



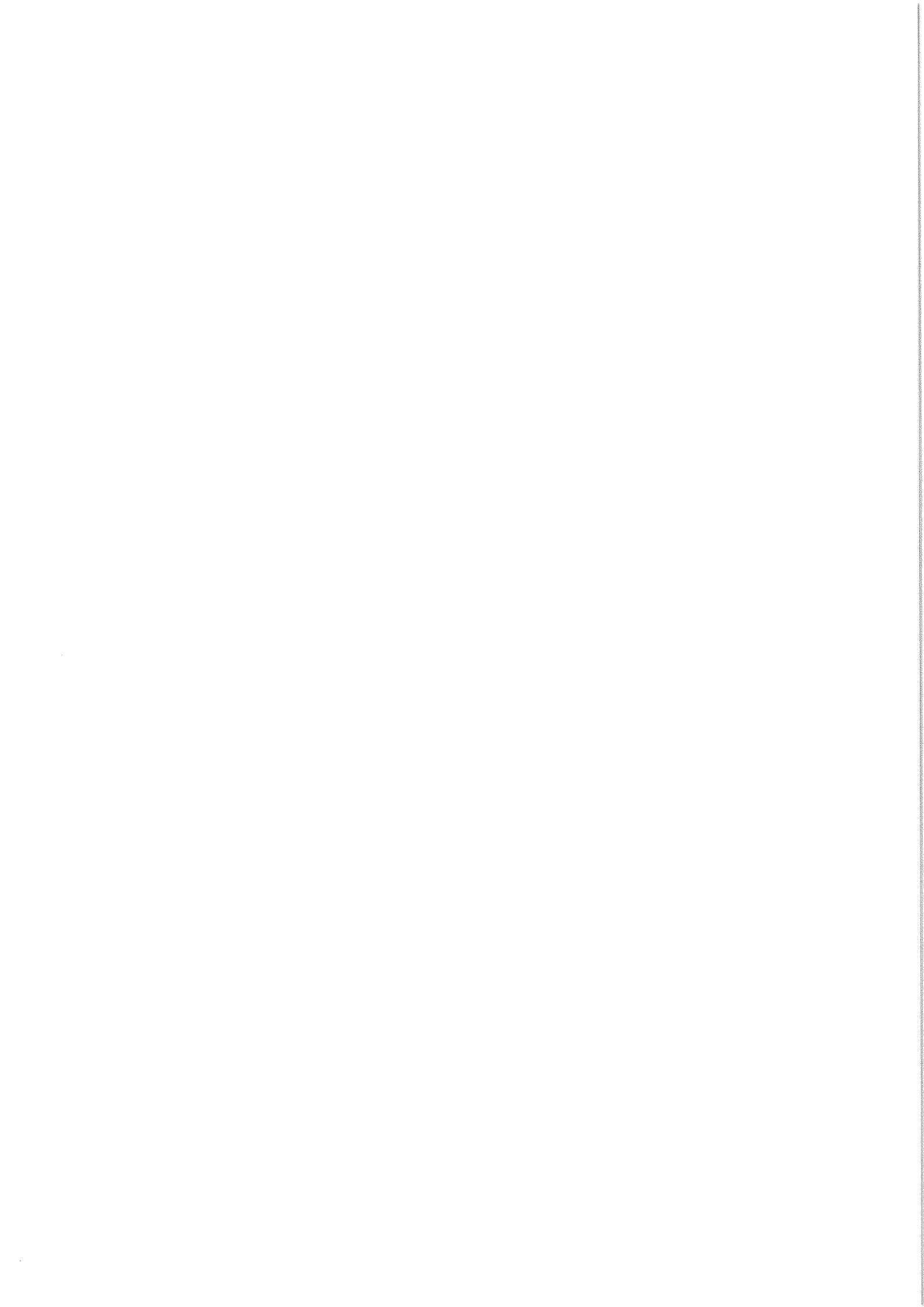
***Contra-rotating  
Roller Separator  
For Grading Lines  
From 2016***

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# **IMPORTANT**

This operator's handbook should be regarded as part of the machine. Suppliers of both new and second-hand machines are advised to retain documentary evidence that this handbook was supplied along with the machine.

On installation the New Machine Installation Record Card should be completed by the dealer/distributor and be countersigned by the customer. The document is proof that the correct procedures have been followed.

