

# TM10 Vacuum Collector OPERATOR'S MANUAL T234900



**WARNING**

THE VACUUM IMPELLOR WILL CONTINUE TO TURN FOLLOWING POWER UNIT SHUT-DOWN. ALLOW FIVE MINUTES FOR THE IMPELLOR TO COME TO A COMPLETE STOP BEFORE WORKING ON THE MACHINE.

This manual contains important information which will help you obtain long life and optimum performance from your TM10 Vacuum Collector while promoting maximum safety and productivity.

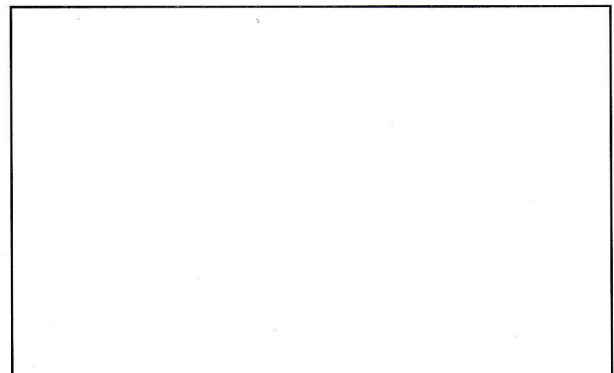
Please ensure that this manual is read by, and readily available to, all who use or maintain the machine. To help with identification for servicing and parts requirements, please record the serial number and date of purchase of your TM10 on page 4 of this manual.

If you have any questions, comments or concerns about the use or care of your TM10 vacuum collector, please contact Turfmech Machinery or your supplying dealer.

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## MANUAL & MACHINE AMENDMENT RECORD

Date	Page	Amendment	Signed
19/7/2010		New issue	JG

## FOREWORD

Thank you for choosing a Turfmech TM10 Vacuum Collector.

This machine has been carefully designed and manufactured to deliver high performance and reliable operation in the hands of trained and responsible professional users. Properly set, operated and maintained, your TM10 vacuum collector will give excellent service and first-class results for many years to come.

To ensure safe and effective operation of your TM10, it is essential that anyone having any involvement whatsoever with the machine should have read and understood the instructions and advice given in this manual. This requirement applies particularly to those who have responsibility for adjusting, maintaining or using the TM10.

A Sign-Off Form is included on page 5 of this manual where owners and managers can record the date that an operator affirms that he/she has read and understood the information given herein and has received instruction in the machine's safe operation.

All of the components used in the manufacture of the TM10 Vacuum Collector have been designed, specified and manufactured to provide a long and reliable working life. Only Turfmech Machinery and its appointed dealers and representatives are authorised to provide you with genuine replacement parts. Turfmech is unable to guarantee the performance and safety of the machine if non-genuine parts are fitted. The use of such parts will also invalidate any warranty provided with the machine. For peace of mind and maximum safety and working life, we strongly recommend that you specify and fit genuine Turfmech-supplied parts at all times.

When it comes to maintenance, remember that your Turfmech dealer knows your machine best and wants you to be completely satisfied. Your dealer is trained to provide quality service and will be pleased to offer any other assistance that you may require.

If you sell or trade-in your TM10, please pass on this manual to the new owner.

All information and specifications given in this manual are correct at time of printing. However, Turfmech's policy of continuous product development means that changes may be made to future machines without notice or obligation. Please return the warranty registration card to ensure that you are notified of any matters concerning safety.

Because the information in this manual covers the TM10 and all its options and accessories, it is possible that you will find explanations given for equipment which is not fitted to your machine.

**NOTE**

The terms "left", "right", "front" and "rear", as used throughout this manual, describe or refer to a specific part of the machine in relation to a person sitting on the tractor's seat facing forward.

To assist when requesting parts, accessories or after-sales service, please record the serial number and date of purchase of your TM10 in the box below. Have this information to hand when you visit or contact your supplying dealer or Turfmech Machinery. You will find the serial number inscribed on a plate fastened to the front left-hand side of the machine - see location illustration on page 8.

MACHINE MODEL: T234 TM10 (Manufacturing code number)

SERIAL NUMBER:

DATE OF DELIVERY:

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# SIGN-OFF FORM

The sign-off form printed below is provided for your record-keeping. Please use it to affirm that all those who will be operating the TM10 Vacuum Collector have read and understood the information given in this operator's manual and have received instruction in the safe operation of the equipment. It should be signed by all operators and by their employer or manager.

Do not allow anyone to operate the equipment before they have first read and understood this manual. We recommend that the information and guidance contained within this manual is reviewed annually by all operators and service personnel.

Untrained or un-informed operators should not be allowed to use the machine.

DATE	EMPLOYEE'S SIGNATURE	EMPLOYER'S/MANAGER'S SIGNATURE

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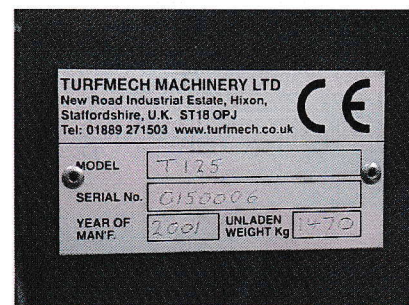
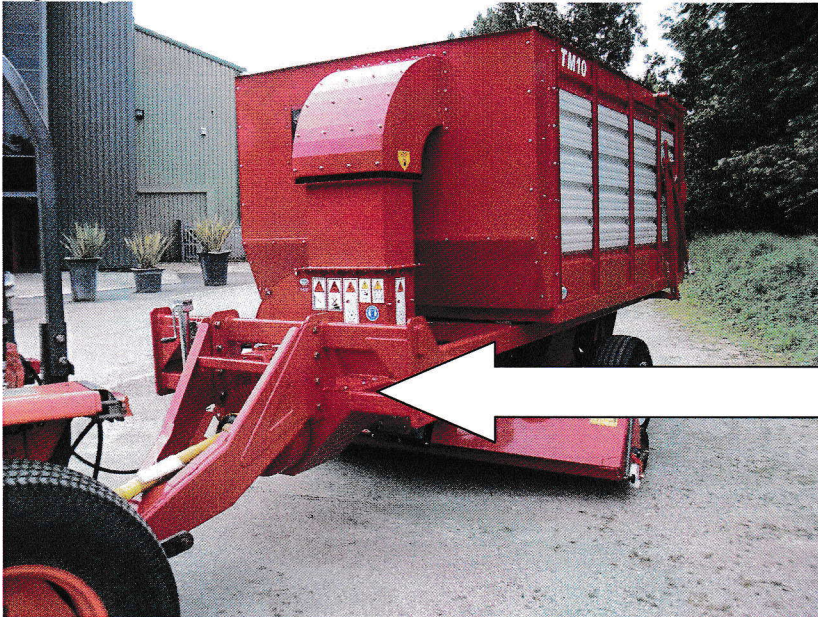
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# 1.0 INTRODUCTION

## 1.1 IDENTIFICATION PLATE LOCATION

Fig 1



The TM10's identification plate (arrowed, Fig 1) is located at the front of the machine. It carries the following important information:

- A) The manufacturer's name and contact information.
- B) The CE mark, indicating the machine's conformity to the Supply of Machinery (Safety) Regulations 1992. This is a legal requirement.
- C) The machine model
- D) The machine's serial number. This unique identification number may be required when contacting your supplier or the manufacturer with technical queries, service requests or spare parts requirements.
- E) The year of manufacture
- F) The machine's unladen weight (kg)



## 1.2 MACHINE'S INTENDED USE

The TM10 Vacuum Collector has been designed and manufactured to a very high standard to carry out a specific operation. If the machine is not used exclusively for the purpose for which it is intended, as stated below, its safety, performance and working life could be impaired.

The TM10 Vacuum Collector is a tractor-towed machine designed for the fast, effective collection and removal of leaves, litter, grass clippings and other light, loose debris from turf surfaces (e.g. parks, playing fields, turf farms) and composite or hard surfaces (e.g. roadways, arenas, stadiums and synthetic play areas). Collection of such materials is achieved by means of the machine's full-width vacuum pick-up head with powered debris agitation brush or by means of the optional operator-guided side wander hose. The minimum recommended tractor power requirement is 50hp (37kW).

The TM10 can be used successfully on level or undulating ground and is able to carry a maximum payload of 2,000kg (4,410lbs) in its 10 cu metre (354 cu ft) hydraulically-tipped hopper. When ready for emptying, the machine is towed to a suitably-designated waste disposal area or receptacle. Collected material is gravity-discharged from the hopper via an automatically-opening tailgate.

Due to the intrinsic hazards of using powered and non-powered machines with modern, sophisticated tractors, it is essential that the TM10 is attached to the tractor and operated only by suitably trained and experienced personnel who are fully conversant with the workings of the machine and the tractor.



**CAUTION** If you have read this Operator's instruction manual and remain unsure or uncertain of any operational setting, function or control on the TM10 or the tractor, it is essential that you contact your supplying dealer or the appropriate manufacturer for advice or assistance **BEFORE** putting the machine to work.

## 1.3 PRINCIPLES OF MACHINE OPERATION

The TM10 Vacuum Collector is designed to collect debris from hard surfaces and turf. It is fitted as standard with a 2.5m (98in) wide suction pick-up head and hydraulically-driven debris brush. The brush is designed to loosen stubborn material immediately in front of the pick-up head.

As an option, the TM10 can be supplied with a suction wander hose. The hose operates independently of the suction head. It uses the vacuum created by the PTO-powered impellor and can be employed for specific debris clearance applications, for example beneath trees and close to buildings. When not in use, the wander hose is stored in support brackets mounted on the side of the machine. In use, the wander hose is supported by a harness worn by the operator (Fig 3) who guides the nozzle over the ground by means of "cow horn" handles (Fig 4). The wander hose is 6m long and can be specified in diameters of 200mm or 250mm.



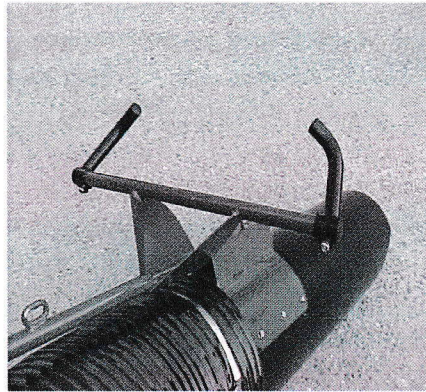
**WARNING**

**USE OF THE WANDER HOSE IS A TWO PERSON OPERATION.**  
A QUALIFIED PERSON SHOULD BE ON THE TRACTOR WHEN THE WANDER HOSE IS IN USE.

Fig 3



Fig 4



#### **1.4 BASIC REQUIREMENTS OF TOWING TRACTOR**

For safe and effective operation, the TM10 Vacuum Collector must be powered by a tractor producing at least 50hp and equipped with 540rpm power take-off, a pick up hitch and one double-acting spool valve.

The TM10 is equipped as standard with three separate hydraulic functions. These are to:

1. raise and lower the debris collection hopper
2. lift and lower the suction pick-up head
3. engage drive to the suction head brush

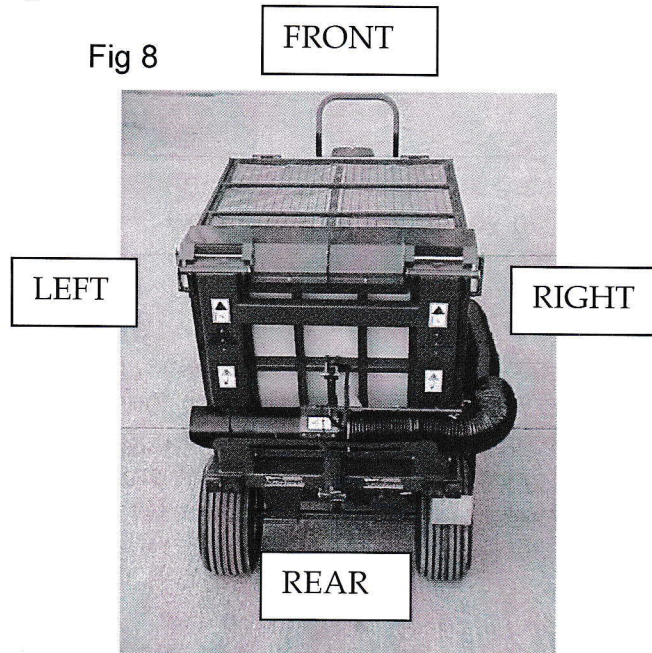
With the TM10 connected correctly to the tractor, the collection hopper can carry loads of up to 2,000kg from the working area to the disposal site. Front tractor ballast may be required to ensure stability when tipping.

The suction head has a manually engaged transport lock valve on the hydraulic cylinder (see section 4.0)

All functions are operated from the electronically powered in cab control box.

## 1.5 OPERATOR'S ORIENTATION

The terms "left", "right", "front" and "rear", are used throughout this manual, describe or refer to a specific part of the machine in relation to a person sitting on the tractor's seat facing forward. See Figure 8



## 1.6 USE OF GENUINE PARTS & ACCESSORIES

There is a possibility that you will be offered non-genuine spare parts and accessories as being suitable for use with your Turfmech TM10 Vacuum Collector.

