [M10*55 GRADE 4.6]	ZBK1J055U	6	
5	NUT-HEX, NYLOC [M10]	ZNN1J000U	20	
6	WASHER-PLAIN [M10 HEAVY]	ZWQ1J000U	28	
7	SCREW-HH [M5*16]	ZDH1E016U	8	
8	WASHER [3/16*1/2*17G]	09257	16	
9	NUT-NYLOC [M5]	09430	8	
10	SCREW-HH [M10 X 90]	ZBH1J090U	2	
11	GUARD-HOC ADJUSTMENT, LH	876086W	1	
12	GUARD-HOC ADJUSTMENT, RH	876087W	1	
13	PLATE - 1030 HEAD	74-01-313W	2	
14	SPACER-DEFLECTOR	876049	4	
15	PLATE _ ROLLER BOX [BLACK]	111-4128-03	4	
16	BOLT M10*60	09397	4	
17	PLATE LIGHTBOARD SECURING	66-01-232W	2	
18	BOLT-CARR [M10*25 HT (8.8)]	15-11-003	4	
19	MK3 CUTTERHEAD ASSYS			
	02800 MK3 200MM (8″) 4-BLADE CUTTER UNIT			
	02801 MK3 200MM (8″) 6-BLADE CUTTER UNIT			
	02802 MK3 200MM (8″) 8-BLADE CUTTER UNIT			
	02803 MK3 200MM (8″) 10-BLADE CUTTER UNIT			
	02810 MK3 250MM (10″) 4-BLADE CUTTER UNIT			
	02811 MK3 250MM (10″) 6-BLADE CUTTER UNIT			
20	CAP-NUT	10-11-100	10	
21	NUT-HEX, NYLOC [M24]	ZNN1X000U	10	
22	WASHER [M24 PLAIN FORM A]	09555	5	
23	SCREW-HH [M12*30]	09415	5	
24	WASHER-SPRING [M12 SC]	09599	5	
25	PIN RETAINER	63-01-185	5	
26	BUMP STOP	65-01-531	2	
27	CONTROL LEVER PARKING CATCH	10-07-010	1	
28	LIGHTING BOARD	-	1	
29	SPANNER	HY922101	1	
30	BELLEVILLE WASHER 60*30.5*3.5	767815	10	
31	NUT-NYLOC [M8, INSERT]	09441	4	
32	WASHER [M8*17*1.6]	09475	8	
33	BOLT M8*80	ZBH1H080U	4	
34	PTO SHAFT - WIDE ANGLE	749812	1	
35	BRACKET LIGHTBOARD LH	66-01-230W	1	
36	BRACKET LIGHTBOARD RH	66-01-231W	1	
37	STOP-BUMP [70]	65-01-532	2	
38	BOX ROLLER	74-01-264W	2	

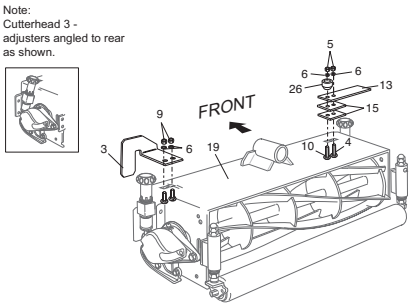
Cutterhead Position	Cutterhead Type
1	Left Hand (with bump stop and roller plate / box)
2	Left Hand (with deflector)
3	Left Hand
4	Right Hand (with deflector)
5	Right Hand (with bump stop and roller plate / box)



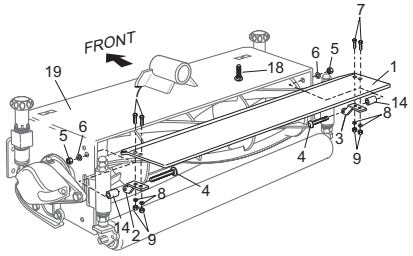
254mm Cutterhead:



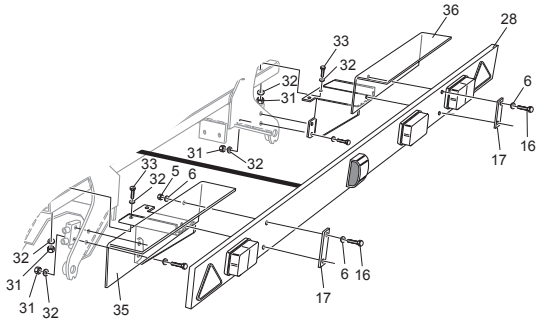
Cutterheads 1 & 5 only:
Cutterhead 5 opposite hand
Cutterhead 3 (smaller image opposite):



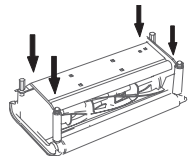
Cutterheads 2 & 4 only:
Cutterheads 4 opposite hand



Lighting board:



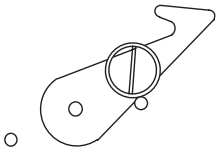
Assembling the Mower



WARNING - PREVENT ACCIDENTS: Take care to avoid the sharp edges of the cutting cylinder and bottom blade when lifting or working on the cutterhead.

The cutterhead is heavy - It is recommended that suitable lifting equipment be used when removing the cutterhead from the carton and during installation.

If lifting equipment is not available, the cutterhead should be lifted from each end as indicated, by two people. All items numbers can be found on the delivery checklist above.



1. To release the cutterhead suspension arms. Start the tractor engine, hitch up the mower, connect the PTO shaft, then operate the control lever to lift the suspension arms to the fully raised position to reduce pressure on the arms. Unlock the cutterhead suspension arms by releasing the red transport latches to their released position and carefully lower the arms to the floor. Refer to 'Commissioning the Mower' and 'Attaching the Mower to the Tractor'

2. Unpack 5 Cutterheads (item 19).

3. Lay out the cutterheads around the mower in the correct positions as shown.

4. 254mm cutterheads - Fit the bump stop (item 26), 2 roller box plates (item 15) and roller plate (item 13) to the cutterheads 2 and 6 (hydraulic motor end) using 1 carriage bolt M10 x 55, 1 bolt hex. head M10 x 90, 2 nyloc nuts and 2 plain washers (item 4, 5, 6 and 10)

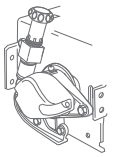
5. Modify cutterheads 4 and 5 from left hand to right hand configuration. Remove protective cover (Item 5) and discard. Remove circlip (Item 7). Remove counterweight (Item 6) together with 'O' ring (Item 9) and refit to the non-drive end. Tighten the socket head cap screws to a torque of 80 Nm. Refit the circlip to the drive end.
   Note: It is important that the circlip is fitted to the drive end.

Assembling the Mower *continued*

6. Modify the cylinder adjustment handwheel assemblies (Item 8) on cutterhead 3 to the angled back position. Remove the nuts, bolts and washers from alternative hole positions 'A'. Remove the nuts, bolts and washers which attach the handwheel assemblies to cutterhead frame. Remove the ring bolt clamp nuts, washers and spring washers and remove the handwheel assemblies. Adjust the handwheel assemblies to provide the correct fastening centres and refit in the alternative positions. Replace all fasteners and tighten securely.

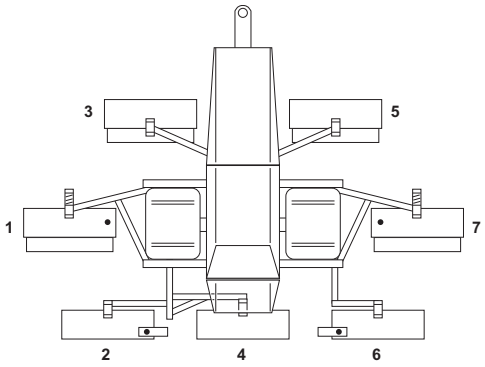
7. Secure the cutterheads to the mower in the correct positions using the pivot pins, M24 nylon nuts, plain washers, nut caps, pin retainers, belleville washers (where applicable), M12 x 25 setscrews and spring washers (Items 21, 22, 20, 25, 30, 23 & 24 - pages 1.23). Note that cutterheads 2 & 4 mount in front of their respective suspension arms.

Note:
Cutterhead 3 - adjusters angled to rear as shown.

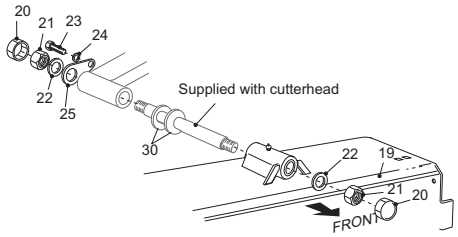


ITEM No.	DESCRIPTION	PART NO.	QTY
1	DEFLECTOR-REAR	876040W	4
2	BRACKET-DEFLECTOR, LH	876041	4
3	BRACKET-DEFLECTOR, RH	876042	4
4	BOLT-CARR [M10*55 GRADE 4.6]	ZBK1J055U	10
5	NUT-HEX, NYLOC [M10]	ZNN1J000U	32
6	WASHER-PLAIN [M10 HEAVY]	ZWQ1J000U	32
7	SCREW-HH [M5*16]	ZDH1E016U	16
8	WASHER [3/16*1/2*17G]	09257	32
9	NUT-NYLOC [M5]	09430	16
10	SCREW-HH [M10*90]	ZBH1J090U	2
11	GUARD-HOC ADJUSTMENT, LH	876086W	1
12	GUARD-HOC ADJUSTMENT, RH	876087W	1
13	PLATE - 1030 HEAD	74-01-313W	2
14	SPACER-DEFLECTOR	876049	8
15	PLATE _ ROLLER BOX [BLACK]	111-4128-03	4
16	BOLT M10*60	09397	4
17	PLATE LIGHTBOARD SECURING	66-01-232W	2
18	BOLT-CARR [M10*25 HT (8.8)]	15-11-003	12
19	MK3 CUTTERHEAD ASSYS		
	02800 MK3 200MM (8″) 4-BLADE CUTTER UNIT		
	02801 MK3 200MM (8″) 6-BLADE CUTTER UNIT		
	02802 MK3 200MM (8″) 8-BLADE CUTTER UNIT		
	02803 MK3 200MM (8″) 10-BLADE CUTTER UNIT		
	02810 MK3 250MM (10″) 4-BLADE CUTTER UNIT		
	02811 MK3 250MM (10″) 6-BLADE CUTTER UNIT		
	02812 MK3 250MM (10″) 8-BLADE CUTTER UNIT		
20	CAP-NUT	10-11-100	10
21	NUT-HEX, NYLOC [M24]	ZNN1X000U	10
22	WASHER [M24 PLAIN FORM A]	09555	5
23	SCREW-HH [M12*30]	09415	5
24	WASHER-SPRING [M12 SC]	09599	5
25	PIN RETAINER	63-01-185	5
26	BUMP STOP	65-01-531	2
27	CONTROL LEVER PARKING CATCH	10-07-010	1
28	KIT LIGHTING	66-09-001	1
29	SPANNER	HY922101	1
30	BELLEVILLE WASHER 60*30.5*3.5	767815	10
31	NUT-NYLOC [M8, INSERT]	09441	4
32	WASHER [M8*17*1.6]	09475	8
33	BOLT M8*80	ZBH1H080U	4
34	PTO SHAFT - WIDE ANGLE	749812	1
35	BRACKET LIGHTBOARD LH	66-01-230W	1
36	BRACKET LIGHTBOARD RH	66-01-231W	1
37	STOP-BUMP [70]	65-01-532	2
38	BOX ROLLER	74-01-264W	2
39	DISC SPRING DIA 25* DIA 12,2*1,5MMTHK	876099	2
40	NUT [M10 PLAIN]	09449	4
41	WASHER-PLAIN [M16]	09491	2
42	NUT M12 BINX	ZNB1L000U	2
43	HOSE GUIDE	749035	2
44	WING HEAD LATCH PLATE W/	749105W	2
45	LATCH WING HEAD	749107C	2
46	PIN DIA 30*478 HEAD PIVOT	749554	2

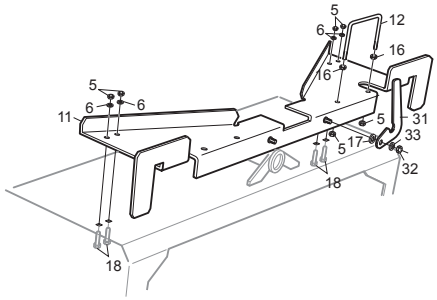
Cutterhead Position	Cutterhead Type
1	Left Hand (with rear deflector and bump stop)
2	Left Hand (with bump stop and roller plate / box)
3	Left Hand (with deflector)
4	Left Hand
5	Right Hand (with deflector)
6	Right Hand (with bump stop and roller plate / box)
7	Right Hand (with rear deflector and bump stop)



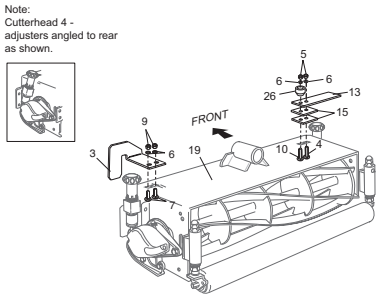
254mm Cutterhead:



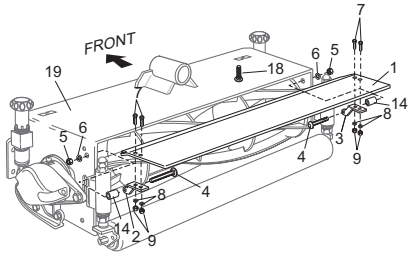
Cutterheads 1 & 7:
Cutterhead 7 shown
Cutterhead 1 shown opposite hand



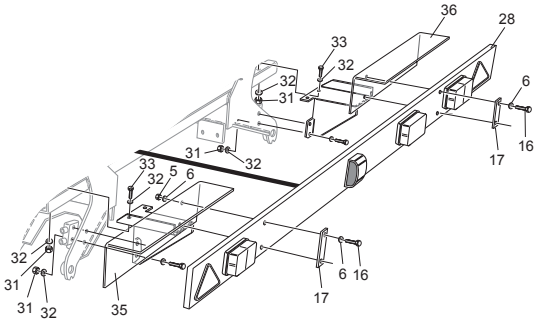
Cutterheads 2 & 6 only:
Cutterhead 6 opposite hand
Cutterhead 4 (smaller image opposite)



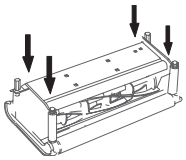
Cutterheads 1, 3, 5 & 7 only:
Cutterheads 1 & 3 as shown
Cutterheads 5 & 7 opposite hand



Lighting board:



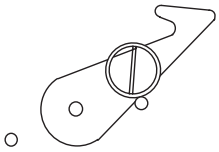
Assembling the Mower



WARNING - PREVENT ACCIDENTS : Take care to avoid the sharp edges of the cutting cylinder and bottom blade when lifting or working on the cutterhead.

The cutterhead is heavy - It is recommended that suitable lifting equipment be used when removing the cutterhead from the carton and during installation.

If lifting equipment is not available the cutterhead should be lifted from each end as indicated, by two people. All items numbers can be found on the delivery checklist above.



1. To release the cutterhead suspension arms. Start the tractor engine, hitch up the mower, connect the PTO shaft, then operate the control lever to lift the suspension arms to the fully raised position to reduce pressure on the arms. Unlock the cutterhead suspension arms by releasing the red transport latches to their released position and carefully lower the arms to the floor. Refer to 'Commissioning the Mower' and 'Attaching the Mower to the Tractor'

2. Unpack 7 Cutterheads (item 19).

3. Lay out the cutterheads around the mower in the correct positions as shown.

4. Sub assemble the wing arm latch plate. Fit the plain washer, latch, disc spring and M12 nyloc nut (items 39, 41, 42 and 45) to the shouldered pin on the latch plate. Tighten the nut such that the latch is stiff but can move from side to side. Assemble the hose guide, two M10 plain nuts and two M10 nyloc nuts (item 5, 40 and 43) to the latch plate. Prepare a second assembly in opposite hand configuration.

5. 254mm cutterheads - Fit the bump stop (item 26), 2 roller box plates (item 15) and roller plate (item 13) to the cutterheads 2 and 6 (hydraulic motor end) using 1 carriage bolt M10 x 55, 1 bolt hex. head M10 x 90, 2 nyloc nuts and 2 plain washers (item 4, 5, 6 and 10).

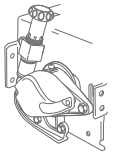
6. Fit each of the wing arm latch plate sub assemblies to their respective cutterheads using four M10 x 25 coach bolts, four M10 plain washers and four M10 nyloc nuts (items 5, 6 and 18).

Assembling the Mower *continued*

7. Modify cutterheads 5, 6 and 7 from left hand to right hand configuration. Remove protective cover (Item 5) and discard. Remove circlip (Item 7). Remove counterweight (Item 6) together with 'O' ring (Item 9) and refit to the non-drive end. Tighten the socket head cap screws to a torque of 80 Nm. Refit the circlip to the drive end. **Note:** It is important that the circlip is fitted to the drive end.

8. Modify the cylinder adjustment handwheel assemblies (Item 8) on cutterhead 4 to the angled back position. Remove the nuts, bolts and washers from alternative hole positions 'A'. Remove the nuts, bolts and washers which attach the handwheel assemblies to cutterhead frame. Remove the ring bolt clamp nuts, washers and spring washers and remove the handwheel assemblies. Adjust the handwheel assemblies to provide the correct fastening centres and refit in the alternative positions. Replace all fasteners and tighten securely.

Note:
Cutterhead 3 - adjusters angled to rear as shown.



9. Secure the cutterheads to the mower in the correct positions using the pivot pins, M24 nylon nuts, plain washers, nut caps, pin retainers, belleville washers (where applicable), M12 x 25 setscrews and spring washers (Items 21, 22, 20, 25, 30, 23 & 24). Note that cutterheads 3 & 5 mount in front of their respective suspension arms.

10. Assemble the hydraulic motor assemblies to the cutterheads by following the steps outlined below:
    A) Remove the socket cap screws, spring washers, plain washers and the protective cover (Items 2, 3, 4 & 5).