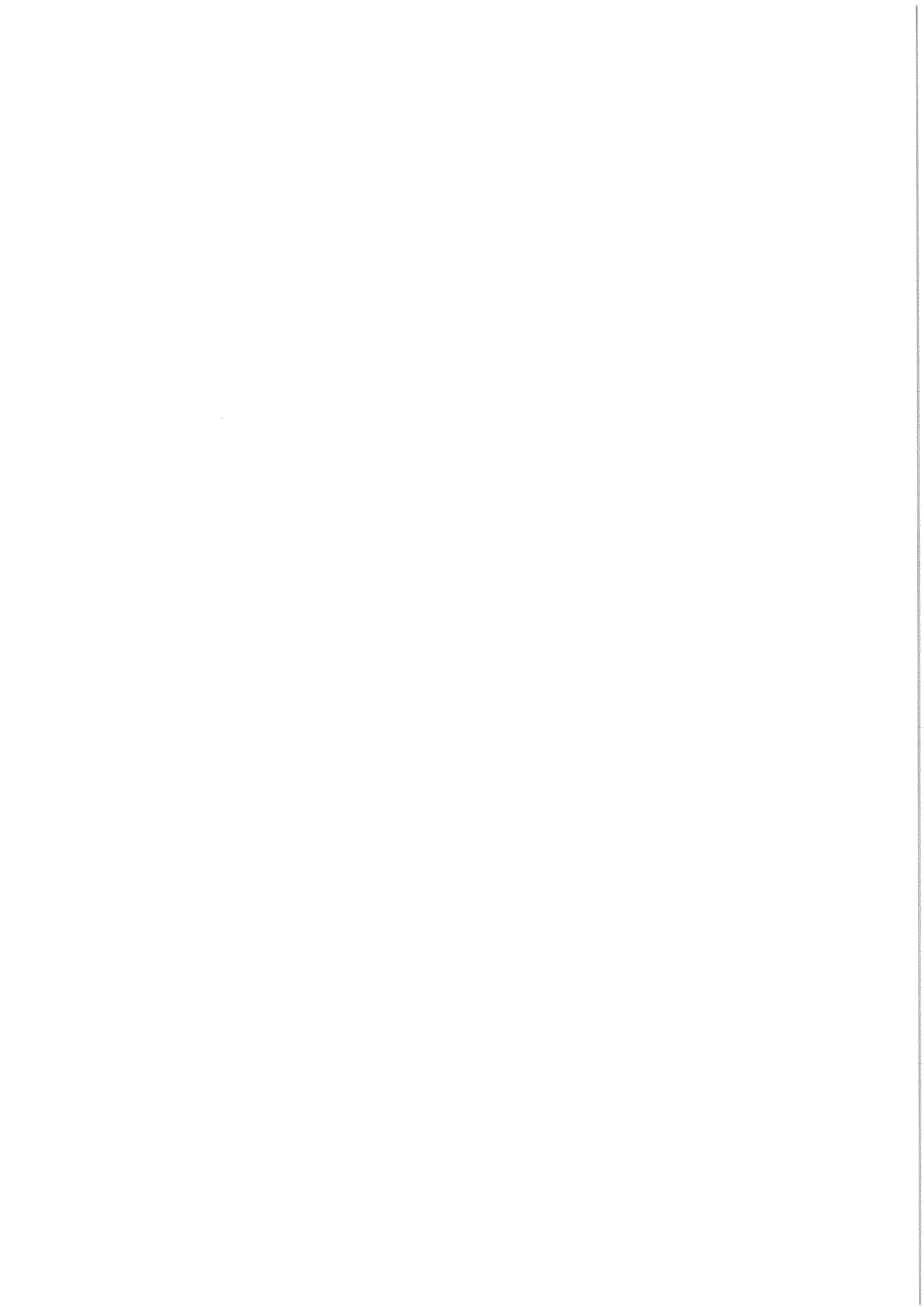
The New Machine Installation Record Card should be returned to Standen Engineering Limited within 7 days of installation. Failure to do so may invalidate the machine warranty.

On delivery, check that the machine is as ordered and has not been damaged in transit. Please report any shortfall to your Standen dealer.

The contents of this handbook, although correct at the time of publication, may be subject to alteration by the manufacturers without prior notice.

Standen Engineering Limited operate a policy of continual product development. Therefore, some illustrations and/or text within this publication may differ from your machine.

The copyright of this handbook is the property of Standen Engineering Limited, Hereward Works, Station Road, Ely, Cambridgeshire. CB7 4BP. This handbook is issued on the condition that it must not be used, copied or exhibited without their written permission.



