

# Owners Manual



## Trash Boss R&D#37



*Built to work.*

**Head Office:**  
P.O. Box 2018  
Hilton Highway, Washdyke  
Timaru, New Zealand  
Telephone (03) 688 2029  
Facsimile (03) 688 2821

**Australian Branch:**  
4B Silverton Close  
Laverton North 3026  
Melbourne, Australia  
Telephone (03) 9314-9666  
Facsimile (03) 9314-6810



# Trash Boss Contents

	Page
<b>Introduction</b> .....	2
<b>Acquisition &amp; Warranty</b> .....	2
<b>Disclaimer</b> .....	2
<b>Description of Machine</b> Working Principle.....	3
<b>Specification</b> .....	3
<b>SAFETY - General</b>	
Safety Symbols on Machine .....	4
Operator Safety .....	5
Be Prepared for Emergencies.....	5
Appropriate Dress .....	6
Transport This Machine Safely .....	6
Handle Agricultural Chemicals Safely.....	7
Avoid High Pressure Fluids.....	7
Safe Work Practices .....	7
Practise Safe Maintenance .....	8
<b>SAFETY - Machine Specific</b>	
Hazard Points .....	9
Safety Decals & Safety Guards.....	11
<b>Transport</b> .....	12
<b>Operation</b> .....	13
<b>Sowing Chart</b> .....	16,17
<b>Basic Calibration Procedure</b>	
Gearbox Setting Lever .....	18
Setting Seeder Shutter Slides .....	18
Bottom Flap Settings.....	18
Seed Calibration .....	17
Use of Seed Rate Calculator.....	21
Calibration Deviations .....	22
Sowing of Fine Seeds .....	23
Sowing Small Seeds .....	24
Sowing Peas .....	24
Hectaremeter Settings.....	25
Calibration Notes.....	27
<b>Maintenance &amp; Care</b>	
General .....	28
Lubrication Instructions .....	29
Maintenance Schedule .....	30
Maintenance Notes .....	33

# Introduction

## Acquisition & Warranty

On delivery of your new Duncan Trash Boss please check that the machine is not damaged. In cases of shipping damage, please ask your dealer to arrange for the appropriate claim to be lodged immediately. Assemble any parts supplied loose and inspect your machine with the aid of this manual to familiarise yourself with its features. If you have any queries ask your dealer straight away. The machine is covered by our 12 month warranty on faulty parts, subject to normal use.

**Record below the serial number of your machine and keep it in a secure place to help trace the machine and assist us when you order parts.**



**Model:** .....

**Serial No:** .....

**Owner:** .....

.....

.....

**Delivery Date:** .....

**Dealer:** .....

.....

.....

## The Owner's Manual

Your new Duncan Trash Boss will give long and efficient service if given normal care and operated properly.

This owner's manual is provided so that you can become thoroughly familiar with the design of the machine and to furnish information on correct operation, adjustment and maintenance. **Only persons well acquainted with these guidelines should be allowed to use the equipment.**

The manual is considered as part of your machine and must remain with the machine when it is sold.

**Right and left hand references in this manual are determined by standing behind the machine and facing in the direction of travel.**

## Disclaimer

Every effort has been made to ensure that the information in this manual was accurate and up to date at the time of going to press. Clough Agriculture reserves the right to make subsequent changes to the machine, where necessary, without notification.

The Company will not be responsible for any damage or consequential loss arising out of misinterpretation or failure to follow recommended procedures. Nor will it be liable for any damage caused by or arising out of modification or misuse of its product.

**The owner has a responsibility to protect himself and others by observing all safety information and by ensuring all operators are well acquainted with the safety information, trained in the correct use of the machine and applying safe work practices.**

## Description of Machine

The boxes are mounted on a robust frame accommodating large diameter tyres. The ground engaging components are controlled by a hydraulic ram system, giving ample control on ground pressure, good transport clearance and contour following ability. Sowing depth is controlled by adjusting the hydraulic ram as required. The quality European type peg roller seeder system handles all seeds from turnip and rape through to peas and maize. The seeders are driven from the groundwheels via a jockey wheel system and variable speed gearbox. For transport, the drive is easily disconnected by raising the drill to its transport height.

## Working Principle

The gearbox, pegged seed rollers and seeder flaps are set to give the desired seed rate. The chosen ground engaging equipment creates the seed bed. Seed flows down the flexible tubes between seeder and tee-boot units, and drops into the prepared seed bed.

<b>Dimensions and Capacities</b>	
	<b>27 Run</b>
<b>Row Spacing</b>	7" (177.8mm)
<b>Width (over wheels)</b>	5950
<b>Width (tine point to point)</b>	4623
<b>Effective Sowing Width (no. off tines x spacing)</b>	4801
<b>Box Capacity Front</b>	1000 litres
<b>Box Capacity Rear</b>	1700 litres



# ATTENTION

On the machine important safety information is indicated by these symbols. These highlight general safety aspects in regard to the machine rather than specific hazards.



**Do not ride or allow passengers on the machine.**  
Under no circumstances are passengers to be permitted on the machine while it is in operation or being transported. Any footboards and/or footsteps are provided solely for the purpose of preparing the machine for use.



**Keep clothing and body extremities well clear of pinch points while the machine is operating (seeding or calibrating). Keep well clear of moving parts at all times.**  
These signs typically occur wherever trapping points exist. These include drive chains, sprockets, shafts, wheels, discs, pivot points, etc. Guards are provided with the machine for safety reasons (where practical without compromising machine performance). Ensure these are always fitted during operation.



**Always exercise extreme caution in the vicinity of sharp edges and points.**  
Where possible guards are provided with the machine for safety reasons (where practical without compromising machine performance). Ensure these are always fitted during operation.



**Footboards, footsteps, drawbars and other machine surfaces may be slippery when wet.**  
Apply extra caution in wet conditions and in the early morning when surfaces are wet.

**KEEP CLEAR**

**Keep Clear. (It is dangerous to be in this area when the machine is operating.)**

# SAFETY - General

**N.B. Throughout this manual important safety information is indicated by these symbols in the margin:**



**A prohibition** should be observed under all circumstances.



**A warning** indicates a hazard that could cause death or injury if the warning is ignored.



**A caution** indicates a hazard that may cause damage to property if the caution is ignored.

**This section of the manual offers general guidelines for the safe operation of machinery.** It does not replace local safety regulations. These guidelines were current at the time of publication, but may be superseded by later regulations.

Clough Agriculture has made every effort to highlight all risks to personnel or property. Owners and operators have a responsibility to exercise care and safe work practices at all times in the vicinity of the machine.

Owners are advised to keep up to date on safety issues and to communicate these to all users of the machine.

Contact the Occupational Safety and Health Service (OSH) for further information about general safety aspects. If you have safety concerns specifically related to this machine, contact your dealer immediately.

## Operator Safety

Read this manual carefully before operating new equipment. Learn how to use this machine safely. Be thoroughly familiar with the controls and the proper use of the equipment before using it.



Take careful note of all safety instructions both in this manual and on the machine itself. Failure to comply with instructions could result in personal injury and/or damage to the machine.

Replace missing or damaged safety signs on the machine and ensure that these remain clearly visible.

**It is the owner's responsibility to ensure that anyone who operates, adjusts, lubricates, maintains, cleans or uses the machine in any way has had suitable instruction and is familiar with the information in this manual (particularly with regard to safety aspects).**

**Operators and other users of the machine should be aware of potential hazards and operating limitations.**



## Be Prepared for Emergencies

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance, hospital and fire department near your telephone.



## SAFETY - General (Continued)



### Appropriate Dress

Wear close fitting clothing and avoid rings or other forms of jewellery which could become caught in the machinery.

People with long hair must have it securely fixed and confined close to the head.

Refer to local safety standards for protective clothing and recommended safety equipment.



### Transport This Machine Safely

Ensure that all linkage pins and security clips are fitted correctly. With trailing machines tow with the drawbar only, as this is the only safe towing point on the machine.

Always check that bystanders (especially children) are well clear (front and rear) before starting and moving the tractor and the machine.

Plan safe routes of travel, and be aware of power lines and other roadside hazards. Take particular care when towing implements on hillsides.

