

12180 Operators & Parts Manual

See our
Online Catalogue
 at www.groundsmanindustries.com

Internet



www.groundsmanindustries.com
info@groundsmanindustries.com

Telephone



UK : 028 2766 7049
 Int : +44(0) 28 2766 7049

Fax



UK : 028 2766 6855
 Int : +44(0) 28 2766 6855

Address



30 Ballybrakes Road
 Ballymoney
 Co. Antrim
 Northern Ireland
 United Kingdom
 BT53 6LG

Importer & Distributor

Ireland & Scotland
Groundsman Industries
 Phone +44(0) 28 2766 7049
www.groundsmanindustries.com

England & Wales
Synergy Products Ltd
 Phone +44(0) 1380 828 337
www.synergyproducts.co.uk

TURF AERATORS

MODEL 12180 TM

OPERATORS & PARTS MANUAL



GROUNDSMAN INDUSTRIES LTD

30 BALLYBRAKES ROAD
 BALLYMONEY
 CO. ANTRIM
 BT53 6LG

TEL: 028 276 67049 FAX: 028 276 66855

Email: bwarke@groundsmanindustries.co.uk Web site: www.groundsmanindustries.co.uk

Leading the field in aeration technology

DELIVERY DATE

SERIAL NUMBER

It is essential to quote the machine model and serial number when making service enquiry's or ordering spare parts to avoid any delay.

The serial number of your Groundsman Turf Aerator is located **on the right side body panel if viewed from the rear of the machine.**

This machine was supplied by:

Dealer address:

If you require any further advice or assistance you can contact **Groundsman Industries directly on: TEL: 028 2766 7049 FAX: 028 2766 6855**
Email: bwarke@groundsmanindustries.co.uk

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SAFETY FIRST !

1. All GUARDS MUST BE CORRECTLY FITTED !

Always ensure that all guards are in position, properly fitted and maintained. Do not attempt to operate the machine before making this check each time the machine is used. The rear safety flap is easily removed for access to the tines and holders; this flap should always be replaced before operating the machine **except** when using the core collector attachment. (See instructions on side panel of the collector) Always ensure that the PTO shaft is the correct length and that the safety guard and chains are functional. Ensure that both ends of the shaft are properly located and that the retainers are working properly.

2. BEWARE OF BYSTANDERS.

Operators should be aware that it is possible that debris can exit from the sides of the machine, so this area is best kept clear.

3. NEVER OPERATE THE MACHINE WITH ANY PARTS MISSING.

Check the machine regularly for loose or damaged parts. **Pay particular attention to the safety guards.** Always use genuine Groundsman Industries replacement parts in the interest of safety. Failures caused by the use of 'spurious' replacement parts will **NOT** be covered by our warranty, nor will any liability be accepted for damages of injury incurred.

4. MODIFICATIONS

NO LIABILITY WILL BE ACCEPTED in respect of machines modified without specific written permission of Groundsman Industries Ltd.

5. OBSERVE THE MANUAL

NO LIABILITY WILL BE ACCEPTED where injury or damage is caused by using the machine in any manner other than that detailed in this manual.

6. Always use the manual for quick and easy reference.

**DO NOT START THIS MACHINE OR CARRY OUT ANY MAINTENANCE ON THIS MACHINE
UNTIL YOU HAVE READ THE SAFETY PRECAUTIONS AS STATED ABOVE.**

WARRANTY

Examination of the goods has been made by or on behalf of the purchaser and no warranty condition, description or representation on the part of the manufacturer is given or is to be implied or has been given from anything said or written in the negotiations between the parties or their representative beyond those mentioned below. Any statutory or other warrant condition, description or representation expressed or implied as to the goods is hereby expressly excluded.

In lieu, thereof the manufacturer undertakes to make good by repair or replacement at its option free of all charge during normal working hours. Any defects in the goods arising in the manufacturers opinion from faulty design, materials or workmanship which shall become apparent within a period of 24 months in the case of machines, and 12 months in the case of spares from the date of receipt of the goods. At the termination of which period, all liability on the manufacturers part ceases. Provided always and the above warranty is subject to the following conditions:

- A. The manufacturers liability extents only to the repair or replacement and it accepts no liability for any consequential or other loss, damage or injury resulting directly or indirectly from any defect in the goods.
- B. The manufacturers warranty does not extent to failures, defects or damage attributable to wear and tear, improper adjustments, neglect, and alteration of specification or accident.
- C. All defective parts must be returned to the dealer immediately together with full particulars of the defects, the machine number, the hours worked and the date machine was supplied.
- D. The manufacturers warranty does not extend to proprietary or other components not of its manufacture, but it will as far as possible pass to the purchaser any benefits of any guarantee given to the manufacturer in respect of such components.
- E. In the event of the rejection by the manufacturer of any claim, the part or parts returned will be destroyed unless specific instructions to the contrary were given when part or parts were returned.
- F. No claim will be considered if other than genuine parts manufactured by the manufacturer or its order and listed in its catalogue are used.
- G. This warranty should only be construed as strictly limited in its application and is valid only in the country of purchase. If the goods shall change hands during the period of this warranty, this warranty will cease to have effect.
- H. The manufacturer accepts no responsibility for damage by fire or accident of any kind to any goods returned under the terms of this warranty. The manufacturer does not accept responsibility for any accident occurring to such goods whilst on the premises.
- I. This warranty shall cease to have effect if the purchaser removes, defaces or alters the manufacturers number plate (serial number) or any other numbers or marks affixed to any Groundsman Industries Ltd product.
- J. In respect to machines sold which have been used since the date of manufacture for commercial, contract, hire, rental or demonstrator purposes, the warranty on this product is limited in duration to 12 months from the date of purchase.