### Introduction to the Handbook

This handbook provides the information for the operation, adjustment and maintenance of your STANDEN CONTRA-ROTATING ROLLER SEPARATOR. To enable you to achieve the best results from the machine, the manufacturer recommends that you read the handbook thoroughly prior to using the machine for the first time.

Record below the details of your machine.

Dealers Name .....

Address .....

.....

Telephone Number .....

Machine Serial Number .....

Date Purchased .....

Date Started Work .....



This symbol indicates important safety messages within this handbook. When you see this symbol, be alert to the possibility of injury to yourself or others and/or damage to the machine and carefully read the message that follows.

Throughout this handbook the terms 'front', 'rear', 'left-hand' (LH) and 'right-hand' (RH) are derived from the rear of the separator.

Adjustments to the separator may have to be made singly or in combination according crop conditions. Always allow the machine to settle to a new setting before making further adjustments.

Recommended lubrication and maintenance instructions are included in this handbook and if followed will help to keep the machine in a safe working condition.

### Warranty

Should the machine suffer any faults or defects within the warranty period, please contact your dealer. The warranty shall be effective only if the dealer is informed of any such defect as soon as practicable upon discovery.

**Replacement Parts**

Recommended replacement parts are designed for your machine and have the full backing of the warranty. Only when recommended parts are used can responsibility be considered under the terms of the warranty.

The rear of this handbook contains a list of spare parts available through your Standen Agents. Each illustration shows a complete unit or assembly in exploded form. Standen's policy of continual product development means that components or even complete assemblies are redesigned from time to time. Where possible the modifications are shown in the remarks column.

The first printing of each page in the spare parts section is identified as issue 1 at the foot of the page. When a complete unit or assembly has been redesigned the appropriate pages are revised and printed as issue 2. The revised pages are filed behind the existing issue so that a complete modification history is gradually built up. When using an illustration and parts list it is essential that both are of the same issue.

**Always quote the full serial number of your machine when ordering spare parts.**

## Safety

The following safety precautions should be brought to the attention of all persons operating and working on the machine. The list is not exhaustive. All machinery is potentially dangerous and the operators must exercise great care at all times. Standen Engineering Limited will not accept liability for damage or injury caused by their products except when such liability is specifically imposed by English statute.



Safety guards must be fitted to prevent access to the rollers.



Avoid loose clothing and always tie back long hair near moving parts.



The machine must never be operated by untrained personnel or children.



Wear gloves when handling the implement or parts with sharp edges.



Never attempt to make adjustments while the machine is in motion.



Always use mechanical or additional help when lifting heavy parts.



All guards, covers, warning transfers and safety devices must be correctly fitted and operable at all times.



Regularly lubricate the machine as per the operator's handbook and check the tightness of all nuts and bolts.



Inspect the machine on a regular basis and replace damaged or worn parts as necessary.



**Safety is the responsibility of the persons working with this machine. Think "safety" at all times. Read and remember the contents of this handbook.**



Inspect the machine for damage after use. Rectify as required.



Never operate the machine in a state of disrepair.



Never set machinery in motion before ensuring that everyone in the vicinity is aware of your intentions.

### **Contra-rotating Roller Separator**

The Roller Separator consists of plain and spiral rubber rollers driven hydraulically from an electrically powered power-pack. The units are designed to be incorporated within a grading line with the crop being fed onto the rollers from the gearbox end. The contra-rotating rollers are designed to trap loose clod, stone and trash, and eliminate them from the sample.

The roller separators are manufactured in various sizes from 6 to 32 rollers wide with double hydraulic motors fitted to the 12 to 32 roller units. The motors can be front or rear mounted.

Power packs are available in the following sizes:

11kW for 6 to 10 roller separators.

22kW for 12 to 20 roller separators.

30kW for 22 to 32 roller separators.





## Roller Separator Installation

The separator should be installed at an angle of between 0° and 10°. The angle should be made adjustable.

After installing the roller separator, safety guards must be made and fitted to prevent injury to personnel. All guards must comply with Health and Safety Regulations.



***The guards should fully encase the separator to ensure that no personnel can reach into the rollers from above or below. The separator must never be operated with any of the safety guards removed.***

Hydraulic hoses should be secured so as not to entangle with any moving part or drag on the ground.

## Power Pack Installation

For power pack installation and operation see the manufacturers instruction manual.

The power pack should be fitted with an automatic reversing facility enabling the rollers to reverse to clear blockages. Roller speed control should also be fitted.