### Do not ride or allow passengers on the machine.

This machine is not designed to carry passengers, and no riders are permitted.

### Road transport

On public roads,

- A speed of 40km/h must not be exceeded.
- Do not operate during the hours of darkness unless standard lights are fitted and clearly visible. (This also applies when visibility is limited, e.g., in foggy conditions.)

See the guidelines in the *Vehicle Dimensions and Mass Rule*, issued by the Land & Transport Safety Authority.

### Avoid tip-overs

Avoid holes, ditches and obstructions which may cause the machine to tip over, especially on hillsides. Never drive near the edge of a gully or steep embankment - it might cave in. Slow down for hillsides, rough ground and sharp turns.



## SAFETY - General (Continued)

### Handle Agricultural Chemicals Safely

All farm chemicals should be stored, used, handled and disposed of safely and in accordance with the supplier's/manufacturer's recommendations.



**Read the product label before using, noting any warnings or special cautions, including any protective clothing or equipment that may be required, ie. respirator.**

Do not eat or smoke while handling sprays, fertilisers, coated seeds, etc. Afterwards, always wash your hands and face before you eat, drink, smoke, or use the toilet.



Store sprays, fertilisers, coated seeds, etc. out of reach of children and pets, and away from food and animal feeds.

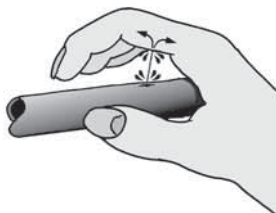
Any symptoms of illness during or after using chemicals should be treated according to the supplier's/manufacturer's recommendations. If severe, **call a physician or get the patient to hospital immediately**. Keep the container and/or label for reference.

### Avoid High Pressure Fluids

Avoid any contact with fluids leaking under pressure, because the fluids can penetrate the skin surface.



Any fluid which penetrates the skin, will need to be **removed immediately by a medical expert**. Seek specialist advice on this type of injury.



Relieve the pressure before disconnecting any hydraulic or other lines. Make all repairs and tighten all fittings before re-connection to pressurised fluid.

Keep your hands and body away from any pinholes or high pressure jets. Search for leaks with a piece of cardboard instead of using your hand directly.

### Safe Work Practices

All farm machinery is potentially dangerous and should be treated with caution and respect.



Before starting the machine, ensure that all controls are placed in neutral and that bystanders are well clear. Check that the guards have been securely fitted and that any adjustments have been made correctly.

Where possible, disconnect or isolate the drive mechanism to the implement. Lower the machine onto the ground when not in use.

## SAFETY - General (Continued)



### Practise Safe Maintenance

Keep the machine in safe working condition. Routine maintenance and regular servicing will help reduce risks and prolong the life of the machine.

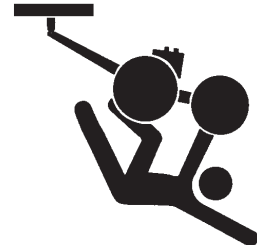
### General Maintenance

Accidents occur most frequently during servicing and repair. The following general rules must be followed when maintaining or working with machinery:

- All operating and maintenance manuals must be read before and referred to while using or servicing any piece of equipment.
- Turn off all machinery power sources and isolate the machine before making adjustments, doing lubrication, repairs or any other maintenance on the machine.
- Ensure that the machine hydraulics are disconnected from the power source.
- Wear gloves when handling components with cutting edges, such as any ground cutting components.
- Beware of hazards created by springs under tension or compression when dismantling or maintaining the machine.
- It is recommended that you clean the machine with a water blaster or similar apparatus before commencing maintenance.

### Make Sure the Machine is Well Supported

When machinery is fitted with hydraulics, do not rely on the hydraulics to support the machine. During maintenance or while making adjustments under the machine, always lock the hydraulics and support the machine securely. Place blocks or other stable supports under elevated parts before working on these.



### Electrical Maintenance

Disconnect the electrical supply from the tractor before doing any electrical maintenance.



### Welding

With electronic equipment in modern tractors it is advisable to disconnect the machine from the tractor, or at least disconnect the alternator and battery before attempting any welding.



### Use Only Genuine Spare Parts

Unauthorised modifications or non-genuine spare parts may be hazardous and impair the safe operation and working life of the machine.

Excess lubricants must be disposed of safely so as not to become a hazard.

# SAFETY - Machine Specific

**This section of the manual gives specific guidelines for the safe operation of the Trash Boss.**

These guidelines were current at the time of publication, but may be superseded by later circumstances. They do not necessarily cover every possible hazard and must be read in conjunction with the **SAFETY - General** section (Page 4 - 8).

## Hazard Points on the Trash Boss

The lists below are not all-inclusive and serve only to highlight the more obvious areas of risk.



The decals attached to the machine are a general reminder that there are hazardous areas on the machine, rather than specifically highlighting all possible hazards.

**For decal locations on machine, refer Page 11.**



### No Ride

Passengers are not permitted anywhere on the machine.



### Pinch Points/Moving Parts

Hazardous areas include:

- Drive chains.
- Sprockets between the drive wheel, the transfer shaft and the gearbox (RH side).
- Sprockets between the gearbox and the box shafts (RH side).
- Agitator drive units (LH side).
- Agitator shaft inside the boxes.
- Seeder units, box shaft and shaft connectors.
- Wheel legs and main frame assemblies
- Between discs and other sub-assembly parts (where fitted).
- Finger tine assemblies (where fitted).



**Slippery  
When  
Wet**

### Slippery When Wet

Hazardous areas include:

- Footboards and footstep.
- All smooth surfaces on the frame structure.

**KEEP CLEAR**

### Keep Clear

Hazardous areas include:

- Between the tractor and Trash Boss.
- Immediately adjacent to the Trash Boss side.

## SAFETY - Machine Specific (Continued)



### Hazard Points on the Trash Boss (Continued)

#### Pedestal Chain Guards

To prevent hands, etc. getting caught in drive chains, guards are provided to cover sprockets, chain and chain tensioners mounted about the drive pedestal (RHS). These guards must be fitted while using the machine.

**Warning:** Access to pinch points is still possible from underneath the guard.

#### Calibrating

Be particularly careful when calibrating the seeding rate. At this time, the calibration trays have been removed and are no longer covering the rotating seeder units. See **Pinch Points/ Moving Parts** for hazardous areas.

#### Transport

The two wheels located at the sides of the machine are for the purpose of controlling sowing depth. These are also used to support the machine weight during transport (while linked to the tractor).

**Important** - Refer to safety cautions in the **Transport** section, page 12 of the manual. Ensure that all linkage pins and security clips are fitted correctly.



#### Maintenance

Refer to the **Maintenance and Care** section of the manual.

#### Lubrication

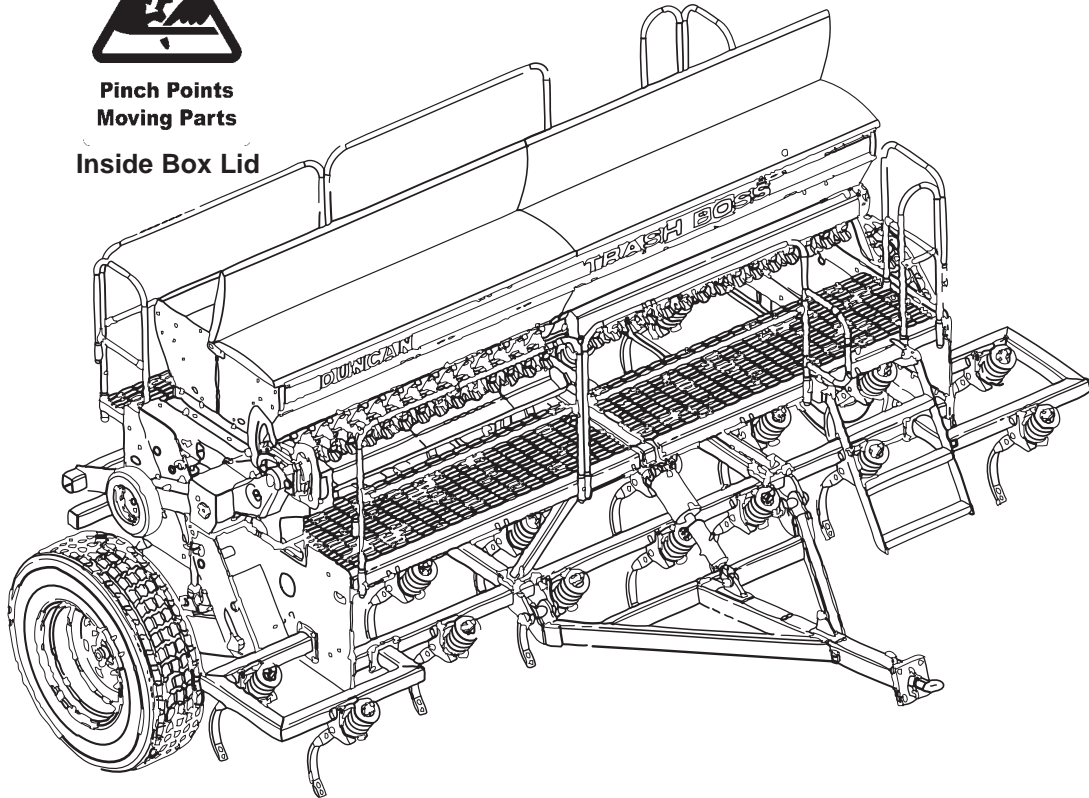
Refer to the **Maintenance and Care** section of the manual.