TECHNICAL SPECIFICATIONS

SPECIFICATION

Model: 12180TM
Powered: 28HP tractor
Drive: PTO Shaft Comer Gearbox 4 / 5/8" chains

DIMENSIONS

Width: 1980mm (78")
Length: 889mm (35")
Height: 762mm (30")
Weight: 605kg 420kg
Swath: 180cm (72")

PERFORMANCE CHART

	MIN	MAX
Ground Speed:		
MPH	0.92	2.77
KPH	1.48	4.44
Coverage		
Sq.mtrs/hr	2,711	8,134
Sq.ft/hr	29,280	87,840
Tine holder set-up:	12 Cluster	Twin
Quantity of holes:		
Per/min	70,272	11,712
Per/Sq.ft	144	8
Hole pattern: (width x length)		
Millimetre	25 x 25	75 x 150
Inch	1 x 1	3 x 6

FEATURES

Mechanism: Maintenance free sealed bearing crank drive, with patented Elliptical Plunge Action & Shock Absorbing Mechanism.
Carriage: Full width adjustable contoured roller. Solid rubber storage wheels.
Depth: Quick set, tools free, adjustment (5 Settings).
Access: Quick release tine and drive guards
Tine Holders: Quick-change spigot-clamp mounting
Cores: Flexblade collection attachment.
Linkage: CAT 1 three-point linkage
Penetration: Up to 130mm (5") (adjustable).

Hole Spacing:	MIN	MAX	
Width	25mm (1")	75mm (3")	(variable via quick-change holders).
Length	25mm (1")	150mm (6")	(variable via vehicle ground speed).
Hole Density:			
Per Sq./ft	8	144	(variable via quick change holders and vehicle ground speed.)

(See Groundsman's Tine & Holder Catalogue for detailed information about hole patterns, tine & holder selection etc.)

ACCESSORIES

- Twin, triple, Quadra and quint tine holders plus dense pattern cluster heads.
- From micro to jumbo tines: hollow, solid, chisel.
- Custom tines available to customer specification.
- Front roller and floating linkage for rolling terrain.
- Flexplate Surface smoothing attachment.
- Flexblade core collection attachment.

BASIC SETTING UP AND OPERATING INSTRUCTIONS

Model 12180 TM

Use on tractors of 27 HP and up. Front weights may be required for tractors under about 30HP. To ensure adequate ground clearance in the raised position, attach the three-point linkage to the lower most pin positions on the mounting frame.

- Check that the machine is mounted level right-to-left and adjust if necessary. Adjust stabilizers to avoid excessive swing.
- With the machine lowered to the 'in work' position, check that the machine is level front to back, (parallel to the ground), adjust the top link if necessary.
- Set the tractor engine speed to 1800 (2000 max) RPM engage PTO drive and forward motion before lowering the machine into work. A test run on aprons on fair-way is advisable to establish correct forward speed. (See page 8, 'how to get the best from your Groundsman')
- The tining mechanism is designed to work best if the forward speed is such that a 3"x 3" pattern is achieved when fitted with twin holders. This forward speed should be maintained throughout the complete range of operations. Closer hole patterns can be achieved by using tine holders which contain more tines.
- When operating at maximum depth, the roller should remain in contact with the ground at all times i.e. The machine will operate smoothly if the depth is not set to go any deeper than the machine is capable of going in the given conditions.

HOW TO GET THE BEST OUT OF YOUR GROUNDSMAN

- **Groundsman** Turf Aerators are capable of switching tine combinations to perform a wide range of aeration tasks with the minimum of effort to change over. This can be achieved because the elliptical plunge action mechanism is designed to work with-out turf retainers thereby enabling any tine combination to be used. For example, it is possible to switch effortlessly from major hollow coring with Twin or Triple holders to needle tining with Quad or Quint holders using the spigot clamp quick change holder system. It must however be set-up correctly.
- **Generally speaking**, the machine should sit level front-to-back as well as right-to-left when in the lowered 'in work' position. However the following applies for fine adjustment of the top link.

If the surface plucks or tufts out the front of the holes then follow A or B (Below) or a combination of both.

A **Decrease** the forward speed without altering the engine RPM (this will also make the hole pattern closer).

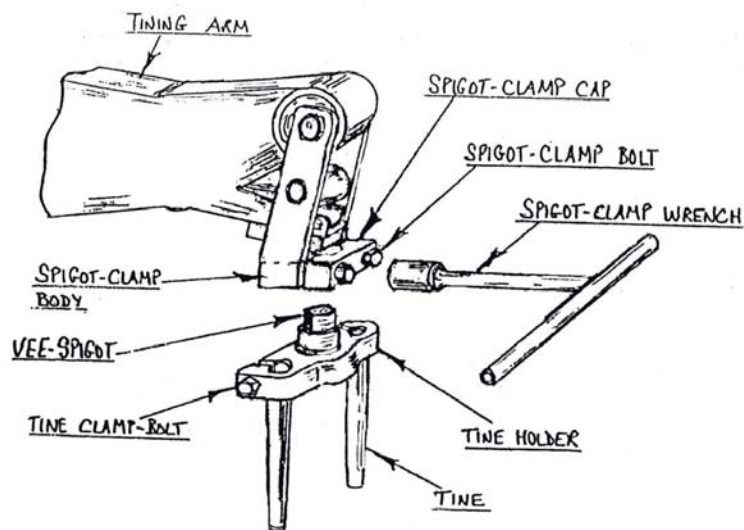
B If you do not wish to alter the hole pattern then shorten the Top-Link.