Fit the pressure and return hoses to the motors as shown in figure 1.



***Electrical installation should be carried out by a qualified electrician and comply with current regulations.***

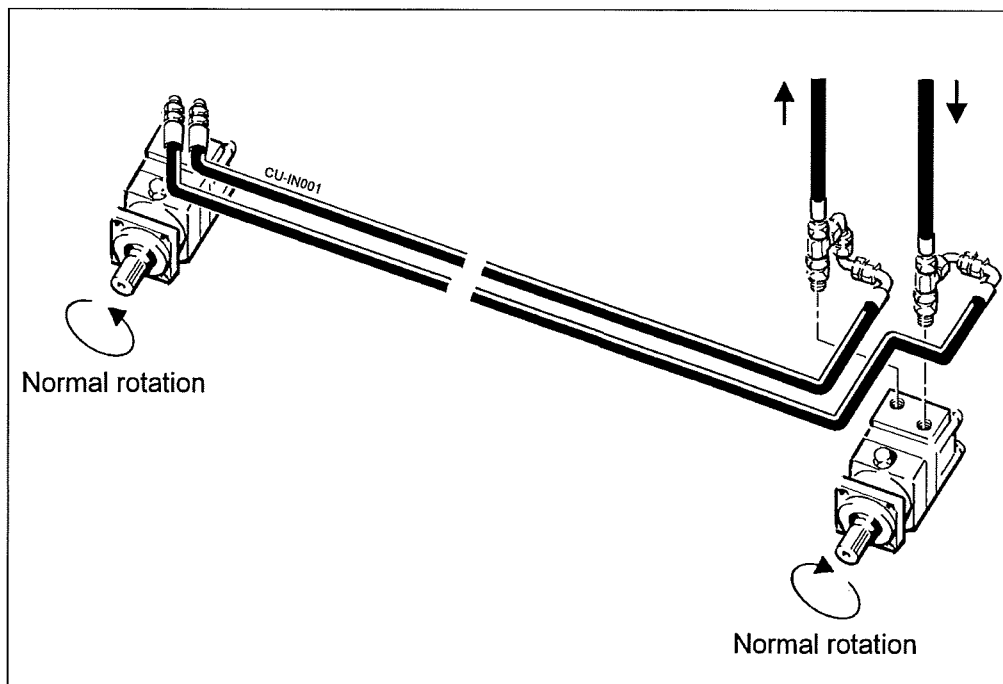


Fig 1

## Operation



***Should a blockage occur where an object jams the rollers such that the rollers cannot reverse, the electricity supply to the power pack must be disconnected before attempting to remove the blockage manually.***

### Roller Angle

The steeper the angle of the unit, the quicker the crop flows over it and the less time it has to be cleaned.

### Roller Speed

By increasing the roller speed, the crop is accelerated across the separator by the scrolled rollers, while the heavier soil and stones settle and are pulled through. Slowing the rollers down will hold the crop on the separator longer allowing more cleaning to take place. It will be necessary to determine the optimum speed and angle to suit the crop being cleaned. Variations in crop and soil conditions will change the effectiveness of the unit.

### Roller Sizes

Various sizes of plain and spiral rollers are available.

Large diameter plain rollers in conjunction with small diameter spiral rollers will normally be used where tuber size is small and in dry soil conditions. Small diameter plain rollers in conjunction with large diameter spiral rollers are generally used on main crop and where soil conditions are wetter and heavier. However, there is a cross-over in the use of the alternative rollers. By varying the angle and the roller speed, the operator will often find an acceptable sample can be achieved without changing rollers. Intermediate gaps can be obtained by selecting alternative combinations of rollers.

### Roller Scrapers

Scrapers mounted below each plain roller prevent excessive build-up of soil and trash damaging or stalling the unit. The scraper blades should be set 2 to 3mm clear of the roller.