## SAFETY - Machine Specific (Continued)

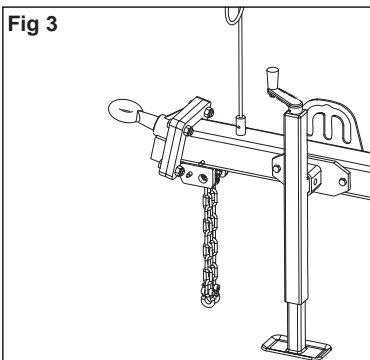
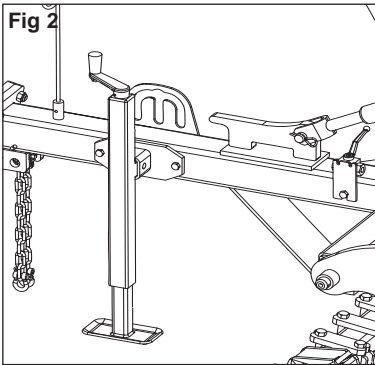
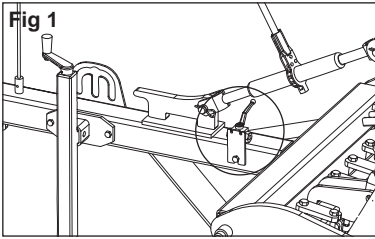


**Pinch Points  
Moving Parts**

**Inside Box Lid**



Item	Decal/Guard
1	'No Ride'
2	'Pinch Point/Moving Parts'
3	'Slippery When Wet'
4	'Keep Clear'
5	Arrows
6	Pedestal Drive Guard (Dual box machine)
6	Pedestal Drive Guard (Single box machine)
7	Jockey Drive Swing Guard
8	'40 km/hr'



## Transport

1 Raise the drill into the transport position and hold at the full extent of the rams for a few seconds to allow cylinders to rephase/equalise.

2 **Important** - To avoid machine damage due to drill lowering during transport, always close the hydraulic valve on the drawbar. Move the handle to a position at 90° to the hydraulic line as shown in Fig 1. This applies to the drawbar hydraulic valves where fitted.

3 Locate jack stand in transport position, if fitted. Refer Fig 2.

4 Ensure lighting and oversize warning requirements meet recommendations published by the local Land Transport Authority or equivalent.

5 **Maximum towing speed 40 km/hr.**  
**For countries other than New Zealand greater speed restrictions may apply, please refer to your local transport authority.**

Ensure towing vehicle requirements are adequate for the towed vehicle e.g. mass, brakes. Refer to recommendations published by the local Land Transport Authority or equivalent.

Braking when towing can cause the load to jackknife. Use extra care when towing in adverse conditions such as mud, inclines and sharp bends.

Lower towing speeds are recommended on farm roads/tracks and where one wheel is on or over a road verge.

6 **Attach safety chains to tractor.** Refer Fig 3. Safety chains must be crossed over underneath the coupling and attached to the towing vehicle. The attachment points must be as close as practical to the towing coupling and one each side. The towbar on the towing vehicle must be rated for the towed mass. **Do not remove or replace the safety chains provided with any other than those specified.**

**Note:** The safety chains are provided with sufficient length to cater for all towing vehicles. Safety chains must be shortened by cutting off excess length so that if the coupling fails the drawbar will not hit the ground.

7 If the machine is fitted with row markers or other vertical extensions, check clearance under power lines en route.

# Operation

## General Operation Guidelines

- 1 Use a sufficiently powerful tractor which is heavy enough to tow the drill safely.
- 2 Operate the drill at a speed of 6-12 km/hr (4-8 mph). In stoney and uneven ground conditions a lower speed is more appropriate
- 3 Check that the drill is level during calibration and while seeding.
- 4 Check tyre pressure before seeding.
- 5 Double check seed rates before seeding.
- 6 Raise the drill out of the ground when making any turns.
- 7 Raise the drill out of the ground before backing up.
- 8 After prolonged storage, check to see that all drive mechanisms and hydraulic equipment are functioning correctly. Check that the seed tubes are not perished or blocked.

## Sowing Speed

Typical travel speeds when sowing range from 6-12 km/hr in good conditions. In stoney and uneven ground conditions a lower speed is recommended to minimise rapid part deterioration. Sowing too fast can result in:

- 1 Poor contour following and uneven sowing depth.
- 2 Impact damage to:
  - a Ground engaging components.
  - b Bearings, housings & axles.
  - c Fasteners & structural components.
- 3 More extreme conditions will result in greater vibration and uneven seed flow at low seeding rates.

## Sowing Depth Control

The sowing depth is dependent on:

- 1 The wheel height in relation to the chassis
- 2 Tyre pressure
- 3 Ground condition i.e. hard or soft

The wheel height in relation to the chassis is controlled using depth stop collars (1) on the non-drive wheel leg ram.