    B) Remove the hose tie securing the hydraulic motor assembly to the machine. Unfold the hoses and ensure that they are neatly routed while offering the motor up to the cutterhead.

Note: the hoses for cutterheads 1 and 7 must pass through the hose guide on the wing head latch mount assembly.

***Assembling the Mower** continued*

C) Align and mesh the motor shaft spline with the coupling on the cutting cylinder. Ensure that the motor is fully located into the bearing housing. If necessary, gently tap the motor into position with a SOFT mallet, until it butts up to the bearing housing.

D) Secure the motor in position using the fasteners previously removed and torque to 80 Nm.

E) Repeat steps (A) to (D) for the remaining cutterheads.

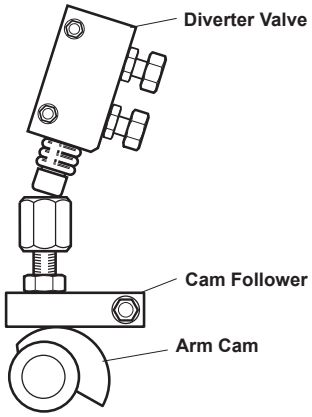
11. Fit deflectors (Item 1) to cutterheads 1, 3, 5 and 7 using deflector brackets (Items 2 & 3) and spacers (Item 14). Secure with fasteners (Items 4, 5, 6, 7, 8 & 9) as shown.

12. Immediately following installation, it is essential that all bearing housings are filled full of grease via the grease nipples 'B'. This will require a significant quantity of a good quality medium grade grease.

13. Assemble the lighting board brackets (item 35 and 36) to the rear of the machine, using four M8 x 80 bolts, eight M8 plain washers and four M8 nyloc nuts (item 37, 38 and 39). Also use the two fasteners holding the diverter valve for cutterheads 2 and 6 to secure the lower part of the bracket as shown.

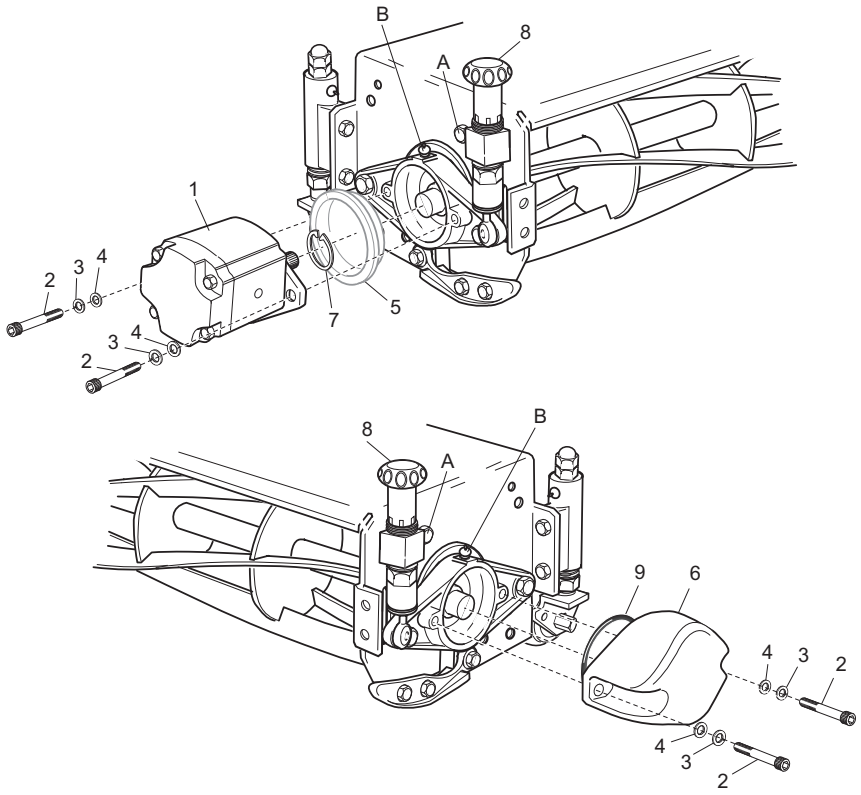
WARNING: PREVENT ACCIDENTS - Ensure that the cam follower is in contact with the cam and that the diverter valve action is in full working order after reassembling the diverter valve fasteners. Refer to the diagram opposite.

14. Fit the lighting board (item 40) to its brackets and secure using two light board securing plates, four M10 x 40 bolts, eight M10 plain washers and four M10 nyloc nuts (items 5, 6, 41 and 42)

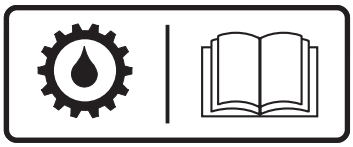


Assembling the Mower *continued*

ITEM No.	DESCRIPTION	PART NO.	QTY	ITEM NOTE
1.	MOTOR			
2.	SCREW			
3.	SPRING WASHER			
4.	WASHER			
5.	PLUG - PROTECTIVE COVER (REMOVE AND DISCARD)			
6.	COUNTER WEIGHT			
7.	CIRCLIP			
8.	CYLINDER ADJUSTMENT HAND WHEEL ASSEMBLY			
9.	'O' RING			

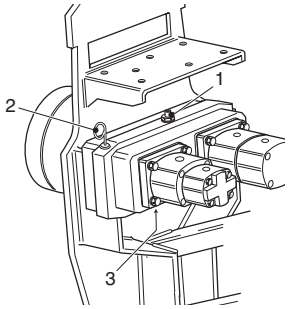


Commissioning the Mower (Mechanical Control)



Check oil level: Remove the filler cap on top of the hydraulic tank. Fill the hydraulic tank with the correct grade of hydraulic oil before use, refer to **SPECIFICATIONS - HYDRAULIC SYSTEM**, to the upper black line on the oil level sight gauge. This may be found at the front of the tank under the pump cover. Replace the filler cap and wipe clean any spillage.

Check pump gearbox oil level: Check that oil is up to the level of the upper mark on the dipstick. Top up as necessary through the dipstick hole, with the correct grade of oil, refer to **SPECIFICATIONS - HYDRAULIC SYSTEM**. Be careful not to overfill the gearbox.



1. Filler / plug breather
2. Dipstick
3. Drain plug

Lubricate grease points: Grease all nipples with the correct grade of grease, refer to **SPECIFICATIONS**. Grease nipples will be found in the following locations:

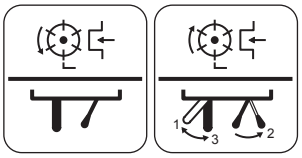
Cutterheads: Rollers, cylinder adjusters, roller adjusters and bearing housings
Cutterhead Suspension Assemblies: Bushes
Wheels: Hubs
Hydraulic Cylinders: Pin bushes
Power Take Off Shaft: Inner and outer sliding shafts, Universal joints
Pivot Arms: Pin bushes and diverter operating cams

Lubricate all braking system moving parts with oil.

Check tyre pressures: Inflate to correct pressures as necessary, refer to **SPECIFICATIONS**.

Adjust Cutterheads: Adjust all cutterheads correctly for cutting cylinder to bottom blade contact clearance and height of cut, refer to **MAINTENANCE** and **OPERATING THE MOWER**. It is essential that the mower is never run with the cutting cylinders in heavy contact with the bottom blades. Never run the cutting cylinders in a dry condition without using some form of lubrication between the cylinders and bottom blades. It is advisable to set the cutting cylinders to a running clearance during the commissioning procedure.

Commissioning the Mower *continued*

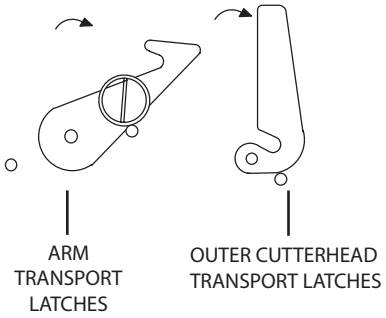


Check that the backlap control valve is locked in the "Normal Operation" position:

Connect up the mower to a suitable tractor.

IMPORTANT: PREVENT DAMAGE - Refer to ATTACHING THE MOWER TO THE TRACTOR and follow the instructions given, otherwise damage could result.

Fit the control lever assembly to the tractor: Disconnect the control lever assembly from the mounting bracket on the mower and attach it to the tractor mounting bracket, refer to **PREPARING THE TRACTOR**.



Set all transport latches to the released positions: To release the cutterhead suspension arms. Start the tractor engine and operate the control lever to lift the suspension arms to the fully raised position to reduce pressure on the arms. Then release the transport latches.

Engage P.T.O. drive: When starting the mower for the first time, it is assumed that all cutterheads will be resting on the ground. Ensure that the area surrounding the mower is clear of bystanders and that there are no obstructions or loose items that may impede or be jettisoned by the cutterheads. Start the tractor and set the engine speed at a low idle. Select and engage the rear P.T.O. for 540 rpm.

Do not exceed 540 rpm P.T.O. speed.

Check hydraulic system: Check and note any hydraulic leaks, keeping well clear of the rotating cutting cylinders. Disengage the P.T.O. and stop the tractor engine before attempting to tighten loose hydraulic unions.

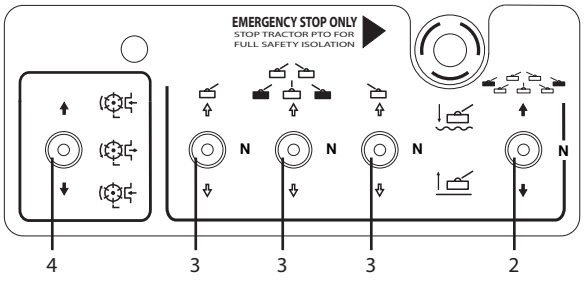
⚠ **WARNING: PREVENT ACCIDENTS - Lower all cutterheads to the ground, disengage the P.T.O. drive, stop the tractor engine, apply the tractor parking brake and remove the ignition key before making any adjustments.**

Commissioning the Mower *continued*

After making final adjustments, operate each circuit in turn to eliminate any air from the hydraulic system and closely observe the movement of the hydraulic hoses. Ensure that the motor hoses move freely without impeding the movement of the cutterheads through the full range of travel. Observe the hoses at each cutterhead to ensure that their ability to follow ground contours is not impeded. Ensure that hoses do not braid adjacent hoses or other parts of the machine.

With all 7 cutterheads on the ground and all the control levers in the 'Down/Cut' position, operate the 'Override' control lever (Short handle) to raise all 7 cutterheads simultaneously. The cutting cylinders should stop rotating instantly. With the cutterheads fully raised, operate the override control lever to the 'Down/Cut' position to lower all 7 cutterheads simultaneously. The cutting cylinders will start to rotate when they are 300 - 400 mm above ground.

Electrical controls only (optional extra)
Reset the electrical control system: It will be necessary to carry out this procedure when powering up the electrical control system for the first time or at any time when electrical power is restored to the control box.
Before engaging the P.T.O operate the individual cutterhead Lift/Lower Switches (3) the Override Switch (2) and the Cutter Switch (4) to the neutral (N), off position in order to reset the electrical control system. Ensure that the power interrupt button (1) is reset by rotating the button clockwise until it 'pops' out.



Commissioning the Mower (Electric Control)

This section refers to the TM7490 Only.
Operate the individual cutterhead Lift/Lower control switches and the override control switch to the 'Down/Cut' position. It is quite normal to experience some delay in the response of the controls for the first time as air is purged from the hydraulic system.

The cutting cylinders will begin to rotate in a forward direction before the cutterheads reach the ground.

Commissioning the Mower *continued*

Operate the Lift/Lower control switches in turn to lift the left hand wing cutterhead, the centre three cutterheads and the right hand wing cutterhead. Carry out this exercise with care and observe the movement of the cutterheads to ensure that they are not impeded by poor routing of the hydraulic hoses.

WARNING: PREVENT ACCIDENTS - The centre cutterhead will stop rotating when the transport height is reached. All other cutting cylinders should stop rotating when the outer part of the outer part of the cutter head reaches a height of 300-400mm above the ground. If the cutting cylinders continue to rotate above this height limit, it is essential to adjust the position of each diverter valve to achieve this requirement.

Check and repair any hydraulic leaks.

WARNING: PREVENT ACCIDENTS - Lower all cutterheads to the ground, disengage the P.T.O. drive, stop the tractor engine, apply the tractor parking brake and remove the ignition key before making any adjustments.

After making final adjustments, operate each circuit in turn to eliminate any air from the hydraulic system and closely observe the movement of the hydraulic hoses. Ensure that the motor hoses move freely without impeding the movement of the cutterheads through the full range of travel. Observe the hoses at each cutterhead to ensure that their ability to follow ground contours is not impeded. Ensure that hoses do not braid adjacent hoses or other parts of the machine.

With all cutterheads on the ground and the three individual Lift/Lower switches in the ‘Down/Cut’ position, operate the override control switch to the ‘Neutral’ position. All the cutting cylinders should stop rotating instantly. Operate the override control switch to the ‘Raise’ position until they are fully lifted.

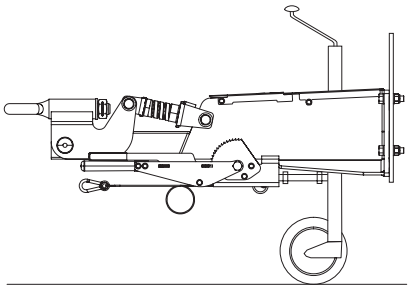
Operate the override control switch to the ‘Down/Cut’ position to lower all cutterheads simultaneously. The cutting cylinders will start to rotate when they are 300 - 400mm above the ground.

Commissioning the Mower *continued*

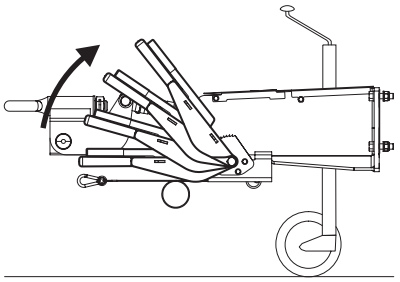
Add hydraulic oil: With all cutterheads on the ground, disengage the P.T.O. and stop the tractor engine. Initial operation of the mower unit will drain oil from the hydraulic tank to fill hoses, hydraulic cylinders, etc. Top up the hydraulic tank with the correct grade of oil, to the upper black line in the sight glass, refer to **SPECIFICATIONS - HYDRAULIC SYSTEM**.

With all cutterheads on the ground and the Lift/Lower switches in the 'Down/Cut' position, operate the cutterhead drive switch to the 'Reverse' position. The direction of rotation of the cutting cylinders will reverse for as long as the switch is held in the 'Reverse' position. The switch will normally remain in the 'Forward' position during operation.

Note: Only cutterheads with their Lift/lower switches in the 'Down/Cut' position will be reversed. This momentary reverse facility is provided in order to allow temporary blockages to be cleared from the cutterheads. This facility should NOT be used to backlap the cylinders.



Commission the braking system: Inspect the brake system and ensure that all components are assembled and secured correctly and that all cables are correctly tensioned. Carefully operate the handbrake upwards. Ensure brakes are on when the lever has moved 70 to 80 percent of it's travel. If not, release the handbrake, adjust using turnbuckle and retry. Repeat this sequence until 70 to 80 percent has been achieved.



Re-apply the handbrake.

Operate the tractor and attempt to pull the mower forwards. Check that the mower brakes operate satisfactorily. Operate the tractor and attempt to push the mower in reverse. Check that the mower brakes operate satisfactorily.

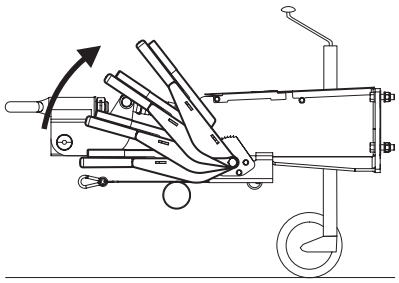
If correct operation is not achieved, re-check the brake system linkages. Consult your dealer if assistance is required.

Firmly apply the brakes 10 times by repeatedly operating the handbrake lever.

Refer to **MAINTENANCE - RUNNING IN PERIOD AT FIRST 50 HOURS**.

Commissioning the Mower *continued*

Lower the handbrake lever to its lowest position to release the brakes.

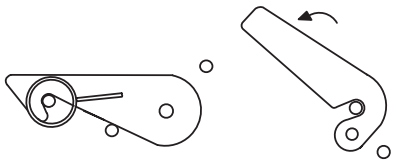


⚠ **Perform the following road tests: WARNING: PREVENT ACCIDENTS - ALWAYS perform road tests taking due consideration of other road users. Tests should be performed on a private road where possible.**

Drive the tractor/mower combination in a straight line at 20 m.p.h. (32 k.p.h.) and brake gradually and firmly without skidding. Check the mower's braking performance. If the braking effect at the L.H. and R.H. wheels is unequal, adjust the wheel brake cables. Repeat the braking test until satisfactory performance is achieved.

Drive the tractor/mower combination at the maximum speed at which it is to be used but do not exceed 40k.p.h. (25 m.p.h.), refer to **SAFETY PRECAUTIONS - TRANSPORT SPEED**. Apply the brake firmly without skidding. Before coming to rest, increase the speed back to maximum. Ensure that the braking performance is gradual and sympathetic to the system (not severe). Avoid aggressive/violent braking during these tests in order to allow the brake pads to bed in correctly.

Preparing the Tractor



Prepare the mower for transport: Start the tractor engine and engage the P.T.O. drive. Operate the override control lever to lift all cutterheads to the fully raised transport position. Stop the tractor engine, return to the mower and secure all cutterhead suspension arms and outer cutterheads in the transport position by locking the transport latch safety locks. Apply a thin coating of grease to all exposed hydraulic cylinder rods and to the faces of the diverter valve operating cams.