Turfmech Machinery advises owners and operators that use of such parts and accessories may adversely affect the performance of your Turfmech machine and will nullify our declaration of EC conformity (the CE mark).

As a result, Turfmech is unable to accept any liability, or guarantee the performance, safety, reliability or working life of the TM10 if non-genuine parts are used.

Never alter your machine by using such parts or by making modifications which have not been authorised by Turfmech Machinery. Such actions could affect safety and durability and may violate European or government-enforced regulations.

### NOTE

Any damage caused to or by the machine or any problems resulting from the use of non-genuine parts or non-authorized modifications will not be covered under the terms of the warranty given by Turfmech with the machine.

## 2.0 SAFETY

YOU, the owner and/or operator, are responsible for the SAFE operation and maintenance of your Turfmech TM10 Vacuum Collector. YOU must ensure that you and anyone else who will be operating, maintaining or working on or near to the TM10 is familiar with all of the operational and maintenance procedures and the related SAFETY information contained within this manual.


This manual takes you step by step through the recommended operation, setting and maintenance of the TM10, alerting you to the proper safety practices which must be observed during these procedures.

Remember that YOU are the key to maximum safety. Good safety practices not only protect you but also the people around you and the machine. Make such practices a normal part of your safety programme and daily routines. Be sure that EVERYONE who will be operating or working on this machine is familiar with the recommended procedures and follows at all times the safety precautions. Remember that most accidents can be avoided. Do not risk injury or death by ignoring good safety practices.

### ***THINK SAFETY! WORK SAFELY!***

## 2.1 SAFETY ALERT WARNING SYMBOLS

Throughout this manual you will find safety alert warning symbols printed alongside the text. These warning symbols indicate a potential safety hazard and require that extra care and/or safety precautions **MUST** be taken by the person responsible for or in charge of the machine at the time.

Be extra alert when you see the symbol  in this manual and read carefully the instructions or advice printed alongside.

Please take very careful note of the warning symbols printed overleaf and the accompanying notes which explain the severity of the hazard to which you are being alerted.

The symbols shown are used throughout this manual and it is important that anyone having any involvement with the operation or care of the machine is fully aware of their meaning and the serious implications of not following the instructions or guidance given.

## SYMBOLS IN THIS MANUAL



**DANGER**

Indicates an immediate and specific hazard which **WILL** result in severe injury or death if proper care and precautions are not observed or followed.



**WARNING**

Indicates a specific hazard or unsafe practice which **COULD** result in injury or death if proper care and precautions are not observed or followed.



**CAUTION**

Indicates an unsafe practice which **COULD** result in injury if proper care and precautions are not observed or followed. This warning also acts as a reminder of sound safety practices.

### The following symbols are also used within this manual:

**NOTE**

Indicates a special point of information which requires your attention.

**IMPORTANT**

Indicates additional information provided to help prevent possible damage or deterioration to the machine **ONLY**.

2.2



## GENERAL SAFETY GUIDANCE



Why are good safety practices important?

- Because accidents can disable and accidents can kill.
- Because accidents cost money and accidents cost time.
- Because accidents are not inevitable. They **CAN** be avoided.

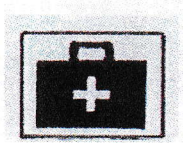
Owners of the Turfmech TM10 Vacuum Collector are obliged to ensure that complete and comprehensive safety and operating instructions are given to any person who will have dealings of any kind at any time with the machine.

Any employee or operator who has not read and fully understood all of the operating and safety instructions given within this manual is not qualified to set, operate or maintain this machine. If in doubt, always seek advice from your dealer or Turfmech Machinery.

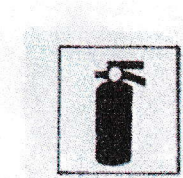
Never alter, amend or modify the machine in any way. Unauthorised modifications or alterations to your TM10 may impair its operation and safety and affect the reliability, performance and working life of the equipment. Any warranty will also be invalidated.

### 2.3 ADDITIONAL EQUIPMENT TO BE CARRIED ON THE TRACTOR

It is beyond the remit of this TM10 operator's manual to list all the equipment that should be made available to equipment operators. As a minimum, however, it is recommended that the tractor operator should have access to a first aid kit and fire extinguisher



**SAFETY REQUIREMENT:** Provide a first aid kit for use in the event of an accident or emergency. Store in a visible and easily accessible place. Replace promptly any items which have been used or are perishable.



**SAFETY REQUIREMENT:** Provide a fire extinguisher for use in the event of a fire. Store in a visible place and re-charge after use or as specified by the extinguisher's manufacturer.

### 2.4 SAFE SETTING AND OPERATION

- a) The TM10 must not be put into operation until all potential users have been given proper initial instruction by the supplying dealer or an appointed representative or employee of Turfmech Machinery.
- b) The TM10 must not be used unless all safety devices (e.g. detachable covers and guards) are securely in place and in proper working order. Only authorised and properly trained personnel should be allowed to remove safety guards. Never remove a guard while the tractor's engine is running.
- c) Check regularly the tightness of nuts, bolts and other fittings, retightening, if necessary. For torque settings, see the fastener torque table, see section 9.

- d) Keep bystanders and untrained personnel well clear of the TM10 at all times. Never allow passengers to ride or stand on the machine.
- e) Ensure that the tractor is in neutral gear, the power take-off is disengaged and the handbrake is applied before starting the tractor. The same rules apply before leaving the tractor's seat after stopping the engine. Read the tractor manual for correct starting and stopping procedures.
- f) Keep all parts of the body and clothing away from moving parts and always wear appropriate protective clothing and safety equipment during work, especially when using the hand-held side wander hose.

A list of suitable protective items includes, but is not limited to:



- A hard hat
- Protective shoes with slip-resistant soles and steel toe caps
- Protective eye glasses or goggles
- Protective gloves
- Wet weather clothing
- Ear defenders
- A respirator or dust filter mask

**Ask your Turfmech dealer about the supply of safety clothing and equipment.**

- g) Before connecting the TM10 to the tractor, transporting or operating the machine, ensure that the working area is clear of all bystanders, animals, obstacles and obstructions. Check thoroughly around the tractor and the machine before driving off.
- h) Although the TM10 is towed by the tractor, be aware that additional weight may be required on the tractor to counter-balance the weight of the TM10 and maintain tractor stability and full steering control in work and transport. (See tractor operator's manual for recommendations regarding front-end weights and wheel ballasting).
- i) Always switch off the tractor's engine, engage neutral gear and apply the handbrake before carrying out any adjustments or maintenance to the TM10. Ideally, such work should be undertaken on a firm, level surface. If this is not possible, insert purpose-designed chocks beneath the wheels to prevent possible movement of the machine.
- j) Take great care with hydraulic oil. Never connect or remove the hydraulic hoses until you have made sure that there is zero pressure on both the tractor and machine side of the system. De-pressurise the system by moving the auxiliary hydraulic control levers backwards and forwards two or three times with the engine switched off.

Because a tractor's hydraulic system operates at high pressures, all pipes, hoses

and connections must be checked regularly for leakage, wear or damage. Hydraulic hoses should not be installed or placed within the tractor's cab or close to the driver.




Never work on the hydraulic system or remove hydraulic hoses with the tractor's engine running. Spurting oil can penetrate the skin and eyes, causing serious injury.

### **WARNING**

- k) Never smoke or permit naked flames when refuelling. Clean up fuel spills immediately.
- l) In the event of any apparent malfunction with the TM10, cease operations immediately and secure the machine in a safe location. With the tractor's engine switched off and the power take-off disengaged, investigate, detect and eliminate the cause of any malfunction before proceeding. If in any doubt, contact Turfmech Machinery or your supplying dealer for advice.

## **2.5** **HYDRAULIC SAFETY**

- a) Always place the tractor's hydraulic controls in the neutral position before leaving the tractor and ensure that the hopper is supported in a safe condition.
- b) If you have to work on or beneath the TM10's raised hopper, provide substantial and secure secondary support capable of holding the total weight plus an adequate safety margin.
- c) Ensure that all components in the hydraulic system are kept clean and in good condition. Leaks and hydraulic circuit failures can be identified early and more easily when components are kept clean.
- d) Replace any worn, cut, damaged, flattened or crimped hoses, hose ends and other lines and fittings.
- e) Never attempt any makeshift repairs to the hydraulic lines, fittings or hoses. The hydraulic system operates under extremely high pressure and such repairs are likely to fail without warning, causing a hazardous and unsafe condition.
- f) Wear proper skin and eye protection when searching for high-pressure hydraulic leaks with the engine running. Use a piece of wood or cardboard as a backstop **NEVER** use hands to isolate and identify a leak.
- g)  If you are hit by a concentrated stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can result from hydraulic fluid piercing the skin's surface.



## 2.6 TRANSPORT SAFETY

- a) Always comply with the relevant road transport and traffic regulations when driving on the public highway. The machine and tractor must be maintained in a roadworthy condition.
- b) Observe the maximum permissible legal width for road transport and ensure that all required reflectors, lights, indicators, guards and warning signs are in place, that they are in good working condition and are clean and clearly visible to all other road users.
- c) Observe maximum permissible axle loads, the load bearing capacity of the tyres and the maximum total weight to ensure adequate steering and braking capabilities. Remember that tractor behaviour is influenced by attached implements. Always take the width and weight of the TM10 into consideration, especially when steering around sharp bends or braking at road junctions.
- d) Never allow anyone to ride on the machine when it is being transported or operated.
- e) Always reduce speed on rough roads and over uneven surfaces.
- f) The tractor's independent brake pedals should always be locked together when driving on the road.

## 2.7 STORAGE SAFETY

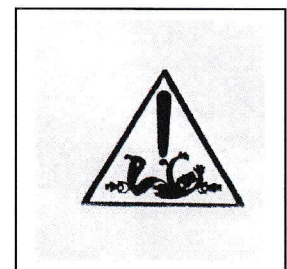
- a) Always store the TM10 on a firm, level surface. To prevent accidental movement in storage, apply the handbrake.
- b) The machine is best stored away from areas of human activity, preferably in a secure and weather-resistant area.
- c) Never allow children to play on or near to the machine.

## 2.8 MAINTENANCE AND ADJUSTMENT SAFETY

- a) Follow closely all of the safety and setting instructions given in this manual. Always contact Turfmech Machinery or your supplying dealer if you are in any doubt about a specific setting, operational point or instruction.
- b) If it is ever necessary to work beneath the machine or the raised hopper, always provide substantial and secure secondary support capable of holding the total weight plus an adequate safety margin.
- c) Place all tractor controls in neutral, stop the engine, apply the handbrake and wait for moving parts to come fully to rest before servicing, adjusting, maintaining or working on the TM10. Never leave the tractor's seat without stopping the engine, engaging a neutral gear, applying the handbrake and disengaging the power take-off.
- d) Be aware that even a properly-adjusted tractor handbrake may not be capable of holding the weight of a loaded machine on a hill or uneven ground. If you need to make adjustments to the machine, the insertion of chocks beneath the wheels is a sensible added precaution.
- e) Observe good workshop practises. Keep the working area tidy, clean and dry. Ensure that electrical sockets and tools are properly earthed and protected from moisture, dirt and damage. Provide adequate light and ventilation, particularly when running the tractor's engine.
- f) If guards have been removed, replace them all correctly and securely before putting the machine back to work.
- g) Keep all parts of the body and clothing clear of any part of a machine which moves. Beware of unexpected movement which can occur even when the machine is not connected to the tractor.
- h) Always wear appropriate clothing when working on or adjusting the machine and keep well clear of moving parts at all times.

## 2.9 POWER TAKE-OFF SHAFT SAFETY

**DANGER** - A rotating power take-off (PTO) shaft can cause injury or death. Do not allow any part of the body or clothing to come into contact with a moving PTO shaft.



Do not maintain or make adjustments to the machine with the tractor's engine running or with the PTO shaft engaged. Wait until all moving parts have come completely to rest before removing any guard or working on the machine.

Contact your Turfmech dealer for help or advice with any operation requiring repair or dismantling of the PTO shaft or other moving parts (tubes, bearings, joints, etc).

The removal and reassembly of such parts for repair or servicing may cause damage if not carried out correctly using special service tools held by the dealer.



The PTO shaft used to transmit power from the tractor to the machine must **never** be used:

- Without its guards correctly fitted
- With only partial protection
- With damaged guards
- With the wide-angle joint fitted at the machine end (see Section 3.8)
- Without the special anti-rotation chains correctly attached (Figs 9 and 10). These should prevent the guard from spinning with the shaft while allowing the shaft to deflect to its maximum angle without compressing the guard.