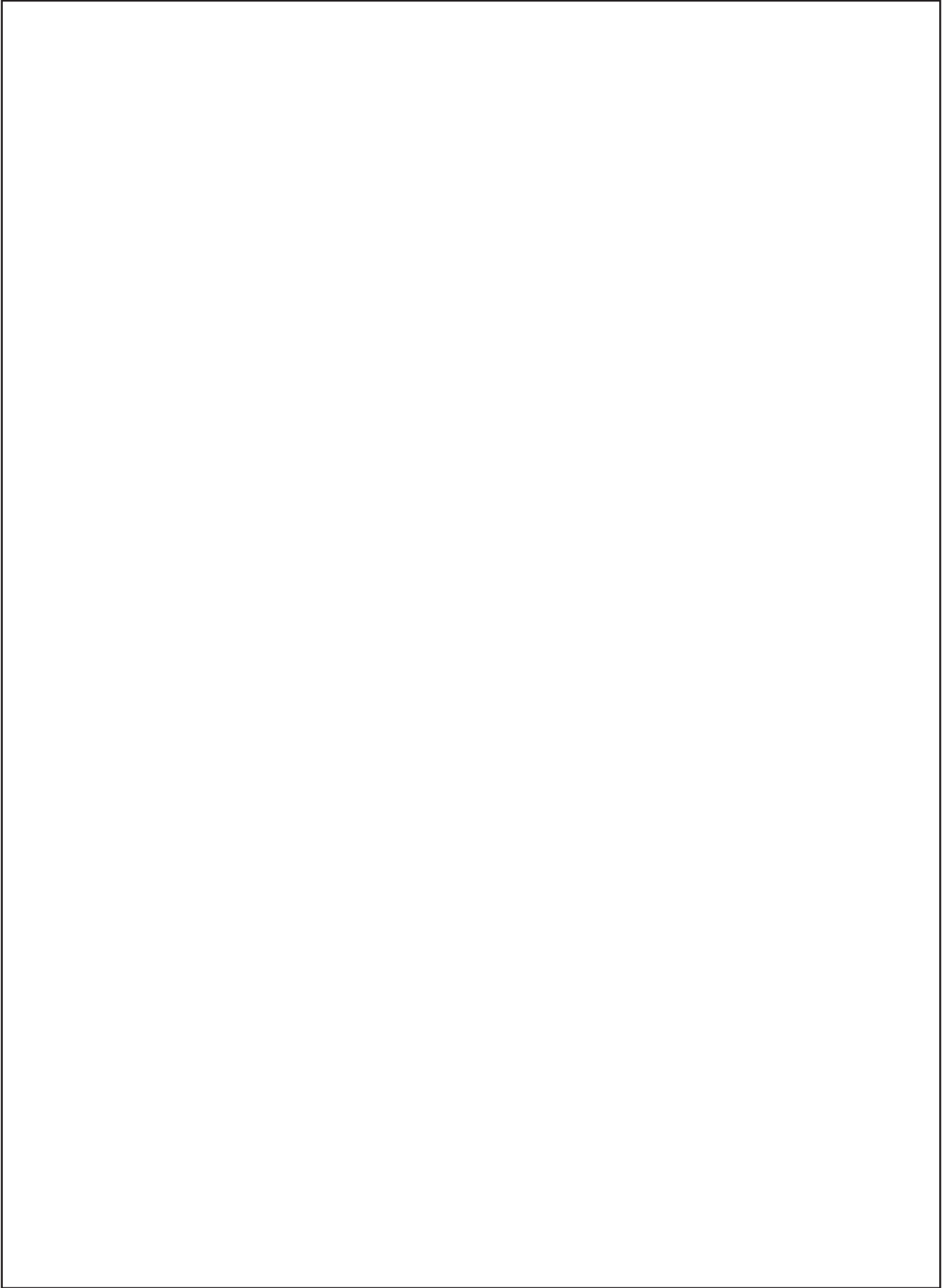


**Level Drill**

Use the drawbar turnbuckle or ram to tilt the drill so it is sitting level.

**Transport Position**

When in the transport position the hydraulic cylinders are fully extended. In this position the cylinders fully equalise by allowing oil to bypass the master cylinder piston. It is recommended to raise the drill into the transport position when turning at headlands or regularly to counteract the effects of oil leakage past the piston and ensure cylinder rods are equally extended and minimise variations in sowing depth.



# Trash Boss Seed Drill Sowing Chart

## High & Low Ratio - Front Box

FRONT BOX		177.8 HI													
PRODUCT	Shutter Slide*	Bottom Flap*	Metering Wheel*	Seed Rate (kg/ha)										Gearbox	Agitator Shaft
				Setting Position											
				Hi/Low	Position		Type	15	20	30	40	50	60		
Wheat	H	3/4	3	N					87	109	129	153	177	199	Connected
Oats	H	Full	3	N					84	104	124	146	167	187	Connected
Barley	H	Full	3	N					100	123	149	174	201	226	Connected
Ryecorn	H	3/4	3	N					101	126	151	176	205	229	Connected
White Peas	H	3/4	3	N			95	138	181	209	259	305	337	388	Disconnected
Green Peas	H	3/4	3	N			66	99	132	163	196	232	268	302	Connected
Peren. Grass	H	Full	3	N	5.5	12	23	35	46	57	69				Connected
Annual Grass	H	Full	3	N	6.8	14	27	39	52	65					Connected
Pasture Mix*	H	Full	3	N		12	23	35	46	57	69				Connected
Lucerne	H	3/4	1	F			7.6	12	15	19	22				Disconnected
Super Phosphate	H	Full	3	N			77	119	157	200	244	292	337	388	Connected
DAP Granules	H	Full	3	N					148	182	218	256	294	325	Connected

FRONT BOX		177.8 LO														
PRODUCT	Shutter Slide*	Bottom Flap*	Metering Wheel*	Seed Rate (kg/ha)										Gearbox	Agitator Shaft	
				Setting Position												
				Hi/Low	Position		Type	15	20	30	40	50	60			70
Wheat	L	3/4	3	N					33.2	41.7	49.5	58.6	67.7	76.1	Connected	
Oats	L	Full	3	N					32.2	40.0	47.5	56.0	64.1	71.6	Connected	
Barley	L	Full	3	N					38.4	47.2	57.3	66.7	77.1	86.6	Connected	
Ryecorn	L	3/4	3	N					38.7	48.2	57.9	67.4	78.4	87.9	Connected	
White Peas	L	3/4	3	N			36.4	52.7	69.3	80.0	99.2	116.8			Disconnected	
Green Peas	L	3/4	3	N			25.4	38.1	50.8	62.5	75.2	88.8		115.8	Connected	
Peren. Grass	L	Full	3	N	2.1	4.6	8.8	13.3	17.6	21.8	26.4				Connected	
Annual Grass	L	Full	3	N	2.6	5.3	10.3	15.1	19.7	25.0					Connected	
Pasture Mix*	L	Full	3	N		4.6	8.8	13.3	17.6	21.8	26.4				Connected	
Lucerne	L	3/4	1	F			7.6	12	15	19	22				Disconnected	
Turnip	L	3/4	1	F	0.8	1.5	2.7	3.9	5.1						Disconnected	
Kale	L	3/4	1	F		1.4	2.7	4.0	5.1						Disconnected	
Swedes	L	3/4	1	F	0.8	1.4									Disconnected	
Rape	L	3/4	1	F		1.4	2.5	3.7	4.9						Disconnected	
White Clover	L	3/4	1	F	0.7	1.4	2.6	3.8	4.8						Disconnected	
Red Clover	L	3/4	1	F		1.6	3.0	4.2	5.7	7.0	8.3				Disconnected	
Super Phosphate	L	Full	3	N					46	60	76	93	112	129	155	Connected
DAP Granules	L	Full	3	N									99	113	125	Connected

Gear Ratio\*: H, High = 21T on Transfer Shaft,  
13T on Gearbox Input Shaft.  
L, Low = 13T on Transfer Shaft,  
21T on Gearbox Input Shaft.

Shutter Slide\*: For Grain, changing the Shutter Slide from 3/4 to Full gives 10% to 15% more flow.

Pasture Mix\*: Test Mixture = 72% Perennial Grass, 8% White Clover, 8% Cocksfoot, 8% Concord, 4% Red Clover

Bottom Flap\*: The values shown were the optimum test settings, decreasing the gap may cause seed damage, too large a gap will give intermittent flow rates. (Flaps are spring loaded to cope with small variations in seed/granule size).

Metering Wheel\*: N = Normal Metering Wheel  
F = Fine Seed Metering Wheel

TSW\*: 
$$\frac{\text{TSW}(\text{gm}) \times \text{Desired Plants}/\text{m}^2}{\text{Germination \%}} = \text{Sowing Rate (Kg/Ha)}$$

# Trash Boss Seed Drill Sowing Chart

## High & Low Ratio - Rear Box

REAR BOX	177.8 HI														
PRODUCT	Shutter Slide*	Bottom Flap*	Metering Wheel*	Seed Rate (kg/ha)										Agitator Shaft	
				Setting Position											
				Hi/Low	Position		Type	15	20	30	40	50	60		70
Wheat	H	3/4	3	N					144	181	215	255	294	331	Connected
Oats	H	Full	3	N					140	174	207	243	279	311	Connected
Barley	H	Full	3	N					167	205	249	290	335	376	Connected
Ryecorn	H	3/4	3	N					168	209	252	293	341	382	Connected
White Peas	H	3/4	3	N			159	229	301	348	432	508	562	647	Disconnected
Green Peas	H	3/4	3	N			110	166	221	272	327	386	447	504	Connected
Peren. Grass	H	Full	3	N	9	20	38	58	76	95	115				Connected
Annual Grass	H	Full	3	N	11	23	45	66	86	109					Connected
Pasture Mix*	H	Full	3	N		20	38	58	76	95	115				Connected
Lucerne	H	3/4	1	F			13	20	25	31	37				Disconnected
Super Phosphate	H	Full	3	N			129	198	262	333	406	487	562	647	Connected
DAP Granules	H	Full	3	N					246	303	364	427	490	542	Connected