If the surface plucks or tufts out the back of the holes then follow A or B (Below) or a combination of both.

A **Increase** the forward speed without altering the engine RPM (this will also make the hole pattern wider).

B If you do not wish to alter the hole pattern then lengthen the Top-Link.
- **For maximum penetration in heavily** compacted conditions use twin tine holders and avoid thick heavy tines such as a 5/8" solids, 1½" chisels or jumbo hollows. (See Groundsman's Tine and Holder catalogue further information)
- Dense/ (Close) aeration patterns can be achieved by using tine holders with more tines fitted ie. quads, quints or clusters. If rooting is shallow then lifting of the turf may occur with the closer patterns. To overcome this problem, drop back in density ie.: if lifting occurs with quint holders change them to quad, triple or twin depending on the severity of the problem. Once the starting point has been established for given conditions and on-going program of aeration will rapidly result in deeper rooting where-by the denser patterns can then be achieved. This process will be expedited if the aeration program is continued throughout the growing season when fertilizers are being applied. A turf retainer attachment is available but should only be necessary in extreme conditions due to the minimal lift characteristics of the Groundsman elliptical plunge action mechanism.

CHANGING THE TINES & HOLDERS



Tines & Holders.

Groundsman provide clamp type tine holders in twin, triple, quad, and quint. Tines are available in a variety of sizes and in order to accommodate these the tine holders can be supplied in a range of socket sizes as follows;

Twin	1/2"	5/8"	3/4"	7/8"
Triple	1/2"	5/8"	3/4"	
Quad	1/2"	5/8"		
Quint	1/2"			

* See Groundsman's Tine & Holder catalogue for illustrations and descriptions

Fitting the tines to clamp style holders.

Ensure that the tine clamp bolt is loose. Place the holder on a solid surface or in a vice, insert the tine into the socket and using a hammer make sure they are in all the way in to the stop. Tighten the tine clamp bolt firmly with the wrench provided in the tool kit.

Cluster tines

Cluster tines are available in six, & eights. These are fitted to the spigot mounting flange by two fixing nuts and tightened using the wrench provided in the tool kit. When the cluster tines wear out they are unbolted from the mounting flange discarded and replaced with a new one.

Fitting the tine holders to the machine

All tine holders are attached to the tining arms by a quick change spigot clamp mounting. The spigot is located at the top of the tine holder and a vee which locates in the spigot clamp body ensures that orientation is always correct. Loosen the spigot clamp bolts with the wrench provided in the tool kit and pull back the spigot clamp cap. Ensuring that the vee portion of the tine holder spigot is facing forward towards the clamp body, insert the holder and tighten the spigot clamp bolts.

Removing the tine holders from the machine

Slacken the spigot clamp bolts just enough to release the tine holder spigot and remove.

MAINTENANCE

Oil

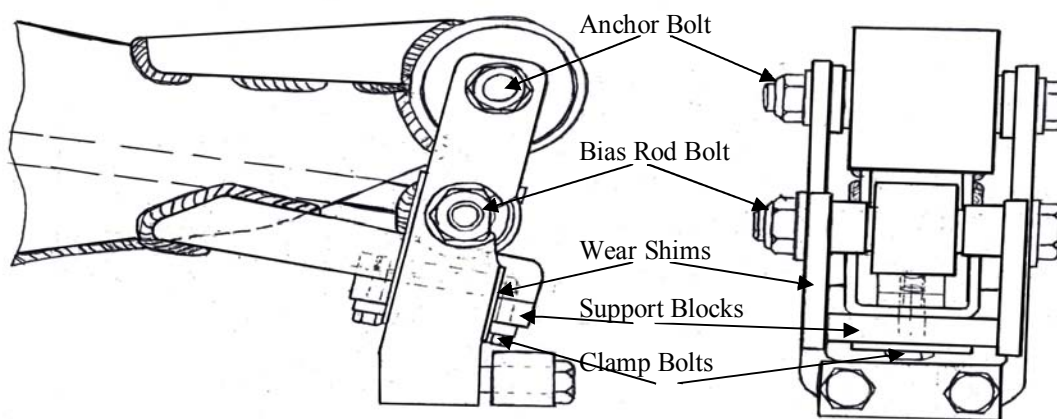
To check the gear-box oil unscrew the oil level plug located in the centre of the access cover at the back of the box. The oil should be up to the lower lip of the hole when the machine is level. If the oil level is low remove the oil filler plug (Fig 3 Located on top of the gear-box using Castrol EP 90 or equivalent. If the level consistently drops check the access cover and the input/output shafts for seepage. Replace the gasket or seals if necessary.

Large diameter drive sprockets ensure long life from the drive chains however the following maintenance procedures should be adhered to: Coat the main drive chains with a thin film of chain oil every 100 hours. If the chain is seized replace it. If it is stretched or badly worn replace them all.

Grease

There are only two grease points on the machine, one on each plumber block bearing at either end of the roller (Fig 2 on page 11.) These should be greased every 1000 hours. Remove the depth-set clamp lever and pack the threads with grease periodically.

Fig 1



MAINTENANCE

The tinning mechanism

Sealed for life bearings are used through-out the tining mechanism, they require no maintenance. These bearings are located on the crank-shaft and shackles towards the front of the machine. If high pressure washers are to be used avoid concentrating the nozzle directly at sealed bearings.

The only wearing parts on the mechanism is the lateral support block and lateral wear shim (Fig 1 Page 9) These items seldom need attention however if side (Lateral) movement at the tine holder exceeds 10mm (7/16") the following procedures should be followed:

With reference to Fig 1 Page 9

Slacken the anchor bolt and remove the bias-rod bolt.

