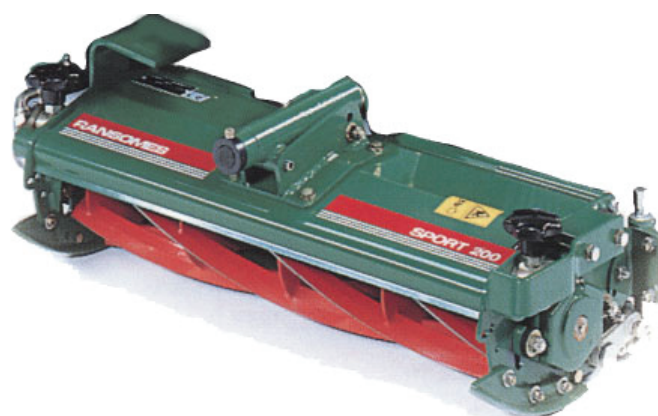




## Safety and Operation / Maintenance and Parts Manual

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# **RANSOMES® Sport 200 & Magna 250 Cutting Units**



**WARNING:** If incorrectly used this machine can cause severe injury. Those who use and maintain this machine should be trained in its proper use, warned of its dangers and should read the entire manual before attempting to set up, operate, adjust or service the machine.





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## 2 INTRODUCTION

### 2.1 IMPORTANT

**IMPORTANT:** This is a precision machine and the service obtained from it depends on the way it is operated and maintained.

This SAFETY AND OPERATORS MANUAL should be regarded as part of the machine. Suppliers of both new and second-hand machines are advised to retain documentary evidence that this manual was provided with the machine.

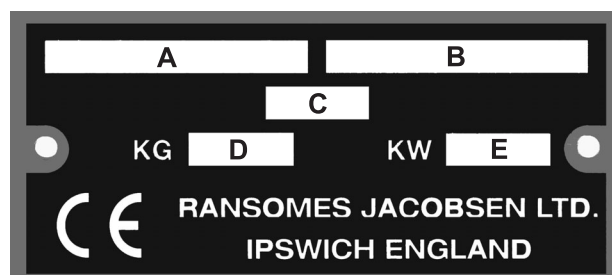
This machine is designed solely for use in customary grass cutting operations. Use in any other way is considered as contrary to the intended use. Compliance with and strict adherence to the conditions of operation, service and repair as specified by the manufacturer, also constitute essential elements of the intended use.

Before attempting to operate this machine, **ALL** operators **MUST** read through this manual and make themselves thoroughly conversant with Safety Instructions, controls, lubrication and maintenance.

Accident prevention regulations, all other generally recognized regulations on safety and occupational medicine, and all road traffic regulations shall be observed at all times.

Any arbitrary modifications carried out on this machine may relieve the manufacturer of liability for any resulting damage or injury.

### 2.2 PRODUCT IDENTIFICATION



- A Machine Name
- B Serial Number
- C Year of Manufacture
- D Machine Weight
- E Engine Power

## 2 INTRODUCTION

### 2.3 GUIDELINES FOR THE DISPOSAL OF SCRAP PRODUCTS

When it has been identified that a turf care product has no further functional value and requires disposal, the following actions should be taken.

These guidelines should be used in conjunction with applicable Health, Safety and Environmental legislation and use of approved local facilities for waste disposal and recycling.

- Position the machine in a suitable location for any necessary lifting equipment to be used.
- Use appropriate tools and Personal Protective Equipment (PPE) and take guidance from the technical manuals applicable to the machine.
- Remove and store appropriately:
  1. Batteries
  2. Fuel residue
  3. Engine coolant
  4. Oils
- Disassemble the structure of the machine referring to the technical manuals where appropriate. Special attention should be made for dealing with 'stored energy' within pressurised elements of the machine or tensioned springs.
- Any items that still have a useful service life as second hand components or can be re-serviced should be separated and returned to the relevant centre.
- Other worn out items should be separated into material groups for recycling and disposal consistent with available facilities. More common separation types are as follows:
  - Steel
  - Non ferrous metals
    - Aluminium
    - Brass
    - Copper

- Plastics
  - Identifiable
    - Recyclable
    - Non recyclable
  - Not identified
- Rubber
- Items that cannot be separated economically into different material groups should be added to the 'General waste' area.
- Do not incinerate waste.

Finally update machinery records to indicate that the machine has been taken out of service and scrapped.

### 3 SAFETY INSTRUCTIONS



This safety symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury, carefully read the message that follows, and inform other operators.

#### 3.1 OPERATING INSTRUCTIONS

- Ensure that the instructions in this book are read and fully understood.
- No person should be allowed to operate this machine unless they are fully acquainted with all the controls and the safety procedures.
- Never allow children or people unfamiliar with these instructions to use this machine. Local regulations may restrict the age of the operator.

#### 3.2 SAFETY SIGNS

- It is essential all safety labels are kept legible, if they are missing or illegible they must be replaced. If any part of the machine is replaced and it originally carried a safety label, a new label must be affixed to the replacement part. New safety labels are obtainable from Ransomes dealers.

#### 3.3 STARTING THE ENGINE

- Before starting the engine check that the brakes are applied, drives are in neutral, guards are in position and intact, and bystanders are clear of the machine.
- Do not run the engine in a building without adequate ventilation.

#### 3.4 DRIVING THE MACHINE

- Before moving the machine, check to ensure that all parts are in good working order, paying particular attention to brakes, tyres, steering and the security of cutting blades.
- Replace faulty silencers, mow only in daylight or good artificial light
- Always observe the Highway Code both on and off the roads. Keep alert and aware at all times. Watch out for traffic when crossing or near roadways.
- Stop the blades rotating before crossing surfaces other than grass.

- Remember that some people are deaf or blind and that children and animals can be unpredictable.
- Keep travelling speeds low enough for an emergency stop to be effective and safe at all times, in any conditions.
- Remove or avoid obstructions in the area to be cut, thus reducing the possibility of injury to yourself and/or bystanders.
- When reversing, take special care to ensure that the area behind is clear of obstructions and/or bystanders. **DO NOT** carry passengers.
- Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.
- When the machine is to be parked, stored or left unattended, lower the cutting means unless the transport locks are being used.
- While mowing, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.
- Check the grass catcher frequently for wear or deterioration. After striking a foreign object inspect the lawnmower for damage and make repairs before restarting and operating the equipment.
- If the machine starts to vibrate abnormally, check immediately.

#### 3.5 TRANSPORTING

- Ensure that the cutting units are securely fastened in the transport position. Do not transport with cutting mechanism rotating.
- Drive the machine with due consideration of road and surface conditions, inclines and local undulations.
- Sudden decelerating or braking can cause the rear wheels to lift.
- Remember that the stability of the rear of the machine is reduced as the fuel is used.

### 3 SAFETY INSTRUCTIONS

#### 3.6 LEAVING THE DRIVING POSITION

- Park the machine on level ground.
- Before leaving the driving position, stop the engine and make sure all moving parts are stationary. Apply brakes and disengage all drives. Remove the starter key.

#### 3.7 SLOPES

##### TAKE EXTRA CARE WHEN WORKING ON SLOPES

- Local undulations and sinkage will change the general slope. Avoid ground conditions which can cause the machine to slide.
- Keep machine speeds low on slopes and during tight turns.
- Sudden decelerating or braking can cause the rear wheels to lift. Remember there is no such thing as a “safe” slope.
- Travel on grass slopes requires particular care.

##### DO NOT USE ON SLOPES GREATER THAN 15°

**IMPORTANT:** When working on any slope select weight transfer, having adjusted to provide adequate traction.

#### 3.8 BLOCKED CUTTING CYLINDERS

- Stop the engine and make sure all moving parts are stationary.
- Apply brakes and disengage all drives.
- Release blockages with care. Keep all parts of the body away from the cutting edge. Beware of energy in the drive which can cause rotation when the blockage is released.
- Keep other people away from the cutting units as rotation of one cylinder can cause the others to rotate.