REAR BOX	177.8 LO														
PRODUCT	Shutter Slide*	Bottom Flap*	Metering Wheel*	Seed Rate (kg/ha)										Agitator Shaft	
				Setting Position											
				Hi/Low	Position		Type	15	20	30	40	50	60		70
Wheat	L	3/4	3	N					55.3	69.4	82.4	97.6	112.8		Connected
Oats	L	Full	3	N					53.7	66.7	79.2	93.3		119.3	Connected
Barley	L	Full	3	N					64.0	78.6	95.4	111.2			Connected
Ryecorn	L	3/4	3	N					64.5	80.3	96.5	112.3			Connected
White Peas	L	3/4	3	N			60.7	87.9	115.5						Disconnected
Green Peas	L	3/4	3	N			42.3	63.4	84.6						Connected
Peren. Grass	L	Full	3	N	3.5	7.6	14.6	22.2	29.3	36.3	43.9				Connected
Annual Grass	L	Full	3	N	4.4	8.9	17.2	25.1	32.9	41.6					Connected
Pasture Mix*	L	Full	3	N		7.6	14.6	22.2	29.3	36.3	43.9				Connected
Lucerne	L	3/4	1	F			12.7	19.8	25.5	31.1	36.8				Disconnected
Turnip	L	3/4	1	F	1.4	2.5	4.5	6.5	8.5						Disconnected
Kale	L	3/4	1	F		2.4	4.5	6.7	8.5						Disconnected
Swedes	L	3/4	1	F	1.4	2.3									Disconnected
Rape	L	3/4	1	F		2.3	4.2	6.2	8.2						Disconnected
White Clover	L	3/4	1	F	1.1	2.3	4.4	6.4	7.9						Disconnected
Red Clover	L	3/4	1	F	0	2.7	5.0	7.1	9.5	11.6	13.9				Disconnected
Super Phosphate	L	Full	3	N					76.4						Connected
DAP Granules	L	Full	3	N											Connected

Gear Ratio\*: H, High = 21T on Transfer Shaft,  
13T on Gearbox Input Shaft.

L, Low = 13T on Transfer Shaft,  
21T on Gearbox Input Shaft.

Shutter Slide\*: For Grain, changing the Shutter Slide from 3/4 to Full gives  
10% to 15% more flow.

Pasture Mix\*: Test Mixture = 72% Perennial Grass, 8% White Clover,  
8% Cocksfoot, 8% Concord, 4% Red Clover

Bottom Flap\*: The values shown were the optimum test settings,  
decreasing the gap may cause seed damage, too large a gap will give  
intermittent flow rates. (Flaps are spring loaded to cope with small  
variations in seed/granule size).

Metering Wheel\*: N = Normal Metering Wheel  
F = Fine Seed Metering Wheel

TSW\*:  $\frac{\text{TSW(gm)} \times \text{Desired Plants/m}^2}{\text{Germination \%}} = \text{Sowing Rate (Kg/Ha)}$

# Basic Calibration Procedure

## Gearbox Setting Lever

To set the seed rate at the gearbox, slacken the star knob (1) by turning counter-clockwise and push from below into the position indicated in the Sowing Chart. Retighten the star knob firmly (Fig 6).

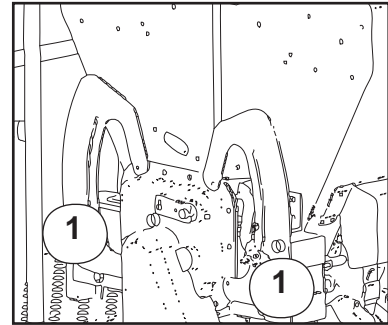


Fig 6

## Important

The settings shown in the Sowing Charts (kg/ha) can only serve as reference values. Deviations may occur caused by differences in the size, shape, density of the grain and by the dressing agent. **Therefore prior to any sowing, always carry out calibration trials to accurately determine the actual seed rate.**

Using the stepless variable speed gearbox, the speed of the metering shaft and thus the seed rate is set steplessly. The higher the figure indicated on the scale by the setting lever the greater the seed rate (Fig 6).

## Setting Seeder Shutter Slides

The varying flow properties of seeds require different shutter slide positions which may be found in the Sowing Chart for the individual type of seed. This corresponds to one of the three settings in Fig 8.

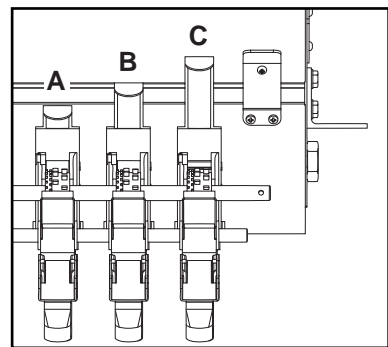


Fig 8

## Bottom Flap Settings

The various seed sizes require matching bottom flap clearances below the metering wheel. The adjusting plate allows for 10 different settings. The required position for the seed type may be found in the Sowing Chart. The control levers are located on the LH end of the seedbox, (opposite end to the gearbox).

Fig 8/A	Fig 8/B	Fig 8/C
Closed	3/4 Open	Fully Open

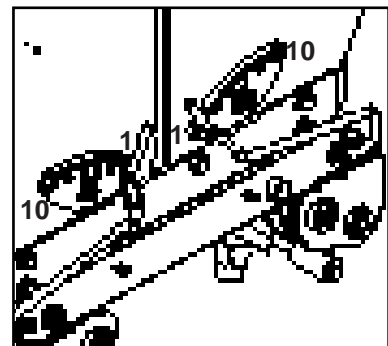
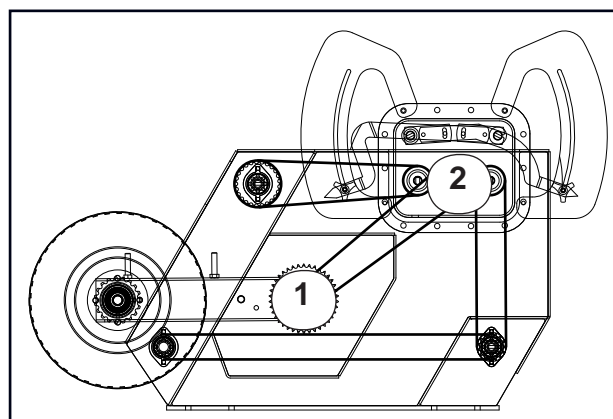


Fig 9

Number "1" corresponds to the minimum (closed) position and "10" the maximum gap (Fig 9).

## HIGH/LOW Ratio

The drive ratio from the jockey wheel to the gearbox can be changed to obtain the desired seeding ranges shown in the seeding charts. It will be necessary to change the sprockets from LOW (13T on the long jockey pivot shaft, 1, and 21T on the gearbox centre input shaft, 2) to HIGH (21T on the jockey pivot long shaft and 13T on the gearbox centre input shaft).



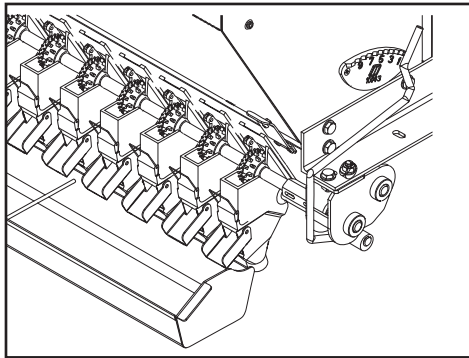


Fig 10

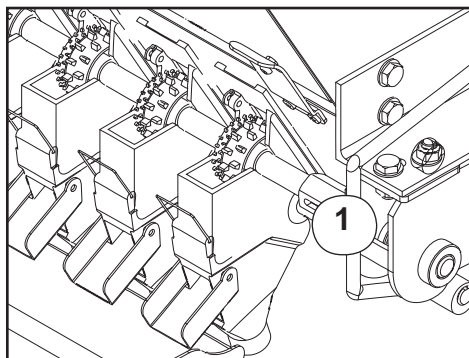


Fig 11

## Basic Calibration Procedure (Continued)

### Seed Calibration

The calibration test should be done to confirm the required seed rate and is done with the drill stationary and level.