Fig 9

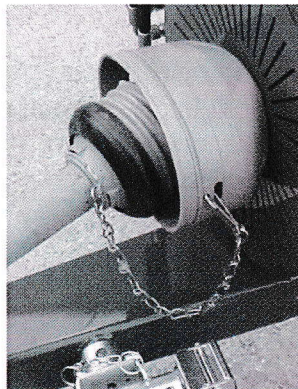
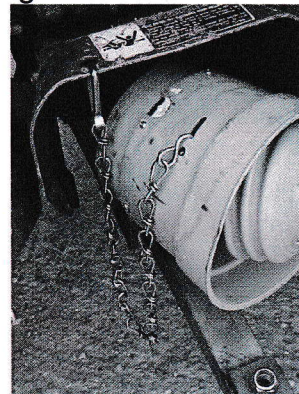


Fig 10



## 2.10 TYRE SAFETY

- a) Failure to follow proper procedure when fitting a tyre to a wheel or rim can produce an explosion, which may result in serious injury or death.
- b) Do not attempt to fit or remove a tyre unless you have the proper equipment and experience for the job.
- c) Arrange for a qualified tyre dealer or service engineer to carry out all required tyre maintenance, fitting and checks.

## 2.11 SAFETY DECALS ON THE MACHINE

The TM10 Vacuum Collector is supplied from new with all appropriate safety decals in place (Section 2.14 Fig 11). The decals are designed and positioned to bring potential hazards to the immediate attention of the operator thereby ensuring maximum safety in operation.


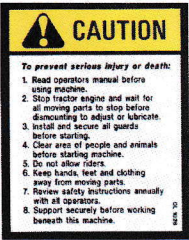



Please note and follow the directions given on all decals and:

- a) Keep safety decals clean and legible at all times.
- b) Replace any missing or damaged decals immediately.
- c) See section 2.15, Figs 12 to 18 to ensure correct positioning of replacement decals.
- d) Ensure that a new decal is affixed on any renewed or replaced part, guard or component that previously displayed a safety decal, sign or symbol.
- e) New decals can be ordered from your dealer or from Turfmech Machinery by quoting the appropriate part number.

## 2.12 PICTORIAL DECALS

The purpose of pictorial decals is to enable universal and instant understanding of the instruction or message irrespective of the operator's native language or reading ability.

Decals that provide specific warnings, advice or instructions in pictorial form are shown and described below.

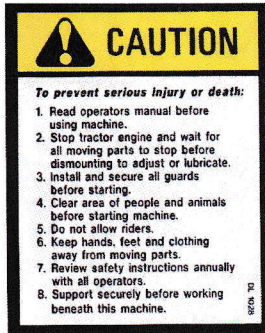
Decal	Part Number	Decal Meaning
	T000494	CAUTION - Stop the tractor and remove the key. Consult the manual before attempting any maintenance or adjustment. Read the manual.
	T000496	CAUTION - Read the text. This provides a written outline of good safety procedures to follow when operating the machine or performing a specific  ENSURE THAT THE OPERATOR UNDERSTANDS THE INSTRUCTION OR GUIDANCE GIVEN.
	T000495	CAUTION - Read the manual before adjusting, operating or maintaining the machine
	T000493	DANGER - Guard Missing. Do not operate the machine when a missing guard reveals this decal.
	T001883	DANGER - Crush Hazard . Do not work on or transport the vacuum collector on slopes as machine may tip over and crush bystanders.

Decal	Part Number	Decal Meaning
	T001882	DANGER - Electrical Hazard. Do not raise the hopper when the machine is standing beneath overhead electrical power lines. Any contact between the machine and power lines may result in injury or death.
	T000990	DANGER - High speed rotating parts. The part of the machine beneath or adjacent to the decal houses high speed rotating parts which can cause death or injury if they come into contact with the body or clothing. Wait until the machine comes to a complete halt before removing any guard or working on any part of the machine
	T001884	CAUTION: Crush hazard. Do not work beneath the raised hopper unless it has suitable secondary support. Remember that hydraulic cylinders can creep and pipes and their fittings can fail.
	T000498	INFORMATION: Greasing Point
	T000500	CAUTION: keep hands and feet off
	T234714	CAUTION: Keep bystanders away



T002548

INFORMATION: Ear protection is recommended



T00496

CAUTION: Instructions to prevent serious injury or death. Refers to essential safe practices.



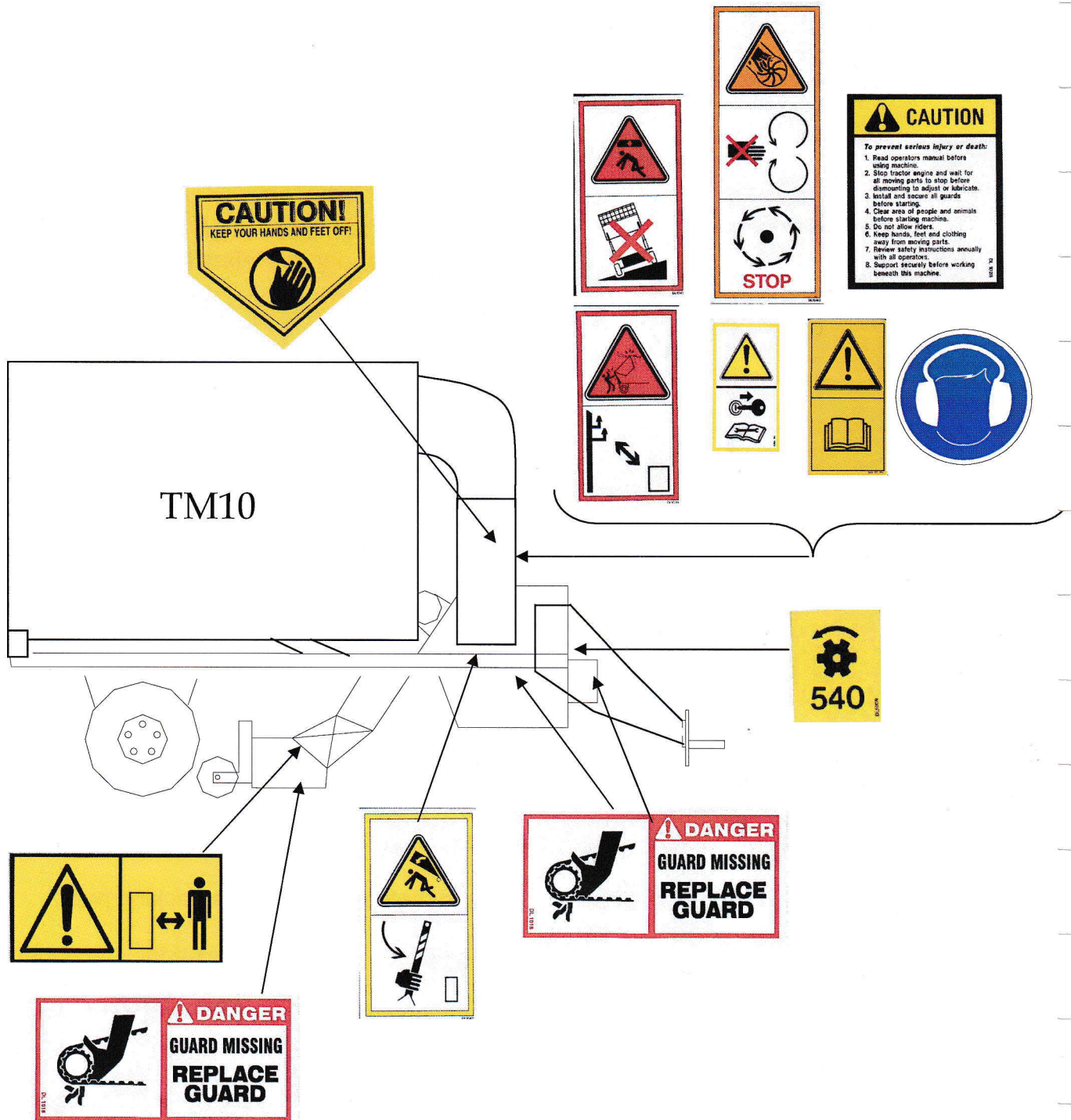
T002309

CAUTION: Only run this machine at 540 RPM

## 2.13 SAFETY DECAL INSTALLATION

- a) Ensure that the installation position is clean, grease & oil-free and dry.
- b) Determine the exact position for the decal before removing its backing paper.
- c) Peel back a small piece of the backing paper to expose the self-adhesive paper.
- d) Align the decal over its required position and carefully place the self-adhesive part of the decal in position.
- e) Slowly peel back the remaining backing paper from the decal while pressing the decal onto the surface of the machine.
- f) Any small air bubbles can be pierced with a pin and smoothed over to gain full contact with the surface.

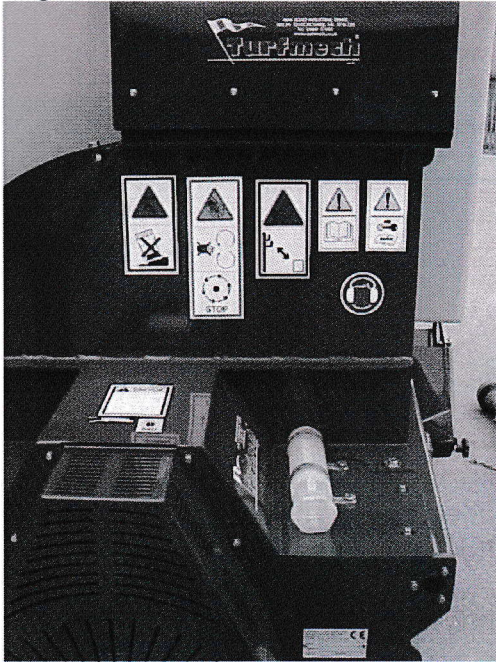
## 2.14 SAFETY DECAL LOCATION (Fig 11)





## 2.15 SAFETY AND OTHER DECAL LOCATIONS (Fig 12 to Fig 18)

Fig 12



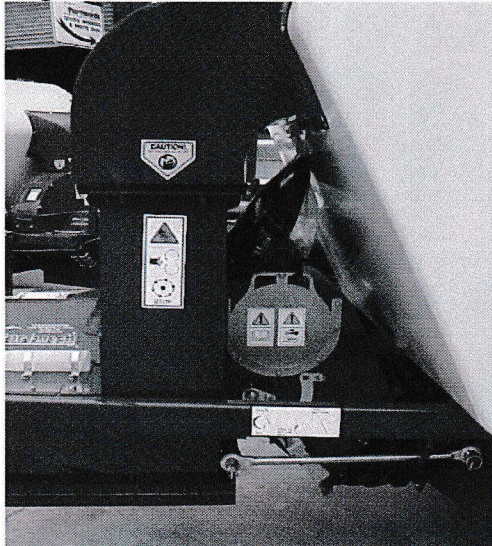
Decals on the impellor housing. If damaged or missing, these decals MUST be renewed