#### 3.9 ADJUSTMENTS, LUBRICATION AND MAINTENANCE

- Stop the engine and make sure all moving parts are stationary.
- Apply brakes and disengage all drives.
- Read all the appropriate servicing instructions.
- Use only the replacement parts supplied by the original manufacturer.
- When adjusting the cutting cylinders take care not to get hands and feet trapped when rotating cylinders.
- Make sure that other people are not touching any cutting units, as rotation of one cylinder can cause the others to rotate.
- To reduce the fire hazard, keep the engine, silencer and battery compartments free of grass, leaves or excessive grease.

- Replace worn or damaged parts for safety.
- When working underneath lifted parts or machines, make sure adequate support is provided.
- Do not dismantle the machine without releasing or restraining forces which can cause parts to move suddenly.
- Do not alter engine speed above maximum quoted in Engine Specification. Do not change the engine governor settings or overspeed the engine. Operating the engine at excessive speed may increase the hazard of personal injury.
- When refuelling, STOP THE ENGINE, DO NOT SMOKE. Add fuel before starting the engine, never add fuel while the engine is running.
- Use a funnel when pouring fuel from a can into the tank.
- Do not fill the fuel tank beyond the bottom of the filler neck.
- Replace all fuel tank and container caps securely.
- Store fuel in containers specifically designed for this purpose.
- Refuel outdoors only and do not smoke while refuelling.
- If fuel is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until fuel vapours have dissipated.
- Allow the engine to cool before storing in any enclosure.
- Never store the equipment with fuel in the tank inside a building where fumes may reach an open flame or spark.
- If the fuel tank has to be drained, this should be done outdoors.
- Do not spill fuel onto hot components.
- When servicing batteries, DO NOT SMOKE, and keep naked lights away.
- Do not place any metal objects across the terminals.

### 3 SAFETY INSTRUCTIONS

---

**DANGER** - Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.

**WARNING** - Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.

**CAUTION** - Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury and property damage. It may also be used to alert against unsafe practices.

**IMPORTANT:** Transport speed is for highway use only. Never select transport speed on grass areas or uneven or unsurfaced roads or tracks.

 **WARNING** 

Hydraulic Fluid escaping under pressure can penetrate skin and do serious damage. Immediate medical assistance must be sought.



## 4 SPECIFICATION

### MAGNA 250.

#### CONSTRUCTION

Heavy duty welded pressed steel construction

#### CYLINDER:

Diameter:	254mm
Width of cut:	762mm
Number of knives:	4, 6 and 8
Height of cut:	12.7mm - 61mm

### SPORT 200

#### CONSTRUCTION

Heavy duty welded pressed steel construction

#### CYLINDER:

Diameter:	197mm
Width of cut:	762mm
Number of knives:	4, 6, 8 and 11
Height of cut	
Fixed head:	12.7mm - 89mm
Floating head	
Standard blade:	12.7mm - 35.7mm
Thin blade:	9mm - 32mm

### MAGNA 250 AND SPORT 200

#### HEIGHT OF CUT ADJUSTMENT

Adjustable screw system on rear roll. (MAGNA 250 & SPORT 200)

Fixed front roll. (SPORT 200 Floating Head)

#### REAR ROLL

Full width 76mm (3in) diameter solid roll running on taper roller bearings with shaft seals and lubricators.

#### FRONT ROLL

Full width 76mm (3in) diameter grooved roll running on taper roller bearings with shaft seals and lubricators.

#### BOTTOM BLOCK & BLADE

Blade replaceable, mounted onto steel constructed bottom block.

#### TRANSMISSION

By hydraulic motor through toothed drive belt to cutting cylinder. Or by hydraulic motor through cardan shaft to cutting cylinder

# RANSOMES SPORT 200 & MAGNA 250 CUTTING UNITS SAFETY, OPERATORS, MAINTENANCE & PARTS MANUAL

## 4 SPECIFICATION

**EC Declaration of Incorporation** • **Déclaration de constitution CE**  
**EG Verklaring van Conformiteit** • **EG Einbauerklärung**  
**Dichiarazione di costituzione CE** • **EF Erklæring om overholdelse af standard**  
**Överensstämmelse med EU:s regler** • **EY-liitäntädeklaraatio**  
**Declaración de Incorporación de la CE**

We the undersigned • Nous, soussignés • Wij, de ondergetekenden •  
 Wir, die Unterzeichneten • Noi sottoscritti • Undertegnede • Nedanstående företag •  
 Me allekirjoittaneet • Nosotros, los abajo firmantes:

**Ransomes Jacobsen Limited**  
**Central Avenue, Ransomes Europark, Ipswich, England, IP3 9QG**

Certify that the cutting unit • Certifions que le bloc de coupe • Verklaren hierbij dat de maai-eenheid • Bescheinigen,  
 daß die Schneidanlage • Certifichiamo che il gruppo di taglio • Attesterer herved at dette klippeaggregat, • Intygat att  
 klippenheten • Vakuutamme, että leikkuulaite • Certificamos que la unidad cortadora

Make • Marque • Merk • Fabrikat • Marca • Fabrikat • Märke • Merkki • Marca: **Ransomes**

Product Code	Series	Description
LMAB751	AF	Magna 250, 6 Knife, Fixed Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB752	AG	Magna 250, 6 Knife, Fixed Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB753	AH	Magna 250, 6 Knife, Fixed Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB755	AT	Magna 250, 8 Knife, Fixed Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB756	AU	Magna 250 8 Knife, Fixed Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB757	AV	Magna 250 8 Knife, Fixed Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB829	AW	Sport 200 8 Knife, Floating Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB830	AX	Sport 200 8 Knife, Floating Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB831	AY	Sport 200 8 Knife, Floating Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB833	AZ	Sport 200 11 Knife, Floating Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB834	BA	Sport 200 11 Knife, Floating Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB835	BB	Sport 200 11 Knife, Floating Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB789	BC	Sport 200 6 Knife, Fixed Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB790	BD	Sport 200 6 Knife, Fixed Head, Spanner HOC, Handwheel on Cut Adjustment
LMAB791	BD	Sport 200 6 Knife, Fixed Head, Spanner HOC, Handwheel on Cut Adjustment

Conforms to the Harmonised standard • Est conforme à la norme • Voldoet aan de Standaard •  
 Mit der Norm • E' conforme allo standard • Overholder den standard • överstämmer med den standarden •  
 Noudattaa standardia • Conformata con la norma:

**EN836**

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 montering på • Denna klippenhet är avsett att monteras på • Tämä leikkuulaite on suunniteltu sopimaan seuraavaan •  
 Esta unidad cortadora ha sido diseñada para su montaje en:

**Commander 3520 series ZE**

  
**T. Lansdell**  
 Managing Director

Certificate Number: **Com3520ZE-Incorp (rev.2)**

# RANSOMES SPORT 200 & MAGNA 250 CUTTING UNITS SAFETY, OPERATORS, MAINTENANCE & PARTS MANUAL

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Make • Marque • Merk • Fabrikat • Marca • Fabrikat • Märke • Merkki • Marca: **Ransomes**

Product Code	Series	Description
LMAB577	WK	Sport 200 4 Knife, Fixed Head, Standard Roll, Spanner Adjustment
LMAB578	WL	Sport 200 4 Knife, Fixed Head, Standard Roll, Spanner Adjustment
LMAB546	WM	Sport 200 4 Knife, Fixed Head, Disposable Roll, Spanner Adjustment
LMAB548	WN	Sport 200 4 Knife, Fixed Head, Disposable Roll, Spanner Adjustment
LMAB579	WP	Sport 200 4 Knife, Fixed Head, Standard Roll, Spanner HOC, Handwheel on Cut Adjustment
LMAB580	WQ	Sport 200 4 Knife, Fixed Head, Standard Roll, Spanner HOC, Handwheel on Cut Adjustment
LMAB549	WR	Sport 200 4 Knife, Fixed Head, Disposable Roll, Spanner HOC, Handwheel on Cut Adjustment
LMAB550	WS	Sport 200 4 Knife, Fixed Head, Disposable Roll, Spanner HOC, Handwheel on Cut Adjustment
LMAB581	WT	Sport 200 6 Knife, Fixed Head, Standard Roll, Spanner Adjustment
LMAB582	WU	Sport 200 6 Knife, Fixed Head, Standard Roll, Spanner Adjustment
LMAB551	WV	Sport 200 6 Knife, Fixed Head, Disposable Roll, Spanner Adjustment
LMAB552	WVW	Sport 200 6 Knife, Fixed Head, Disposable Roll, Spanner Adjustment
LMAB583	WX	Sport 200 6 Knife, Fixed Head, Standard Roll, Spanner HOC, Handwheel on Cut Adjustment
LMAB584	WY	Sport 200 6 Knife, Fixed Head, Standard Roll, Spanner HOC, Handwheel on Cut Adjustment
LMAB553	WZ	Sport 200 6 Knife, Fixed Head, Disposable Roll, Spanner HOC, Handwheel on Cut Adjustment
LMAB554	XA	Sport 200 6 Knife, Fixed Head, Disposable Roll, Spanner HOC, Handwheel on Cut Adjustment
LMAB445	XT	Sport 200 11 Knife Floating Head, Standard Roll, Handwheel Adjustment
LMAB446	XU	Sport 200 11 Knife Floating Head, Standard Roll, Handwheel Adjustment