### Changing Rollers

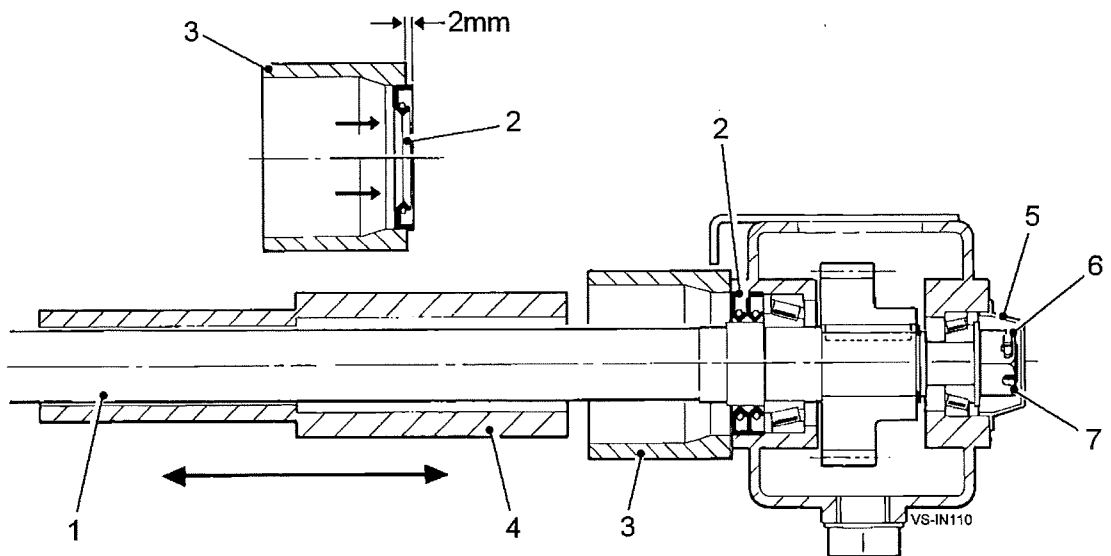
The rollers are retained by an M10 setscrew and thick washer at the discharge end. To remove a roller, remove the setscrew and slide the roller off the shaft. The rollers are a close fit at the gearbox end and may need to be prised off in some cases.

When fitting a roller, smear grease on the gearbox end of the shaft. Slide the roller onto the shaft taking care to align the squared hole within the roller with the drive flats at the discharge end of the shaft. Refit the setscrew and washer. Torque to 52 Nm (38 lb/ft).

**Oil Seal Replacement**

The roller shafts (item 1, fig 2) are each fitted with an oil seal (item 2, fig 2) which is press-fitted into the gearbox casing. The seals prevent loss of oil from the gearbox and also prevent the ingress of dirt. If leakage is apparent, the seals can be replaced in situ by using the guide sleeve and slide hammer service kit.

1. Remove the roller and clean the loose soil and any other material from around the gearbox face.
2. Prise out the worn seal (item 2, fig 2) taking care not to damage the seal aperture in the gearbox. Clean the seal aperture and the surrounding face of the gearbox.
3. Grease the inner and outer faces of the new seal and grease the inside of the seal aperture.
4. Push the new seal into the compression ring (item 3, fig 2) until the seal protrudes approximately 1-2mm beyond the ring face (see fig 2). Slide the compression ring complete with seal over the roller shaft (item 1, fig 2) and locate the seal into the aperture.
5. Locate the slide hammer (item 4, fig 2) over the roller shaft and, holding the compression ring and seal firmly against the gearbox face, bump the seal into the gearbox. If required, a second seal can be fitted behind the first to give additional backup.



**Fig 2**

**Tightening the Roller Shaft Bearings**

If excessive play can be felt at the end of a roller shaft (10-15mm), the roller should be removed to ensure that it is not a loose fitting roller that can be felt and then, if necessary, the bearings adjusted as follows.

1. Clean the loose soil from around the gearbox face and prise out the end cap (item 5, fig 2).
2. Remove the split pin (item 6, fig 2) from the castellated nut (item 7, fig 2) and tighten the nut to a torque of 30 Nm (22 lb/ft).
3. Check the roller shaft (item 1, fig 2) again for free play.
4. Refit the split pin (item 6, fig 2) in the next clear hole, tightening the nut a maximum of one flat if needed.
5. Smear the end cap mating face with an oil resistant silicon sealer and tap the cap back into place.