Fig 13



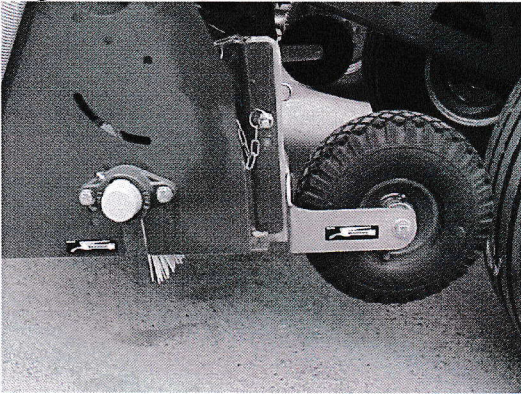
PTO speed. This MUST NOT be exceeded

Fig 14



Decals on the left side of the machine provide safety and operating information

Fig 15



A grease gun decal indicates the location of routine lubrication points

Fig 18

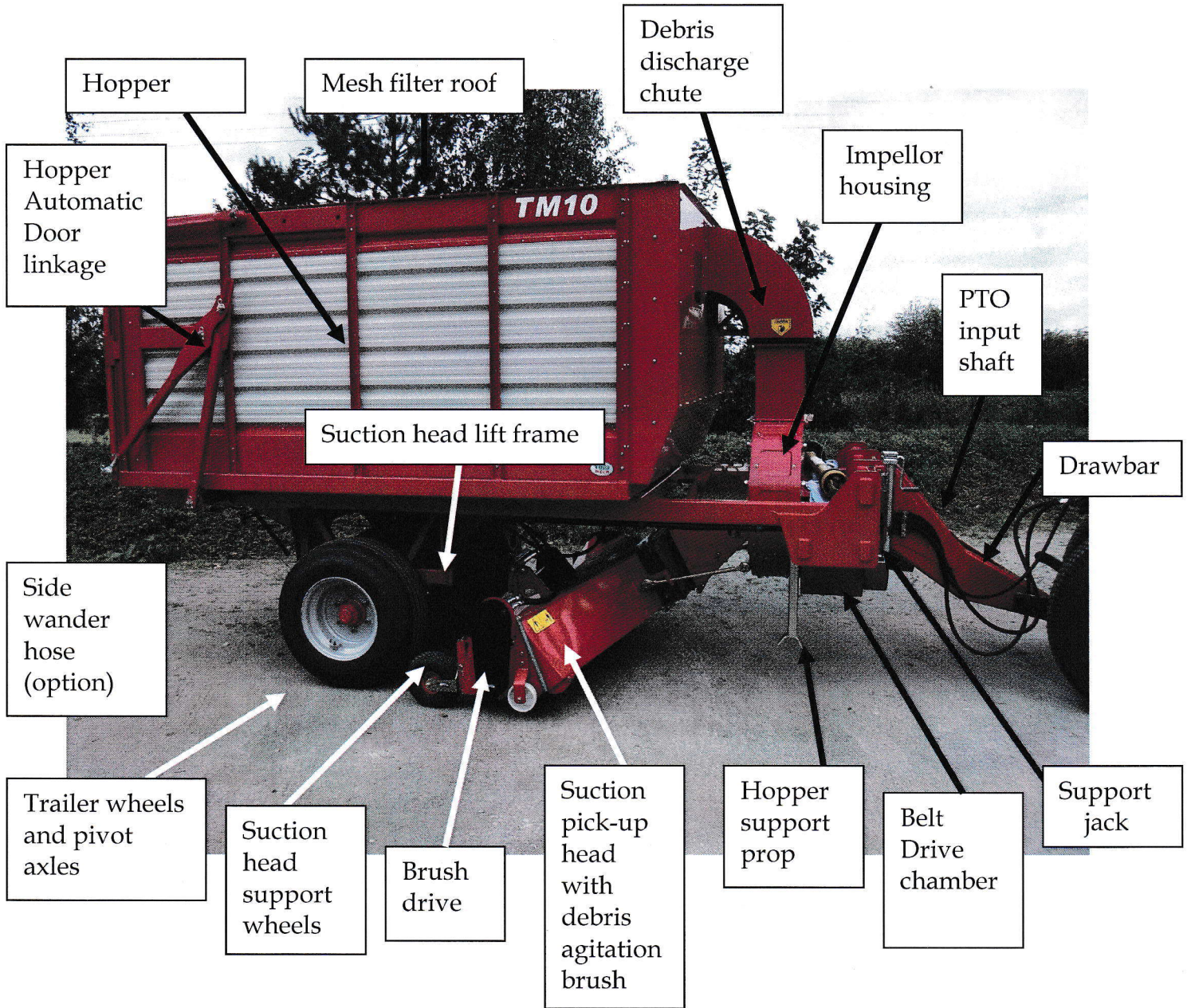


Important safety decals are fitted to the impeller housing. These MUST be renewed if damaged or missing

# 3.0 OPERATING THE TM10 VACUUM COLLECTOR

## 3.1 PRINCIPAL COMPONENTS

Fig 19



## 3.2 TRACTOR MATCHING

### POWER REQUIREMENT

The TM10 vacuum collector must be used with a tractor of 50Hp (37 kW) or greater.

### DRAWBARS

The TM10 is fitted with a height-adjustable drawbar which must be attached only to a pick up hitch on the tractor.

When the TM10 is attached to the tractor, the chassis should sit parallel to the ground. If adjustment is necessary, the TM10's drawbar end can be moved up or down by removing the four fastenings (Fig 22), repositioning them in the alternative location holes provided.

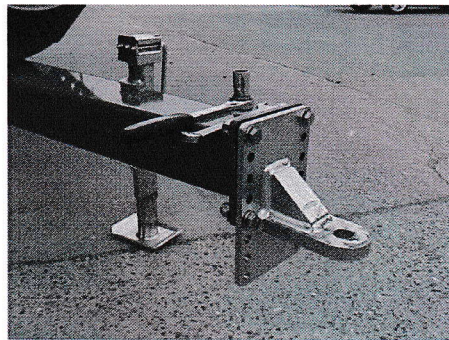


Fig 22

### TYRES

If using the TM10 on turf surfaces, the tractor should be fitted with turf tyres to prevent marking of the turf.

### PTO SHAFT

The tractor must be equipped with a six spline 1<sup>3</sup>/<sub>8</sub>in (35mm) diameter PTO shaft when used with the TM10 vacuum collector. The shaft's rotational speed should never be faster than 540rpm.

If there is any question or doubt about the shaft speed, use an accurate hand-held tachometer to check the shaft's rpm (revolutions per minute).



**WARNING**

**Take great care when working near a rotating shaft. Keep hair and loose clothing well clear and follow the tachometer manufacturer's instructions.**

Never operate the tractor at maximum rpm, only at rated PTO speed.

Do not use a PTO shaft adapter when operating the TM10 as it alters drawbar dimensions and can lead to over-speeding and shaft strain.

## HYDRAULIC SYSTEM

The hydraulic system on the tractor must be capable of delivering between 50+ litres (11+ gals) per minute at 138 bar (2000 psi). The tractor also needs one double-acting external hydraulic spool valve to operate the various hydraulic functions on the machine.

### 3.3 OPERATOR PROTECTION

The TM10 vacuum collector is equipped with its own hydraulic valve controls to change from one function to another. Because hydraulic oil is supplied by the tractor to the valve control, no hydraulic pipes should need to be positioned near to the driver's seat or operating platform. This ensures that operator is at a safe distance from the machine during operation and when the hopper is being emptied.

### 3.4 PRE-OPERATION CHECKS

For safe and effective operation of the vacuum collector, it is important that all operators have read and fully understood the operating procedures and all related safety precautions outlined in this section AND in section 2 of this manual.

A checklist is provided below for the operator. Following this checklist will help ensure that the safety, condition and performance of the TM10 vacuum collector are maintained at optimum levels. Before using the vacuum collector, and each time thereafter, the following points should be checked by the operator:

1. Lubricate the machine as detailed in the maintenance section (see section 7.1)
2. Remove any twine, wire or stray material that has become attached to or wrapped around any part of the machine ie axle, brush, chassis or lift-frame. Ensure the machine is parked in a safe manner before carrying out this work.
3. Check that all wheel nuts are secure and the tyres are in good order (see section 7.8)
4. Check that no hydraulic pipes are chafing, under strain or loose. Leaks, crimped pipes or any other damage should be rectified before putting the machine to work.
5. Check around and beneath the machine for any visible damage or faults that may impair its performance or create a safety problem.
6. Check belt tensions and the alignment of all pulleys. Tension belts and re-align pulleys as required (see section 7.5)
7. Check that all bearings run freely. Replace any that do not run smoothly or are seized.
8. Refit all guards that were removed to enable inspection to take place and ensure that they are correctly fitted and secure.

### 3.5 MACHINE RUNNING-IN PERIOD

Although there are no operational restrictions on the TM10 vacuum collector when being used for the first time, it is recommended that the following items are checked:

#### After 1 hour's use

- Check alignment of impellor drive pulleys and re-align as required
- Check belt tensions and adjust as required (see 7.5)
- Tighten all fasteners and hardware to recommended torque setting (see 9.0)
- Check tyre pressures and wheel nuts and adjust as required (see 7.8)

#### After 10 hours' use

- Repeat all checks as detailed above.
- Check and tighten wheel nuts as required (see 7.8)

#### Thereafter

- Carry out the recommended maintenance schedule as detailed in the service and maintenance section of this manual (see 7.0)

### 3.6 ATTACHING THE TM10 TO THE TRACTOR

- a) Ensure the area is clear of bystanders, animals or obstacles before starting the tractor's engine.
- b) Ensure that there is sufficient space and clearance to safely reverse the tractor to the vacuum collector.
- c) Slowly reverse the tractor to the vacuum collector and use the tractor's pick up hitch to attach the vacuum. Apply the tractor's parking brake and turn off the engine.
- d) If necessary, the drawbar ring may be relocated to gain better height alignment (Fig 25 and Fig 26).

Fig 25

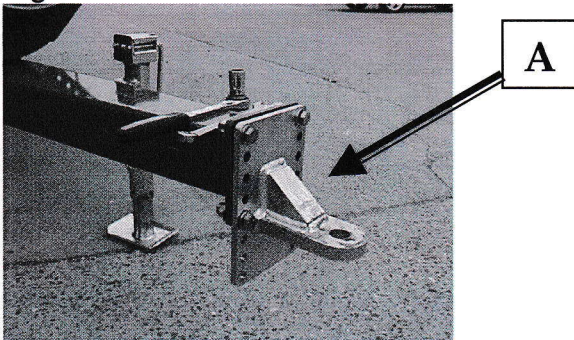
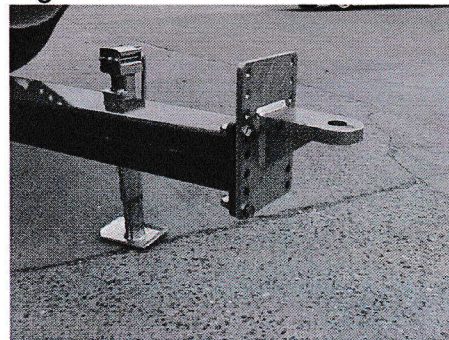


Fig 26



Adjusting the height of the TM10's drawbar ring end (A) should enable the chassis to sit level when connected to the tractor. To adjust, remove the four retaining nuts and bolts and move the clevis end up or down as required. Relocate the fasteners as appropriate and retighten before use.

- d) To ensure optimum flotation of the suction head, the vacuum collector's chassis must be sitting horizontal to the ground when the machine is attached to the tractor (Fig 27).

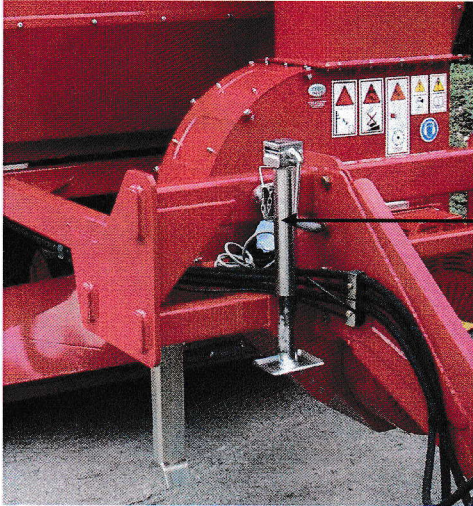
Fig 27



The chassis must be horizontal to the ground when the TM10 is attached to the tractor

- f) Having connected the tractor to the vacuum collector, raise the jack fully from the ground. Remove the locating pin and move the jack to the storage point on the chassis (Fig 29), replace the pin so that the jack is stowed in its transport position.

Fig 29



Ensure the jack is securely locked in its transport position using the lynch pin provided.

- g) Attach the vacuum collector's PTO drive shaft to the tractor.

### 3.7 CONNECTING THE POWER TAKE-OFF SHAFT



**WARNING**

**NEVER CONNECT OR DISCONNECT THE PTO SHAFT WITH THE TRACTOR'S ENGINE RUNNING**

**PTO DRIVE SHAFTS MUST BE USED FOR THEIR INTENDED PURPOSE ONLY. ALWAYS USE A FULLY-PROTECTED PTO DRIVE SHAFT**

**IMPORTANT**

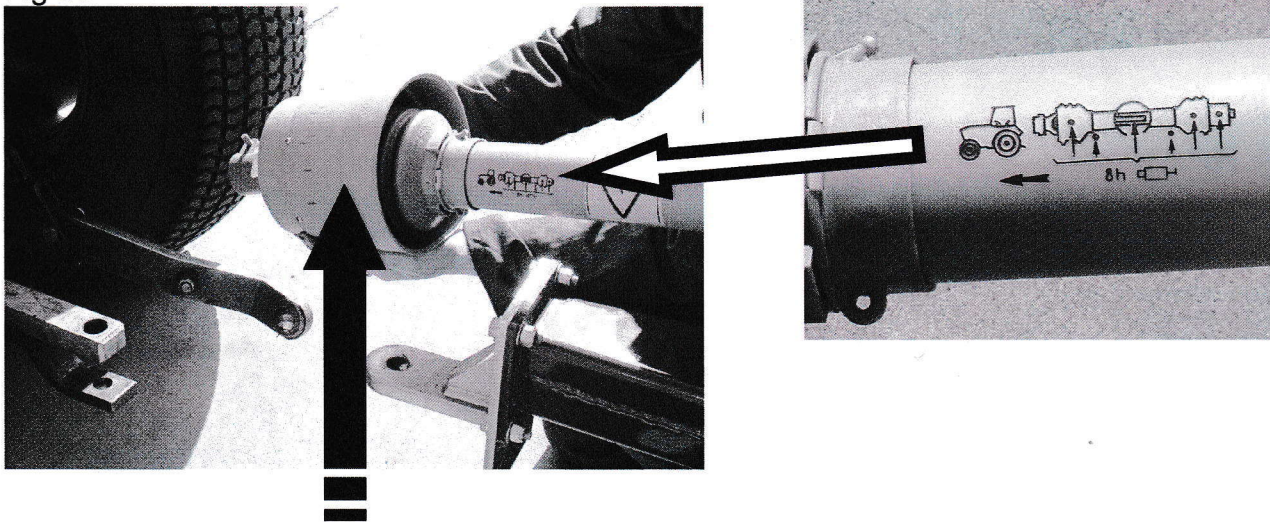
Before connecting the PTO shaft to the tractor, make sure that the PTO shaft has been fitted properly and correctly to the TM10 and is the right way round.