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 Esta unidad cortadora ha sido diseñada para su montaje en:

**Highway 2130 series WJ, CS, CU, DK**

  
**T. Lansdell**  
 Technical Director

Certificate Number: **HW2130WJ-Incorp (rev.2)**

# RANSOMES SPORT 200 & MAGNA 250 CUTTING UNITS SAFETY, OPERATORS, MAINTENANCE & PARTS MANUAL

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**Central Avenue, Ransomes Europark, Ipswich, England, IP3 9QG**

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 Esta unidad cortadora ha sido diseñada para su montaje en:

**Parkway 2250 Plus series WB**

  
**T. Lansdell**  
 Technical Director

Certificate Number: **PW2250WB-Incorp (rev.2)**

**4 SPECIFICATION**

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Make • Marque • Merk • Fabrikat • Marca • Fabrikat • Märke • Merkki • Marca: **Ransomes**

Product Code	Series	Description
LMAB354	UG	Magna 250, 6 Knife, Fixed Head,
LMAB355	UH	Magna 250, 6 Knife, Fixed Head,
LMAB352	UV	Sport 200 8 Knife, Floating Head,
LMAB353	UW	Sport 200 8 Knife, Floating Head,

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**Hydraulic 3400 series UD & Hydraulic 4650 series UC**

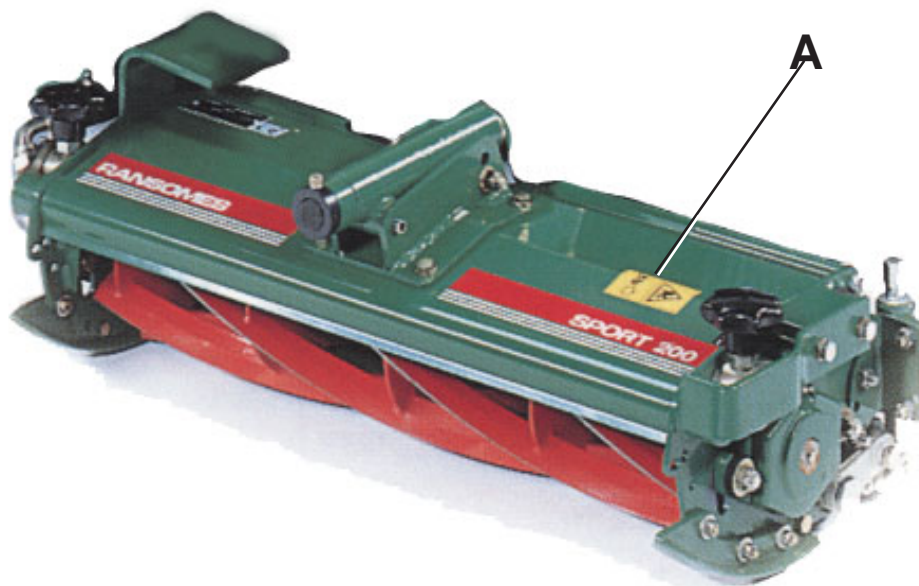


T. Lansdell  
 Technical Director

Certificate Number: **3400-UD-4650-UC-Incorp (rev.2)**



A = 009034940 Cation rotating blades



**6 ASSEMBLY & OPERATION**

---

**FITTING THE UNIT TO THE MACHINE**



*Read the Safety Instructions*

Fitting the unit to the machine is described in the power unit operating instruction book.

**OPERATING THE UNIT**



*Read the Safety Instructions*

Operating the unit is described in the power unit operating instruction book.

7 MAINTENANCE & LUBRICATION



Read the Safety Instructions

Lubricate the following with Shell Darina R2 grease.

Cutting cylinder bearings weekly or every 50 hours.  
(A Fig.1)

Roll bearings weekly or every 50 hours.  
(A Fig.2)

Unit pivot weekly or every 50 hours.  
(A Fig.3)

Cylinder on cut adjusters - If for any reason the adjusters are dismantled they should be half filled with gear oil EP90.

**Lubrication of Direct Drive Hydraulic Motor  
(Every 400 hours)**

Lower all cutting units onto level ground. Before leaving the driving position, stop the engine and make sure all moving parts are stationary. Apply brakes and disengage all drives. remove the starter key. The direct drive hydraulic motor can be removed from the cutting unit by removing the two screws and washers holding the motor to the bearing housing. Carefully withdraw the motor from the bearing housing, it is important not to contaminate the motor shaft or internal splines of the cutting cylinder. If for any reason they are contaminated, they should be cleaned by degreasing. Liberally lubricate the motor and cylinder splines with Shell Malleus JB1 grease (Textron Part no. MBE3927) before reassembling.

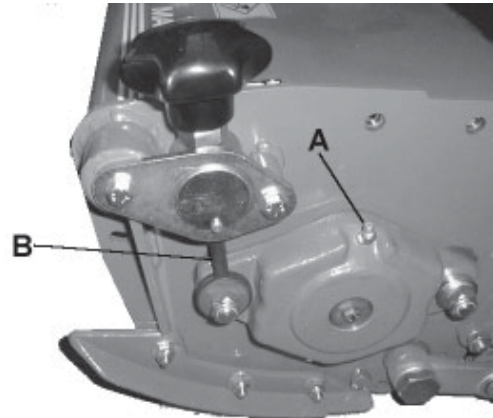


Fig.1

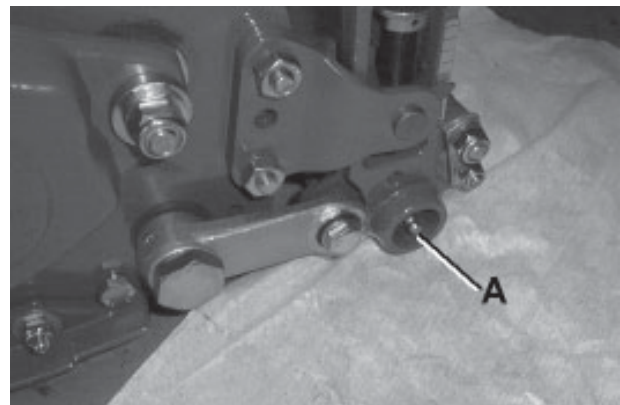


Fig.2

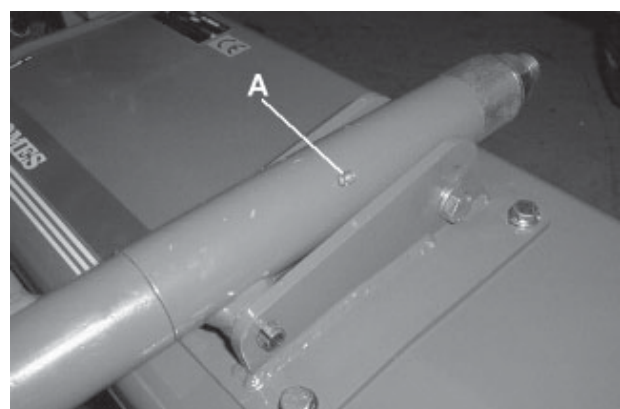


Fig.3



## 7 MAINTENANCE & LUBRICATION



*Read the Safety Instructions*

**Check all nuts and bolts every 75 hours**

### BELT DRIVE UNIT

#### HYDRAULIC MOTOR TO CUTTING CYLINDER

This is located in the drive housing and is accessed by removing the drive housing complete with hydraulic motor from cutting unit. The cylinder drive belt should not need any adjustment in normal use.