Pivot the spigot-clamp body away from the assembly to expose the lateral support block.

The wear shims will be released, these should be examined for wear replace if necessary.

Remove the two clamp bolts on the under side of the support block, rotate the block 90 degrees and refit.

If all four wear faces on the block have already been used replace it.

OPTIONAL EQUIPMENT

A large range of accessories are available for the Groundsman Aerators summarized as follows

Holders

Clamp style tine holders: Twin Triple Quad Quint

Tines

Jumbo/micro hollow

Solid/ needle tine

Chisel

Cluster

*** See Groundsman Tine and Holder catalogue available free.**

Accessories

Core collector

Turf retainers

Surface iron

FITTING ACCESSORY ATTACHMENTS

Storage wheels are supplied standard with Groundsman tractor mounted turf aerators. The Flexblade core-collector, Flexblade surface iron and Turf-retainers are optional accessories. Instructions for fitting these items to the machine are as follows:

Storage wheels

The machines are supplied with three storage wheels. Two for attachment to each roller leg and one at the front of the machine directly underneath the tractor mounting frame. Remove all drag-link attachments. With the machine in the raised position, slot the cross bar on the storage wheel brackets into the storage wheel mounting lugs on the roller legs, Locate the hole at the upper end of the bracket onto the storage-wheel mounting-pin (see fig 2 page 13) secure in position by fitting the linch pin provided. Lower the machine onto the wheels and support the front with the jack legs before detaching from the tractor. The castor wheel bracket can now be fitted to the front of the machine by slotting onto the lower pins attached to the body. The hole at the upper end of the bracket is located onto the storage wheel mounting pin in the same manner as the side wheels. Secure in position by fitting the linch pin provided. Raise the jack legs and park the machine.

Flexblade Core Collector

The core collector attachment is fitted to the aerator machine by two drag-links and two lift chains. The drag-links consist of a flat bar with a hole at either end. One end is located on the drag-link mounting pin on the collector and the other end to the drag-link mounting pin on the roller leg (fig2 page13) Insert the lift chain bars into the brackets provided on the rear of the machine and secure with linch pins provided. The chains should have about 2" of slack when the machine is lowered in work to allow the collector to float freely on the turf and should adjust accordingly. Excessive slack will hinder the dump of the cores when the machine is raised out of work due to the lack of ground clearance.

Flexplate Surface Iron

The surface iron attachment is fitted to the machine in exactly the same manner as described for the core collector.

Turf Retainer Attachment

With the machine raised off the ground and the rear safety flap removed, slide the turf retainer rack over the top of the roller from the back to the front of the machine. Locate the mounting bush into the lugs on each roller leg. (Fig a) below.

When the rack is in position remove the spacer which is fitted to protect the threads on the clamp bolts when the holders are not being used. (Fig b)

Fit the holders starting with the wide holder on the left followed by the 7 narrow holders. To find the correct position, turn the crank by hand and line the tines with the slots on the holders and tighten the clamp. Make sure that all the holders line with the tines or the holders could be damaged when the machine is lowered.