The end of the PTO shaft equipped with the wide-angle joint (ie the end with the larger guard cone) must be connected to the tractor's PTO output shaft, as indicated by the tractor marking stamped onto the shaft's guard (Fig 30).

Incorrect fitting of the PTO shaft is likely to cause damage to the shaft's universal joints, particularly when the machine is negotiating tight turns in work. Any damage caused as a result of incorrect fitting of the PTO shaft will not be covered by warranty



Fig 30

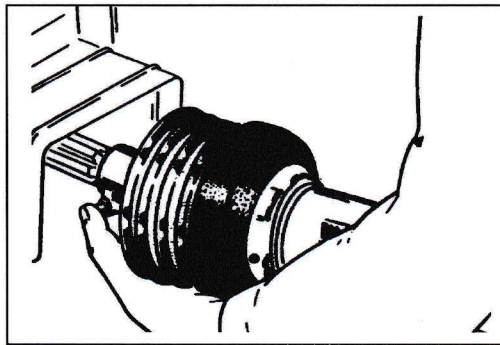


The end of the PTO shaft equipped with the wide-angle joint (the end of the shaft with the larger guard cone) must be fitted to the tractor's PTO output shaft. There is also a tractor stamped onto the guard to show which end of the PTO shaft should be connected to the tractor.

IF YOU ARE IN ANY DOUBT, ASK YOUR DEALER OR TURFMECH MACHINERY.

With the shaft correctly fitted to the machine, depress the pin in the yoke (Fig 31). Align the splines within the PTO drive shaft with the splines on the tractor's PTO shaft. Slide the yoke onto the tractor's PTO until the locking pin 'clicks' into position.

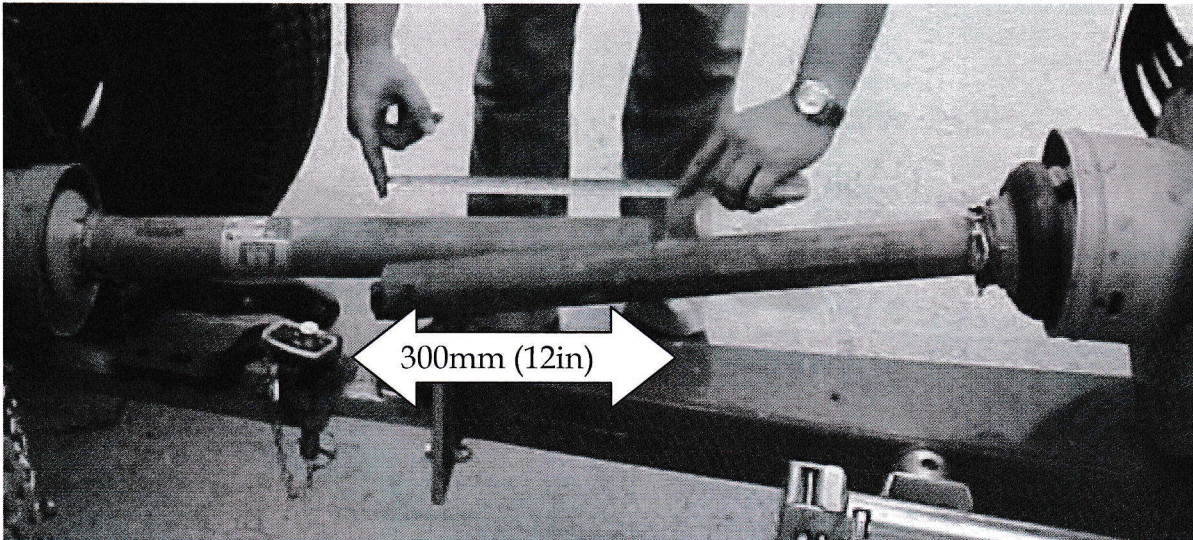
Fig 31



- Pull on the drive shaft to check that the pin is fully engaged and secure.
- Attach the safety chains to prevent the PTO guards from spinning with the shafts.

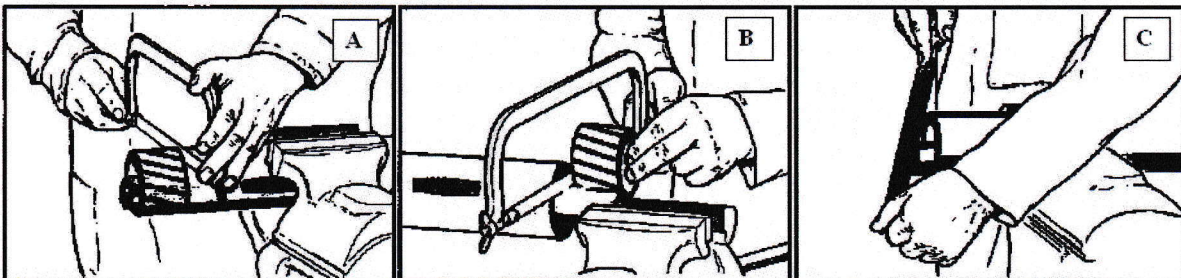
**IMPORTANT: PTO SHAFT LENGTH.** Ensure the two halves of the PTO shaft overlap by at least 300mm (12in) when the shaft is connected and at its shortest length i.e. with the TM10 in line with the tractor. A shorter overlap may compromise the life of the PTO shaft. This distance can be checked by separating the PTO and measuring the overlap (Fig 32) when the two halves are connected to the tractor and TM10 and placed side by side.

Fig 32



If the shaft and its guard are too long, remove the complete shaft from the machine and shorten the shaft and guard on both sections by the same amount using a hacksaw (Fig 33 - A & B). Use a file to smooth over the sawn edges of the PTO shaft and its guard (Fig 33 - C). Ensure the two halves slide freely when connected.

Fig 33



### 3.8 CONNECTING THE HYDRAULIC HOSES

Before connecting the TM10's hydraulic hoses to the tractor, wipe the tractor's external hydraulic outlets and ends of the hydraulic hoses on the machine with a clean, lint-free cloth to prevent dirt entering the hydraulic system (Fig 34). Now connect the TM10's hydraulic pipes to the tractor. The valve block requires one double-acting spool valve assembly. The hose with the male quick release coupling marked with red tape is the pressure line. The other male hydraulic quick release coupling is the return line. Attach the vacuums hydraulic brake line to the tractors brake coupling.

Fig 34



### 3.9 PARKING BRAKE

Release the vacuum collector's parking brake (Fig 35) and any wheel chocks positioned to prevent unexpected movement of the machine.

Fig 35 Parking brake



Pull lever to apply handbrake.

To release: pull lever to remove pressure from locking mechanism, then turn the catch to disengage the pawl from the ratchet

- i) Using the tractor's hydraulic controls, fully raise the tractor's lower lift arms so they do not interfere with the draw bar. The TM10 vacuum collector is now ready for use.

### 3.10 CONNECTING THE IN CAB CONTROL BOX

It is recommended to securely attach the electronic control box to a suitable point on the tractor's interior. Connect the control cable from the vacuum to the plug on the end of the control box. Plug the 12V lead of the control box into the tractor's cigarette lighter. With the ignition on or tractor running the control box green status LED will illuminate signalling the system is powered.

### 3.11 DETACHING THE TM10 FROM THE TRACTOR

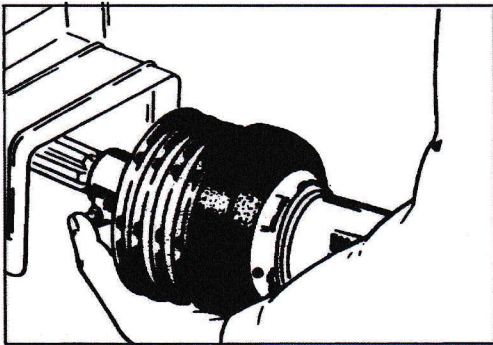
- a) Drive the vacuum collector to the desired parking location, making sure that the area chosen is suitable for the job ie is firm and level. Ensure that the suction head is fully lowered. The hopper must be fully lowered and supported by the chassis
- b) Apply the tractor's parking brake, disengage PTO drive and stop the tractor's engine. When the engine and all moving parts on the vacuum collector have come to rest, place the tractor in gear, and with the ignition ON move the switches on the control box backwards and forwards two or three times to release pressure in the system. Turn the tractor's ignition OFF. Dismount the tractor, apply the vacuum collector's parking brake and chock its wheels.
- c) Disconnect the TM10's hydraulic hoses from the tractor and fold them back over the machine out of harm's way and clear of the ground.
- d) Where fitted with highway lighting, disconnect from tractor.

- e) Release the TM10's jack from its stowed position, replace the securing pin before unwinding the jack until its foot touches the ground.

NB: If the machine can only be parked on soft or unstable ground, a solid flat piece of wood or other suitable material should be positioned beneath the jack's foot to provide additional support and prevent the jack sinking.

- f) The PTO shaft may now be removed from the tractor by depressing the pin on the yoke (Fig 37) and withdrawing the shaft. Release the safety chains.

Fig 37



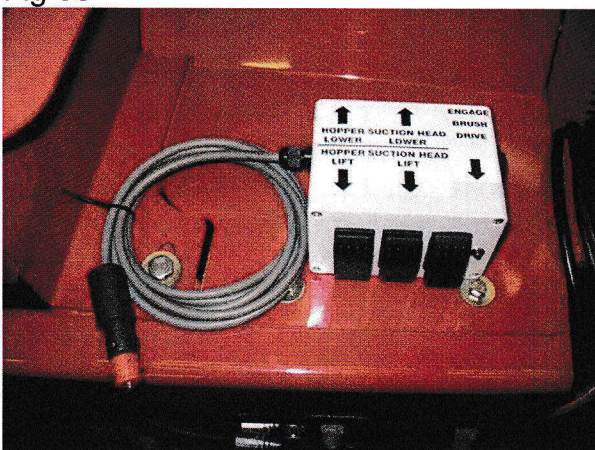
- g) Before returning to the tractor, check that the machine's parking brake is fully applied and that all hydraulic pipes have been disconnected and are stowed neatly clear of the ground. After unhitching the pick up hitch the tractor can then be driven away from the vacuum collector.

## 4.0 HYDRAULIC FUNCTIONS OPERATION

The TM10 vacuum collector is equipped with a three spool valve block (Fig 38), operated electronically from an in cab control box. This is used to:

- Raise and lower the hopper
- Raise and lower the suction head
- Engage and disengage suction head brush drive

Fig 38



## IMPORTANT: TO RELEASE SUCTION HEAD HYDRAULIC LOCK

The hydraulic lock is designed to prevent accidental lowering of the suction head when the machine is due to spend a prolonged period of time in transport mode. To release the hydraulic lock it is recommended to first support the suction head by placing suitable blocks under each side or setting the suction head wheels to their maximum setting. **KEEP YOURSELF AND BYSTANDERS CLEAR** of the suction head at all times when releasing the lock. **ALWAYS** release the lock from the rear of the machine. Supporting the head when releasing the lock will prevent the head falling and causing injury or damage should the pressure have been removed from the head lift circuit.

### 4.1 VACUUMING

Drive the TM10 to the area to be cleared.

1. Set the tractor hydraulic service into constant pumping mode. Ensure the green status LED in the control box is illuminated.
2. Ensure the area is clear of bystanders and lower the suction head to the ground.
3. Disengage the clutch and select a low forward gear.
4. At engine idle speed, slowly engage the PTO drive (SEE TRACTOR MANUAL)
5. Gradually increase tractor engine speed on the hand throttle until rated PTO 540 rpm speed is achieved.

#### IMPORTANT

Do not over-speed the PTO or machine damage may result. The machine is designed to be used at 540 rpm PTO speed **ONLY**.

6. When 540rpm PTO speed is achieved, release the tractor's hand brake and then release the clutch to engage forward drive and proceed steadily forward. Switch on the suction head brush via the in cab control box.
7. Note how the debris passes into the suction head and is being collected. Adjust the height of the suction head (section 4.4) to suit ground and debris conditions.
8. If the operator is confident with the machine and the collection quality is satisfactory the forward speed of the tractor may be increased by means of the tractor gearing but **DO NOT INCREASE THE PTO SPEED. THIS MUST REMAIN AT 540 RPM.**
9. If an area of deep material is reached it is best to slow down and move through at a lower forward speed to maintain quality of collection.



#### WARNING

**DO NOT OPERATE ON STEEP SLOPES. DO NOT START, STOP, CHANGE DIRECTION OR UNLOAD ON STEEP SLOPES**

**NOTE** Watch for hidden hazards on the ground during vacuuming.

## 4.2 TURN ANGLE RESTRICTIONS

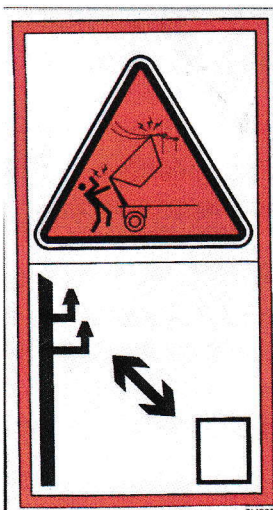
The TM10 vacuum collector is equipped with a wide-angle PTO shaft to allow constant power transmission during turns. THE WIDE-ANGLE END OF THE SHAFT SHOULD BE CONNECTED TO THE TRACTOR'S PTO OUTPUT SHAFT (See Section 3.8, page 35).