#### REMOVAL OF DRIVE HOUSING

If the drive housing should need any maintenance it is first removed from the cylinder bearing housing by removal of two bolts M10 x 45 together with plain washers 10mm. (It is important these bolts and washers are used as any other arrangement will not give the correct engagement of bolt in the cylinder bearing housing).

#### REMOVAL OF HYDRAULIC MOTOR

To remove the hydraulic motor remove the bolts holding the motor to the drive housing. Carefully withdraw the motor together with its attached toothed pulley from the drive housing and toothed belt.

#### REMOVAL OF DRIVE BELT

Belt removal can now be achieved by the removal of the larger driven toothed pulley, the pulley assembly can be released from the drive housing by the removal of 3 screws, the belt can now be removed through the large drive housing orifice.

#### BELT STORAGE AND HANDLING

For storage, the belt should be protected from moisture, temperature extremes, direct sunlight and high ozone environments. The belt should be stored in its original package, avoiding any sharp bends or crimping, which will damage the belt.

There is no problem with leaving tension on the belt during equipment storage. Tension could be backed off if desired. Consideration should be given to extended storage of equipment with belts installed if the environment is detrimental as described above.

Handling of the Poly Chain GT belt is also important. Due to the high performance characteristics of the Poly Chain GT belt, do not twist, crimp, invert, bend or coil the belt. Belts should not be bent tighter than the smallest recommended pulley diameter for that cross section on the inside - approximately 60mm for 8mm pitch.

Backside bending should be limited to two times the inside permissible diameter. Under no circumstances should the belt be forced or prised onto a drive.

The belt may be cleaned by wiping with a rag slightly dampened with a light, non-volatile solvent, such as mineral spirits or paraffin. Soaking or brushing on of such a solvent is not advisable. More obviously, sanding or scraping the belt with a sharp object to remove grease or debris is not recommended. Similar solvent procedures should be applied to the pulleys.

#### FITMENT OF DRIVE BELT, HYDRAULIC MOTOR AND DRIVE HOUSING

1. Assemble toothed belt into drive housing through large orifice taking care not to 'crimp' or 'nip' the belt in anyway. The hydraulic motor complete with toothed pulley should be assembled next taking care to make sure the flange of the pulley is correctly assembled through the belt, with the belt sitting squarely on the pulley teeth.

2. Finally assemble the large pulley assembly retaining it with the 3 screws.

3. Belt adjustment is best achieved after the drive housing has been refitted to the cutting unit.

4. Fitting the drive housing assembly to the cylinder bearing housing is the reverse of REMOVAL OF DRIVE HOUSING. Care should be taken that the plastic drive element is correctly engaged between driving 'dogs' on the cylinder drive shaft and pulley.

#### DRIVE BELT TENSIONING

With the hydraulic motor clamp bolts just slack enough to allow the hydraulic motor to rotate about its pivot bolt grasp the hydraulic motor by one hand and pull upwards firmly to tension the belt and while held in this position tighten the clamp bolt and finally the pivot bolt.

#### DIRECT DRIVE UNIT

#### REMOVAL OF HYDRAULIC MOTOR

To remove the hydraulic motor, remove the two screws and washers holding the motor to the bearing housing. Carefully withdraw the motor together with the cardan shaft.

**NOTE:** When dismantling it is important not to contaminate the cardan shaft or the internal splines of the hydraulic motor and cutting cylinder shaft. If for any reason they should become contaminated, they should be cleaned by degreasing and then lubricated using Shell Malleus JB1 grease before reassembling.

8 ADJUSTMENT



Read Safety Instructions

**HEIGHT OF CUT (FIG.4 & 5)**

**TO ADJUST HAND WHEEL TYPE:**

1. Turn the adjuster handwheel or nut (A Fig.4) situated on handwheel clockwise (+) to increase the height of cut, or anticlockwise (-) to decrease the height of cut.

2. Ensure that an equal amount of adjustment is made to both adjusters on all the cutting units. To assist in obtaining equal adjustment height of cut indicators (B Fig.2) are provided at each end of the roll assembly.

NOTE: The numbers 1 to 9 are only for reference from one side of the roll to the other and bear no relation to the height of cut other than each graduation gives approximately 6.25mm (1/4in) height of cut movement for fixed head units and 3.75mm (5/32in) for floating head units. These indicators are set at the factory and when the pointer is set the same at each end of the roll the roll will be parallel with the bottom blade. If due to any reason the roll and bottom blade are not parallel with each other the roll can be set parallel with the bottom blade by rotating one of the handwheels and then one indicator adjusted by slackening the small clamping screw in the centre of the indicator plate and positioning the indicator relative to the pointer at the opposite end of the roll assembly.

3. No other adjustments are necessary.

4. THIS IS A SELF LOCKING MECHANISM THERE BEING NO NECESSITY TO UNLOCK OR LOCK THE MECHANISM.

**TO ADJUST SPANNER TYPE:**

- 1) Release the two screws (78 Fig.5) which hold the eccentric bush in the lever.
- 2) Turn the adjuster (83 Fig.5) at the rear of the unit, clockwise to reduce the height of cut, or anticlockwise to increase the height of cut.
- 3) After adjusting securely tighten screws (78 Fig.5).

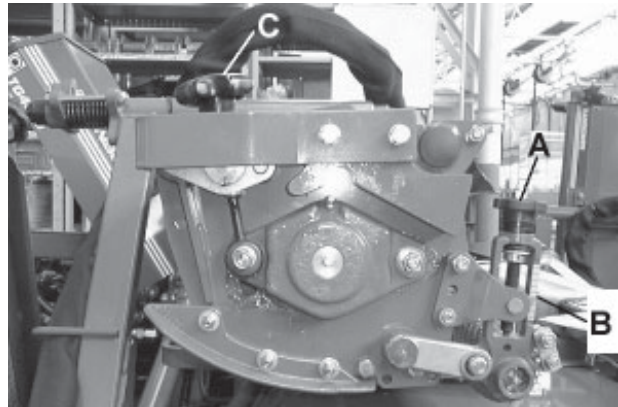


Fig.4

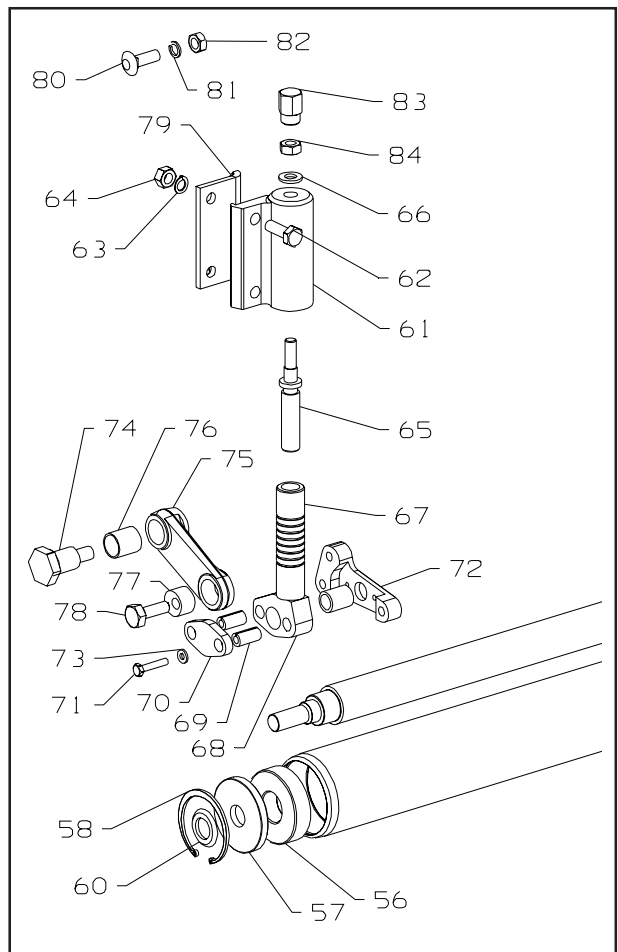


Fig.5

## 8 ADJUSTMENT

### SPORT 200 FIXED HEAD ADDITIONAL ADJUSTMENT

1. Accommodation for extra high height of cut adjustment is built into the cutting unit centre pivot.
2. By repositioning the rear centre pivot bolt height of cut up to 101mm (4in) can be achieved.