Fig a



Fig b Spacer Plates

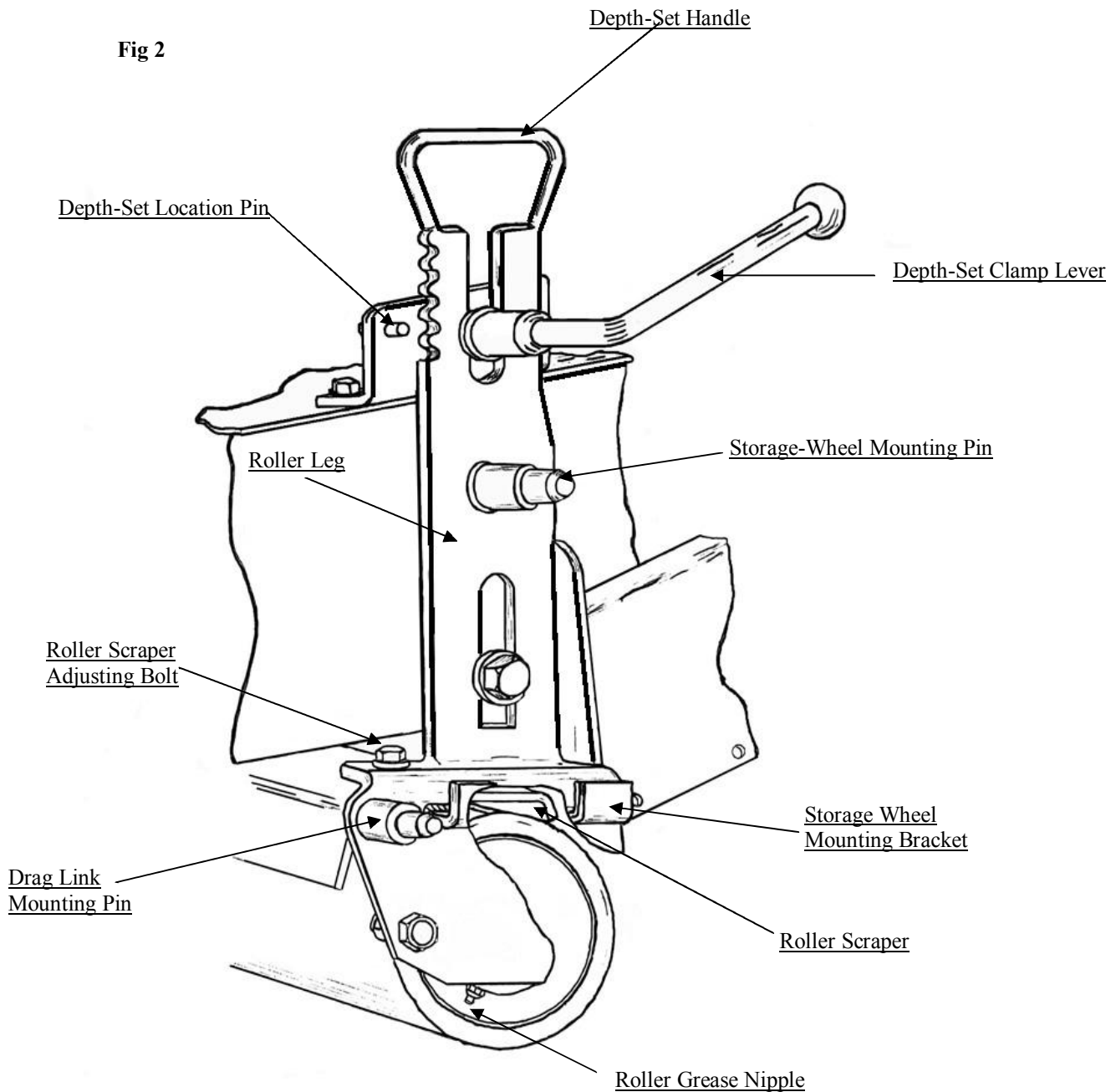


Rack & Holders Fitted



SETTING THE DEPTH

Fig 2



Setting the aeration depth

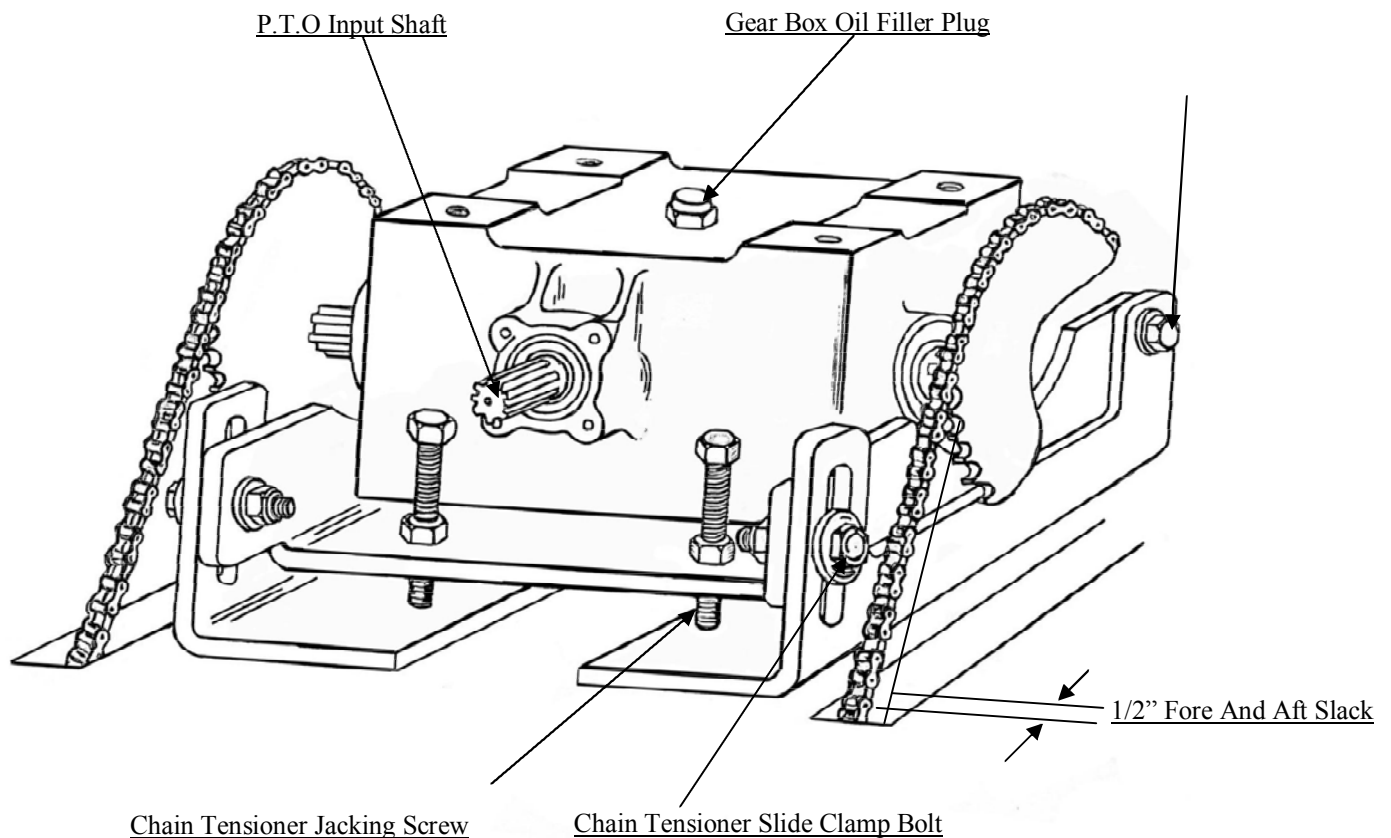
Raise the machine out of work until the roller is about 6" clear of the ground. Grasping the depth-set lever while unclamping the depth-set clamp lever and pivoting the roller-leg away from the location pin raise or lower the roller and relocate the depth-set pin in one of the five notched positions in the roller leg. Ensuring the location pin is fully engaged in the appropriate notch, tighten the depth-set clamp lever. When adjusting the depth with the core collector attachment fitted, lower the machine so that the collector is resting on the ground and not on the drag-link mounting pins. This will take pressure off the roller leg making the depth adjustment easier.