The TM5490 and TM7490 Trailed Gang Mowers are designed for use with standard agricultural or industrial tractors having a minimum power of 45 BHP (TM5490) and 70 BHP (TM7490). They must also be equipped with a ring-hitch (automatic pick up hitch) and a 540 rpm, rear P.T.O.

The TM5490 and TM7490 Gang Mowers have a fully independent hydraulic system which is powered from the tractor rear P.T.O. The system is live when the tractor rear P.T.O. is engaged. The cutterheads may be raised or lowered via a remote control sited adjacent to the operator.

This procedure is best carried out after attaching the mower to the tractor, for the first time.
A remote control quick release mounting bracket is supplied loose with the mower. This should be attached to the tractor in a convenient position according to the operator's preference. When choosing this position it is essential that adequate slack is left in the umbilical cable assembly to allow for articulation of the tractor and the mower when turning or negotiating brows of hills, etc. Serious damage could result if the umbilical cable assembly becomes stretched or pinched in work. The control and power cables are housed in a robust umbilical hose. Secure the tractor end of the umbilical hose using the mounting bracket supplied in a convenient position on the tractor. Recheck the routing of the umbilical cable assembly and ensure that it is free of pinch points and has adequate slack.

WARNING: PREVENT ACCIDENTS - Under no circumstances should the mounting brackets be attached to the frame or structure of a safety CAB or ROPS.

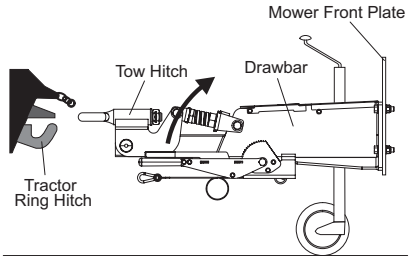
Preparing the Tractor *continued*

The mower electric remote control system incorporates a cigar lighter plug connector and the lighting system incorporates a conventional 7 pin plug connector. The tractor must be equipped with compatible cigar lighter and lighting sockets.

The tractor should be equipped with turf pattern tyres to minimise damage to fine turf areas. Consult your tractor operators manual or tractor dealer for full details of recommended tyre equipment. Pay particular attention to tractor tyre pressures as this will have a considerable effect on steering, traction and associated turf damage.

Attaching the Mower to the Tractor

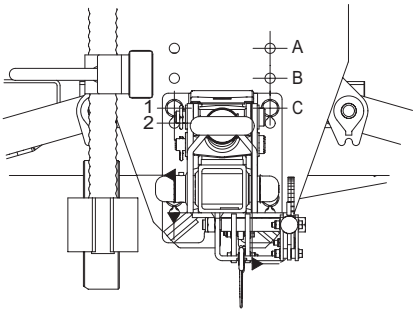
Prepare the tractor: Before attaching the mower to the tractor ensure that the tractor is properly prepared, refer to **PREPARING THE TRACTOR**.



Assemble the mower tow-hitch to the tractor: Ensure that the tractor ring-hitch is in the normal towing position.

The mower should be standing on level ground with the handbrake applied and supported at the front end by the jockey wheel. The jockey wheel height should be adjusted such that the mower framework is aligned horizontally with the ground.

Reverse the tractor to approximately the correct position in relation to the mower to establish the mower drawbar position.

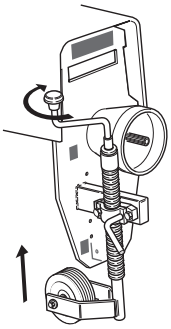


Apply the tractor parking brake, stop the engine and remove the ignition key.

Align the mower tow-hitch with the tractor ring-hitch. If necessary adjust the height of the tow-hitch by fitting the drawbar in the appropriate mounting holes in the mower front plate.

	1	2
A	546 - 570	571 - 620
B	496 - 520	521 - 545
C	0 - 470	471 - 495

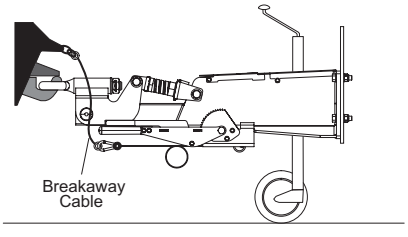
Assemble the drawbar to the mower in the required position and tighten the 4 M16 fasteners to 200Nm torque.



Engage the tractor ring-hitch to the mower tow-hitch after lubricating with grease.

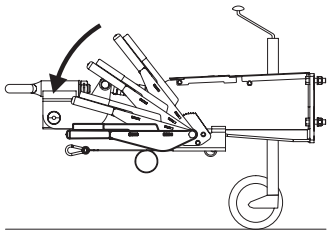
Rotate the jockey wheel handle clockwise to raise the jockey wheel to a position just above the ground. Unclamp the jockey wheel assembly, slide it upwards and re-clamp in its storage position.

Check that the mower frame is still horizontally aligned with the ground and re-adjust if necessary.



Assemble the breakaway cable: Assemble the breakaway cable between the handbrake lever and a rigid location on the tractor. Ensure that the breakaway cable location will provide straight line operation in the event of a breakaway. In the event of the mower uncoupling from the tractor the breakaway cable automatically applies the brakes.

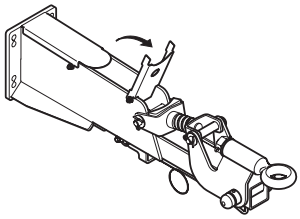
Attaching the Mower to the Tractor
continued



WARNING - PREVENT ACCIDENTS: Do not use a damaged breakaway cable. Discard and replace before using the mower.

Release the handbrake: Carefully operate the handbrake to its lowest position.

Assemble the P.T.O. shaft: WARNING: PREVENT ACCIDENTS - Always examine the condition of the P.T.O. shaft and guards before use. Never use a damaged P.T.O. shaft assembly.



IMPORTANT: PREVENT DAMAGE - When fitting the P.T.O. shaft for the first time or when hitching the mower to another tractor it is essential to check and adjust the P.T.O. operating length, otherwise serious damage may result.

IMPORTANT: PREVENT DAMAGE - Ensure that the P.T.O. rest is folded down in the storage position when the P.T.O. shaft is connected to the tractor.

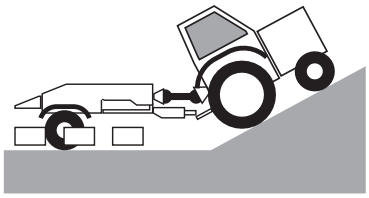
Grease the P.T.O shaft. Partially withdraw the telescoping P.T.O. shaft to expose the grease nipple through the outer guard aperture and lubricate with a good quality grease, refer to **RECOMMENDED LUBRICANTS**. Push the telescoping section back into position. Grease the universal joints.

Assemble the large wide angle joint to the tractor (as shown on the P.T.O. guard) and the other end to the mower ensuring that the release clips are fully engaged.

When the P.T.O. is correctly installed attach the P.T.O. shaft guard restraint chains. Connect one chain to the hole on the mower P.T.O. safety guard and connect the other chain to a suitable position on the tractor.

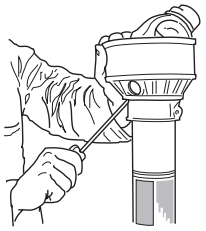
IMPORTANT: PREVENT DAMAGE - Ensure that the P.T.O. shaft does not make contact with the tractor or mower during operation. Check for P.T.O. shaft clearance at the severest operating angles/conditions.

Attaching the Mower to the Tractor
continued



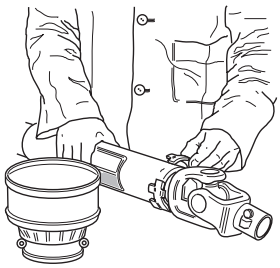
Check and adjust the P.T.O. operating length: Check the minimum P.T.O. operating shaft length (maximum compressed condition). It is essential that the P.T.O. shaft is not fitted at this stage. Set the tractor/mower combination with the tractor straight ahead on a steep upward slope, with the mower on level ground as shown. Gently reverse the tractor a short distance to fully compress the tow hitch drawbar. Apply the tractor handbrake, stop the engine, remove the ignition key, apply the mower handbrake and chock the tractor rear wheels to prevent runaway.

Separate the two halves of the P.T.O. shaft and assemble the large wide angle joint half to the tractor (as shown on the P.T.O. guard). Assemble the other half of the P.T.O. shaft to the mower. Ensure that the release clips are fully engaged. Align the two half shafts alongside each other and mark off 40mm from the end of the guards as shown below.



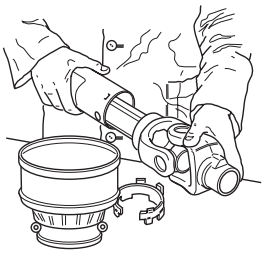
Disassemble the shaft halves from tractor and mower. Remove the plastic guard from each half using the following method.

Cut the inner and outer plastic guards at the marks previously made. Measure the length of the discarded guard cut ends and reduce the length of the inner and outer shaft tubes by the same amount.



WARNING: PREVENT DAMAGE - Deburr the shaft tube ends and remove all swarf. The slightest burr will damage the Rilsan coating of the shafts and a substantial reduction in shaft life will result.

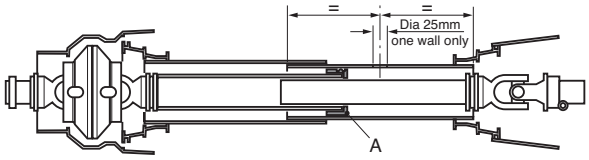
Fit greasing collar (item A), part no. 767822, to the outer shaft and ensure that it is pushed fully home. Drill one 25mm diameter hole in the inner guard only, approximately halfway along its length through one wall of the tube. Remove all burrs from the hole.



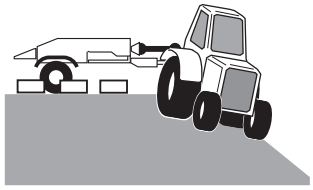
Apply grease to the inner shaft and fit all guards to both halves. Assemble the P.T.O. shaft and ensure that the telescoping action is smooth and uninterrupted.

Do not make any other changes to the P.T.O. shaft or guard assembly.

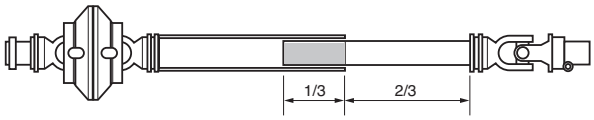
Attaching the Mower to the Tractor
continued



Assemble the P.T.O. shaft to tractor / mower and check that shaft does not fully compress. Remove chocks from wheels.



Check the maximum P.T.O. operating shaft length (maximum extended condition): Remove the P.T.O. shaft and set the tractor/mower combination with tractor turning sharply on a steep downward slope and the mower on level ground. Set the tractor parking brake. Stop the engine, remove the ignition key, apply the mower handbrake and chock the rear tractor wheels to prevent runaway.



Assemble the P.T.O. shaft ensuring that the large wide angle joint is connected to the tractor P.T.O. (as shown on the P.T.O. guard). Ensure that the release clips are fully engaged. In this position, the overlap of the two shafts must not be less than 1/3 of the length of shaft.

If the shaft extension does not achieve this minimum overlap then serious damage will result. The telescopic shaft should operate with as much engagement as possible under normal working conditions for optimum working life. If less than the minimum please contact Hayter.

Check the tractor three point linkage: If the tractor is equipped with a three point linkage it is essential that the relationship with the mower be assessed for potential interference when making tight turns or when mowing undulating ground. It is wise to remove the lower link arms when using the mower to eliminate potential damage.

Assemble the control levers: Unhook the control lever assembly from the mower mounting bracket and attach it to the tractor mounting bracket, ensuring that the remote cables are clearly routed and free to allow articulation of the tractor relative to the mower.

Connect the lighting system cable plug: Connect the lighting plug to the tractor light socket and check that all lights operate correctly before using the mower. Ensure the cable is neatly routed alongside the control cables.

Connect the brake hose: Connect the brake hose from the front bulkhead of the mower to the tractor auxiliary brake connector. Check that the braking system operates correctly before using the mower. Ensure that the hose is neatly routed alongside the control cable and lighting cable.

Disconnecting the Mower from the Tractor

WARNING: PREVENT ACCIDENTS - Before attempting to disconnect the mower from the tractor always ensure that:

- **The tractor and the mower are on level ground.**
- **The tractor parking brake is applied, the P.T.O. drive disengaged, the engine is stopped, the ignition key is removed and apply the mower handbrake.**

Engage the mower brakes: Carefully raise the handbrake lever to its highest position to engage the mower brakes.

Disconnect the breakaway cable from the tractor.

Support the mower on the jockey wheel: Unclamp the jockey wheel, lower the wheel to the ground and re-clamp securely in position. Operate the jack screw to support the mower and remove the weight from the tractor ring-hitch.

Disconnect the P.T.O. shaft: Disconnect the P.T.O. shaft from the tractor and store on the P.T.O. shaft rest. Never rest the P.T.O. shaft on the ground.

Disconnect the manual lever control: Remove the control lever assembly from the tractor and attach it to the storage position on the mower with the cables freely coiled and protected from damage.

Disconnect the electrical control: Disconnect the power cable from the cigar lighter socket and the control cable from the in-cab remote control unit. Detach the umbilical hose from its mounting bracket on the tractor and stow it on the mower. Do not allow the free end of the umbilical hose to lie on the ground. Remove the remote control unit from the mounting bracket and store in a safe, dry location.

Disconnect the lighting system cable: Remove the lighting system plug and cable from the tractor socket and store on the mower.

Disconnect the tractor ring-hitch: Operate the tractor to disconnect the ring-hitch from the mower tow-hitch.

Disconnect the brake hose: Disconnect the brake hose from the auxiliary brake connector on the tractor. Connect to the fitting mounted on the mower bulkhead.

Disconnecting the Mower from the Tractor *continued*

Move the tractor away from the mower: Check that there are no obstructions and that all connections to the mower have been disconnected before driving the tractor away from the mower.

Safety

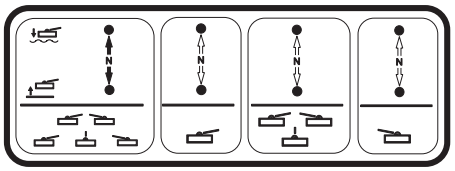
WARNING: PREVENT ACCIDENTS - Before operating the mower it is essential that:

- **The operator reads and understands this manual.**
- **The operator should wear safety clothing, with no loose items e.g. tie, belt, etc.**
- **The daily maintenance checks have been carried out, refer to MAINTENANCE.**
- **The operator has checked that the machine is properly hitched to the tractor with the P.T.O. shaft correctly fitted and the P.T.O. guards locked with their restraint chains.**
- **The mower brake hose is securely connected to the tractor auxiliary brake connector.**
- **The breakaway cable is properly connected between the mower brake system and the tractor.**
- **The jockey wheel is firmly clamped in the transport position.**
- **The P.T.O. rest is in the storage position.**
- **The mower brakes are disengaged.**
- **The area where the equipment is to be used is inspected and all objects which may be thrown by the machine are removed.**

Failure to do so could result in damage and risk to health and safety.

WARNING: PREVENT ACCIDENTS - Operate safely on slopes: It is essential to follow safe working practices when working on slopes. In order to avoid potentially hazardous situations it is essential that the operator understands and observes the relevant safety precautions listed in this manual, refer to 'SAFETY PRECAUTIONS'.

Cutterhead Position Controls



Check hydraulic system: Check and note any hydraulic leaks, keeping well clear of the rotating cutting cylinders. Disengage the P.T.O. and stop the tractor engine before attempting to tighten loose hydraulic unions.

Operate the cutterhead lift/lower controls: Note that there is one short "Override" and three long "Independent" control levers.

Operate all the control levers into the 'Down/Cut' position.

Operate the outer long control levers in turn to lift the 2 wing cutterheads (No's 1 and 5) or (No's 1 and 7). Carry out this exercise with care and observe the movement of the cutterheads to ensure that they are not impeded by poor routing of the hydraulic hoses. It is quite normal to experience some delay in the response of the controls for the first time as air is purged from the hydraulic system. Lower the cutterheads to the ground.

Operate the middle long control lever to raise the 5 central cutterheads (No's 2, 3, 4, 5 & 6), following the same procedure outlined above.

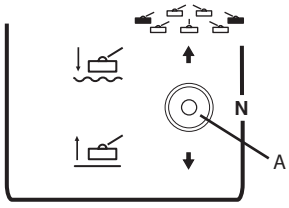
WARNING: PREVENT ACCIDENTS - The cutting cylinders of heads 1, 2, 3, 4, 5, 6 & 7 should stop rotating when the outer part of the cutterhead reaches a height of 300 - 400 mm above the ground. Cutterhead 4 will run until reaching its transport height. If the cutting cylinders continue to rotate above this height limit, it is essential to adjust the position of each diverter valve to achieve this requirement.

Check and note any hydraulic leaks.

WARNING: PREVENT ACCIDENTS - Lower all cutterheads to the ground, disengage the P.T.O. drive, stop the tractor engine, apply the tractor parking brake and remove the ignition key before making any adjustments.

For identification of controls please refer to page 1.14.

Cutterhead Position Controls (Electrical Control)

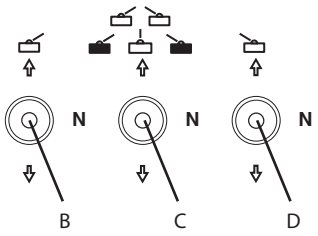


The remote control cutterhead position controls include an override control switch and three individual lift/lower control switches.

Override control switch: Push the override control switch (A) away to lower cutterheads simultaneously and pull backwards to raise cutterheads simultaneously.
Note: This function will only operate on cutterheads where the individual control switches are in the 'Down/Cut' position.

The cutterhead drive will disengage quickly when the override control switch is operated to raise the cutterheads or moved to the 'Neutral' position. The cutterhead drive will engage approximately 300 - 400mm above the ground level when the override control switch is operated to lower the cutterheads.