### SPORT 200 FLOATING HEAD FRONT ROLL SETTING

1. The right hand end of the front roll is fixed. To set the roll parallel to the bottom blade rotation of an eccentric clamping nut on the left hand front roll bearing housing is necessary.
2. Slacken left hand roll bearing housing clamping bolts.
3. Rotate the eccentric nut to give the desired parallelism of the roll to the bottom blade.
4. While still holding the eccentric nut from rotating tighten the the roll bearing housing clamping bolts.

### CUTTING CYLINDER TO BOTTOM BLADE ADJUSTMENT (FIG.6)

To check that the cutting cylinder is set to the bottom blade correctly, hold a piece of thin paper between the edge of the blade and the spiral cutters and turn the cylinder manually.

The paper should be cut cleanly along the total length of the bottom blade, if not, some adjustment may be necessary, BUT DO NOT OVERTIGHTEN. Alternatively if the cylinder is worn it may require back lapping before adjusting.

#### TO ADJUST HANDWHEEL TYPE:

1. To adjust the cylinder to the bottom blade turn alternately left and right hand handwheels (C Fig.6) clockwise to put on cut. A 'notching' effect will be felt as the handwheel is rotated in a clockwise direction this 'notching' is moving the cylinder in increments of approximately 0.035mm (0.0014in) towards the bottom blade.
2. The correct 'on cut' must be achieved with the adjustment mechanism 'slack' (i.e. between 'notches'). A requirement of the hand adjustment is that the cylinder must always be moved towards the bottom blade (i.e. clockwise rotation of handwheels)

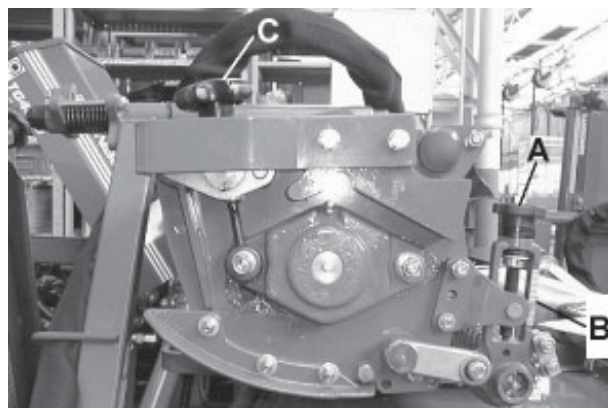


Fig.6

### ⚠ WARNING ⚠

#### CUTTING CYLINDER TO BOTTOM BLADE ADJUSTMENT

##### COMMANDER 3520

To ensure the cutting circuit has no back pressure. The following procedure should be used.

1. Stop cutting cylinder rotation by putting control lever into the neutral position.
2. The units should be raised (to close the diverter valves) then lowered and the engine switched off.

The cutting units can now be rotated freely to assist setting the cylinder to bottom blade.

## 8 ADJUSTMENT

to attain the correct cutting relationship of cylinder and bottom blade. NEVER PLACE CYLINDER HARD 'ON CUT', and by anticlockwise rotation of handwheel try to attain the correct cutting relationship.

3. If cylinder is placed too hard 'on cut' it must be adjusted to clear the bottom blade by anticlockwise rotation of handwheel then re-adjusted back down to the bottom blade.

4. THIS IS A SELF LOCKING MECHANISM THERE BEING NO NECESSITY TO UNLOCK OR LOCK THE MECHANISM.

### TO ADJUST SPANNER TYPE:

1. Slacken the cutting cylinder clamp nuts and bolts (48 Fig.7) on both sides of the unit and adjust the nuts (58 Fig.7) to bring the cylinder slightly off cut so that it will revolve freely.
2. Adjust the cylinder down to the bottom blade on one end of the unit until the blade of the cylinder lightly contacts the bottom blade. Back off the adjustment slightly until the blades are just clear of each other.
3. Repeat the adjustment on the opposite end of the unit until the cylinder contacts the bottom blade.
4. Finally, the first end of the cylinder should be adjusted down again so that it just contacts the bottom blade.
5. Re-tighten the cylinder bearing housing clamp bolts and nuts (48 Fig.7) securely.

**NOTE:** When using the above method it should be possible to rotate the cylinder freely during all stages of adjustment.

### CUTTING CYLINDER BEARINGS

The cutting cylinder bearings are self adjusting taper roller bearings and require no adjustments.

### FRONT AND REAR ROLL BEARINGS

The roll bearings are self adjusting taper roller bearings and require no adjustment

### GRASS DEFLECTOR

The grass deflector can be positioned by hand as it is 'friction clamped' by nuts (tightening the nuts will increase the clamping effect).

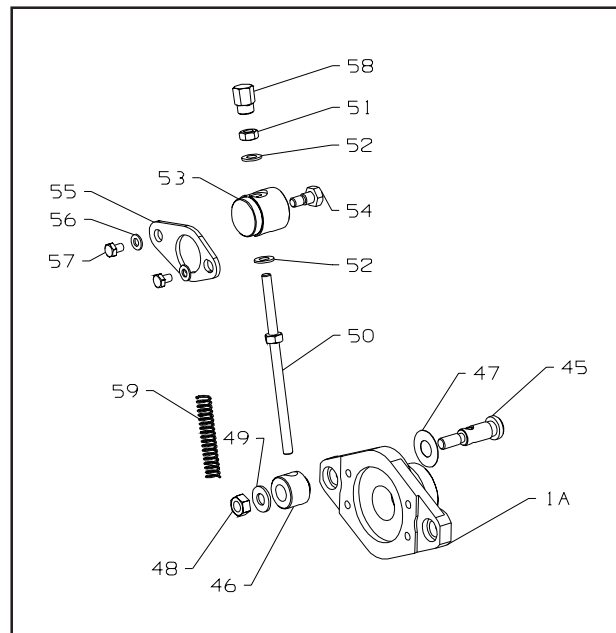


Fig.7

### VERTICUT REEL ADJUSTMENT.

The position of the reel must not be altered after being set. Any changes required in height must only be made by moving the front and rear rolls. Normal setting of the blades is that the tips should be 3mm (1/8 in) above the ground. The blade tips MUST NOT penetrate the top surface of the soil.

To Adjust :

- (a) Release bolt and nut at front end.
- (b) Turn adjusters above rear roll clockwise to reduce height of cut and anticlockwise to increase height of cut.
- (c) Re-tighten nut at front of skid.

## 9 END OF SEASON

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- a. The units should be thoroughly cleaned down to remove all accumulations of grass clippings and debris.
- b. Turn the cutting cylinders to clean the cutting edges.
- c. Apply a little oil with a brush to the spiral cutters to prevent rusting.
- d. Slowly turn the cylinders which will then spread the oil on the bottom blades.

WARNING NOTE: Do not turn the cylinders manually.

## **GUARANTEE**

We **GUARANTEE** that should any defect in workmanship or material occur in the goods within **TWO YEARS** or two thousand hours (on models equipped with hour meters), or whichever occurs first.

Exception to this warranty will be Aeration products, which are covered for a period of **TWO-YEARS** or five hundred hours (on models equipped with hour meters) or whichever occurs first.

We will repair, or at our option, replace the defective part without making any charge for labour or for materials, provided that the claim under this guarantee is made through an authorised dealer and that the defective part shall, if we so request, be returned to us or to the dealer.

This guarantee is in addition to, and does not exclude, any condition or warranty implied by law, except that we accept no liability in respect of used/second-hand goods, or in respect of defects which in our opinion are in any way or to any extent attributable to misuse, lack of reasonable care or ordinary wear and tear, or to the fitting of spares, replacements, or extra components which are not supplied or approved by us for the purpose. The use of non-recommended oil or lubricant nullifies the guarantee.

Damage through transport or normal wear does not come under the guarantee.