Adjusting the roller scraper

The roller scraper will seldom need adjusting however if the scraper blade becomes worn to the extent that it no longer rests on the roller adjust as follows:

Slacken the roller scraper clamp bolt (Fig 2 Page 11) and slide in the slotted hole rearwards away from the roller leg. Retighten the bolt at the new position. Repeat this adjustment at the other end.

Fig. 3



Adjusting the main drive chains

Remove the top cover exposing the gearbox and drive chains. Slacken the sliding and fixed clamp bolts (fig 3) Undo the lock nut on the chain tensioner jacking-screw and turn the screw clockwise to tighten the chain. Repeat the operation for the other chain ensuring that the chains have about 1/2" fore and aft slack when gripped between finger and thumb where the chassis slot, do not over tension, (see fig 3) Retighten all bolts and lock nuts, Replace cover.

Crank Arm Parts List

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	GI002C	HD Crank Right
2	2	BPC027	Crank Bearing Rear
3	2	CPC017	Crank Centre Circlip
4	1	GI253	Shackle Bearing Spindle
5	1	GI309	Bias Rod
6	1	BPC002	PC UD Bush Metalastic 13-1004
7	1	BPC003	UD Bush Small Bias Rod
8	2	MPC118	Circular Mount
9	1	GI259B	SC Imp Head
11	2	GI259A	Bias Rod UD Spacer
12	1	GI313A	Clamp Block Implement Head
13	1	GI312	Lateral Support Block
14	2	BPC0830S	Bolt
15	2	GI314	Lateral support shim
16	2	BPC716312HB	Hex Head Bolt
17	5	NPC10NYT	Nylock NUT
18	1	GI308	Bias Rod Cover
20	2	IPC007	Implement Head Hex Head Bolt
21	1	GI256	Implement Head Clamp Cap
22	2	GI033	Shackle Spacer
23	1	BPC005	Shackle Bolt C/Sunk
24	1	WAS10CK	Counter Sunk Washer
25	1	BPC110	Crank Centre Bearing
26	1	GI027G	Shackle Anchor Bearing Block Complete
27	2	GI006	Shackle Plate
29	1	GI313B	Clamp Plate Implement Head

Crank Arm Parts

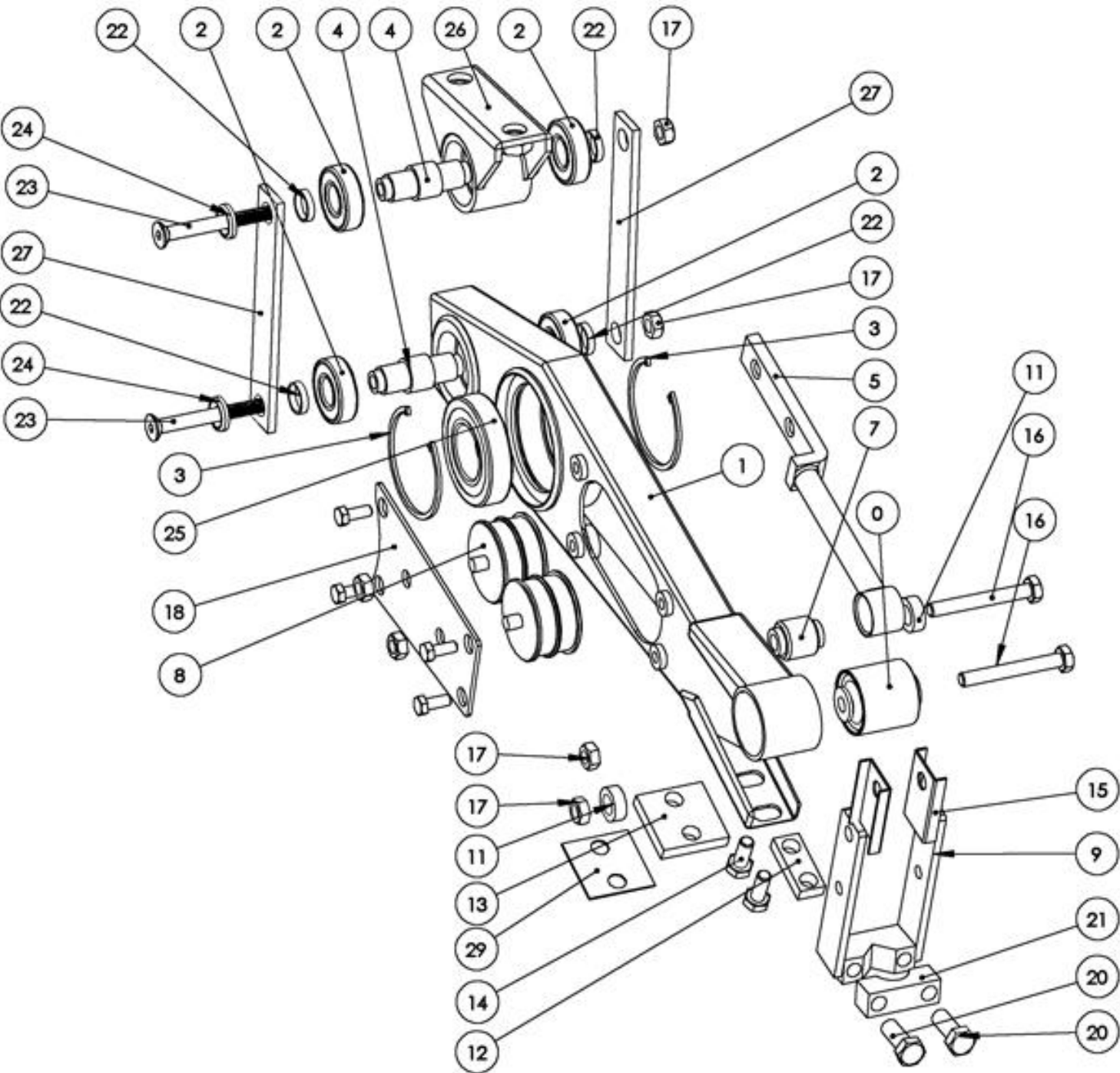
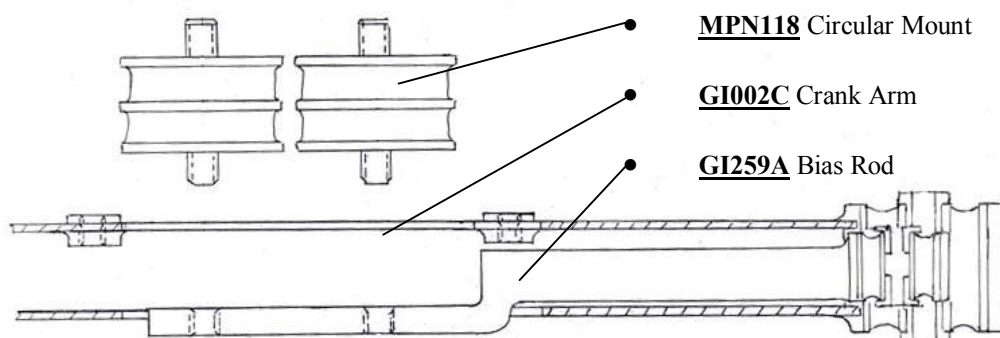