**Oil flow requirement:**

100cc motor(s)	50 Ltr/min
150cc motor(s)	70 Ltr/min

Normal operating pressure:	50 – 70 bar
Maximum system pressure:	170 bar
Nominal roller speed:	425 rpm

**Power pack requirement:**

6 to 10 roller:	11 kW
12 to 20 roller:	22 kW
22 to 32 roller:	30 kW

Gearbox lubricant:	BP Energrease FGL
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**Gearbox capacity:**

6 roller	5.5 Ltr	3.6 Kg
8 roller	7.2 Ltr	4.7 Kg
10 roller	8.8 Ltr	5.8 Kg
12 roller	10.5 Ltr	6.9 Kg
16 roller	13.8 Ltr	9.0 Kg
18 roller	15.4 Ltr	10.1 Kg
20 roller	17.0 Ltr	11.1 Kg
28 roller	23.7 Ltr	15.5 Kg

**Nut and bolt tightening torque:**

Roller setscrew	30 Nm (22 lb/ft)
Roller shaft castellated nut	30 Nm (22 lb/ft)

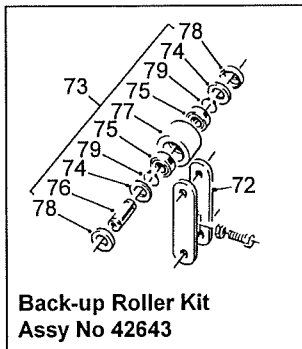
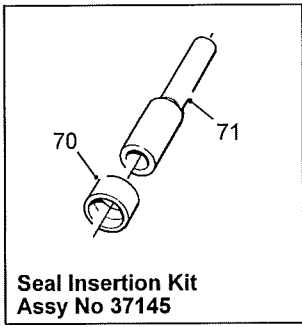
M6 nyloc zinc plated nut	14 Nm (10 lb/ft)
M8 nyloc zinc plated nut	31 Nm (23 lb/ft)
M10 nyloc zinc plated nut	60 Nm (44 lb/ft)
M12 nyloc zinc plated nut	118 Nm (87 lb/ft)
M16 nyloc zinc plated nut	282 Nm (208 lb/ft)
M20 nyloc zinc plated nut	515 Nm (380 lb/ft)
M24 nyloc zinc plated nut	936 Nm (690 lb/ft)

M6 bolt/steel nut	9 Nm (7 lb/ft)
M8 bolt/steel nut	26 Nm (19 lb/ft)
M10 bolt/steel nut	52 Nm (38 lb/ft)
M12 bolt/steel nut	95 Nm (70 lb/ft)
M16 bolt/steel nut	230 Nm (170 lb/ft)
M20 bolt/steel nut	440 Nm (325 lb/ft)
M24 bolt/steel nut	766 Nm (565 lb/ft)