Restrict sharp turns during operation to a minimum. Reducing engine speed during turns will prolong the life of the PTO shaft's universal joints.

## 4.3 UNLOADING

As the load hopper fills, the collection efficiency of the TM10 will be reduced. To empty the hopper:

1. Lift the suction head as outlined in the hydraulic operation section.
2. Travel to the dumping site and reverse the TM10 to the position for dumping.
3. Ensure you can manoeuvre out of the dump area when the load is tipped.
4. Reverse up to the desired site and apply the tractor's parking brake and switch off.
5. Dismount tractor and make sure that the load, when tipped, will not interfere with any obstacles and that the tipped hopper will not foul on any overhead cables, trees etc. Make sure that the ground is level. The hopper tips in a vertical plane.



Never raise the hopper under overhead electric cables. Current can earth to a raised hopper, even if the hopper does not make physical contact with the wires. Ignoring this advice can result in serious injury or death.

6. Remount the tractor, check the tractor is out of gear and start the engine. Engage the tractors spool then operate the hopper tipping switch on the in cab control box. Operate this function until the hopper has stopped tipping or all debris has left the hopper.

7. The tractor must not be moved when the hopper is in the raised position at any time.
8. Lower the hopper by operating the valve in the opposite direction.



DO NOT OPERATE THE FAN WHEN  
TIPPING THE LOAD OR RESETTING.

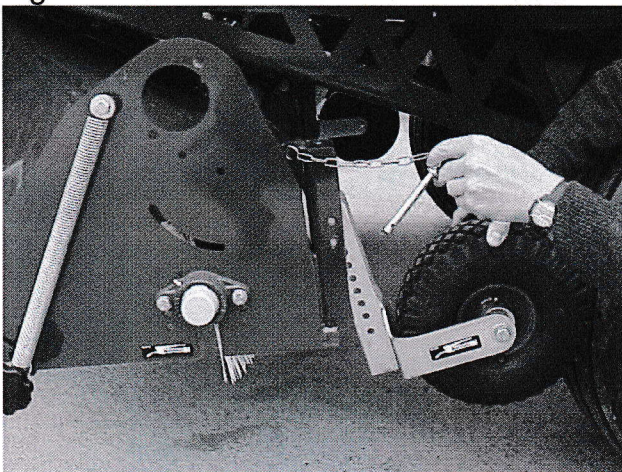
**WARNING**

#### 4.4 SUCTION HEAD RIDE HEIGHT

The suction head ride height can be altered to suit differing conditions, types of debris and applications:

1. Raise the suction head from the ground
2. Apply the tractor parking brake and stop the tractor. Ensure the engine and all moving parts have stopped turning.
3. Make sure the suction head brush has stopped rotating. Remove the square shaft-locking pin (Fig 39) and either raise, or lower the left hand suction head wheel to adjust the heads working height. Replace the pin.

Fig 39



Ensure both wheels on  
the suction head are set  
at the same height

4. Repeat this process on the right side of the head so that the suction head is level.
5. Resume operation from tractor.

The best cleaning or clearance results are not necessarily achieved at the lowest suction head and brush setting.

Too low a setting can:

1. Cause unnecessary brush wear.
2. Restrict the suction head aperture, causing poor suction at debris level and restricted collection of larger material.
3. Cause damage to turf or other surfaces.
4. Not allow the brush to flick debris into the suction airflow effectively.

Ideally, the suction head should be set so the brush just 'flicks' the surface. This will agitate stubborn material sufficiently for the suction force to draw it into the machine. On hard surfaces, such as tarmac and concrete, the suction head / brush may need to be run at a lower height than on turf.

When clearing deep debris - to prevent the unit bulldozing bulky material - a flap (Fig 40 and Fig 41) can be opened on the front section of the suction head.

Fig 40

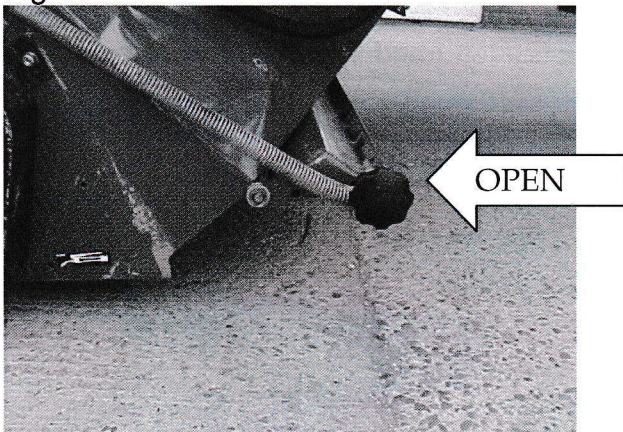
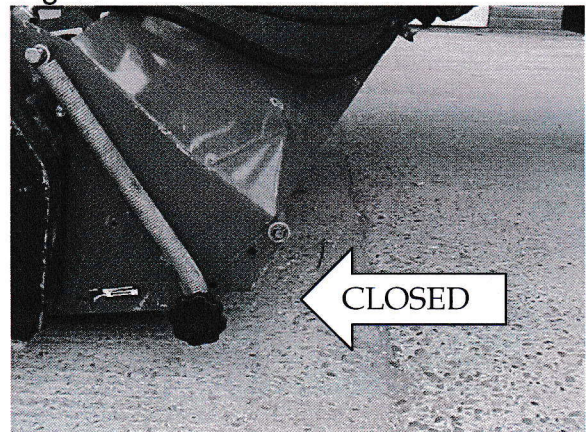


Fig 41

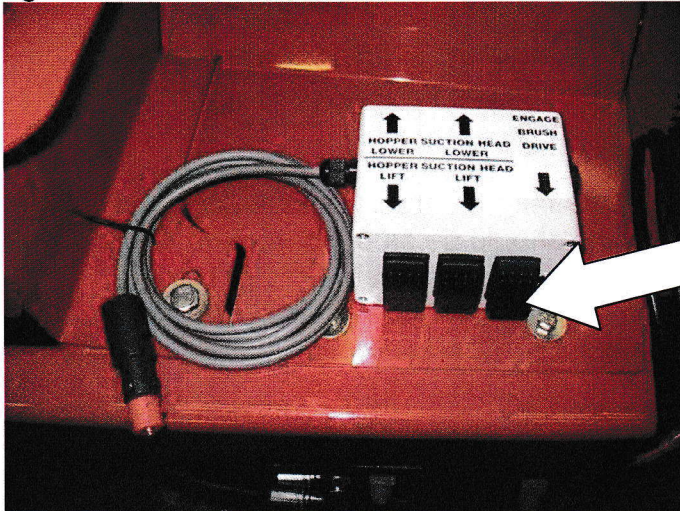




## 4.5 SUCTION HEAD BRUSH - ENGAGING DRIVE

The flow of hydraulic oil to drive the suction head brush is provided from the tractor spool valve via the TM10 valve block. It is controlled via the in cab control box on the TM10. When the suction head is fully lowered, drive to the brush can be engaged by pressing the control switch. (Fig 42) It will remain in this position until turned off by the operator.

Fig 42

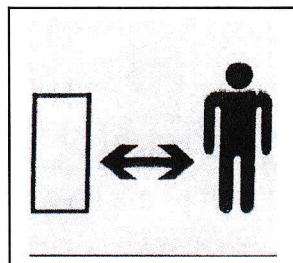


The suction head brush is powered by a hydraulic motor. Oil is diverted to the motor when the control switch is pressed. It must be switched off to stop the brush

**NOTE:** The brush should rotate in a clockwise direction when viewed from the right-hand side of the machine. If the brush does not rotate or it turns in the incorrect direction, check that the hydraulic hoses are correctly connected.

Contact Turfmech Machinery or your dealer for advice if necessary.

## 4.6 OPERATING RESTRICTIONS



Clear the area of bystanders when operating the machine. Bystanders should be no closer than 30m (100ft) at any time when the machine is being operated.

## 5.0 SIDE WANDER HOSE

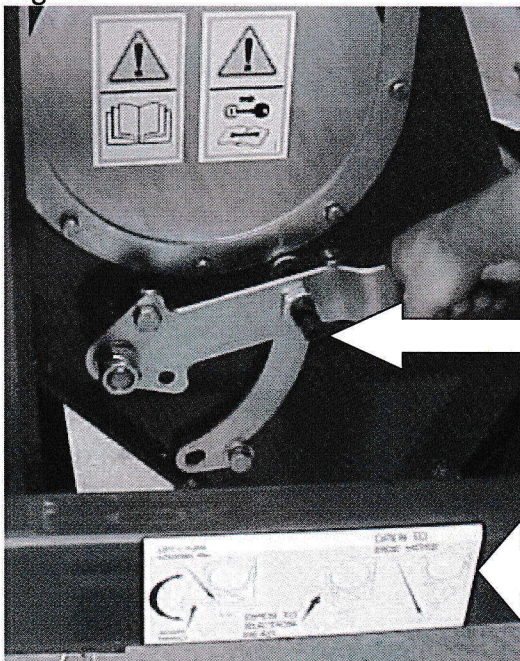
For safety reasons, use of the wander hose is a two-person operation. An operator must be in control of the tractor at all times when the unit is in use.

### IMPORTANT

The wander hose operator should always wear the supplied support harness when using the wander hose. The wander hose operator **MUST** disconnect from the hose whenever the tractor is moved.

- Park the vehicle at the desired location, ensuring the tractor's parking brake is on and that it is out of gear. The tractor engine should be stopped and the site to be cleared prepared.
- The wander hose operator should now fit the hose support harness, adjusting it for a comfortable fit as illustrated. (See harness section and Fig 45)
- Clear the area of bystanders to a distance of 30m.
- Check that the material is suitable to collection and that when leaving the hopper spout it will not cause any damage to the machine or operator.
- Vacuum power needs to be switched from the suction head to the hose. This is achieved by moving the lever on the diverter plate (Fig 43) mounted on the left front of the machine. Outline instructions are shown on the adjacent decal (Fig 44).

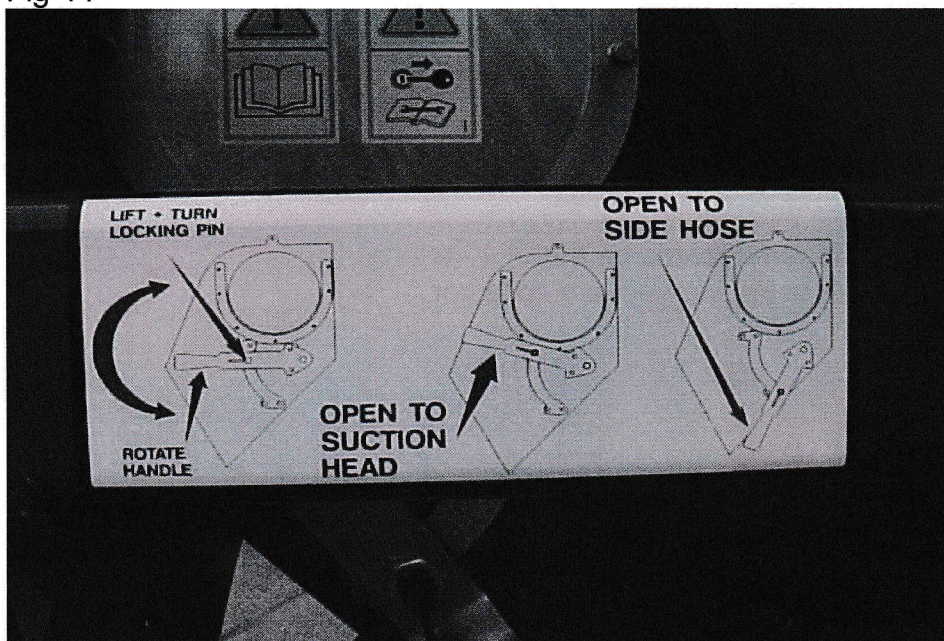
Fig 43



Before the lever can be moved, the locking pin (arrowed) must be released.

This decal shows the relevant lever position on the diverter plate (see close-up detail on next page)

Fig 44



**IMPORTANT**

The full suction power of the TM10 will be concentrated at the wander hose intake nozzle. Heavy items, such as bricks or large stones, can easily be sucked into the machine.

SUCH OBJECTS MAY CAUSE DAMAGE TO THE IMPELLOR AND RELATED HOUSING.

It is advised that the hose should only be used to clear lighter items such as bottles, drinks cans, litter etc.