Fig 4



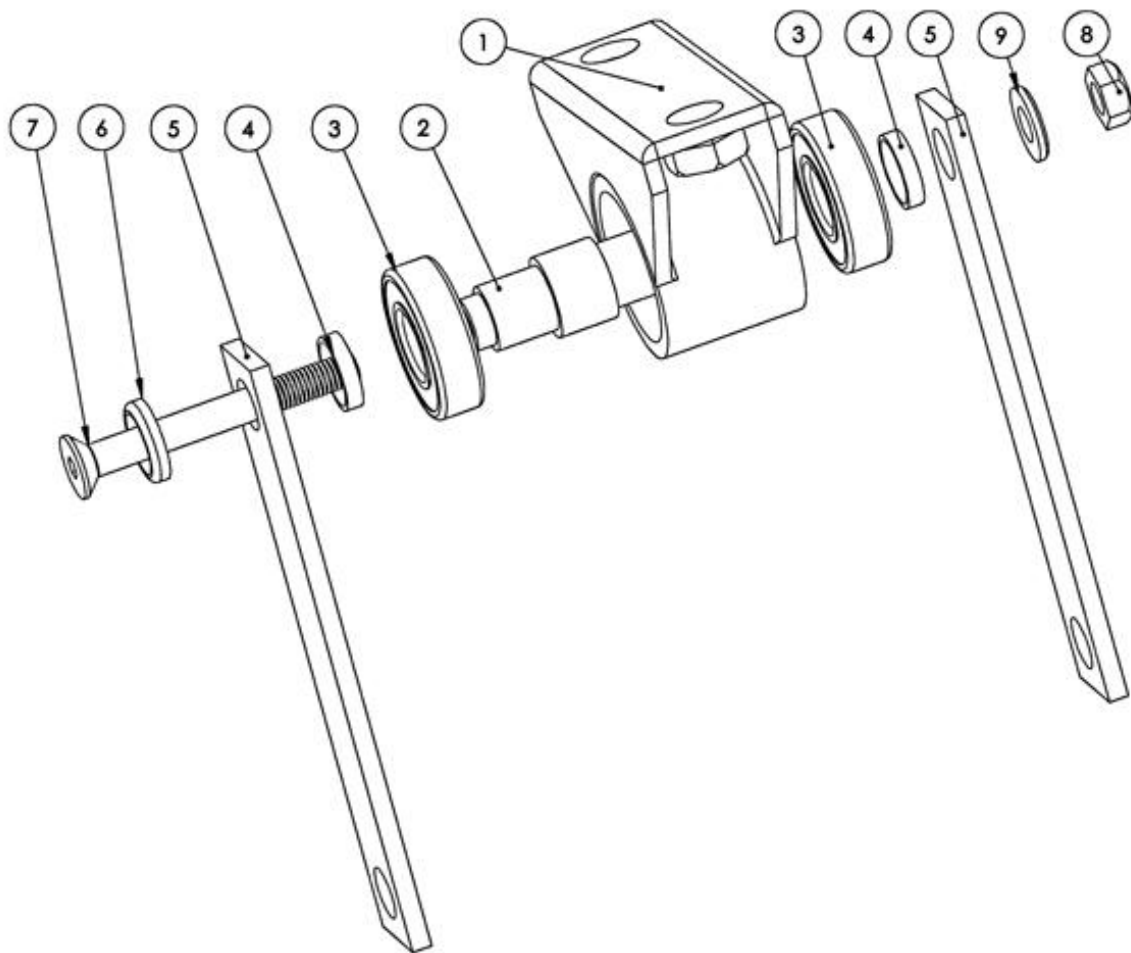
GI259A Bias Rod

GI259A Bias Rod



GI027G Shackle Anchor Bearing Block Assembly

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	GI027B	Shackle Anchor Block
2	1	GI253	Shackle Bearing Spindle
3	2	BPC027	Bearing Single Row Radial Ball
4	2	GI033	Spacer
5	2	GI006	Shackle
6	1	WAS10CK	Counter Sunk Washer
7	1	BPC005	Shackle Bolt
8	1	NPC10NYT	NUT
9	1	WAS10H	Heavy Washer