The warranty is extended to the original purchaser only and is not transferable to subsequent owners. The warranty period begins on the date the product is delivered to the end user (customer), unless otherwise agreed with the manufacturer. At the end of the first year the owner must have the product serviced by an authorised dealer to be eligible for the second year of warranty coverage.

## **SALES & SERVICE**

A network of authorised Sales and Service dealers has been established and these details are available from your supplier.

When service attention, or spares, are required for the machine, within or after the guarantee period your supplier or any authorised dealer should be contacted.

Always quote the registered number of the machine.

If any damage is apparent when delivery is made, report the details at once to the supplier of the machine.

## **HOW TO USE THE PARTS MANUAL**

### **ITEM NUMBER**

Each part which is identified in the illustrations has an item number. Parts which do not have an item number may not be readily identified in the illustration but are usually closely associated with the immediately adjacent part.

### **ASSEMBLIES**

A complete assembly, e.g. a wheel motor or hydraulic motor or roll assembly, is listed as a complete item with subsequent individual components listed separately.

The assembly is listed under its part number with component parts being listed offset to the right, e.g.:-

<b>ITEM</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>	<b>QTY</b>	<b>REMARKS</b>
1	LMSD798	Roll Assy.	1	ALL MACHINES
2	MBB4490	• Tube	1	
3	LMSD926	• End Cap Assy.	2	
4	MBB6851	•• End Cap	1	
5	H009116	•• Bearing	1	
6	MBB2356	• Seal Housing	1	
7	A224016	• Seal	2	
*	A122192	Screw	2	

It may not be possible to illustrate every item. With certain items purchased from outside suppliers some component parts may not be available from Ransomes and may need to be specially ordered from the supplier e.g. Volvo hydraulic motor components.

### **QUANTITIES**

Quantities shown are for one assembly or sub-assembly.

### **USING THE PARTS LIST**

Determine the function and application of the part required. Turn to the main index page and select the appropriate section. Locate the part on the illustration and parts list and read off the quantity from the appropriate MODEL column.

### **NUMERICAL INDEX**

This is a summary of all part numbers used in the manual arranged in numerical sequence and showing the page and item number under which the parts appear.

### **ORDERING OF SPARE PARTS**

When ordering replacement parts, it is most important to quote the SERIAL NUMBER of the machine, PART NUMBER, DESCRIPTION and QUANTITY required.

Any arbitrary modifications carried out on this machine may relieve the manufacturer of liability for any resulting damage or injury.

### **ABBREVIATIONS**

N/A Not Available  
AR As Required



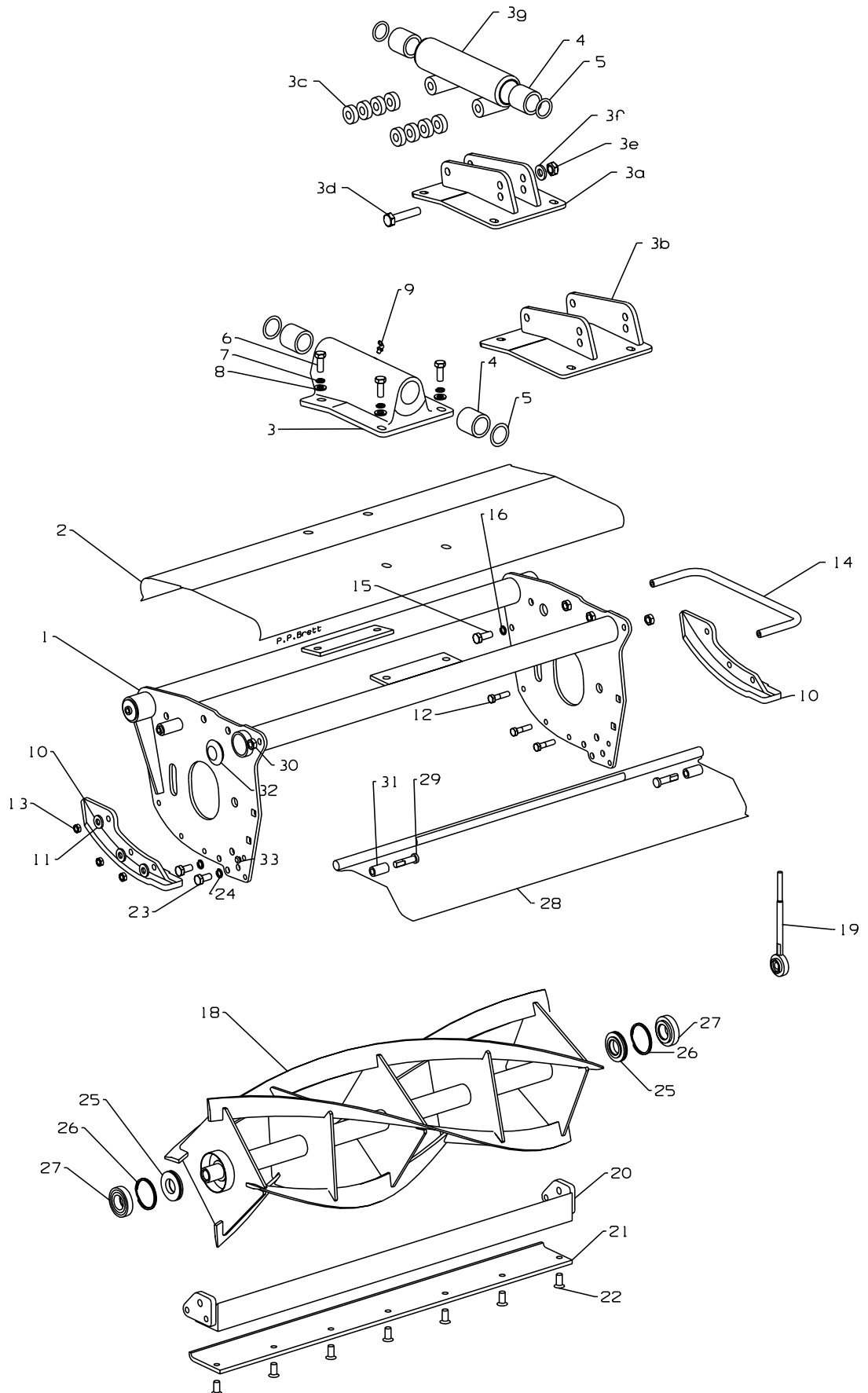


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**RANSOMES  
SPORT 200  
MAGNA 250**