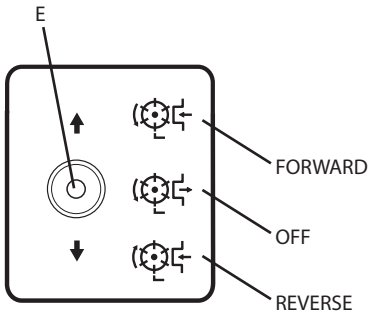
For identification of controls please refer to page 1.13.



Lift/Lower control switches: Push the lift/lower control switches away to lower the cutterheads independently. The cutterhead drive will engage approximately 300 - 400mm above ground level. Pull the lift/lower control switches backwards to raise the cutterheads independently.
Note: The lift/lower control switches will only operate when the override control switch (A) is in the 'Down/Cut' position.

Override control switch 'A' operates all cutterheads.
Lift/Lower control switch 'B' operates left hand wing cutterhead.
Lift/Lower control switch 'C' operates central three/five cutterheads.
Lift/Lower control switch 'D' operates right hand wing cutterhead.

Cutterhead Drive Direction Control (Electrical Control)



Note: The cutter head drive switch (E) will only operate when the override control switch (A) is in the down/cut position.

Forward rotation cutterhead drive engagement: Operate the cutterhead drive switch to the 'Forward' position.

Reverse rotation cutterhead drive engagement: Operate and hold the cutterhead drive switch to the 'Reverse' position.

This control is intended for cutterhead blockage removal only and should not be used for backlapping. Refer to **MAINTENANCE - BACKLAPPING**.

To disengage all cutterhead drives: Operate the cutterhead drive switch to the 'Off' position or operate the override control switch to the 'Neutral' position and or disengage the tractor PTO drive. In an emergency, operate the emergency stop button.

Operate the override control switch to the 'Neutral' position and/or disengage the tractor PTO drive. In an emergency, operate the emergency stop button.

Power indicator: The power indicator light will illuminate when electrical power is fed to the electrical control box. If the indicator fails to light, check the electrical supply connection to the tractor.

Note: When the indicator is unlit the lift control system is inoperative.

Emergency stop button: Operation of the emergency stop button performs the following actions:

1. All cutterhead drives are disengaged.

2. All cutterhead lift mechanisms are hydraulically locked and the cutterhead suspensions are frozen in the position at which the emergency stop button was operated. The cutterheads/suspensions will remain in this condition supported solely by the hydraulic system.

3. The electrical lift control system is disabled.

Cutterhead Drive Direction Control (Electrical Control) *continued*

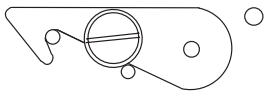
WARNING: PREVENT ACCIDENTS - For full safety isolation disengage the tractor PTO drive and lower the cutterheads to the ground.

WARNING: PREVENT ACCIDENTS - For full safety isolation disengage the tractor PTO drive and lower the cutterheads to the ground. To restore the electrical lift control system after the emergency stop button has been operated:

1. Ensure the tractor PTO drive is disengaged.
2. Set all five cutterhead / position control switches to the 'Neutral' position.
3. Turn the Emergency Stop button clockwise to release and allow it to return to the normal 'ON' position.
4. Refer to **'Operating The Mower'** and engage the tractor PTO drive.
5. Electrical lift control should now be restored.

Manual override control valve: In the event of total electrical failure the cutterheads can be lifted into the transport position using the manual over-ride control valve as follows:

1. Ensure that the immediate area is entirely clear.
2. Ensure that the tractor parking brake is applied, the PTO drive is disengaged, the engine has stopped and the ignition key is removed.
3. Set all cutterhead arm transport latches to the automatic latching position as shown.



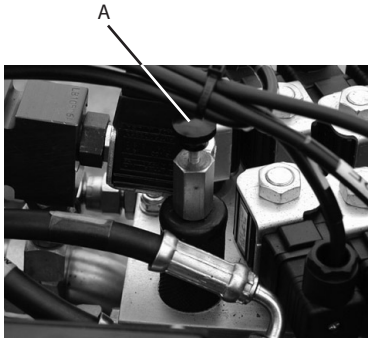
4. Locate the manual override control valve (A) and screw in the operating screw fully.
5. Start the tractor and set the engine speed to a slow idle.
6. Operate the tractor rear PTO and allow all cutterheads to raise into the transport position until the transport latches are automatically engaged.
7. Disengage the tractor rear PTO and stop the engine.

Cutterhead Drive Direction Control (Electrical Control) continued

8. Return the manual override control valve screw to its original position. On doing this the cutterhead arms will fully engage with the transport latches.

9. Engage all transport latch safety locks as shown.

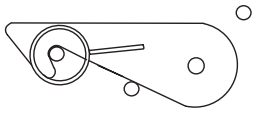
10. Latch outer cutterheads.

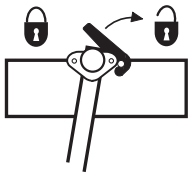


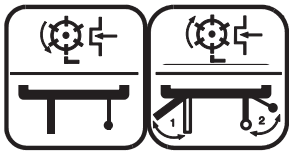
A - Manual override control valve

Cutterhead Setup

All cutterheads should have been checked for cylinder to bottom blade adjustment and height of cut. If 'floating' cutterheads are to be used ensure that front rollers are correctly fitted and that the suspension pivot securing bolts are located in the 'float' position. Check that the backlap control valve is in the "Normal Operation" position for cutting.







Mower Brakes

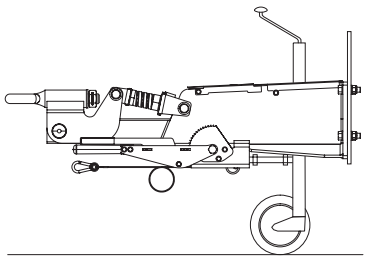
WARNING: PREVENT ACCIDENTS - The way in which the brakes are operated and maintained will affect their operating performance and durability. Ensure that the braking system is correctly maintained and in good working order, refer to MAINTENANCE.

General operation: Direct hydraulic braking via the tractor auxiliary braking system is the preferred method of operation. In the event that the tractor is not equipped with auxiliary braking, the mower may be used with an overrun drawbar (overrun optional extra).

WARNING: PREVENT ACCIDENTS - Never operate the mower in direct hydraulic braking mode when set up for overrun braking.

Handbrake: To apply the handbrake pull the lever until the brakes are applied. To release, pull the release lever and lower the handbrake until it's in the horizontal position.

Breakaway cable: The breakaway cable is secured between the tractor and the mower. If the mower becomes detached from the tractor whilst travelling, the breakaway cable is tensioned and automatically applies the mower brakes (by operating the handbrake lever) before disconnecting from the special ring securing it to the mower.



General

1. Mount the tractor, start the engine and set the engine speed at a fast idle.

WARNING: PREVENT ACCIDENTS - Ensure that the immediate area is entirely clear of by-standers and obstructions which could interfere with the machine, before engaging the rear P.T.O. in the correct gear for 540 rpm.

2. Operate the mower override control switch to lift the dead weight of each cutterhead from its transport latch.

WARNING: PREVENT ACCIDENTS - Disengage the tractor P.T.O. drive, switch off the tractor engine and ensure that the parking brake is applied before dismounting from the tractor.

3. Walk back to the mower, release the transport latches and move them to their storage positions as shown.

4. Re-mount the tractor, start the engine and set the engine speed to a fast idle. Engage the rear P.T.O.

5a. **Manual lever control**
Push the mower control levers forward into the 'Down/Cut ' position. This will lower the cutterheads into the work position.

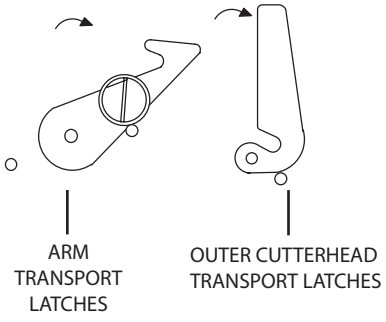
Electric control
On the remote control push the Lift/Lower and override control switches into the 'Down/Cut' position.

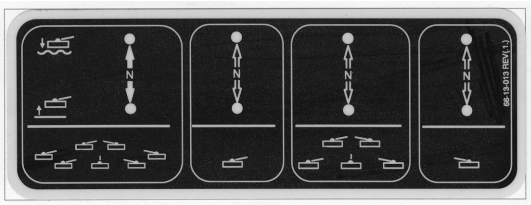
The cutterheads will automatically start up when they are within 300-400mm of the ground.

IMPORTANT: PREVENT DAMAGE - Never mow grass with the control levers in the neutral (N) position.

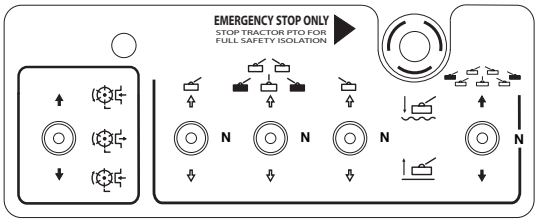
IMPORTANT: PREVENT DAMAGE - Never mow grass with the Lift/Lower or override control switches in the neutral (N) position.

6. The operator should become familiar with the controls and the lifting/lowering response of the cutterheads to the control switch action.





General

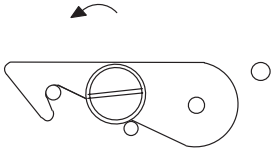


(Electric Lift Only) Override control: With the cutterheads on the ground set all the Lift/ Lower control switches to the 'Down/Cut' position and operate the override control switch to the 'Neutral' position. All cutting cylinders will stop immediately. Operate the override control switch to the 'Raise' position. All cutterheads will rise. If the switch is returned to the 'Down/Cut' position all cutterheads will lower to the ground and will automatically start up when they are within 300 - 400mm of the ground.

(Electric Lift Only) Independent controls: With the cutterheads on the ground set all the Lift/ Lower control switches and the override control switch to the 'Down/Cut' position. Operation of an individual control switch to the 'Raise' position will lift the corresponding cutterheads. The cutting cylinders will start to slow down when the cutterheads are 300 - 400mm above ground level. When the cutterheads are lowered using the individual control switches the cylinders will automatically start up when the cutterheads are within 300 - 400mm of the ground level.

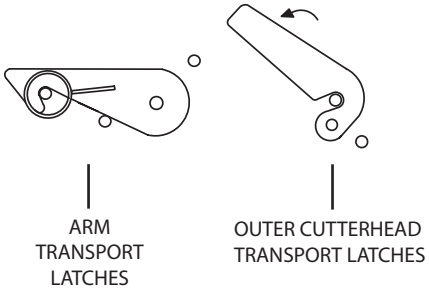
7. The mower is now ready for grass cutting.

8. After mowing, lower all cutterheads to the ground, disengage the rear P.T.O. drive, stop the tractor engine, remove the ignition key and apply the parking brake before leaving the tractor.



9. Walk back to the mower and set all suspension arm transport latches to the automatic latching positions, as shown.

10. Mount the tractor, start the engine and set the speed at a fast idle. Engage the rear P.T.O. and operate the 'Override' control lever to lift all cutterheads to the transport position. Ensure that all transport latches have locked correctly into position before disengaging the rear P.T.O. and stopping the tractor engine.



11. Walk back to the mower and engage all cutter head suspension arms and outer cutterhead transport latch safety locks.

12. The machine is now ready to be transported.

Unblocking the Cutting Cylinders

WARNING: PREVENT ACCIDENTS - Before attempting to clear any blockage from the cutting cylinders on this machines ensure, all of the following:

- **Stop the machine on level ground.**
- **Apply the parking brake and disengage all drives.**
- **Lower the cutting units to the ground or securely lock in the designated transport positions.**
- **Stop the engine and remove the ignition key to isolate all power sources and check that they are stopped.**
- **Release all stored energy devices.**
- **Check that all moving parts are stationary.**

DO NOT ATTEMPT TO ROTATE THE CUTTING CYLINDERS BY HAND as there may be some residual pressure in the hydraulic system which could cause injury through sudden movement of the cylinder(s) when the blockage is released.

Wear protective gloves and use a suitable strong wooden instrument. Ensure that this will fit between the blades and through the cylinder and is long enough to provide sufficient leverage to release the blockage and any residual hydraulic system pressure by rotating or rocking the cylinder. Make sure that the wooden instrument is properly supported in the cylinder and avoid the use of excessive force to prevent damage.

Only when the cylinder has a degree of free movement should the source of the blockage be removed. Ensure that the wooden instrument is also removed before restarting the power source.

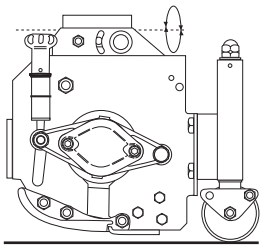
If the cylinder requires readjustment or repair, refer to **MAINTENANCE - Cutterheads**.

Cutterhead General Information

The mower is designed to be used with MK3 200mm (8˝) fixed or floating cutterheads or MK3 254mm (10˝) fixed cutterheads.

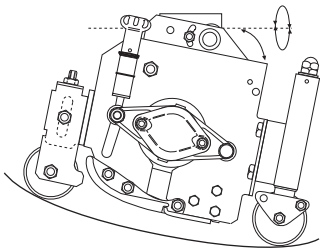
It is essential that the relationship between the bottom blades and the cutting cylinders are kept in good adjustment and that cutting edges are kept sharp to ensure good cutting performance, minimum power consumption and prolonged life for the cutting edges, refer to **MAINTENANCE - CUTTERHEADS**.

MK3 Fixed Cutterheads 200mm (8˝) / 254mm (10˝): When the mower is set up with fixed cutterheads the height of cut is gauged by the rear roller and the cutterhead is allowed to pivot laterally to follow ground contours. This arrangement is normally recommended for general mowing requirements.

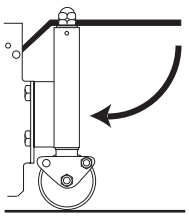


(MK3 200mm (8˝) Cutterhead illustrated).

MK3 Floating Cutterhead 200mm (8˝): When the mower is set up with floating cutterheads the height of cut is gauged by the front and rear rollers. The cutterhead is allowed to pivot fore and aft as well as laterally. This arrangement is recommended for high quality grass areas and performs well where grass is short and the ground undulations are severe.

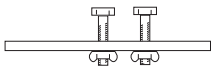


Grass deflectors: The rear grass deflectors must always be correctly fitted. The deflectors should be set as low as possible to deflect grass discharge to the ground.



⚠ **WARNING: PREVENT ACCIDENTS - Always ensure that the grass deflectors are angled below horizontal level, otherwise risks to health and safety may result.**

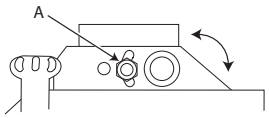
Height of cut gauge: An optional height of cut gauge is available to assist in achieving accurate cut height settings. It is suitable for both fixed and floating cutterheads.



Hayter part no. 63-01-760

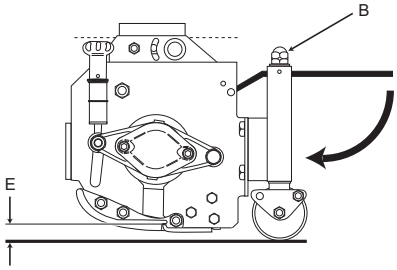
MK3 200 mm (8˝) Fixed Cutterhead

Pivot knuckle fixing: Secure the bolt in the front "fixed" hole position 'A' as shown.



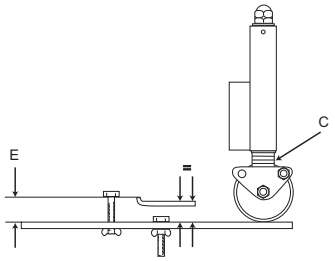
Height of cut adjustment: The height of cut is gauged by the position of the rear roller.

Turn the adjusting nut assembly 'B' both ends clockwise to decrease height of cut 'E' or anti-clockwise to increase height of cut 'E'.



IMPORTANT: PREVENT DAMAGE - Do not attempt to unlock the nut assemblies, 'B'.

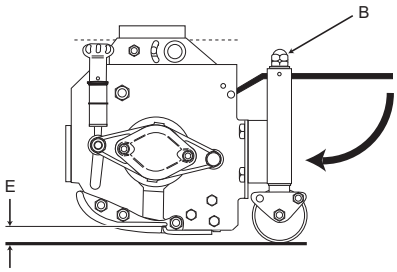
Ensure that all cutterheads are set at the same height of cut by either referring to the indicator rings 'C' or by using a height of cut gauge across the full width of each cutterhead for greater accuracy as shown.



MK3 254 mm (10˝) Fixed Cutterhead

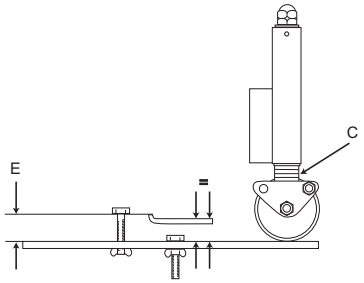
Height of cut adjustment: The height of cut is gauged by the position of the rear roller.

Turn the adjusting nut assembly 'B' both ends clockwise to decrease height of cut 'E' or anti-clockwise to increase height of cut 'E'.



IMPORTANT: PREVENT DAMAGE - Do not attempt to unlock the nut assemblies, 'B'.

Ensure that all cutterheads are set at the same height of cut by either referring to the indicator rings 'C' or by using a height of cut gauge across the full width of each cutterhead for greater accuracy as shown.



Hour Meter

Electric lift only: Displays machines cutting hours.
Location: Main control box

General Operating Hints

1. The rotational speed of the cutting cylinders should always be kept as high as possible in order to maintain the highest quality of cut. This in turn requires that the tractor engine speed be kept as high as possible without exceeding 540 rpm P.T.O. speed.

2. The quality of cut will deteriorate if the forward speed is excessive. Always balance the quality of cut with the work rate required and set the forward speed accordingly.

3. Never let the tractor engine labour. Reduce the forward speed or increase the height of cut. Check that the cutting cylinders are not in heavy contact with their bottom blades.