12180 TM Spare Parts

BPC002	BUSH CRANK ARM UD 13 - 1004
BPC003	BUSH BIAS ROD UD 13-1460-00
BPC004	CRANK ARM UD BUSH C/W INSERTS 13-1004
BPC005	BOLTS C/SUNK SCK/HD SHACKLE M10
BPC020	BOLT UNF HEX . M. 7/16"
BPC027	BEARING 6204
BPC035	BOLT. M HT HEX M10
BPC036	BOLT. M HT HEX M12
BPC037	BOLT. M HT HEX M8
BPC038	BOLT.S HT HEX M10
BPC093	BEARING CRANK MAIN 6211
BPC110	BEARING CRANK-ARM 6208
BPC125	ROLLER BEARING MSFT25
CPC052	CONNECTOR LINK 5/8"
CPC092	CHAIN MAIN DRIVE 8120 5/8" PAIR
CPC099	CORE COLLECTOR LIFT CHAIN
GI0014HD	FOUR ARM HD CRANK ASSY (Minus Imp. Heads)
GI0014HDC	FOUR ARM HD CRANK UNIT C/W IMP. HEADS
GI002C	CRANK BOX ARM
GI003H	HD CRANK ARM ASSY (minus imp legs)
GI005A	UD BUSH INSERT FLAT
GI006	SHACKLE
GI027G	SHACKLE ANCHOR BEARING BLK. L B
GI070	GUARD GUSSET
GI071A	UNDER CHAIN GUARD
GI110	CRANK ARM BEARING
GI233	CORE BLADE CHAINS
GI253	SPINDLE SHACKLE
GI256	SC HOLDER CLAMP CAP
GI259A	BIAS ROD UD SPACER
GI259B	SPIGOT CLAMP BODY
GI268	T BAR
GI313A	IMP.HEAD CLAMP BLOCK
GI313B	IMP.HEAD CLAMP PLATE
GI314	LATERAL SUPPORT SHIM
GI318	DRIVE KEY
GI405OBS	8120 GEAR BOX BASE PLATE
GI4110	GEARBOX HEX MOUNTED SPRKT 8120
GI419	ROLL-LEG CORE GUARD PLATE
GI419R	ROLL-LEG CORE FLAPS
GI420	HUB GEAR BOX SIDE 8120/12180
GI421	HUB HARDY SPICER SIDE 8120/12180
GI422	SHIM FOR GEARBOX & HARDY SPICER HUB
GI423	TAPERLOCK 40 FOR 12180
GI426	GUARD STEEL TYPE, TOP 8120
GI439	REAR FLAP MOUNTING BRACKETS RH
GI439A	REAR FLAP MOUNTING BRACKETS LH
GI444	ROLLER 8120
GI445D	SCRAPER ROLLER 8120
GI445E	SCRAPER ROLLER 12180
GI450C	FLEX BLADE (INSIDE)
GI450D	FLEX BLADE (OUTSIDE)
GI451D	8120 CORE COLLECTOR SKID PLATE
GI4053C	CORE COLLECTOR GRAG LINK
GI455A	CORE/C LIFT-CHAIN BRKT
GI455B	CORE/C LIFT CHAIN BAR

GI456A	LEG
GI465	ROLLER LEG
GI469C	8120 BODY SIDE FLAP
GI478A	DRAG-LINK SPIGOT
MPC118	HANDLE/BIAS-ROD RUBBER MOUNTING
NPC103	HEX ANCHOR NUT 9/16" HT
PPC011	PLASTIC NUT CAPS
PPC012	TM PTO SHAFT
PPC014	PLASTIC KNOB DC LEVER
RPC081	RUBBER SURROUND FCC8
RPC082	FCC8 CANOPY RUBBER
SPC122	SEAL FOR 12180TM GEARBOX
TM12	SHAFT 8120/12180 GEARBOX OUTPUT
TPC014	SPLINED TAPERLOCK
TR2	TWIN TURF RETAINER
TR2W	TWIN TURF RETAINER (WIDE)
TR3	TRIPLE TURF RETAINER
TR3W	TRIPLE TURF RETAINER (WIDE)
TR4	QUAD TURF RETAINER
TR4W	QUAD TURF RETAINER (WIDE)
TR5	QUINT TURF RETAINER
TR5W	QUINT TURF RETAINER (WIDE)
TRH	TURF RETAINER HOLDER
TRHW	TURF RETAINER HOLDER (WIDE)
TRR12	TURF RETAINER RACK (12180)
TRR8	TURF RETAINER RACK (8120)
TRSB	TURF RETAINER SPRING BRACKET
WPC104	STORAGE WHEEL



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GROUNDSMAN INDUSTRIES LTD

30 BALLYBRAKES ROAD

BALLYMONEY

CO. ANTRIM

BT53 8TF

TEL: 028 276 67049 FAX: 028 276 66855

Email: bwarke@groundsmanindustries.co.uk **Web site:** www.groundsmanindustries.co.uk

Leading the field in aeration technology