### Seed Calibration Procedures

- 1 Remove the calibration tray from the storage brackets on the seedbox. Place the calibration tray (1) on the support members below the seeders (Fig 10).
  - 2 Position all the clear plastic seed diverters (2) to redirect the seed into the calibration tray (Fig 10).
  - 3 Make sure all the shutters are open and set to the position indicated in the seed charts for the particular seed (Table 3. Page 15).
  - 4 Agitator Shaft - Check the Seed Chart "Hints" (Table 3) whether to connect or disconnect the shaft by removing the lynch pins (1) during seeding (Fig 11).
  - 5 For the test, half fill the box with seed. If this is not possible make sure the seed is evenly distributed within the box.
  - 6 For setting method refer to Basic Calibration Procedures (Page 16).
- Note** For seeds which are not covered in the Sowing Chart (Page 15), use the figures for a seed of comparable size and shape.
- 7 Place the crank handle over the hexagonal drive dog on the transfer shaft and turn clockwise until the seed flows consistently from the seeders (Fig 12). To ensure complete filling of the seed unit continue turning the crank until the calibration tray is approximately half full then empty into the seedbox. The drill is now ready for calibration.
  - 8 Turn the crank handle clockwise the required number of revolutions as detailed in Table 5.

**Note** The Calibration is usually done for 1/40th hectare. For very small seed rates or when using inaccurate scales (i.e. unable to measure to the nearest gram) the calculation based on 1/10th hectare should be used.

**Scales must be accurate to 2 grams as any error will be multiplied by either 10 or 40 giving inaccurate calibration results.**

# Basic Calibration Procedure (Continued)

## Hand Crank Turns for Seed Rate Calibration

The tables represented below are for arable conditions (**worked ground**) and are calculated to indicate an average situation. If there is any doubt as to the accuracy of these figures for the conditions, it is advisable to run at least 1 of the 2 checks on the calibration figures listed. Refer Page 21 (**Recalculating the Constant**) and/or Page 22 (**Wheel Slip Deviations**). Check and record which tyres are fitted to your drill, to ensure use of the correct Hand Crank Turn and Constant figures.

Machine Size	Turns for 1/40 Hectare	Distance /m
27 Run HI Ratio	43.1	52
27 Run LOW Ratio	16.5	52

- 9 Weigh the seed collected during the test in kilograms.

**Caution:** Scales must be accurate to 2 grams, as any error will be multiplied by either 10 or 40, giving inaccurate calibration results.

- 10 Calculate the seed rate by multiplying the kgs previously collected x 40 (1/40th ha method, refer Table 6) or x 10 (1/10th ha method) depending on the requirement. If the resultant calculation does not produce the desired seed rate use the enclosed seed rate calculator disc to determine the correct gearbox setting.

Refer **Use of Seed Rate Calculator** Page 19.

**Suggestion:** To be on the safe side and until confidence has been gained with the method of calibration it is advisable to conduct a second test at the newly determined gearbox setting.

- 11 Where a coated seed is used it is advisable to check the calibration after 1 hectare as dressings can tend to create a coating on the seed metering wheels thus changing the the flowing properties of the seed which in turn alters the seed rate.

For  $\frac{1}{40}$  Hectare (250m<sup>2</sup>) Calibration  
Seed Rate = Actual Seed Collected (kg) x 40

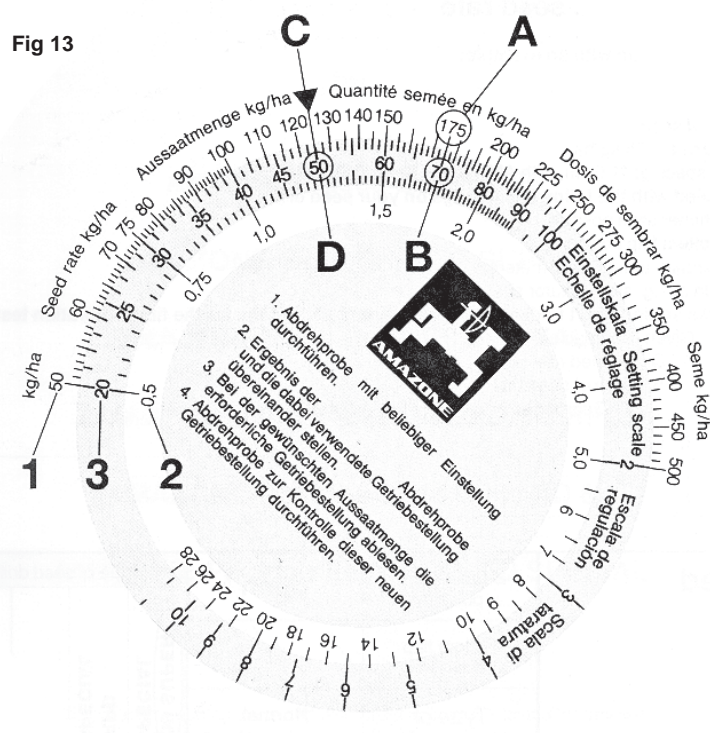
For  $\frac{1}{10}$  Hectare (1000m<sup>2</sup>) Calibration  
Seed Rate = Actual Seed Collected (kg) x 10

# Basic Calibration Procedure (Continued)

## Use of Seed Rate Calculator

### Determining the gear box scale setting using the calculator.

Usually the first calibration test yields a different seed rate. However with the value determined from the first test it is possible to determine the correct gearbox setting with the aid of the enclosed disc calculator (Fig 13). The disc calculator consists of 3 scales. An outer white scale (1) for all seed rates above 30 kg/ha and an inner scale (2) for all seed rates below 30 kg/ha. On the middle coloured scale (3) are all the gearbox setting numbers to a maximum value of 100.



### Setting Example (Desired Seed Rate 125kg/ha)

- 1 From the calibration procedure at a gearbox lever setting of "70", a seed rate of 175 kg/ha is obtained.
- 2 Turn the inner disc until the measured seed rate of 175kg/ha (A) is in line with the related actual gearbox setting of "70"(B) (Fig 13).
- 3 Read off from the disc rule the necessary gearbox setting for the required seed rate of 125kg/ha (C). In this example the correct setting is "50" (D) (Fig 13).
- 4 To be on the safe side the new gearbox setting can be checked by another calibration test.

## Basic Calibration Procedure (Continued)

### Calibration Deviations

#### Deviations Between the Calibration Test and the Actual Seed Rate

The most frequent cause for changes between the calibration test and the seed rate lies in the flowing properties of seed during sowing. These changes in properties generally result from reactions of the dressing agents to temperature, humidity or abrasion. These changes will become even more obvious when the bottom flaps are incorrectly set. If the setting of these flaps leaves too large a gap an uncontrollable additional flow of seed can occur during seeding; especially when assisted by the drill bouncing, a condition not simulated while conducting the calibration tests. For this reason the basic setting of the bottom flaps should be checked at regular intervals.

Residues from the seed dressing on the bottom flaps and metering wheels can also influence the flowing properties of the seed and thus the seed rate. In such cases a balance will occur only after a period of time and it is recommended to repeat the calibration test to confirm the seed rate after 2-3 seedbox fillings, nominally when the seed box is half empty. Only then will a balance occur and the seed rate will stabilise.

#### Wheel Slip Deviations

It is always possible with rubber tyred drills in extreme ground conditions to get wheel slip. Not normally a problem with cleated type tyres in good condition, but more so in the arable situation with the less aggressive tread patterns. The result: large differences between the calibration test and the actual sowing rate, obviously less seed deposited than required. The number of crank turns indicated is correct in most circumstances other than those mentioned above.

#### To check number of crank turns for calibration

Should you require to check this in a practical way proceed as follows:

For an area of 125m<sup>2</sup> (1/40 Hectare), the travel distance for your machine is shown in the table below. Place the crank handle over the hexagonal drive dog on the gearbox. Move the machine forward over the measured distance, counting the number of turns of the crank handle as you go. Using this number of crank turns repeat the calibration.

Machine Size	Turns for 1/40 Hectare	Distance /m
27 Run HI Ratio	43.1	52
27 Run LOW Ratio	16.5	52

## Hints for Sowing with Variable Speed Gearbox

The gearbox allows for stepless changes in the speed of the metering shaft and thus the seed rates. Due to the variations in seed type and application rates there are two speed ranges available.

By changing from High Speed to Low Speed the range of settings and control is dramatically increased.