4. Regularly check the cylinder to the bottom blade adjustment every few hours even though cutting performance appears to be satisfactory. Heavy contact or excessive clearances between the cylinders and bottom blades will cause rapid wear to take place.

5. Always disengage the tractor P.T.O. when travelling across ungrassed areas. Grass will lubricate the cutting edges whilst mowing. Excessive heat will build up if the cutting cylinders are run when not mowing and this will cause rapid wear to take place. For this reason it is also wise to reduce cutting cylinder speed when mowing lightly grassed areas or when the grass is dry.

6. Cutting performance is best when cutting against the lie of the grass. In order to take advantage of this fact, the operator should attempt to alternate the direction of mowing between cuts.

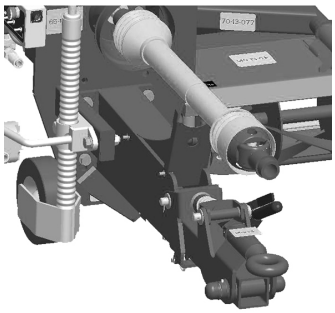
7. Take care not to leave uncut strips of grass at the overlap points between the adjacent cutterheads by avoiding tight turns.

8. It is generally wise to remove the rear roller scrapers where conditions allow as best grass discharge is achieved without them. Scrapers should be refitted when conditions are such that mud and grass start to build up on the rollers.

General Operating Hints *continued*

WARNING: PREVENT ACCIDENTS - Take care when travelling over obstacles such as roadside kerbs. ALWAYS travel at slow speed over obstacles to prevent damage to the tyres and wheels. Ensure that tyres are inflated to the recommended pressures.

IMPORTANT: PREVENT DAMAGE - When the mower is detached from the tractor always support the P.T.O. shaft on P.T.O. rest. Never allow the P.T.O. shaft to rest in contact with the ground.



Maintenance

WARNING: PREVENT ACCIDENTS - When carrying out maintenance procedures it is essential that:

- **The P.T.O drive is disengaged.**
- **The tractor is in neutral.**
- **The tractor parking brake is applied.**
- **The engine is switched off.**
- **The ignition key is removed.**
- **The mower handbrake is applied.**
- **The cutterheads are fully lowered to the ground.**
- **The hydraulic system pressure is fully released.**
- **The safety precautions listed in this manual have been read and understood.**

IMPORTANT: PREVENT DAMAGE - Regular maintenance is essential for the continued safe operation of the machine. Correct servicing will prolong the working life of the machine and safeguard the "Toro warranty". Always fit genuine 'Toro service parts' as these are accurately matched to the required duty.

Dirt and contamination are the enemies of any hydraulic system. When carrying out maintenance procedures on the hydraulic system always ensure that the work area and the components are thoroughly clean before, during and after refitting. Ensure that all open hydraulic lines and ports, etc. are plugged during maintenance procedures.

The recommended service intervals are based on normal operating conditions. Severe or unusual conditions will necessitate shorter service intervals.

ALWAYS grease pivot points immediately after pressure washing or steam cleaning, refer to **EVERY 50 HOURS, Grease pivot points**.

WARNING: PREVENT ACCIDENTS - The handbrake has a powerful spring assisted action. Take care when operating.

Maintenance *continued*

WARNING: PREVENT ACCIDENTS - Use hazardous substances carefully.
The following fluids are identified as being hazardous;

Substances	Assessed risk
Diesel oil	Low
Lubricating oil	Low
Hydraulic oil	Low
Grease	Low

When using any of the above fluids it is recommended that eye protection and gloves are worn and that care is taken to prevent spillage.

Avoid contact with skin; wash off spillage with soap and water.

Avoid contact with eyes; wash with running water and seek medical attention if symptoms persist.

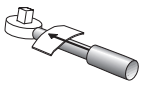
Avoid ingestion; if swallowed seek medical attention.

Keep clear of high pressure fluid escaping from pinholes, cracked connections etc. High pressure fluid can penetrate the skin. Seek immediate medical advice if any fluid is injected into the skin. Always use a piece of cardboard or paper when searching for leaks.

CAUTION: PREVENT ENVIRONMENTAL DAMAGE - Dispose of hazardous substances correctly.

When disposing of hazardous waste products, take them to an authorised disposal site.
Waste products must not be allowed to contaminate surface water, drains or sewerage systems.

Running In Period



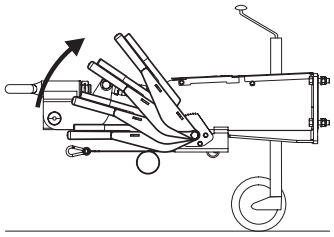
During first 50 hours of use and in addition to routine checks, refer to **DAILY BEFORE USE**.

Check wheel nut torque settings before use.
Wheel nut torque setting - 224 Nm.

At first 50 hours of use and in addition to routine checks, refer to DAILY BEFORE USE.

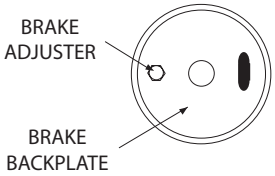
Adjust the brake system.

⚠ **WARNING: PREVENT ACCIDENTS - Ensure that the mower is securely coupled to the tractor, refer to ATTACHING THE MOWER TO THE TRACTOR. The mower should be standing on level ground with the handbrake applied.**

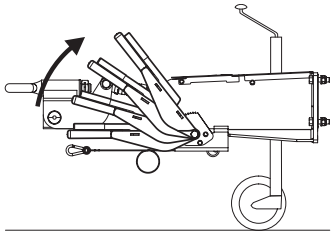


Carefully lower the mower handbrake to release the brakes.

Adjust the wheel brake shoes. Jack the mower and block securely such that the wheels are raised above the ground. Rotate the L.H. wheel in the direction of forward travel by hand and turn the brake shoe adjuster until the wheel cannot be rotated (pre-load the brakes). Turn the brake adjuster back in increments of half a turn, tapping the adjuster after each increment until the wheel can be rotated by hand against slight resistance. The brake shoe is now correctly adjusted. Repeat this process on the R.H. wheel.

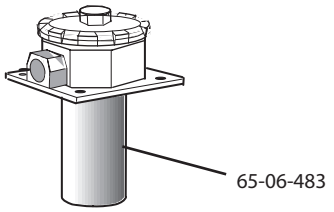


Lower the wheels to rest on the ground.



At first 50 hours of use and in addition to routine checks, refer to DAILY BEFORE USE AND EVERY 50 HOURS USE.

Change the hydraulic oil return filter. Remove the top of the return filter assembly. Withdraw the filter element canister and discard. Refit a new filter canister (Toro part No: 65-06-483) and replace the screw top taking care to ensure that the 'O' ring seal is correctly located.

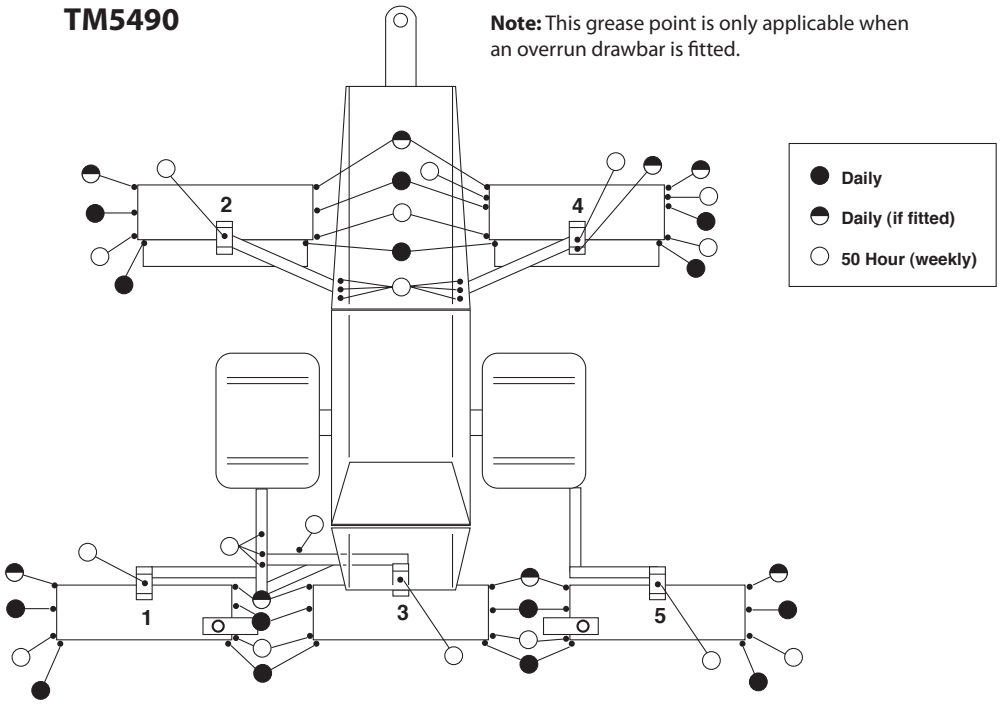


***Running In Period** continued*

Grease pivot points: Clean and grease all grease points with a good quality medium grade grease.
Replace any grease nipples which are damaged.
Grease all cutterhead grease points and ensure that sufficient grease is injected such that clean grease is seen to escape from the roller end caps. This provides visible evidence that the roller seals have been purged of grass and debris etc. and will ensure maximum working life.

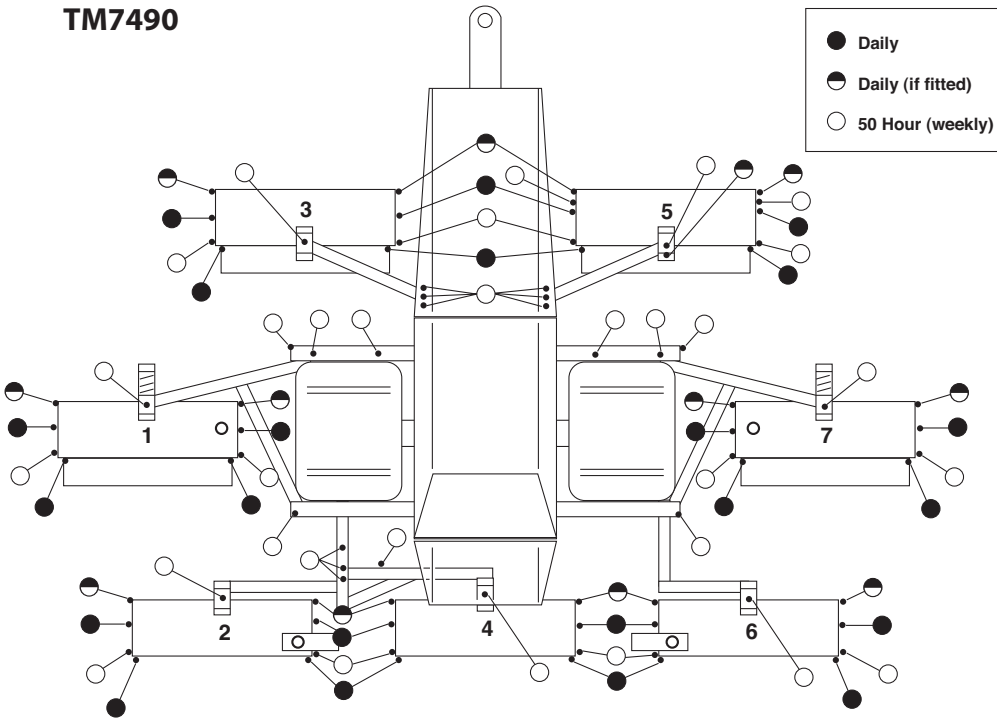
TM5490

Note: This grease point is only applicable when an overrun drawbar is fitted.



TM7490

Note: This grease point is only applicable when an overrun drawbar is fitted.



Daily And Before Use

Check hydraulic oil level: Check the hydraulic oil level in the sight glass with all cutterheads lowered to the ground. The sight glass is located at the front of the hydraulic reservoir beneath the pump cover. If the level is below the top line, top up with the correct grade of hydraulic oil as necessary, refer to **SPECIFICATIONS**.

IMPORTANT: PREVENT DAMAGE - If there is noticeable hydraulic oil loss, the leakage source must be found and sealed before using the mower. NEVER operate the mower when the hydraulic oil level is below the bottom line on the sight glass. NEVER operate the mower with contaminated hydraulic oil.

Check hydraulic hose lines: Inspect hydraulic hose lines for signs of wear or damage.

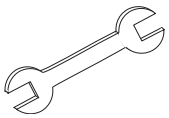
Inspect the mower for signs of oil leakage and tighten fittings or replace seals as required.

WARNING: PREVENT ACCIDENTS - Always replace worn or damaged hydraulic hose lines immediately. DO NOT operate the mower with defective hydraulic hose lines.

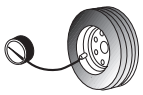
Check safety devices:

WARNING: PREVENT ACCIDENTS - Ensure that all safety guards, shields and protective devices are securely in place and in good working order.

Check fasteners: Check that all nuts, bolts and pins are secured correctly in place and in good condition.



Check tyres: Examine the condition of the tyres and check that inflation pressures are correctly set, refer to **SPECIFICATIONS**.



WARNING: PREVENT ACCIDENTS - Ensure that damaged tyres are replaced. Ensure that tyre tread depths comply with road traffic regulations.

Check cutterheads: Examine the condition of the cutting cylinders and the bottom blades and adjust as necessary, refer to **CYLINDER TO BOTTOM BLADE ADJUSTMENT**.

Daily And Before Use *continued*

Check towing eye: Inspect the towing eye for wear. Replace the towing eye when worn to ¾ of its original thickness. Lubricating the towing eye may extend the life of the eye.

Lubricate the P.T.O shaft: Remove the P.T.O. shaft connection from tractor and withdraw the telescoping shaft to expose the grease nipple through the inner guard aperture. Apply a generous amount of grease of the correct grade, refer to **SPECIFICATIONS**. Reconnect to the tractor P.T.O. and ensure that the release pin is correctly located. Grease the P.T.O. universal joints. Take care not to over grease otherwise damage to the seals may result.

IMPORTANT: PREVENT DAMAGE - It is essential that the P.T.O. shaft is greased at least every 8 hours of work otherwise serious wear and subsequent damage to the shaft and gearbox may result.

Check lighting equipment: Inspect the electric cable assembly and lights for signs of damage and replace damaged components. Ensure that the lights operate correctly.

Check electrical equipment: Inspect the electric cable assemblies, remote control unit and lights for signs of damage and replace damaged components. Ensure that the electrical controls and lights operate correctly.

Every 50 Hours

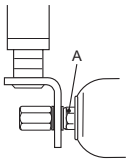
Perform routine checks: Refer to **DAILY BEFORE USE**.

Check cutterhead roller bearing adjustment: Important: Prevent Damage - It is essential that the cutterhead roller bearings are kept in good adjustment in order to ensure maximum working life. If roller end float is allowed to become excessive, premature bearing failure will result.

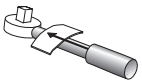
Grip the roller and move from side to side and up and down. If excessive movement is detected proceed as follows:

Carefully tighten nuts ‘A’ at each end of the roller with the spanner provided, just sufficiently to remove any end float.

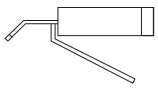
Every 50 Hours *continued*



Note: The roller should still rotate freely after adjustment. Overtightening of nuts 'A' could lead to premature bearing failure.

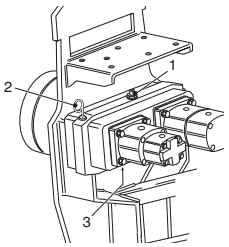


Check wheel nut torque: Wheel nut torque setting - 224 Nm.



Lubricate all grease points: Clean and grease all grease points, including hubs, tow hitch and pivot points with a good compound of the grade specified, refer to **SPECIFICATIONS**. Replace any grease nipples which are damaged.

Grease all cutterhead grease points and ensure that sufficient grease is injected such that clean grease is seen to escape from the roller end caps. This provides visible evidence that the seals have been purged of grass debris etc. and will ensure maximum working life.



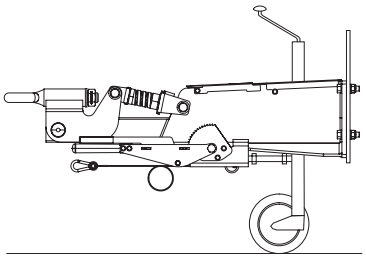
1. Filler plug / breather
2. Dipstick
3. Drain plug

Check pump gearbox oil level: Remove the dipstick and check the oil level. If the level is below the upper mark, top up as necessary through the dipstick aperture.

Braking system: Wipe away all corrosion and dirt deposits and oil all moving parts.

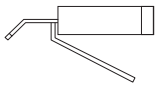
Every 250 Hours

Perform routine checks: Refer to **DAILY BEFORE USE AND EVERY 50 HOURS**.



Check the brake link: Lubricate the brake link with oil and ensure that it is free to operate.

Check the handbrake: Lubricate the handbrake pivots with oil to ensure that the handbrake operates freely.



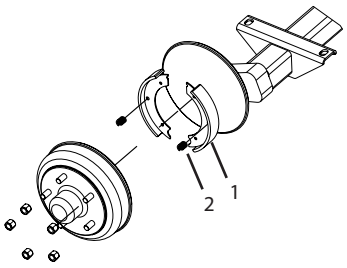
Check the breakaway cable: If the breakaway cable is kinked of frayed or its connections are damaged they must be replaced.

Adjust the hubs: Slacken the brake adjuster and check whether there is movement between the brake drum and the rim of the brake backplate. If movement is detected, remove the grease cap. Straighten and remove the split pin. Tighten the axle nut while rotating the brake drum by hand, until resistance is felt. Slacken the nut one slot (300) anti-clockwise and re-fit a new split pin. Replace the grease cap and repeat for the other hub.

Every 250 Hours *continued*

Inspect the brakes shoes for wear: Remove the wheel hubs and inspect the brake shoes. The shoes must be replaced if the lining thickness is less than 1.5mm. Use genuine Toro replacement parts. Do not reline brake shoes.