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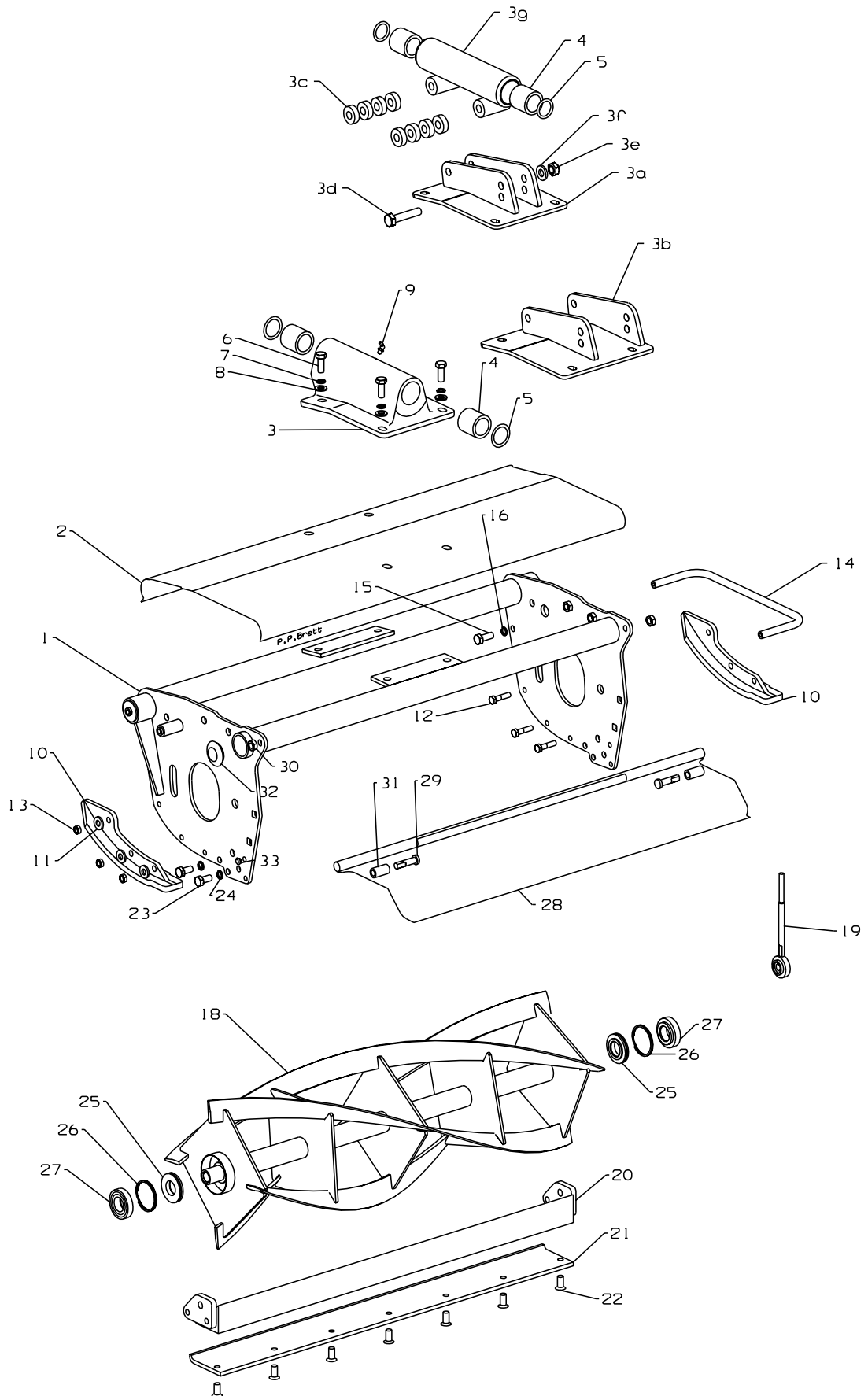
**MAIN FRAME,CYLINDER & BOTTOM BLOCK (MAGNA 250)**


**LIST OF PARTS**

ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS	
1	MBC8949B	FRAME ASSEMBLY	1	TG3400 / TG4650 ONLY TG3400 / TG4650 CENTRE UNIT OPTION(OVERLAPADJUSTMENT)	
2	MBC8935A	COVER	1		
3	MBE0021A	PIVOT BRACKET	1		
3A	MBF0683A	PIVOT BRACKET	1		
3B	MBF1297	PIVOT BRACKET	1		
3C	MBG1023	SPACER	8		
3D	450062	BOLT M12 X 130	2		
3E	450380	NUTM12NYLOC	2		
3F	450392	WASHERM12	2		
3G	MBC8414	PIVOT BEARING	1		TG3400 / TG4650 ONLY
4	A219331	BUSH	2		
5	A221321	O RING	2		
6	450026	SCREW M10 X 35	4		
7	450412	S.L.WASHER M10	4		
8	MBE4682	WASHER 10MM	4		
9	A299306	LUBRICATOR	1		
10	MBC8985	SKID	2		
11	A907207	WASHER	6		
12	450014	BOLT M8 X 30	6		
13	450378	STIFFNUT M8	6		
14	MBE2649	BAR	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5/ COMMANDER 3520	
15	A110396	SCREW M8 X 16	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5	
16	A150008	WASHER 8MM	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5	
18	MBC8391B	CYLINDER 4K	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5	
18*	MBE4102	CYLINDER 4K	1	COMMANDER 3500DX / 3510	
18*	MBF1412	CYLINDER 4K	1	HIGHWAY2130/PARKWAY2250+/ COMMANDER 3520	
18*	MBF0565	CYLINDER 6K	1	HIGHWAY2130/PARKWAY2250+	
18*	MBC8392B	CYLINDER 6K	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5111	
18*	MBE2230	CYLINDER 6K	1	COMMANDER 3500DX / 3510	
18*	MBF0565A	CYLINDER 6K	1	PARKWAY 2250 / TG 3400 & 4650 COMMANDER 3520	