Change to the Low Speed when the gearbox setting is down to 10 on the scale and the desired seed rate cannot be obtained.

To change the speed setting from high to low, release the tension on the chain by forcing back the chain tensioner and hold in place.

Remove the chain from the 21 tooth output sprocket to the 13 tooth sprocket, then remove the chain from the 13 tooth gearbox sprocket to the 21 tooth.

Check the chain is correctly aligned then release the chain tensioner. Ensure the tension roller is correctly aligned with the chain.

Calibrate as required.

## To Determine the Gearbox Setting after a Speed Change

For determining the correct gearbox setting after the speed change, conduct the first test at 50. With the weight of seed collected find your correct setting with the aid of the disc calculator.

## Sowing of Fine Seeds

For sowing fine seeds the Trash Boss Drill is equipped as standard with a combined normal and fine seed "Elite" metering wheel (1). During grain sowing and other larger varieties of seed both the normal and fine seed metering wheels are coupled and both rotate. In order to convert the seed drill to sow fine seed insert the crank handle and rotate clockwise until the holes (2) of the fine seed wheel are visible (Fig 16)

Using the tool supplied (3) disengage the the pin inside the hole so that the normal metering wheel rotates freely on the metering shaft.

At this time it would be advisable to close any shutter slides not required for the fine seed sowing.

When seed is to be sown again using the normal metering wheel press the pin, from the normal metering wheel side (opposite direction to before), using the tool, back into the hole of the fine seed wheel thus reconnecting the drive between the two.

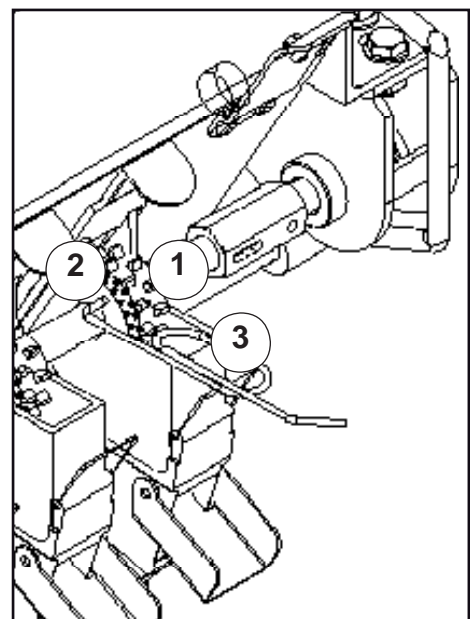


Fig 16

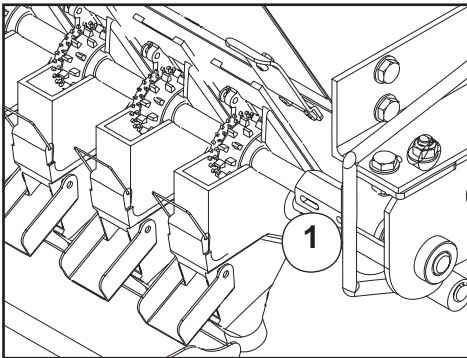


Fig 18

### Small Seeds Calibration with Disconnected Agitator Shaft

The fine seed metering wheel used in Duncan Drills is especially well suited for sowing small seeds such as rape. Due to the intensive action caused by the agitator the seeds can adhere to each other, or be damaged, causing irregular sowing/germination. **Therefore it is recommended that when sowing small seeds, especially oil seeds and thin shelled seeds, the drive to the agitator is disconnected.** To do this remove the lynch pin or bolt. (1) (Fig 18).

Deviations between the calibrated and actual seed rate can occur when residual dressing agent sticks to the bottom flaps and thus slows the flow of seed. Before beginning the actual calibration test fill the calibration trays by turning the crank handle at a high speed around the 90 setting on the gearbox scale. This will cause an immediate buildup of the dressing agent on the flaps. Return the contents of the calibration trays to the seed box and proceed with the actual calibration. Due to the residue buildup on the flaps your calibration will now reflect accurately the required seed rate. It is advisable with small seeds to use the 1/10 hectare method for your calibration, thus cutting down on weighing errors.

**Note** - Remember to reconnect the agitator shaft as required for other seeds otherwise the consistency of seed rate will be affected.

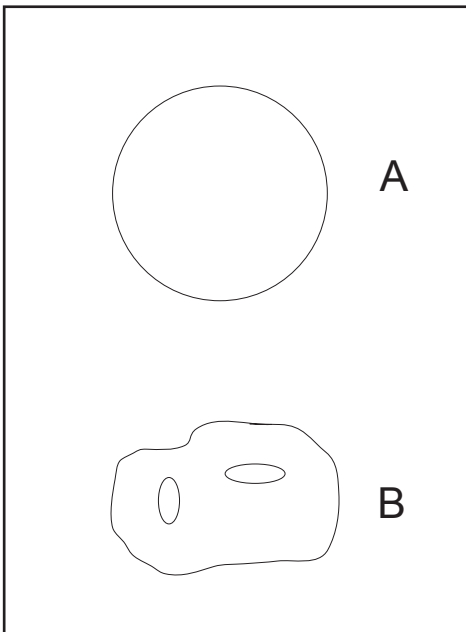


Fig 19

### Sowing Peas

Peas having the size and shape as illustrated in Fig 19A (e.g. White Field Peas), can be sown without problems with all Clough Drills with this type of metering wheel.

The flap should be set to a gap of at least "3" on the flap setting lever (Page 16, Fig 9).

With these peas it should not be necessary to run the agitator shaft.

Peas having the size and shape as illustrated in Fig 19B (e.g. Green or Garden Peas), tend to bridge inside the seedbox and do not flow freely.

This multi-faceted pea requires agitation for sowing.



### Caution - When resetting the metering wheels on the seeder shaft

Care should be taken when tightening the grub screws on the fine seed wheel.. Adjust the grub screw until the movement of the metering wheel just stops, then tighten no more than 1/8 of a turn.

**Do not overtighten** as this can result in breakages while operating and may render the warranty on these units void.

## Hectaremeter Settings Setup

Refer to the installation and operation instructions supplied with your hectaremeter kit for information on installation, calibration, operation and servicing (Fig 21).

The table below gives the effective working widths for the machine.

**Note:** If under certain operating conditions a calibration check indicates a significant difference, the hectaremeter should be recalibrated by changing the H1 setting for the period of operation under those conditions.

Machine Size	Row Spacing(mm)	Sowing Width (m)
27 Run	177.8	4.800

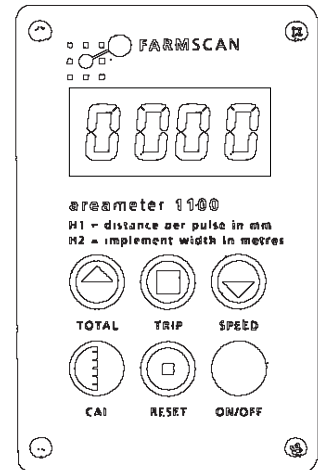


Fig 21

## Hectaremeter Settings (Continued)

### Computronics 1100 Area Meter Setup for Trash Boss

The **H1** value is the **distance the machine travels in mm per pulse detected on the pedestal drive shaft.**

This is affected by:-

- jockey wheel diameter
- if there is wheel slip
- the gear ratio (13T on the jockey axle and 38T on the sensor mainshaft).

Ensure that the jockey wheel is inflated to the recommended pressure. (Page 2)

The **H2** value is calculated from the **number of rows x row spacing** (in metres)

Machine Size	Row Spacing(mm)	H1	H2
27 Run	177.8	1953	4.800
Enter your value here>			
		H1	H2

It is advisable, as with all things electronic, to have a backup of your totals. We suggest you record these on a daily basis in a notebook or diary.



# Maintenance & Care

## General Safety and Accident Prevention Advice



- 1 Make sure that if the tractor remains attached to the drill that the ignition key is removed.
- 2 During maintenance the drill should be supported in such a manner that if hydraulic failure was to occur the machine would still be adequately supported.
- 3 Wear gloves when handling components with cutting edges such as worn discs etc...
- 4 Disconnect the electrical supply from the tractor before doing any electrical maintenance.
- 5 Refer to safety sections for more safety information.