Inspect the brake wedges: Check that the brake wedges operate the brake shoes correctly. Wedges which are worn excessively will not apply the brakes fully and must be replaced.

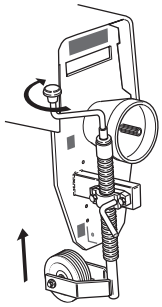


Examine the brake cables: Ensure that the brake cables operate freely and that there are no signs of fraying or other damage. Always replace damaged cables.

Examine linkages: Ensure that all brake linkages are in good condition, operate freely and are secured correctly. Lubricate pivot points with oil.

Examine cylinder: Check the brake cylinder and the associated hydraulic hoses for leaks. Always replace any leaking components.

Inspect the jockey wheel assembly: Examine the wheel and tyre and ensure that they are in good condition. Check that the jack is in good condition and operates freely. Replace worn or damaged components.



Every 500 Hours

Perform routine checks: Refer to **DAILY BEFORE USE, EVERY 50 HOURS AND EVERY 250 HOURS USE**.

Thoroughly clean the machine.

Service the hydraulic system: Lower the cutterheads to the ground and drain the hydraulic oil by removing the hydraulic tank drain plug. Remove the oil tank filler flange to gain access to the strainer inside the tank. Unscrew and remove the strainer and clean in paraffin before replacing. Renew the strainer if it is damaged.

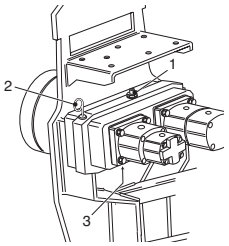
Renew the return line oil filter element, refer to **RUNNING IN PERIOD - AT FIRST 50 HOURS OF USE**.

Replace the drain plug and refill the hydraulic tank with new hydraulic oil, refer to **SPECIFICATIONS.**

Every 500 Hours

Replace all brake cables.

Service the pump gearbox: Drain the pump gearbox oil by removing the drain plug. Remove the dipstick. When the gearbox is fully drained, replace the drain plug. Refill the gearbox with new gear oil of the correct grade, refer to **SPECIFICATIONS**, to the upper mark on the dipstick. Replace the dipstick. Ensure that all plugs are tightened securely.



1. Filler plug / breather
2. Dipstick
3. Drain plug

End of Season / Winter Storage

Perform routine checks: Refer to **DAILY BEFORE USE, EVERY 50 HOURS AND EVERY 500 HOURS**.

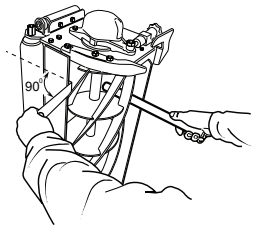
Release the mower brakes: Operate the mower handbrake downwards to its lowest position to release the mower brakes.

Adjust the cutting cylinders such that they are clear of the bottom blades.

Prevent tyre distortion: Support the mower chassis on blocks such that the tyres are clear of the ground to prevent tyre distortion.

Prevent corrosion: Treat bare metal surfaces including the cutting edges of cutting cylinders, bottom blades and exposed hydraulic cylinder rods with grease, oil or a proprietary corrosion inhibitor.

Cutterhead Cylinder to Bottom Blade Adjustment



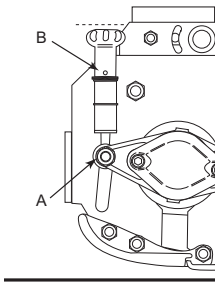
IMPORTANT: PREVENT DAMAGE - It is essential that the relationship between the bottom blades and the cutting cylinders is kept in good adjustment in order to ensure good cutting performance,
minimum power consumption and prolonged life for the cutting edges.

Carry out the following procedure before commencing work and
re-check the settings every few hours.

Check that the cutting cylinder is correctly set to the bottom blade by holding a thin piece of paper between the cutting cylinder and the bottom blade as shown. Carefully rotate the cylinder as shown and check that the paper is cut cleanly at all points along the length of the blade. Hold the paper at 90° (right angles) to the bottom blade to obtain the correct cutting action.

⚠ **WARNING: PREVENT ACCIDENTS - Ensure that people are clear of the cutting cylinders as rotation of one may cause others to rotate.**

If adjustment is necessary proceed as follows;



Release nut ‘A’ ¼ turn both ends.

Turn hand wheel ‘B’ each end alternately whilst rotating the cutting cylinder backwards until the bottom blade is in ‘fleeting’ contact with the cylinder along its entire length. Re-check the cutting action along the length of the bottom blade using a thin piece of paper making marginal adjustments as necessary.

Tighten nut ‘A’ both ends.

If it is impossible to obtain a good clean paper cut across the entire length of the bottom blade it will be necessary to carry out the back lapping procedure to reprocess the cutting edges. In severe cases it will be necessary to regrind the cutting cylinder and the bottom blade, refer to **BACK LAPPING / GRINDING**.

Cutterhead Cylinder to Bottom Blade Adjustment *continued*

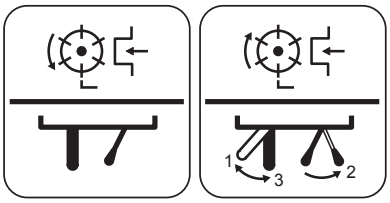
Do not be tempted to over adjust, thus causing heavy contact between the cylinder and bottom blade, as this will cause very rapid uneven wear to take place leading to tram lining and waviness of the cutting edges. The frictional losses will be high and a significant amount of power will be absorbed, thus reducing the power available for cutting. The heating effect due to friction will cause excessive expansion to take place which will further aggravate the situation by increasing the contact pressure.

If the cutterheads are allowed to operate for more than a few hours without adjustment the running wear will eventually cause the cylinder to run out of contact with the bottom blade. At this stage very rapid rounding of the cutting edges will occur as grass and abrasive particles pass through the clearance between the blades.

Lack of attention to adjustment can therefore be foolhardy as maintenance costs will escalate. The quality of cut will also be seriously affected as will the health and growth of the grass.

An experienced operator will notice when a cutterhead starts to go out of adjustment; when the grass ceases to be cut cleanly and the cut ends become ragged.

Cutterhead Back Lapping



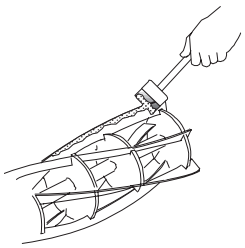
This process is recommended for restoring the sharp cutting edges to cylinders and bottom blades which are essential for good quality grass cutting.

This process can only deal with a small amount of metal removal to restore the cutting edges. If the blade edges are seriously worn or damaged it will be necessary to remove the component parts and have them reground.

The back lapping process:

1. Lower the cutterheads to the ground. Disengage the tractor rear P.T.O., apply the handbrake, switch off the engine and remove the ignition key.

2. Adjust the cutting cylinders to the bottom blades to obtain 'fleeting contact'. Operate the control lever fully across into the "Reverse / Back lap" mode. This will cause the cutting cylinders to run at a reduced speed in reverse on start up.

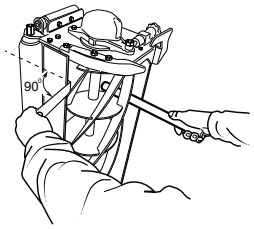


3. Apply a medium grade detergent based carborundum paste to the cutting edges of the cylinder with a long handled brush.

80 Grade Carborundum paste	
	Part No.
0.45 kg (1 lb)	63-07-088
11.25 kg (25 lb)	63-07-086

4. Ensure that the area surrounding the cutter heads is clear of bystanders and keep hands and feet clear of the cutting cylinders when the tractor engine is running.

5. Start the tractor and set the engine speed at idle.



6. Engage the P.T.O to start the cutting cylinders rotating backwards and allow to run for a period of time while listening to the grinding action.

7. Stop the tractor engine and disengage the P.T.O. when the grinding action has stopped.

8. Re-adjust the cutting cylinders to the bottom blades and check that a thin piece of paper can be cut cleanly at all points along the cutting edges while rotating the cutting cylinders by hand.

Cutterhead Back Lapping *continued*

9. If further backlapping is necessary repeat steps 3 to 8.

10. Thoroughly remove and wash off all traces of the carborundum paste from the cylinders and bottom blades.

11. Move the control lever to the 'Normal Operation'.

As the backlap control lever is moved towards the 'Normal Operation' position the backlap control lock will be pushed outwards. When the backlap control lever reaches the 'Normal Operation' position the backlap control lock should spring back, locking the control lever in position.

Grinding

It will be necessary to carry out a grinding operation to correct cylinder spiral edges or bottom blade edges which have become excessively rounded or distorted. Bottom blades which are nearing the end of their wear life should be replaced and these should be ground on their holders prior to fitting, refer to **BOTTOM BLADE REPLACEMENT**. When grinding operations are necessary it is essential that both cylinders and bottom blades are ground at the same time. The only exception to this rule is when a new cylinder is fitted in which case it is only necessary to grind the bottom blade. All such grinding operations should be carried out by your dealer on a quality, well maintained cylinder / bottom blade grinding machine.

Bottom Blade Replacement

Remove the bottom blade holder by removing the three fixing bolts at each end and withdraw from the cutterhead. Remove the worn bottom blade and discard the countersunk screws and securing nuts. Fit the new blade to the holder and loosely assemble with new countersunk screws and securing nuts. Tighten the centre bolts to a torque of 40 Nm. Continue by tightening the remaining bolts to the same torque by working from the centre out towards the blade ends.

Cutterhead Bottom Blade Replacement
continued

The new bottom blade must be ground on its holder prior to refitting to the cutterhead. Adjust the cutting cylinder position to give adequate clearance for fitting the new bottom blade holder. Refit the bottom blade holder assembly to the cutterhead using the original fixing bolts and tighten to a torque of 35Nm (26 lbf.ft). Finally adjust the cylinder to the bottom blade, refer to **CUTTERHEAD CYLINDER TO BOTTOM BLADE ADJUSTMENT**.

FAULT	POSSIBLE CAUSE	REMEDY
Areas of uncut grass at point of overlap between cutting cylinders	Turning too tightly	Reduce turning radius
	Mower sliding sideways when travelling across face of slope	Mow up/down slope
	One end of cutterhead out of ground contact caused by:	
	- Poorly routed hoses or wrongly positioned hydraulic adaptors	Reroute hoses/reposition hydraulic adaptors
	- Pivot pins seizing	Free off and grease pivot points
	- Grass build up under cutterhead	Remove grass
Ridge lines in the cut across the direction of travel over full width of cut	Forward speed too high	Reduce forward speed
	Cylinder speed too slow	Increase tractor engine speed
	Height of cut too low	Raise height of cut
Ridge lines in the cut grass across the direction of travel over cutting width of one cylinder	Cylinder is running slow	Refer to **TROUBLE SHOOTING** for remedy
Step in cut grass height at point of overlap between cutting cylinders	Inconsistent height of cut setting on one cylinder	Check and readjust height of cut setting
	Control lever in 'Neutral' position	Operate control lever to 'Down / Float'
	Cylinder is partially out of contact with bottom blade	Re adjust cutting cylinder to bottom blade
Some uncut or poorly cut strands of grass	Cylinder is in heavy contact with bottom blade	Re adjust cutting cylinder to bottom blade
	Height of cut is too high	Lower height of cut setting
	Cutting edges of cutting cylinders / bottom blades are rounded	Back lap or regrind to restore cutting edges

FAULT	POSSIBLE CAUSE	REMEDY
Lines of uncut or badly cut grass in direction of travel	Tram lining of cutting edges due to heavy contact caused by poor cutting cylinder to bottom blade adjustment	Back lap or regrind to restore cutting edges
	Bottom blade in ground contact	Raise height of cut
	Nose down attitude of bottom blade	Re adjust cutterhead to ensure bottom blade is parallel to ground
	Cutterheads bouncing	Reduce forward speed
	Worn cylinder bearings / bearing housing pivots	Replace worn parts
	Loose components in cutterhead	Check and re tighten as necessary
Scalping	Undulations too severe for fixed cutterheads	Use floating cutterheads
	Height of cut too low	Raise height of cut
Excessive bottom blade wear	Bottom blade in heavy ground contact	Raise height of cut
	Cutting edges of the cutting cylinder / bottom blade are rounded	Back lap or regrind to restore cutting edges
	Cylinder is in heavy contact with the bottom blade	Re adjust the cutting cylinder to the bottom blade
	Damaged cutting cylinder or bottom blade	Re grind or replace as necessary
	Excessively abrasive ground conditions	Raise height of cut

When using the following chart it may be found that overhaul of major components or hydraulic pressure adjustments are necessary. In this case it is recommended that your authorised dealer make these repairs as they are properly equipped to do this work.

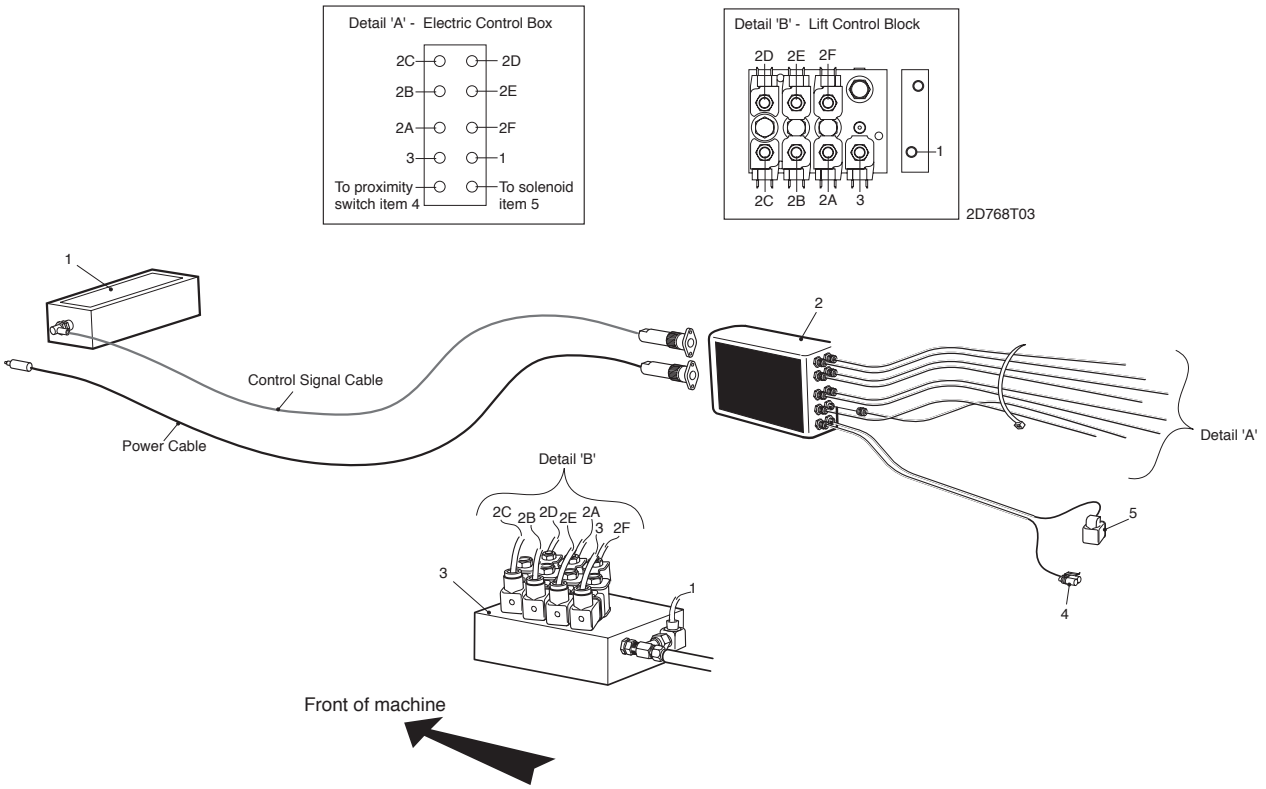
⚠ **WARNING: PREVENT ACCIDENTS - ALWAYS Apply the parking brake, switch off the engine and remove the ignition key before attempting to work on the mower.**