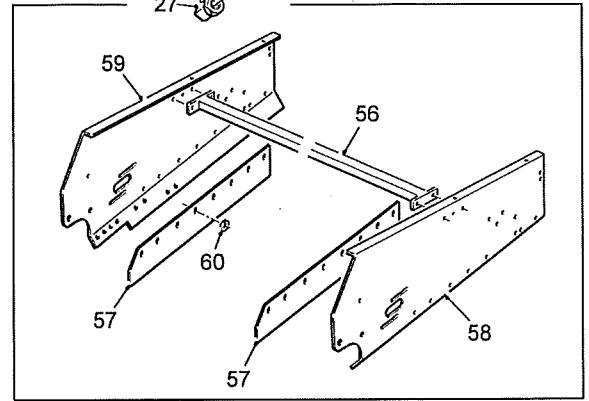
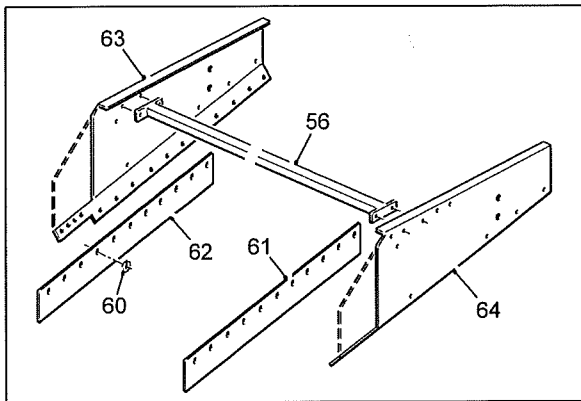
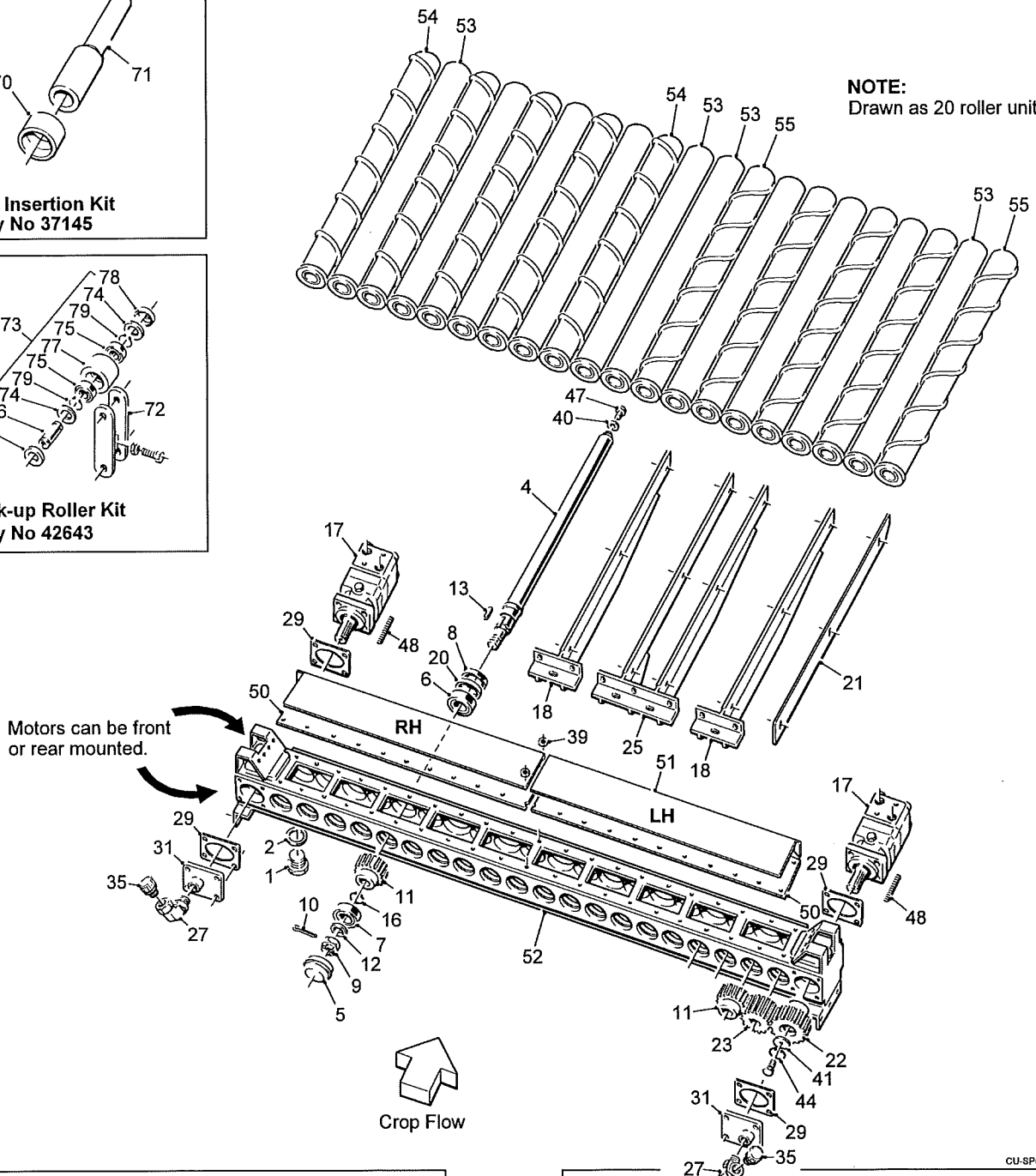
Standen Engineering's policy of continual product development means that specifications may be altered without prior notice. All dimensions are approximate.