1. The wander hose can now be unhitched from the TM10 Vacuum collector and laid out on the ground for its pre-use inspection. Ensure the hose is not damaged in any way. If any defects are found, the hose should NOT be used. It MUST be renewed with a genuine TURFMECH replacement.
2. The tractor driver can now start the engine. The PTO can be engaged and brought up to 540rpm operating speed.
3. The hose may now be picked up at the carrier frame and clipped onto the operator's harness at the quick clip location. (See Fig 45)
4. The hose may now be operated to collect the material.



It is essential that the tractor driver remains seated and alert to the wander hose operator's position at all times. On no account should the tractor be moved when the hose is in operation or when the hose operator is still connected via the harness.

5. The handbrake must be applied at all times while the hose operator is connected via the harness.
6. When finished, unhitch the hose from the harness, and lay it down on the ground.

7. Switch off the tractor.
8. When the engine has stopped, replace the hose in its transport position.

ENSURE THE HOSE IS SECURED IN ITS TRANSPORT POSITION AND THAT ALL RETAINING STRAPS ARE FITTED. MAKE SURE THE MACHINE IS ROAD LEGAL BEFORE PROCEEDING TO THE NEXT JOB.



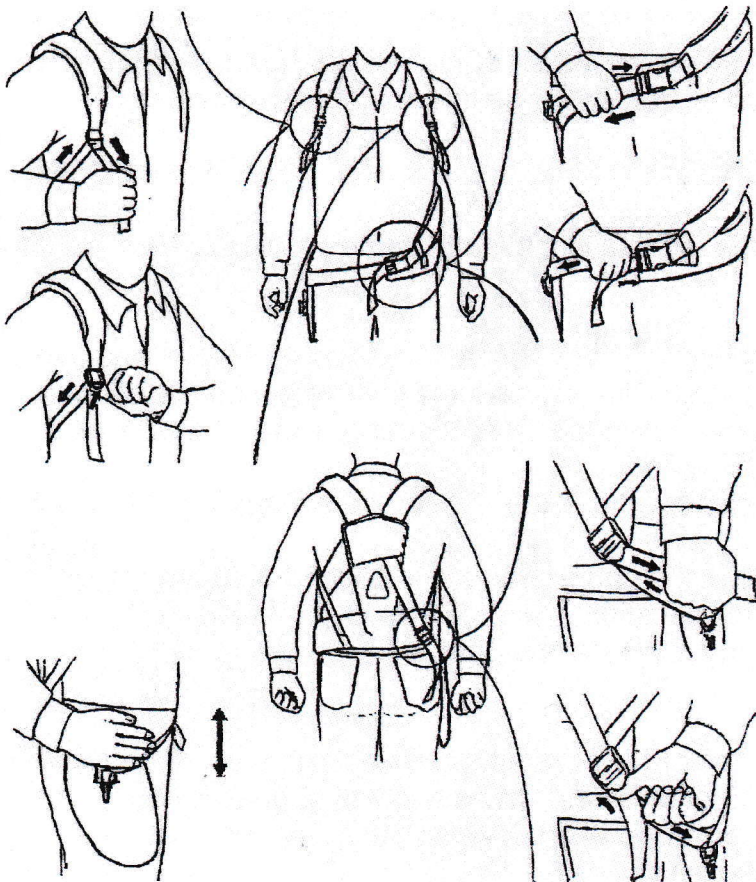
Watch for hidden hazards on the ground when using the vacuum collector.

**WARNING**

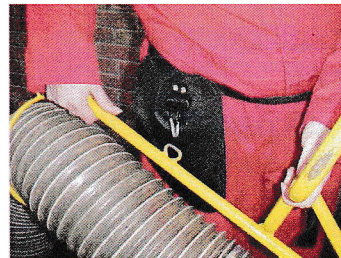
**The Wander Hose Harness**

- a) Fasten the harness and adjust the straps (As shown in Fig 45)
- b) Clip the Hose carrier frame to the harness as shown in Details I - III below.

Fig 45



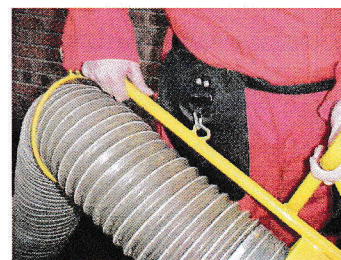
I



II



III



## 6.0 PRECAUTIONS



### WARNING

The impellor continues to turn following power unit shut-down. Allow 30 seconds for the impellor to come to a complete stop before attempting to work on the machine.

- a) If a blockage occurs, **NEVER** attempt to un-block the machine with either the tractor or fan running. Always ensure the tractor engine is stopped, drive to the PTO is disengaged, no hydraulic service is pressurised or running, the handbrake is applied and all parts are securely propped and safe to work underneath.
- b) Any shield or guard may only be removed when the impellor or brush has stopped. Failure to observe this advice may result in injury.
- c) If the wander hose intake is to be swapped from one side of the machine to the other, the tractor **MUST** be shut down and the impellor allowed to come to a complete stop. Ensure all the appropriate guards and fasteners are replaced as shown in parts manual.

**NEVER RUN THE MACHINE WITH ANY GUARDS LOOSE OR MISSING**

### 6.1 THE TM10 IN TRANSPORT



### WARNING

**ENSURE YOU ARE IN COMPLETE COMPLIANCE WITH THE APPROPRIATE HIGHWAY REGULATIONS WHEN TRANSPORTING THE TM10 ON THE PUBLIC HIGHWAY.**



### DANGER

**NEVER ALLOW ANYONE TO RIDE ON THE BACK OF THE TM10 UNDER ANY CIRCUMSTANCES**

### IMPORTANT

**DO NOT EXCEED 32 KM/H ( 20 MPH ). ALWAYS REDUCE SPEED OVER ROUGH SURFACES OR NARROW ROADS.**

### GENERAL TRANSPORT GUIDELINES

1. When transporting the TM10 either loaded or un-loaded, ensure that it is first correctly connected as outlined in section 3.7 ATTACHING THE TM10 TO THE TRACTOR
2. Ensure the handbrake is off and the jack stand is fitted in its transport position.
3. Ensure that all lights, where fitted, are working correctly and all reflectors are clean.
4. Fit front end ballast weights to the tractor if needed to maintain front end steering.

5. Always brake the tractor carefully from speed to avoid loss of control.
6. On mechanical transmission tractors, select a low gear when negotiating steep hills. Where necessary, use the tractor's engine braking to help prevent the brakes overheating.
7. On mechanical transmission tractors, keep tractor in gear. Do not de-clutch tractor and coast down any incline.
8. Ensure the machine is cleaned before travelling on the road. This will prevent debris dropping onto the surface of road that may be hazardous to other road users.
9. Always lock the tractor's independent brakes before travelling on the road.
10. Always use an amber flashing beacon when travelling on a public highway and when working in areas with third party access.
11. Always ensure the suction head is securely locked in place in transit.
12. Always ensure the wander hose option is securely fastened in its stowage position before road transport.

## 6.2 STORAGE

At the end of the season, the TM10 should be thoroughly cleaned and inspected. It should be prepared for storage as detailed below.

<b>NOTE</b>
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To aid cleaning, remove all guards and replace prior to storage. The roof filter mesh can be easily removed by firstly removing the four R clips and fasteners retaining the front and rear roof mesh rails. The roof mesh can then be slid off the roof of the hopper for easy cleaning on the floor. To replace reverse the procedure.

1. Thoroughly wash the unit to remove mud, debris and other residues.
2. Ensure all water drains from the machine and that it is allowed to dry.
3. Lubricate all grease points on the machine to prevent rust and seizure.
4. Touch up paint scratches to prevent rusting and corrosion.
5. Move the machine to a level storage area.
6. If possible, store the TM10 under cover. If not, cover with securely-fitted waterproof sheeting. This needs periodic inspection to ensure it is providing protection.
7. Place a plank under the jack foot for added support
8. Do not allow children to play on or around the machine.

## 7.0 SERVICE AND MAINTENANCE

The information in this section is written to assist those with basic mechanical skills. Should further help or advice be needed, your Turmech dealer will be able to offer assistance.



### 7.1 LUBRICATION

1. **GREASE:** Use a multi-purpose high temperature grease with extreme pressure (EP) performance. An SAE multi-purpose lithium based grease may also be used.
2. **STORING LUBRICANTS:** Your machine can only operate at maximum efficiency if maintained using quality uncontaminated lubricants. Use only clean containers / grease guns when transferring oils/ greases from a large drums / containers. All lubricants should be stored in an area protected from dust, moisture and other contaminants.

**CORRECT LUBRICANTS ARE AVAILABLE FROM YOUR TURFMECH DEALER**

### 7.2 NOTES ON GREASING

Ensure area around the grease fitting is thoroughly cleaned before attaching the grease gun

#### **IMPORTANT**

- Over-greasing a bearing may damage its seal or seals. Only grease at the intervals as outlined. If a bearing seal is damaged, replace both the bearing and seal immediately.
- Clean grease fitting with a clean rag before greasing to avoid injecting dirt / grit into the bearing.
- Replace any broken or damaged grease fitting immediately.
- If a fitting will not take grease, remove and clean the fitting and the lubricant passage. Replace fitting if necessary.

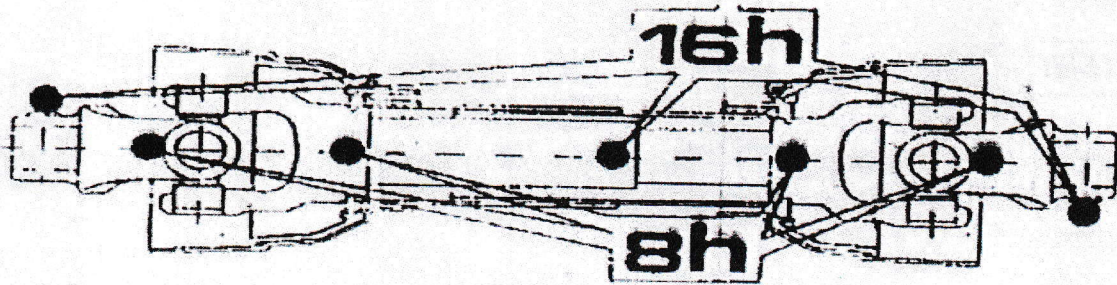
### 7.3 GREASE POINTS

1. Wheel bearings. Remove bearing end cap and pack with grease. Refit cap. (every 3 months)
2. All pivot points (if not fitted with a grease fitting, apply grease with a brush) (weekly, when in use)
3. Parking brake assembly (all joints). (every 3 months)
4. Drawbar box jack. (weekly)
5. Driveline bearings. (weekly)
6. Suction brush Bearings (weekly)

### 7.4 PTO SHAFT LUBRICATION

The lubrication points, and greasing intervals, are shown in the diagram (Fig 46) below.

Fig 46



Further information on PTO shaft care and maintenance can be found within the leaflet taped to the PTO shaft guard on new machines. If your leaflet is missing, or you require advice or assistance on any aspect of caring for the PTO shaft, please contact your dealer or Turfmech Machinery.



## 7.5 BELT MAINTENANCE



### WARNING

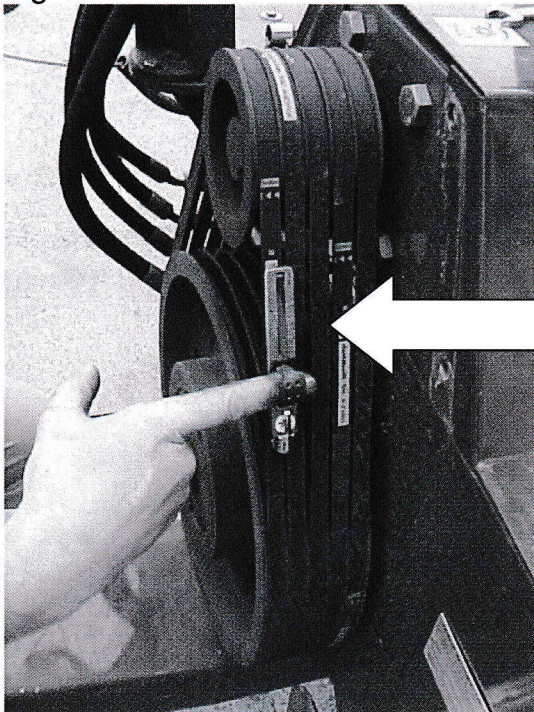
THE ENGINE MUST BE SWITCHED OFF WHEN ANY GUARD IS REMOVED. CHECK THAT THE HAND BRAKE IS FULLY ENGAGED.

WEAR GLOVES WHEN INSPECTING OR INSTALLING BELTS. BE AWARE THAT SERIOUS FINGER AND HAND INJURY CAN OCCUR IF CAUGHT BETWEEN A BELT AND A PULLEY

The drive belts on this machine transmit power from the tractor PTO to the impellor. They also protect the driveline between the machine and tractor. Do not over tension the drive belts. This will compromise the drive line protection.