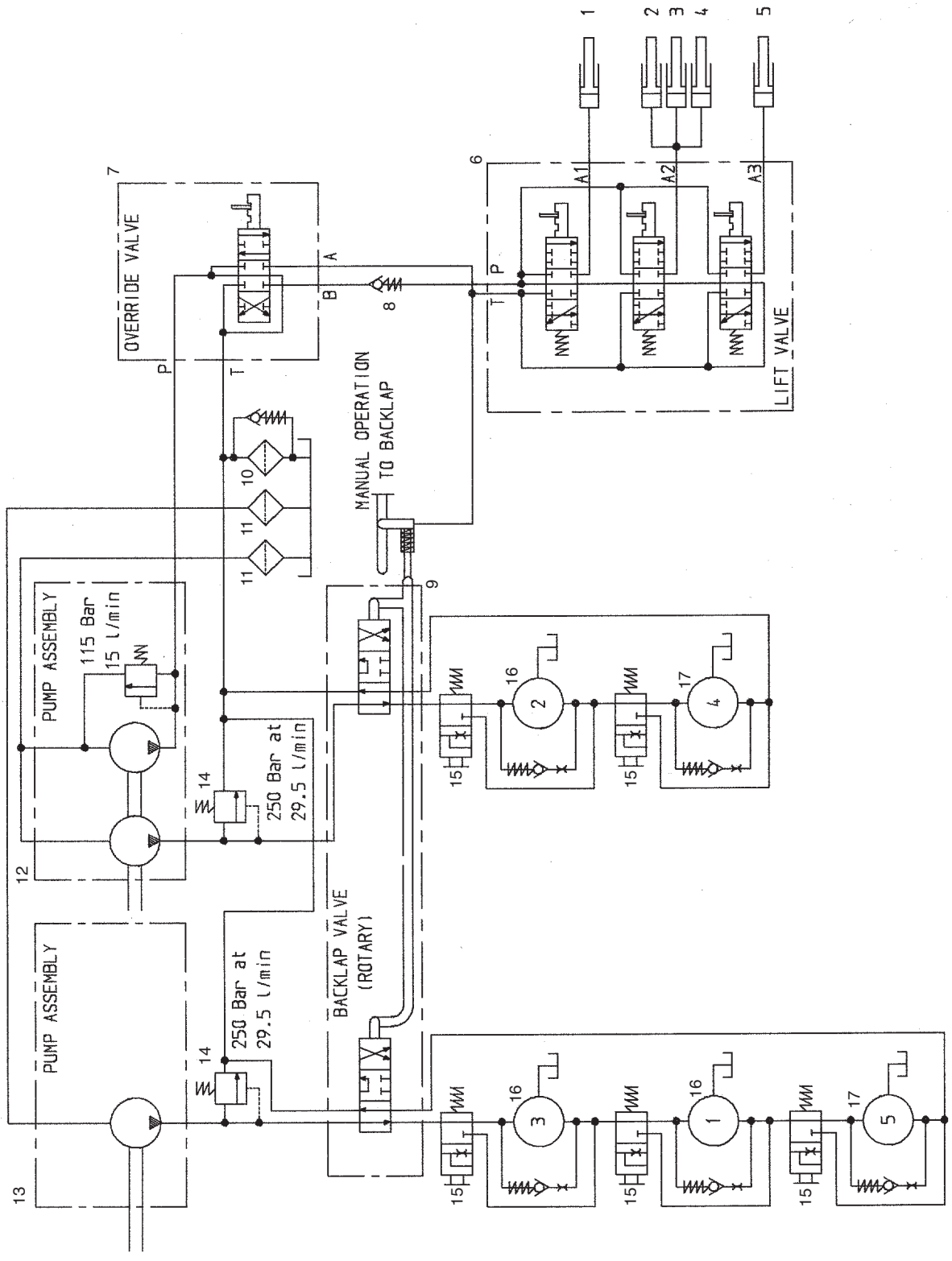
FAULT	POSSIBLE CAUSE	REMEDY
Hydraulic oil system overheating	Cylinders are tight against bottom blades	Adjust cylinder to bottom blade clearance
	Low relief valve setting	Have relief valve cleaned and pressure checked. Consult your authorised dealer
	Low oil level	Fill reservoir to correct level
	Brakes engaged	Disengage brakes
	Cutting cylinders tight on bottom blades	Re adjust settings
	Excessive work rate	Reduce work rate i.e., increase height of cut or reduce forward speed
	Hydraulic oil viscosity incorrect	Drain and refill hydraulic oil reservoir with correct grade viscosity oil, refer to **RECOMMENDED LUBRICANTS**.
Excessive noise in hydraulic system	Faulty pump	Identify noisy pump and service or replace
	Faulty motor	Identify noisy motor and service or replace
	Air leaking into system	Tighten or replace hydraulic fittings particularly in suction lines
	Suction strainer blocked or damaged	Clean and replace suction strainer or renew as necessary
	Excessive oil viscosity due to cold conditions	Allow system to warm up
	Low relief valve setting	Have relief valve cleaned and pressure checked. Consult your authorised dealer
	Low hydraulic oil level	Fill hydraulic oil reservoir to correct level
Cylinders rotate in the wrong direction	Back lap control lever not locked in the ‘normal operation’ position	Lock the back lap control lever in the ‘normal operation’ position
After initial satisfactory operation machine loses power.	Worn pump or motor	Replace as necessary
	Low hydraulic oil level	Fill hydraulic oil tank to correct level
	Incorrect oil viscosity	Renew oil in hydraulic tank with hydraulic oil of correct viscosity grade, refer to **SPECIFICATIONS**
	Oil filter element blocked	Change filter element
	Faulty pressure relief valve	Have relief valve cleaned and pressure checked. Consult your authorised dealer
	Overheating	Incorrect hydraulic oil grade, refer - Problem ‘HYDRAULIC OIL SYSTEM OVERHEATING’
	Leaks on suction hose	Check and tighten fittings. Replace hose if necessary

FAULT	POSSIBLE CAUSE	REMEDY
Cylinder 'knocks' while rotating	High spot on cylinder or bottom blade due to contact with foreign object	Remove high spot with a stone and back lap to restore cutting edges. Serious damage will require re grinding
	Worn cylinder bearings	Replace as necessary
One cylinder rotates slowly	Cutting cylinder bearing seized	Replace as necessary
	Incorrect rotation motor fitted	Check motor and replace if necessary
	Diverter valve only partly open	Free off and lubricate or replace diverter valve as necessary
	Motor integral check valve jammed open	Have check valve cleaned and checked
	Cutting cylinder tight on the bottom blade	Re adjust setting
Cutterhead fails to lift out of work	Lift cylinder seal failure	Replace seals
	Pressure relief valve jammed open or wrongly set	Have relief valve cleaned and pressure checked. Consult your authorised dealer
	Defective control valve	Overhaul control valve
	Mechanical blockage	Remove blockage
Cutterheads do not follow ground contours	Incorrect hose routing or incorrect orientation of hydraulic fittings	Move cutterheads throughout extremes of movement and observe any tightness in the hoses. Correctly route hoses and orientate fittings as necessary
	Tightness in pivots	Free off and grease as necessary
	Control levers in 'Neutral' position	Move the control levers to the 'Down / Cut' position
Cutterheads fail to start up when lowered into work	Low oil level	Fill hydraulic oil reservoir to correct level
	Diverter valve jammed	Free off and lubricate diverter valve as necessary
	Pressure relief valve jammed open or wrongly set	Have relief valve cleaned and pressure checked. Consult your dealer
	Cutting cylinder jammed	Free off as necessary
	Cutting cylinder tight on bottom blade	Re adjust setting
	Cutterhead control valve in the 'off' position caused by:	
	- Hydraulic pressure in the override lift circuit	Operate the override control lever to the 'Down / Cut' position
	- Back lap control lever not locked in the 'normal operation' position	Lock the back lap control lever in the 'normal operation' position
	- Mechanical failure of the back lap control valve or its operating mechanism	Replace or repair as necessary
	Hoses wrongly connected	Check hydraulic circuit and reconnect as necessary

FAULT	POSSIBLE CAUSE	REMEDY
Heavy wear on P.T.O. shaft	Lack of lubrication	Re grease and repeat every 8 hours of work
	Insufficient overlap between shaft inner and outer sections	Check and adjust the P.T.O. operating length, refer to 'ATTACHING THE MOWER TO THE TRACTOR'
	Damage due to contact with tractor drawbar pin	Check and re adjust vertical alignment of mower towbar
Excessive hand brake travel / poor braking performance	Worn brake shoes	Adjust wheel brake shoes or replace as necessary, refer to 'MAINTENANCE'
	Slack brake cables	Re adjust brake cables, refer to 'MAINTENANCE'
	Worn brake cylinder	Replace cylinder
Mower pulls to one side under braking	Unbalanced cable adjustment	Re adjust brake cables, refer to 'COMMISSIONING THE MOWER'

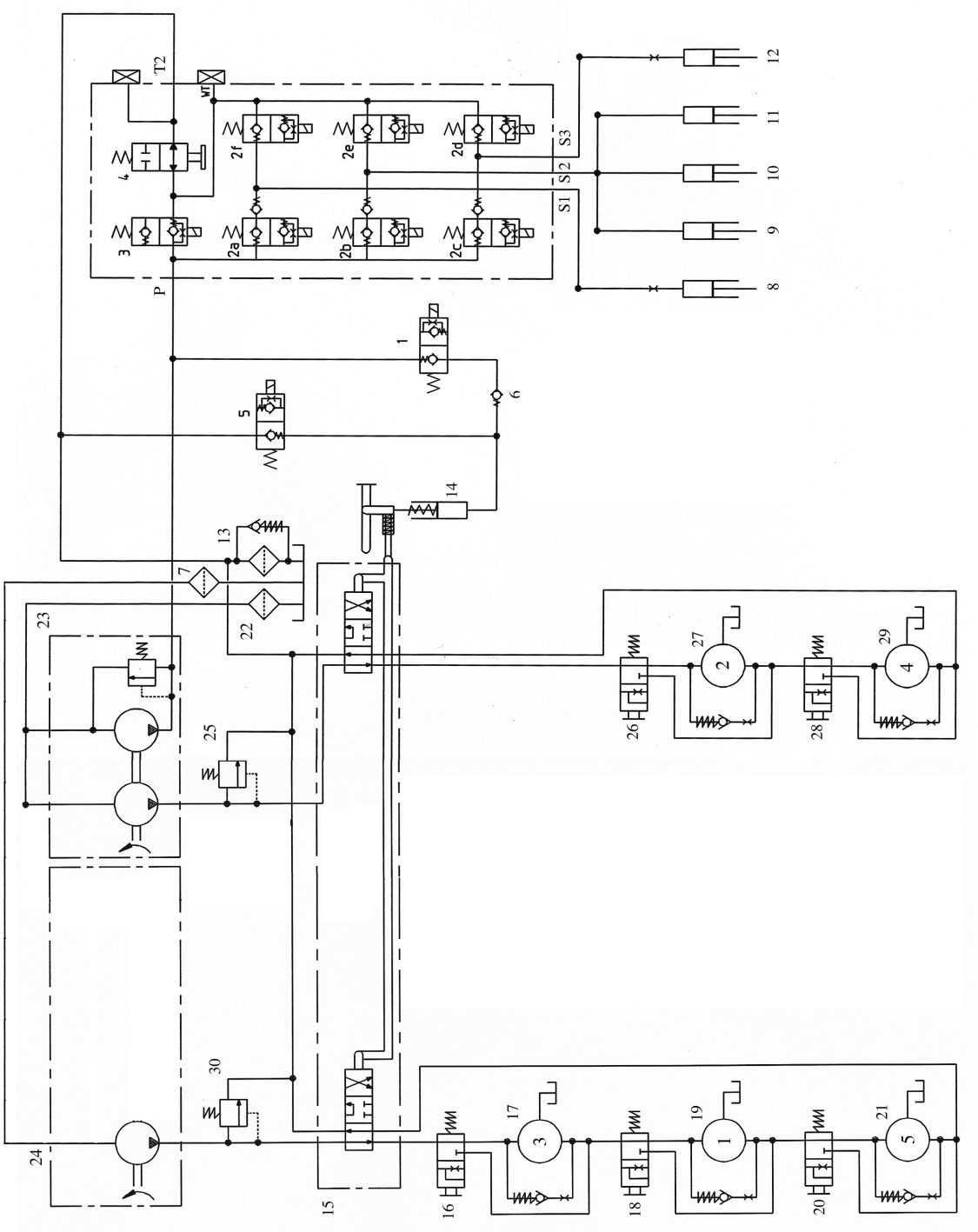
ITEM No.	DESCRIPTION	PART NO.	QTY	ITEM NOTE
1.	REMOTE CONTROL	111-1794	1	
2.	ELECTRIC CONTROL BOX	111-1795	1	
3.	LIFT CONTROL BLOCK	768600	1	
4.	PROXIMITY SWITCH ASSY	111-1787	1	
5.	SOLENOID	768701	1	
6.	UMBILICAL CABLE	111-1790	1	




OVERRIDE VALVE
LIFT VALVE
MANUAL OPERATION TO BACKLAP
BACKLAP VALVE (ROTARY)
PUMP ASSEMBLY
115 Bar 15 l/min
250 Bar at 29.5 l/min
250 Bar at 29.5 l/min
PUMP ASSEMBLY
P
T
A
B
A1
A2
A3

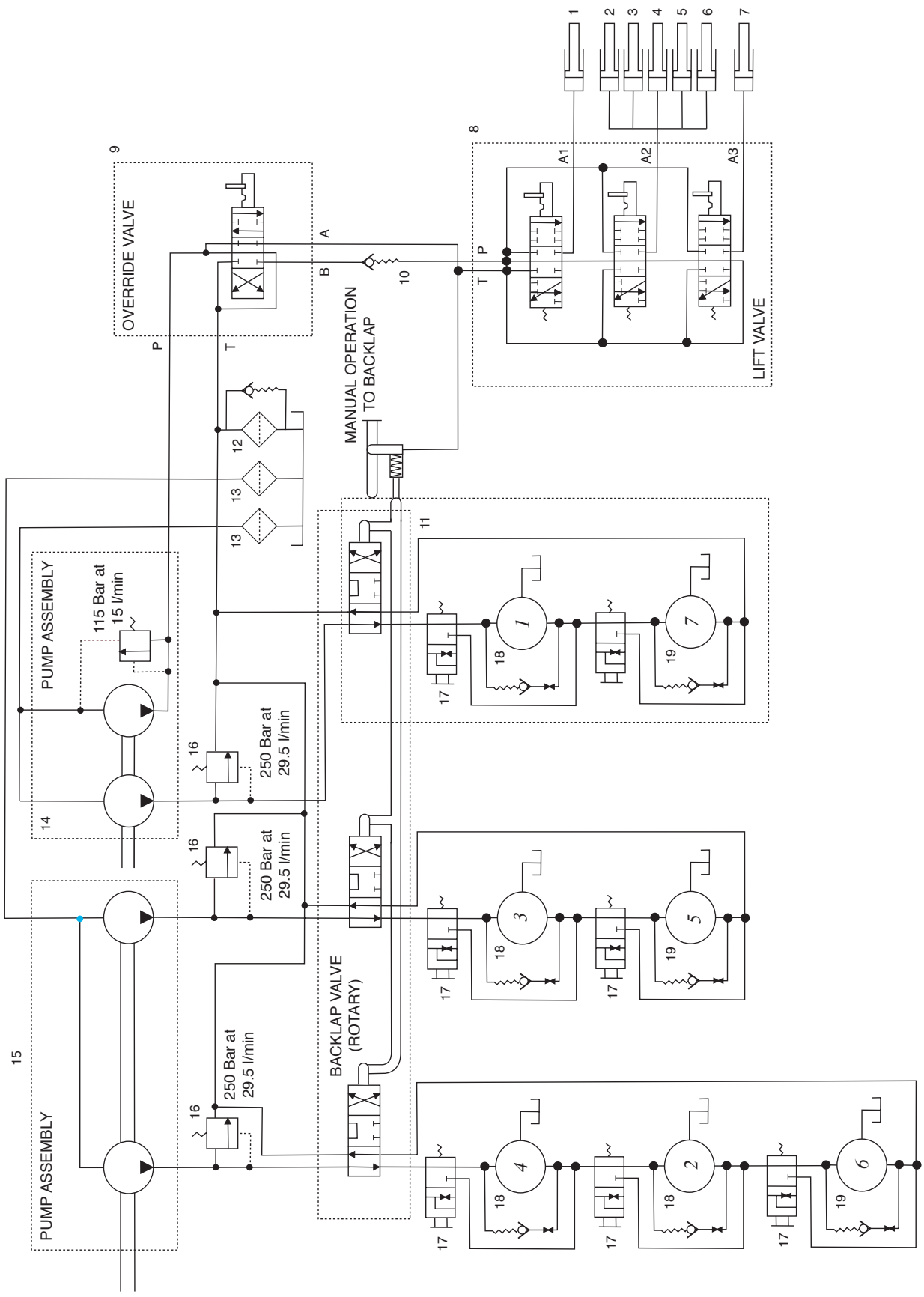
1.80 TM5490 HYDRAULIC CIRCUIT PARTS LIST 1.80

ITEM No.	DESCRIPTION	PART NO.	QTY	ITEM NOTE
1.	LIFT CYLINDER	74-06-012W		
2.	LIFT CYLINDER	63-06-001W		
3.	LIFT CYLINDER	74-06-058W		
4.	LIFT CYLINDER	63-06-001W		
5.	LIFT CYLINDER	74-06-012W		
6.	LIFT CONTROL VALVE	767603W		
7.	OVER-RIDE CONTROL VALVE	767604W		
8.	CHECK VALVE	65-06-303		
9.	ROTARY VALVE 3 BANK	65-06-343W		
10.	RETURN FILTER	65-06-482		
11.	SUCTION STRAINER	10-06-025		
12.	TANDEM PUMP ASSEMBLY	767601		
13.	TANDEM PUMP ASSEMBLY	767600		
14.	250 BAR RELIEF VALVE ASSEMBLY	749611		
15.	DIVERTER VALVE	953601		
16.	CUTTERHEAD MOTOR L.H.	910696		
17.	CUTTERHEAD MOTOR R.H	924602		