## Roller Table for Grading Lines



**NOTE:**  
Drawn as 20 roller unit.



CU-SP003

## 2.1a

## ROLLER TABLE SPARE PARTS

## Roller Table for Grading Lines

Item	Part No.	Description	Qty.	Remarks
1	11116	1"BSP Blanking Plug	1	
2	11122	1"BSP Dowty Seal	1	
3				
4	27840S	Roller Shaft (solid)	a/r	
	27840T	Roller Shaft (tubular)	a/r	
5	27841	End Cap	a/r	
6	27843	Bearing Cup & Cone	a/r	
7	27844	Bearing Cup & Cone	a/r	
8	27895A	Oil Seal	a/r	
9	27917	Slotted Nut	a/r	
10	27918	Split Pin	a/r	
11	27937	35T Gear	a/r	
12	27942	Flat Washer	a/r	
13	27948	RBE Key	a/r	
14				
15				
16	37086	1 1/2"External Circlip	a/r	
17	37660	Hydraulic Motor (150cc)	2	
	37754	Hydraulic Motor (100cc)	2	
18	44779A	Scraper Mounting	a/r	
19				
20	46406	Steel Spacer	a/r	
21	46908	Scraper (975mm rollers)	a/r	
	46909	Scraper (1125mm rollers)	a/r	
22	51651	45T Motor Gear	2	
23	51652	35T 1st Shaft Gear	2	
24				
25	59825A	Double Scraper Mounting	1	
26				
27	60705	3/4"BSP M F 90°Elbow	2	
28				
29	62465	Gasket	4	
30				
31	64120	Filler/Breather Mounting	2	
32				
33				
34				
35	DWS538	Filler/Breather Cap	2	
36				
37				
38				
39	SS020007/001	Steel Spacer	2	
40	SS030011/005	Steel Spacer	a/r	
41	SS050011/005	Steel Spacer	2	
42				
43				
44	TH00932252	Ø50 Internal Circlip	2	
45				
46				
47	22011010/025	M10x25 Setscrew	a/r	
48	22106010/055	M10x55 Motor Stud	8	
49				



**ROLLER TABLE SPARE PARTS****2.1b****Roller Table for Grading Lines**

<b>Item</b>	<b>Part No.</b>	<b>Description</b>	<b>Qty.</b>	<b>Remarks</b>
50	46333/14	14 Roller Gearcase Cover	2	
	46333/18	18 Roller Gearcase Cover	2	
	46333/20	20 Roller Gearcase Cover	2	
51	46334-14LH	14 Roller Cover Plate LH Half	1	
	46334-14RH	14 Roller Cover Plate RH Half	1	
	46334-18LH	18 Roller Cover Plate LH Half	1	
	46334-18RH	18 Roller Cover Plate RH Half	1	
	46334-20LH	20 Roller Cover Plate LH Half	1	
	46334-20RH	20 Roller Cover Plate RH Half	1	
52	59734/14	14 Roller Gearcase	1	
	59734/18	18 Roller Gearcase	1	
	59734/20	20 Roller Gearcase	1	
	59734H/20	20 Roller Gearcase	1	
53	37057B	975mm Plain Roller (Ø82)	a/r	
	37057C	975mm Plain Roller (Ø75)	a/r	
	37058B	1125mm Plain Roller (Ø82)	a/r	
	37058C	1125mm Plain Roller (Ø75)	a/r	
54	37057E	975mm LH Spiral Roller (Ø75/Ø95)	a/r	
	37783B	975mm LH Spiral Roller (Ø80/Ø95)	a/r	
	37058AL	1125mm LH Spiral Roller (Ø75/Ø95)	a/r	
	37784AL	1125mm LH Spiral Roller (Ø80/Ø95)	a/r	
55	37057A	975mm RH Spiral Roller (Ø75/Ø95)	a/r	
	37783A	975mm RH Spiral Roller (Ø80/Ø95)	a/r	
	37058A	1125mm RH Spiral Roller (Ø75/Ø95)	a/r	
	37784A	1125mm RH Spiral Roller (Ø80/Ø95)	a/r	
56	27930E	14 Roller Tie Bar	1	
	27930G	18 Roller Tie Bar	1	
	27930H	20 Roller Tie Bar	1	
57	27876	Rubber Deflector	2	
58	37048	Side Panel LH	1	
59	37049	Side Panel RH	1	
60	37108	Deflector Washer	a/r	

## Roller Table for Grading Lines

Item	Part No.	Description	Qty.	Remarks
61	37903	Rubber Deflector LH	1	
62	37904	Rubber Deflector RH	1	
63	37905	Side Panel	1	
	37924	Side Panel (with cut-out)	1	
64	37906	Side Panel	1	
	37925	Side Panel (with cut-out)	1	
		_____		
	<b>37145</b>	<b>Seal Insertion Kit Consists Of:</b>		
70	37146	Seal Compression Ring	1	
71	37147	Slide Hammer	1	
		_____		
	<b>42643</b>	<b>Back-up Roller Kit Consists Of:</b>		
72	42633	Roller Arm	2	
73	KA16023	Roller Assembly	2	(see list at end)
	<b>KA16023</b>	<b>Roller Assembly Consists Of:</b>		
74	0000300504	Felt Seal	2	
75	6005RS	Bearing	2	
76	KA16021/4	Open Bore Spindle	1	
77	KA16023/1	Ø80 Plain Steel Roller	1	
78	PH408	Seal	2	
79	PS843	Ø25 External Circlip	2	