1. If the belts are under tensioned, slippage may occur. This can cause premature belt failure and / or insufficient impellor speed. This will adversely effect performance.
2. If belts are over tensioned they may stretch and / or provide no overload protection in the driveline. During impellor run up, slight initial belt slippage is acceptable.
3. Check belts every 20 hours of operation (Fig 47).

Fig 47



Correct belt tension can only be accurately measured using a belt tension tester such as the Opticrik unit illustrated.

The correct belt tension is 300 Newtons. This can be read off the tool scale as arrowed.

**ALL GUARDS MUST BE FULLY INSTALLED BEFORE OPERATING THE MACHINE.**

## 7.6 ADJUSTING SUCTION HEAD BRUSH TO ACCOMMODATE WEAR



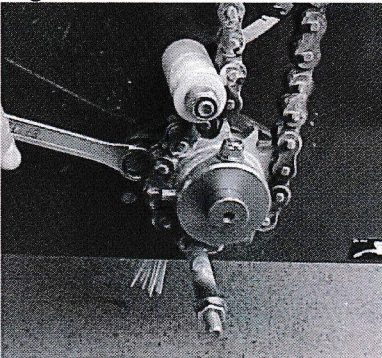
### WARNING

ALWAYS LOWER THE SUCTION HEAD TO THE GROUND BEFORE SERVICING. ENSURE THE TRACTOR ENGINE IS STOPPED, THE KEY REMOVED IS REMOVED AND THE TRACTOR PARKING BRAKE IS FULLY APPLIED

ALL GUARDS MUST BE FULLY REINSTALLED BEFORE OPERATING THE VACUUM.

The bristles on the agitator brush will gradually wear during normal operation. To accommodate this wear, the brush bearings can be relocated to a lower setting on the suction hood (Fig 48). The chain cover over the brush drive needs to be removed to gain access to the bearings.

Fig 48

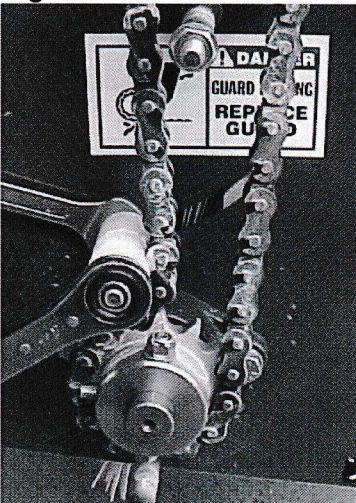


Ensure both sides of the brush are lowered when adjusting brush setting

## 7.7 BRUSH DRIVE CHAIN TENSION

The suction head brush chain is a high-tensile simplex design. The chain will need to be re-tensioned if the brush is lowered. This is carried out by loosening and repositioning the tensioning post as illustrated (Fig 49).

Fig 49



NOTE: The bushes on the tensioning post must be free to rotate with the chain. Use two spanners, as illustrated, to loosen and move the post, as required.

## 7.8 WHEELS AND TYRES

Main wheel tyre pressure	2.5 Bar (36 PSI)
Tighten wheels nuts to	225 Nm (166 lb-ft)
Suction Head tyre pressure	1.7 Bar (24 PSI)

## 7.9 IMPELLOR INSPECTION

Before proceeding, see **7.11 RAISING AND SUPPORTING THE HOPPER** overleaf.

Inspect the impellor, and its housing, annually. Rotate the impellor by hand, looking for wear and damage at the ends of the blades (Fig 51). Also inspect the housing (Fig 52).

Fig 51

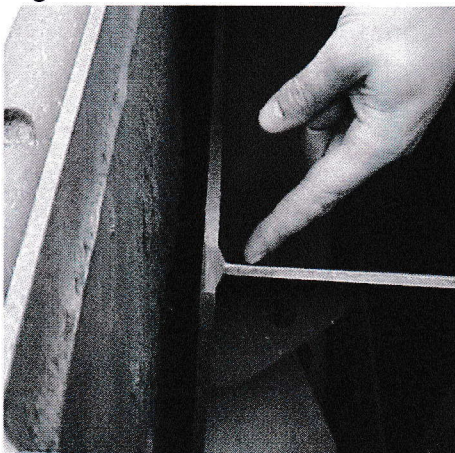
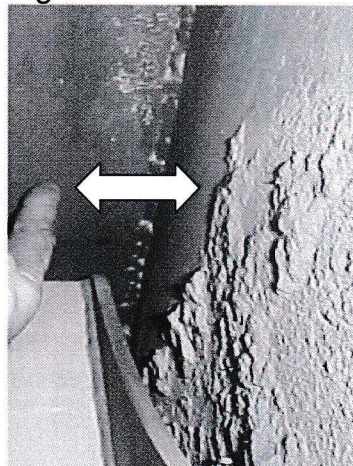


Fig 52



After extensive operation, wear may be detected at the areas indicated.

## 7.10 RAISING AND SUPPORTING THE HOPPER.

Before the impellor can be inspected, the debris collection hopper needs to be raised and secured in position.

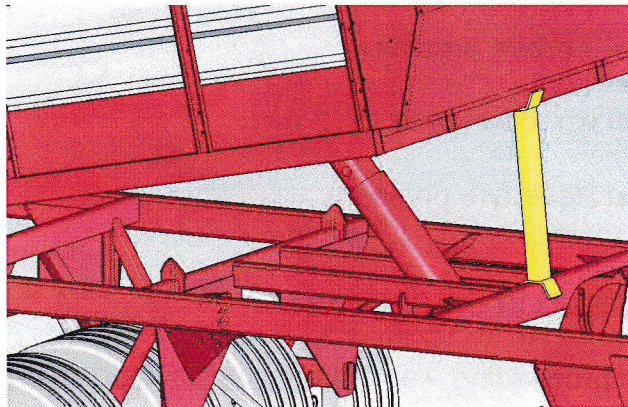
- Place the tractor and vacuum on an area of hard, level standing and switch the tractor off. Apply the parking brake on the tractor.
- When all moving parts have stopped, dismantle the tractor and remove the locking pin from the hopper safety prop (Fig 53).
- Remount the tractor and start the engine. Raise the hopper approximately 1m above the chassis. Locate the safety prop in the centre of the machine (Fig 54). The clevis will hold the prop in place once the hopper has been raised to the correct height.
- From inside the tractor lower the hopper until the load rests on the safety prop.
- Switch off the tractor and remove the keys.
- It is now safe to work under the raised hopper

Fig 53



Safety prop in storage position

Fig 54



### 7.11 BRAKE MAINTENANCE

Regular maintenance of the brake components is essential to health and safety. Regular inspection and maintenance is required to maintain your vacuums stopping performance. Contact your Turfmech Dealer who will be happy to check you braking systems performance.

## 8.0 FASTENERS

### CHECKING BOLTS FOR CORRECT TIGHTENING TORQUE

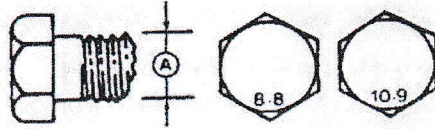
The table below lists the correct torque values for various bolts and cap head screws used on the TM10 Vacuum Collector. All bolts should be tightened to these settings periodically unless otherwise stated.

**Always replace any lost fasteners with the same specification of fastener.**

**PLEASE CONTACT TURMECH OR YOUR DEALER IF YOU NEED ADVICE.**

# 9.0 FASTENERS TORQUE SPECIFICATION

## TORQUE SETTINGS



	8.8		10.9	
Bolt dia "A"	Nm	lb-ft	Nm	lb-ft
M3	0.5	(.4)	1.8	(1.3)
M4	3	(2.2)	4.5	(3.3)
M5	6	(4)	9	(7)
M6	10	(7)	15	(11)
M8	25	(18)	35	(26)
M10	50	(37)	70	(52)
M12	90	(66)	125	(92)
M14	140	(103)	200	(148)
M16	225	(166)	310	(229)
M20	435	(321)	610	(450)
M24	750	(553)	1050	(774)
M30	1495	(1103)	2100	(1550)
M36	2600	(1917)	3675	(2710)

## 10.0 TROUBLESHOOTING

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>POSSIBLE SOLUTIONS</b>
Hopper will not tip	Over loaded	Remove material from hopper
	Hydraulic leak	Isolate fault. Repair as necessary
	Low hydraulic oil in tractor	Top-up tractor hydraulics
	Control box not powered	Check wiring and supply voltage
	Bad hose connection at tractor	Check the couplers are clean and reconnect pipes
Debris is not being Collected Satisfactorily	Blockage	Un-block
	Hydraulic diverter valve not engaged	Move lever on valve to correct position
	Hopper full	Empty hopper
	No suction	Check drive belt tension
	Brush too high	Lower suction head
	Roof mesh blocked	Clean
Excessive Machine vibration	Damaged impellor	Replace impellor

## 11.0 WARRANTY TERMS AND CONDITIONS

Turfmech Machinery Ltd warrants its full line of equipment to be free from defects in materials and factory workmanship for a period of 12 months unless otherwise stated in writing. This warranty begins on the date the machine is placed into service by the original purchaser.

This guarantee is limited exclusively to equipment and accessories manufactured or supplied by Turfmech Machinery Ltd and is subject to the inspection and analysis by the company to conclusively identify and confirm the nature and cause of failure.

A CUSTOMER ACCEPTANCE CERTIFICATE must be completely filled out, signed by the customer, and returned to Turfmech Machinery Ltd before any warranty claims will be considered.

Turfmech Machinery Ltd reserves the right at any time to make improvements in materials and/or the design of its products without notice and without obligation with regard to equipment previously manufactured and/or supplied.

Turfmech Machinery Ltd is not obligated under any other warranty different from the warranty as published above.

### **Turfmech Machinery Ltd's Responsibilities**

1. Only factory-trained service personnel are permitted to carry out warranty service work on Turfmech machines.
2. All major warranty claims involving overhauls or rebuilds must be authorised by Turfmech Machinery Ltd before any work is started.
3. All replacement parts used for work required under warranty must be supplied by Turfmech Machinery Ltd or approved by Turfmech Machinery Ltd service personnel. The use of non-recommended lubricants, components or accessories will render the warranty null and void.

### **TM10 Owner's Responsibilities**

The owner is required to maintain, adjust, set and operate the equipment in accordance with the guidance and recommendations provided by authorised Turfmech staff, representatives or dealers and published by Turfmech Machinery Ltd in this operator's manual. The owner is responsible for the costs associated with such maintenance and any adjustments which may be required on a scheduled basis. The owner is responsible for transportation of the machine to and from an authorised Turfmech dealer and for the cost of any service calls requested of that dealer.

### **Conditions which will void warranty**

The warranty shall not apply to equipment which:

1. Has been fitted with any non-genuine part or been subjected to any repairs or modifications not authorised by Turfmech Machinery Ltd.
2. Has been subjected to abuse, improper maintenance or improper application.

### **Warranty exceptions**

This warranty does not apply to the following items:

1. Wearing parts including blades, cutting edges, spark plugs, points and condensers, belts, chains, shafts, bearings, joints, couplings, pins, bushes, filters, tyres, light bulbs, lubricants and fluids.
2. The cost of normal regular maintenance including the replacement or renewal of service or wearing items.
3. Any damage to the engine or drive systems caused by lack of lubricants and/or fluids or the use of incorrect lubricants and/or fluids.
4. Any damage to the engine or drive systems caused by improper setting, operation and/or maintenance.
5. Turfmech Machinery Ltd will not be liable for any incidental or consequential damage or injuries, including but not limited to loss of profits, loss of crops, rental of substitute equipment, or any other commercial loss or damage to any associated equipment, building, surface or operation.

### **Freight Carrier Damage**

Claims for equipment damaged in transit should be referred to the freight carrier. Visible damage should be reported immediately, and concealed or hidden damage as soon as possible, in accordance with freight carrier regulations and conditions.

<b>NOTE</b>
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The warranty provided by Turfmech Machinery Ltd for your TM10 Vacuum Collector is given in addition to and does not affect, lessen or restrict your contractual rights under statutory and/or common law.



# 12.0 EC DECLARATION OF CONFORMITY

## DIRECTIVES

**2006/42/EC** (Known as the 'Machinery Directive')

## DESIGNATED RESPONSIBLE PERSON

Full Name Austin Y. Jarrett  
Position in Company Managing Director  
Company Address Turfmech Machinery Ltd  
Hangar 5  
New Road  
Hixon  
Staffordshire ST18 OPJ  
UNITED KINGDOM  
Company Telephone No 01889 271503  
Company Fax No 01889 271321  
E.mail Address [austin.jarrett@turfmech.co.uk](mailto:austin.jarrett@turfmech.co.uk)

## DECLARATION

We of the above declare that under our sole responsibility for the supply and manufacture, the machinery described below is in conformity with the essential health and safety requirements identified in the above directives.

Date 19<sup>th</sup> July 2010 Responsible Person  Austin Y. Jarrett

**MACHINE DESCRIPTION** TM10 Trailed Vacuum Collector

**MODEL NUMBER(S)** T234

**SERIAL No's** All from 19/7/2010 onwards

## **TECHNICAL FILE**

All technical documentation is held at Turfmech Machinery Ltd.