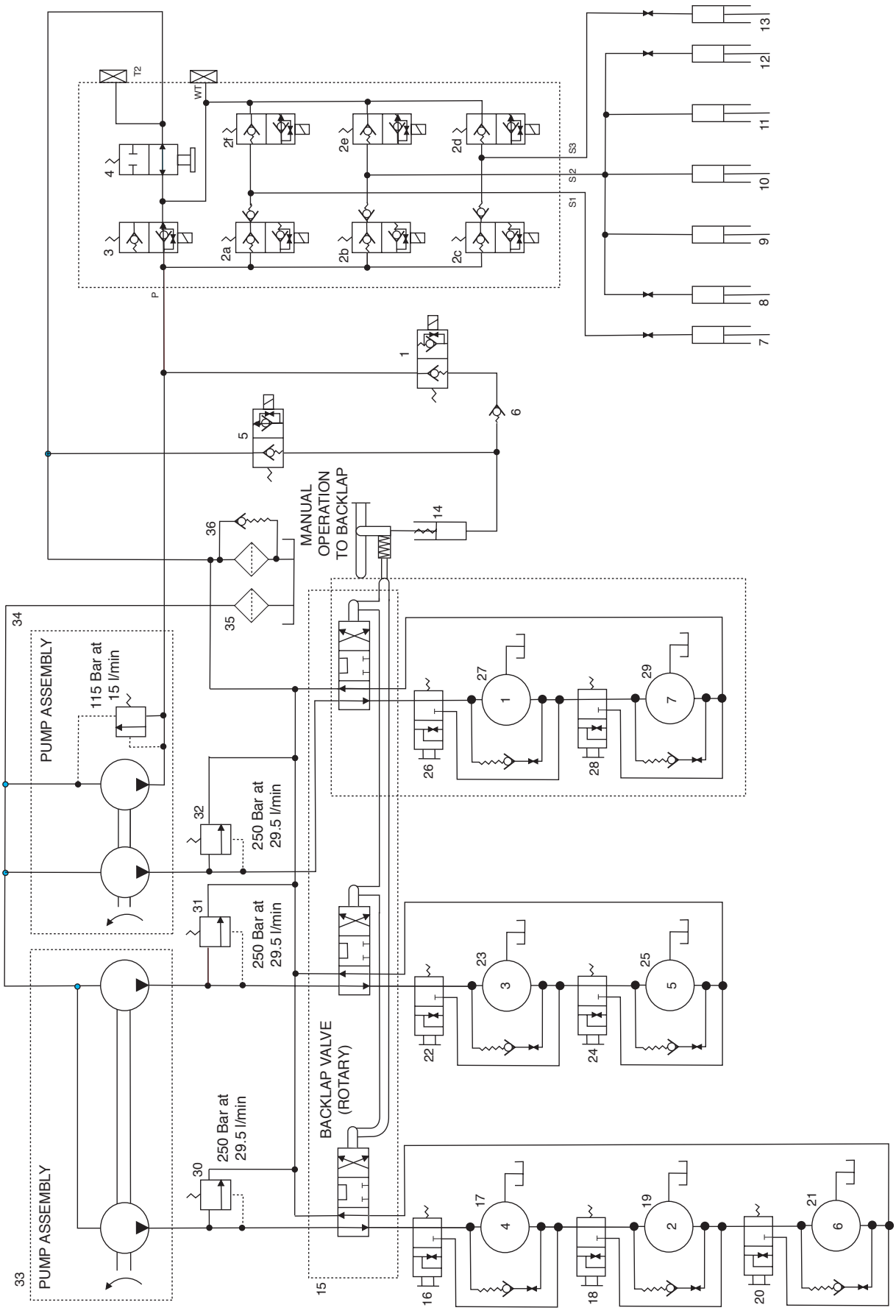

T2
WT
P
S1
S2
S3
1
2a
2b
2c
2d
2e
2f
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

1.82 TM5490 ELECTRIC HYDRAULIC CIRCUIT PARTS LIST 1.82

ITEM No.	DESCRIPTION	PART NO.	QTY	ITEM NOTE
1.	SOLENOID VALVE			
2A.	SOLENOID VALVE			
2B.	SOLENOID VALVE			
2C.	SOLENOID VALVE			
2D.	SOLENOID VALVE			
2E.	SOLENOID VALVE			
2F.	SOLENOID VALVE			
3.	SOLENOID VALVE			
4.	VALVE - MANUAL LIFT OVERRIDE			
5.	SOLENOID VALVE			
6.	CHECK VALVE			
7.	SUCTION STRAINER			
8.	HYDRAULIC CYLINDER NO. 1			
9.	HYDRAULIC CYLINDER NO. 2			
10.	HYDRAULIC CYLINDER NO. 3			
11.	HYDRAULIC CYLINDER NO. 4			
12.	HYDRAULIC CYLINDER NO. 5			
13.	RETURN FILTER			
14.	HYDRAULIC CYLINDER - ROTARY VALVE			
15.	ROTARY VALVE BLOCK			
16.	VALVE DIVERTER			
17.	HYDRAULIC MOTOR NO. 3			
18.	VALVE - DIVERTER			
19.	HYDRAULIC MOTOR NO. 1			
20.	VALVE - DIVERTER			
21.	HYDRAULIC MOTOR NO. 5			
22.	SUCTION STRAINER			
23.	TANDEM PUMP			
24.	SINGLE PUMP			
25.	PRESSURE RELIEF VALVE 250 BAR			
26.	VALVE - DIVERTER			
27.	HYDRAULIC MOTOR NO. 1			
28.	VALVE - DIVERTER			
29.	HYDRAULIC MOTOR NO. 7			
30.	PRESSURE RELIEF VALVE 250 BAR			

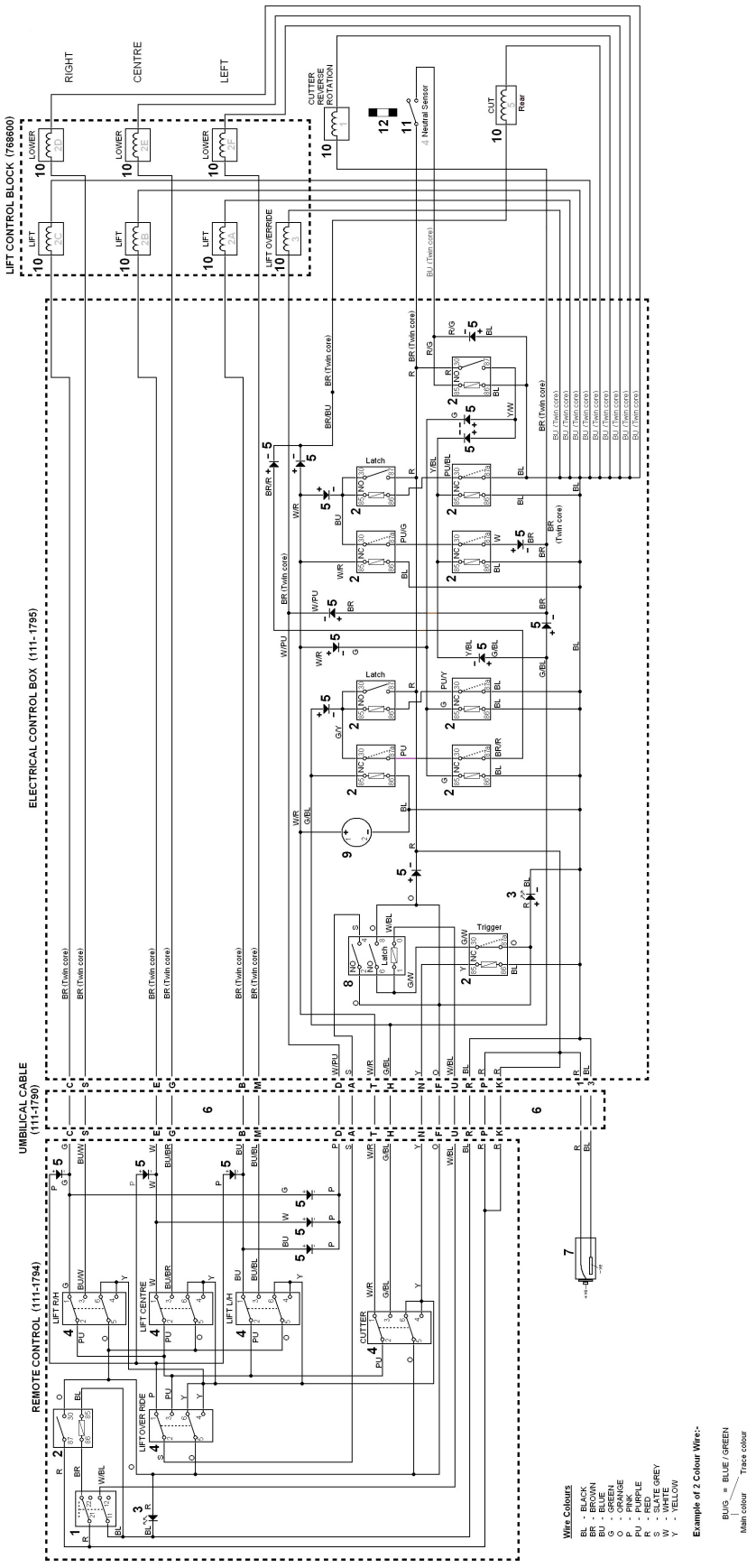

1
2
3
4
5
6
7
8
A1
A2
A3
P
T
LIFT VALVE
9
OVERRIDE VALVE
A
B
10
MANUAL OPERATION
TO BACKLAP
11
12
13
13
14
PUMP ASSEMBLY
115 Bar at
15 l/min
16
250 Bar at
29.5 l/min
16
250 Bar at
29.5 l/min
15
PUMP ASSEMBLY
16
250 Bar at
29.5 l/min
BACKLAP VALVE
(ROTARY)
17
18
19

ITEM No.	DESCRIPTION	PART NO.	QTY	ITEM NOTE
1.	LIFT CYLINDER	66-06-001W		
2.	LIFT CYLINDER	74-06-012W		
3.	LIFT CYLINDER	63-06-001W		
4.	LIFT CYLINDER	74-06-058W		
5.	LIFT CYLINDER	63-06-001W		
6.	LIFT CYLINDER	74-06-012W		
7.	LIFT CYLINDER	66-06-001W		
8.	LIFT CONTROL VALVE	767603W		
9.	OVER-RIDE CONTROL VALVE	767604W		
10.	CHECK VALVE	65-06-303		
11.	ROTARY VALVE 3 BANK	65-06-343W		
12.	RETURN FILTER	65-06-482		
13.	SUCTION STRAINER	10-06-025		
14.	TANDEM PUMP ASSEMBLY	767601		
15.	TANDEM PUMP ASSEMBLY	767600		
16.	250 BAR RELIEF VALVE ASSEMBLY	749611		
17.	DIVERTER VALVE	953601		
18.	CUTTERHEAD MOTOR L.H.	910696		
19.	CUTTERHEAD MOTOR R.H	924602		


T2
WT
P
S1
S2
S3
MANUAL OPERATION TO BACKLAP
PUMP ASSEMBLY
115 Bar at 15 l/min
250 Bar at 29.5 l/min
250 Bar at 29.5 l/min
250 Bar at 29.5 l/min
BACKLAP VALVE (ROTARY)
PUMP ASSEMBLY

1.86 TM7490 ELECTRIC HYDRAULIC CIRCUIT PARTS LIST 1.86

ITEM No.	DESCRIPTION	PART NO.	QTY	ITEM NOTE
1.	SOLENOID VALVE			
2A.	SOLENOID VALVE			
2B.	SOLENOID VALVE			
2C.	SOLENOID VALVE			
2D.	SOLENOID VALVE			
2E.	SOLENOID VALVE			
2F.	SOLENOID VALVE			
3.	SOLENOID VALVE			
4.	VALVE - MANUAL LIFT OVERRIDE			
5.	SOLENOID VALVE			
6.	CHECK VALVE			
7.	HYDRAULIC CYLINDER NO. 1	66-06-001W	1	
8.	HYDRAULIC CYLINDER NO. 2	74-06-012W	1	
9.	HYDRAULIC CYLINDER NO. 3	66-06-001W	1	
10.	HYDRAULIC CYLINDER NO. 4	74-06-058W	1	
11.	HYDRAULIC CYLINDER NO. 5	63-06-001W	1	
12.	HYDRAULIC CYLINDER NO. 6	74-06-012W	1	
13.	HYDRAULIC CYLINDER NO. 7	66-06-001W	1	
14.	HYDRAULIC CYLINDER - ROTARY VALVE			
15.	ROTARY VALVE BLOCK			
16.	VALVE DIVERTER			
17.	HYDRAULIC MOTOR NO. 4	940602	1	
18.	VALVE - DIVERTER			
19.	HYDRAULIC MOTOR NO. 2	940603	1	
20.	VALVE - DIVERTER			
21.	HYDRAULIC MOTOR NO. 6	910696	1	
22.	VALVE - DIVERTER			
23.	HYDRAULIC MOTOR NO. 3	940602	1	
24.	VALVE - DIVERTER			
25.	HYDRAULIC MOTOR NO. 5	910696	1	
26.	VALVE - DIVERTER			
27.	HYDRAULIC MOTOR NO. 1	940602	1	
28.	VALVE - DIVERTER			
29.	HYDRAULIC MOTOR NO. 7	910696	1	
30.	PRESSURE RELIEF VALVE 250 BAR			
31.	PRESSURE RELIEF VALVE 250 BAR			
32.	PRESSURE RELIEF VALVE 250 BAR			
33.	TANDEM PUMP	767601	1	
34.	TANDEM PUMP	767600	1	
35.	SUCTION STRAINER			
36.	RETURN FILTER	65-06-482	1	


LIFT CONTROL BLOCK (768600)
ELECTRICAL CONTROL BOX (111-1795)
UMBILICAL CABLE (111-1790)
REMOTE CONTROL (111-1794)
RIGHT
CENTRE
LEFT
LOWER
LIFT
LIFT OVERRIDE
CUTTER REVERSE ROTATION
Neutral Sensor
CUT
Rear
Latch
Trigger
LIFT RH
LIFT CENTRE
LIFT LH
CUTTER
LIFT OVER RIDE
Wire Colours
BL - BLACK
BR - BROWN
BU - BLUE
G - GREEN
O - ORANGE
P - PINK
PU - PURPLE
R - RED
S - SLATE GREY
W - WHITE
Y - YELLOW
Example of 2 Colour Wire:-
BU/G = BLUE / GREEN
Main colour
Trace colour

1.88 TM5490 & TM7490 ELECTRICAL CIRCUIT DIAGRAM 1.88

ITEM No.	DESCRIPTION	PART NO.	QTY	ITEM NOTE
1.	SWITCH - EMERGENCY STOP	111-1779	1	
2.	RELAY	111-0336	11	
3.	LED	111-1780	2	
4.	TOGGLE SWITCH	70-09-001	5	
5.	DIODE	111-0348	19	
6.	UMBILICAL CABLE (INCLUDES ITEM 7)	111-1790	1	
7.	PLUG AUTOMOTIVE	111-1636	1	
8.	RELAY	995713	1	
9.	HOUR METER	910850	1	
10.	SOLENOID 12V CCS5012D	HY768701	9	
11.	PROXIMITY SWITCH ASSEMBLY	111-1787	1	
12.	MAGNET	111-1789	1	

The Toro Total Coverage Guarantee

A Limited Warranty

Conditions and Products Covered

The Toro® Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly warrant your Toro Commercial product ("Product") to be free from defects in materials or workmanship for two years or 1500 operational hours*, whichever occurs first. This warranty is applicable to all products with the exception of Aerators (refer to separate warranty statements for these products). Where a warrantable condition exists, we will repair the Product at no cost to you including diagnostics, labor, parts, and transportation. This warranty begins on the date the Product is delivered to the original retail purchaser.
* Product equipped with an hour meter.

Instructions for Obtaining Warranty Service

You are responsible for notifying the Commercial Products Distributor or Authorized Commercial Products Dealer from whom you purchased the Product as soon as you believe a warrantable condition exists. If you need help locating a Commercial Products Distributor or Authorized Dealer, or if you have questions regarding your warranty rights or responsibilities, you may contact us at:

Commercial Products Service Department
Toro Warranty Company
8111 Lyndale Avenue South
Bloomington, MN 55420-1196
E-mail: commercial.warranty@toro.com

Owner Responsibilities

As the Product owner, you are responsible for required maintenance and adjustments stated in your Operator's Manual. Failure to perform required maintenance and adjustments can be grounds for disallowing a warranty claim.

Items and Conditions Not Covered

Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. This warranty does not cover the following:

- Product failures which result from the use of non-Toro replacement parts, or from installation and use of add-on, or modified non-Toro branded accessories and products. A separate warranty may be provided by the manufacturer of these items.
- Product failures which result from failure to perform recommended maintenance and/or adjustments. Failure to properly maintain your Toro product per the Recommended Maintenance listed in the *Operator's Manual* can result in claims for warranty being denied.
- Product failures which result from operating the Product in an abusive, negligent or reckless manner.
- Parts subject to consumption through use unless found to be defective. Examples of parts which are consumed, or used up, during normal Product operation include, but are not limited to, brakes pads and linings, clutch linings, blades, reels, bed knives, tines, spark plugs, castor wheels, tires, filters, belts, and certain sprayer components such as diaphragms, nozzles, and check valves, etc.
- Failures caused by outside influence. Items considered to be outside influence include, but are not limited to, weather, storage practices, contamination, use of unapproved coolants, lubricants, additives, fertilizers, water, or chemicals, etc.
- Normal noise, vibration, wear and tear, and deterioration.
- Normal "wear and tear" includes, but is not limited to, damage to seats due to wear or abrasion, worn painted surfaces, scratched decals or windows, etc.

Parts

Parts scheduled for replacement as required maintenance are warranted for the period of time up to the scheduled replacement time for that part. Parts replaced under this warranty are covered for the duration of the original product warranty and become the property of Toro. Toro will make the final decision whether to repair any existing part or assembly or replace it. Toro may use remanufactured parts for warranty repairs.

Note Regarding Deep Cycle Battery Warranty:

Deep cycle batteries have a specified total number of kilowatt-hours they can deliver during their lifetime. Operating, recharging, and maintenance techniques can extend or reduce total battery life. As the batteries in this product are consumed, the amount of useful work between charging intervals will slowly decrease until the battery is completely worn out. Replacement of worn out batteries, due to normal consumption, is the responsibility of the product owner. Battery replacement may be required during the normal product warranty period at owner's expense.

Maintenance is at Owner's Expense

Engine tune-up, lubrication cleaning and polishing, replacement of Items and Conditions Not Covered filters, coolant, and completing Recommended Maintenance are some of the normal services Toro products require that are at the owner's expense.

General Conditions

Repair by an Authorized Toro Distributor or Dealer is your sole remedy under this warranty.

Neither The Toro Company nor Toro Warranty Company is liable for indirect, incidental or consequential damages in connection with the use of the Toro Products covered by this warranty, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non-use pending completion of repairs under this warranty. Except for the Emissions warranty referenced below, if applicable, there is no other express warranty.

All implied warranties of merchantability and fitness for use are limited to the duration of this express warranty. Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Countries Other than the United States or Canada

Customers should contact their Toro Distributor (Dealer) to obtain guarantee policies for your country, province, or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact the Toro importer. If all other remedies fail, you may contact us at Toro Warranty Company.

Machine Details

Model: .....

Machine Serial No: .....

Cutterhead Serial No's: .....

.....

.....

.....

.....

.....