## General Cautionary Maintenance Advice



- 1 **Electric Welding** - With the electronic equipment in modern tractors it is advisable to completely disconnect the implement from the tractor, or at the very least disconnect the alternator before attempting any welding.
- 2 **Hydraulics** - Ensure hydraulic couplings (male & female) are clean before connecting. Dirty couplings will result in hydraulic oil contamination and hydraulic cylinder seal damage and bore scores. This in turn will result in oil leakage past the piston seals.  
  
No filter is fitted to the hydraulic system. If hydraulic fittings and oil supply are not going to be kept clean it is recommended that a filter be fitted to prevent hydraulic cylinder damage.
- 3 **Water Blasting** - Water blasting, steam cleaning or other pressurised cleaning processes can force dirt etc. into undesirable places that may cause damage or rapid part wear to items such as bearings, seals, chains, bushes etc. Caution must be exercised.

# Maintenance & Care - Lubrication Instructions

## Precautions with Grease

Greases should not be mixed as the structure may be weakened by the mixes of different types of thickener, which may cause softening and loss of grease from the bearings by running out.



Your new Duncan Trash Boss Seed Drill will give long and efficient service if given normal care and maintained properly.

## Lubrication Chart

Item	Components	Lubricant	Frequency
1	Wheel Bearings	Castrol LMX Grease	Annually
2	Wheel Leg Pivots	Castrol LMX Grease	Weekly
3	Gearbox	Castrol Oil Agri Trans Plus	Maintain Level
4	Drive Chains	Suitable Roller Chain Lubricant	See Maintenance Schedule
5	Drive Shafts (Pedestal)	Pre-packed & Sealed	Not Required
6	Agitator Shaft Supports	Nylon Bushes	Not Required
7	Seeder Shafts	Nylon Supports	Not Required
8	Turnbuckles	Castrol LMX Grease	Monthly
9	Jockey Wheel Bearings	Pre-packed & Sealed	Not Required
10	Coupling	Castrol LMX Grease	Weekly

\* The lubrication frequencies are only a guide. Actual frequency will be dependent on extent of use and ground conditions.

# Maintenance & Care - Lubrication Instructions

Table 10

Components	Daily (or after 20Ha)	Weekly (or after 75Ha)	Pre Season (or 500 Ha)
Seeders/Agitators/Bottom Flaps	•	•	•
Wheel Nuts		•	•
Pivot Pin Fasteners		•	•
Coupling & Safety Chains		•	•
Roller Chains		•	•
Gearbox		•	•
Hydraulics (Oil Leaks)		•	•
Tyre Pressure		•	•
Bolted Connections			•

## Maintenance Schedule

(Refer also to Summary Chart, above)

### 1 Bolted Connections

All bolted connections of the machine should be checked after the first 30 hours of operation and retightened if necessary and thereafter at regular intervals. It is suggested that this is done every 500 hectares or annually, whichever occurs first.

### 2 Gearbox

The oil level in the gearbox can be seen in the oil gauge window. Changing the gearbox oil is normally not necessary. For refilling the oil remove the 1/2" BSP plug on the top face of the gearbox, Castrol Oil Agri Trans Plus should be used.

The total filling capacity is 1.25 litres (refer Fig 24).

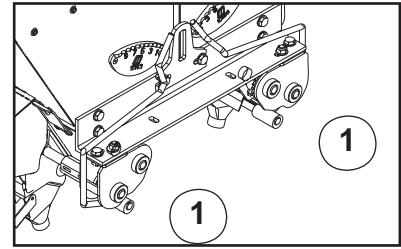
**DO NOT OVERFILL.**

### 3 Drive Chains

All drive chains (1) (Fig 25) should first be checked after every 20 hours of operation and thereafter weekly or after 75Ha of operation as follows:-

The metering wheels of the seed drill are driven via roller chains from the drive wheel.

Cleaning of the roller chains is recommended after long periods of operation. Remove the chain, wash in kerosene and then dip them in heated grease or oil or spray them with a suitable commercial roller chain lubricant.



### 4 Wheel Arm Pivots

Wheel arm pivots must be greased regularly (weekly or after every 75Ha) to provide lubrication and flush out any dirt. Refer Fig 26 (1).

### 5. Tyre Pressure

Check the tyre pressures regularly to ensure correct pressure is maintained. Weekly checks are recommended.

### 6. Length of Seed/Fertiliser Tubes

These tubes can stretch over a period of time and require checking at approximately six monthly intervals. Shorten if necessary to avoid bends which will restrict the flow of seed/fertiliser.

### 7 Framework

The framework structure should be inspected annually for defects, i.e., cracks in members or welded connections. The framework should be cleaned prior to the inspection.

## Maintenance & Care (Continued)

### 10 Bottom Flaps (Fig 28)

The required seed rate is controlled by both the metering wheels and the bottom flaps. The seed flows from the seed box into the metering wheel housings. Inside the metering wheel housing (1) the seed is caught between the metering wheel (2) and the bottom flap (3). The metered amount of seed is transported by the metering wheel to the edge of the bottom flap where it drops off into the seed guide tube which leads to the coulter. Varying grain sizes require the matching of the flap clearance to the different grain sizes. This matching is done by raising or lowering the bottom flaps by using the flap adjusting lever on the LH end of the seed box. If larger foreign particles, e.g. stones get between the metering wheel and the bottom flap, the bottom flap can give way downwards. A strong return spring (4) brings the bottom flap immediately back into the working position.

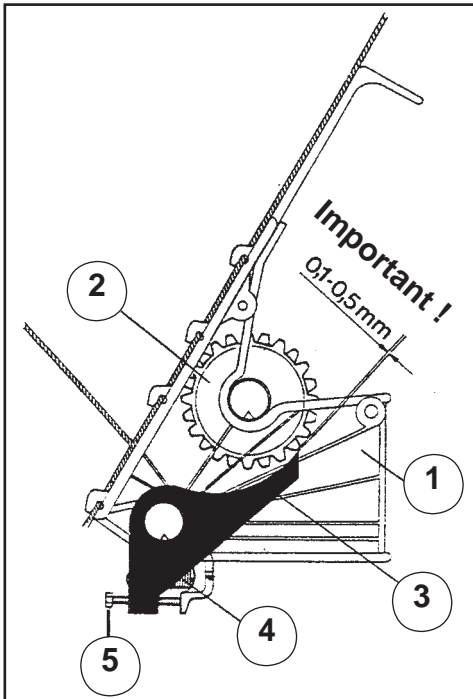


Fig 28

**The metering system should be checked every 1/2 year or before any sowing period with an empty seed box and empty metering housings.**

#### Use the following procedure:

Put the bottom flap setting levers (1) (located on the LH end of the seed boxes) in position "1" for the front box and position "1" for the rear box. Refer Fig 29.

**By turning the metering wheel shaft by hand check the flaps are all set to a gap of 0.1 to 0.5mm (refer Fig 28).**

To adjust individual flaps use the spring tensioning screw (5) (Fig 28).

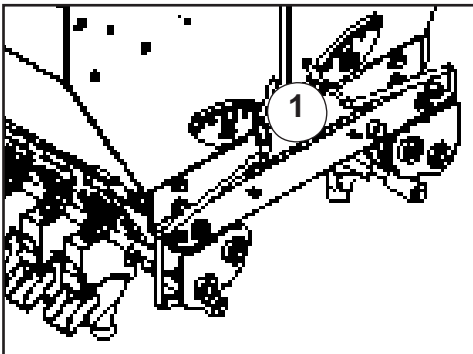


Fig 29

#### Note: Maintenance Schedule (page 28)

Where the frequency is given in terms of use (eg. weekly) or area covered (eg. 75 Ha) perform the maintenance task based on whichever occurs first.

### Preparing the Machine for Storage.

Locate on a dry level surface. The machine should be stored wherever possible so the rams are not supporting any weight. The drive chains should be lubricated with suitable roller chain lubricant before prolonged periods of storage.

For longer term storage remove seed/fertiliser tubes from the boot assembly and allow to hang without deformation. Check tube lengths when replacing.

It is recommended that maintenance be carried out at the end of the season, giving sufficient time to obtain spare parts and/or carry out repairs if required.