\*NOT ILLUSTRATED

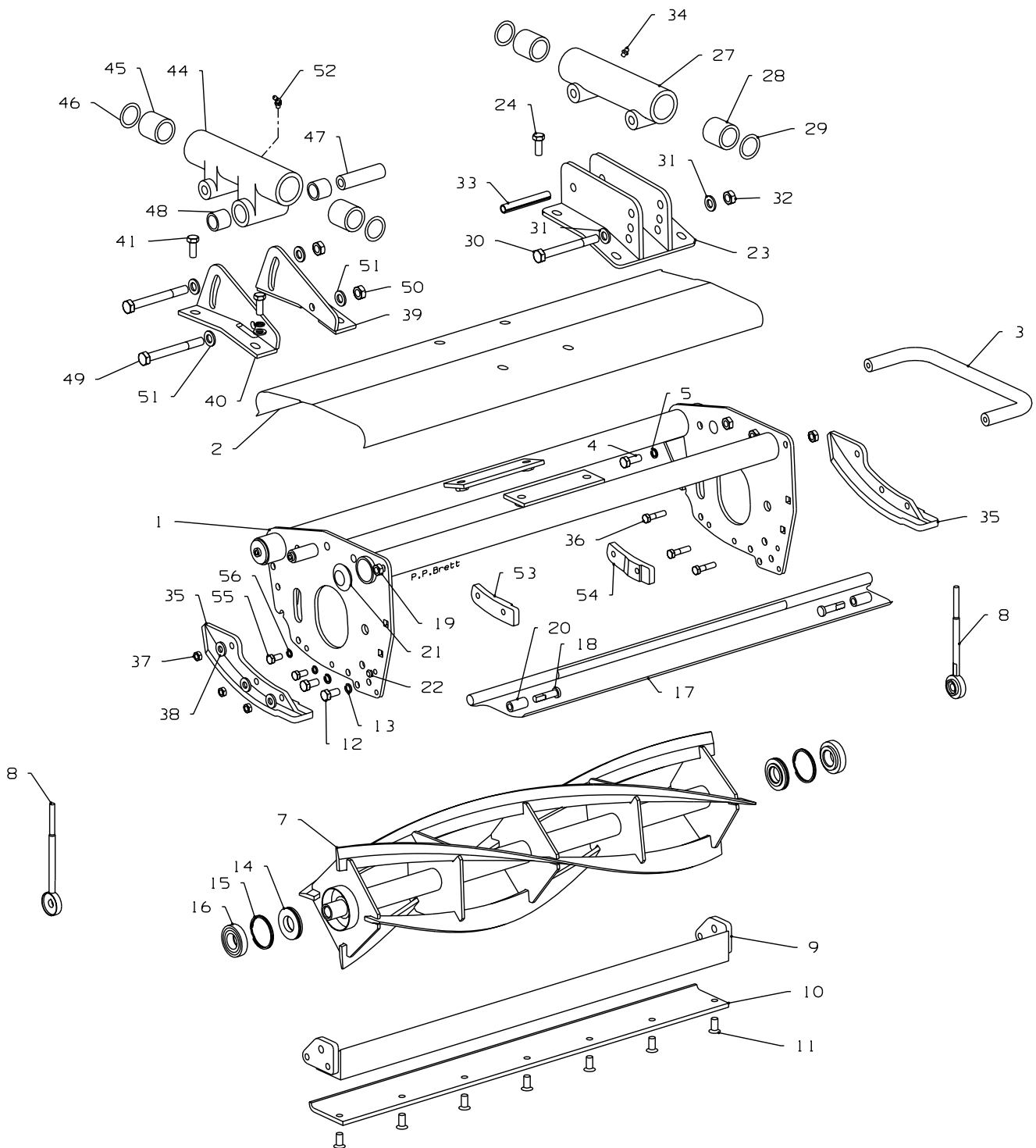
RANSOMES  
SPORT 200  
MAGNA 250



ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
18*	MBE2250	CYLINDER 8K	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
18*	MBE4103	CYLINDER 8K	1	COMMANDER 3500DX / 3510
18*	MBF2024	CYLINDER 8K	1	PARKWAY 2250 PLUS COMMANDER 3520
19	MBE0270	ADJUSTING ROD	2	
20	MBE1150	BOTTOM BLOCK ASSY	1	
20		• BOTTOM BLOCK	1	
21	MBA7024A	• BOTTOM BLADE	1	
22	A119000	• SCREW 3/8" X 11/16"	7	
23	450213	SCREW M10 X 20	4	
24	450412	S.L.WASHER 10MM	4	
25	MBE1185	RING CARRIER	2	220 M28 / MOTOR 350D MK5 / PARKWAY 225
25*	MBE2231	RING CARRIER	2	COMMANDER 3500DX/3510/3520 TG 3400 & 4650 / PARKWAY 2250 PARKWAY 2250 + / HIGHWAY 2130
26	A230021	SEAL RING	2	220 M28 / MOTOR 350D MK5 / PARKWAY 225
26*	A230013	SEAL RING	2	COMMANDER 3500DX/3510/3520 TG 3400 & 4650 / PARKWAY 2250 PARKWAY 2250 + / HIGHWAY 2130
27	A205902	BEARING	2	220 M28 / MOTOR 350D MK5 / PARKWAY 225
27*	A209044	BEARING	2	COMMANDER 3500DX/3510/3520 TG 3400 & 4650 / PARKWAY 2250 PARKWAY 2250 + / HIGHWAY 2130
28	MBC9586A	DEFLECTOR (LONG)	1	MOTOR 350D / PARKWAY 225
28*	MBC8328D	DEFLECTOR (SHORT)	1	MOTOR 350D / PARKWAY 225
29	MBC8956A	BOLT X	2	MOTOR 350D / PARKWAY 225
30	450379	STIFFNUT M10	2	MOTOR 350D / PARKWAY 225
31	A298383	SPACER	2	MOTOR 350D / PARKWAY 225
32	A295274	PLASTIC PLUG	2	
33	A295286	ROUND INSERT	2	PARKWAY 225
34*	A903468	LABEL - (-<->+)	4	
35*	A903816	LABEL - RANSOMES	1	
36*	A903817	LABEL - MAGNA 250	1	
37*	A903494	LABEL - DANGER -	1	CUTTING CYLINDER


\* NOT ILLUSTRATED

**RANSOMES  
SPORT 200  
MAGNA 250**



**MAIN FRAME,CYLINDER & BOTTOM BLOCK (SPORT 200)**

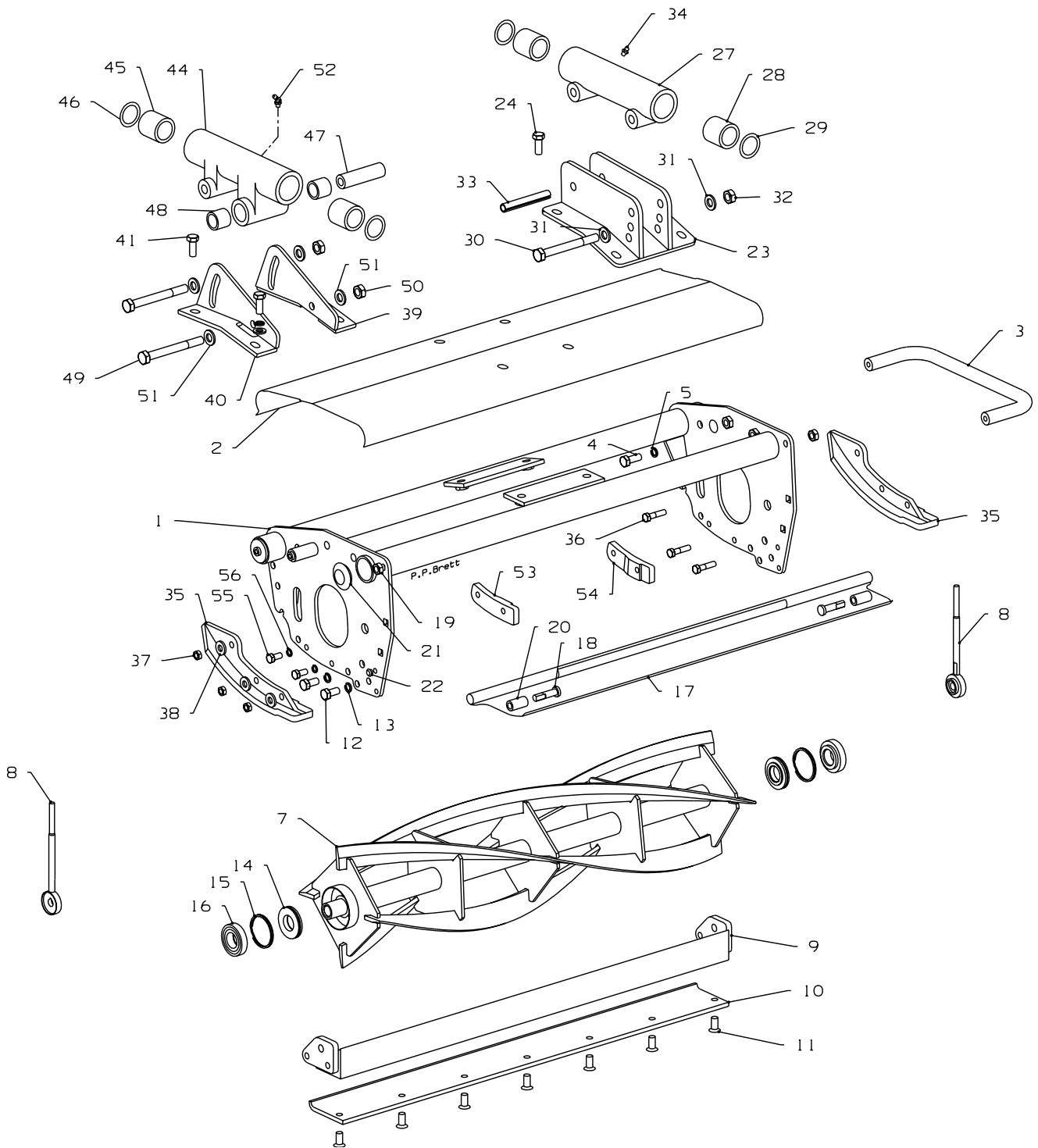
**LIST OF PARTS**

ITEM	RANSOMES PARTNO	DESCRIPTION 	QTY	REMARKS
1	MBC8950B	FRAME ASSEMBLY	1	
2	MBC8936A	COVER	1	
3	MBCE2649	BAR	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5 COMMANDER 3520
4	450190	SCREW M8 X 16	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
5	450396	WASHER 8MM	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
7	MBE0476A	CYLINDER 4K	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
7*	MBE4104	CYLINDER 4K	1	COMMANDER 3500DX / 3510
7*	MBF1466	CYLINDER 4K	1	HIGHWAY2130/PARKWAY2250+ COMMANDER 3520
7*	MBF1264	CYLINDER 6K	1	HIGHWAY2130/PARKWAY2250+ COMMANDER 3520
7*	MBC8390B	CYLINDER 6K	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
7*	MBE4105	CYLINDER 6K	1	COMMANDER 3500DX / 3510
7*	MBC8388B	CYLINDER 8K	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
7*	MBE4106	CYLINDER 8K	1	COMMANDER 3500DX / 3510
7*	MBF0566A	CYLINDER 8K	1	PARKWAY 2250 / TG 3400 & 4650/COMMANDER 3520
7*	MBC8389B	CYLINDER 11K	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
7*	MBE4109	CYLINDER 11K	1	COMMANDER 3500DX / 3510
7*	MBF1091	CYLINDER 11K	1	PARKWAY 2250 / TG 3400 & 4650 HIGHWAY2130/PARKWAY 2250+/COMMANDER 3520
8	MBE0271	ADJUSTING ROD	2	

\* NOT ILLUSTRATED

**RANSOMES  
SPORT 200  
MAGNA 250**


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**MAIN FRAME,CYLINDER & BOTTOM BLOCK (SPORT 200)**

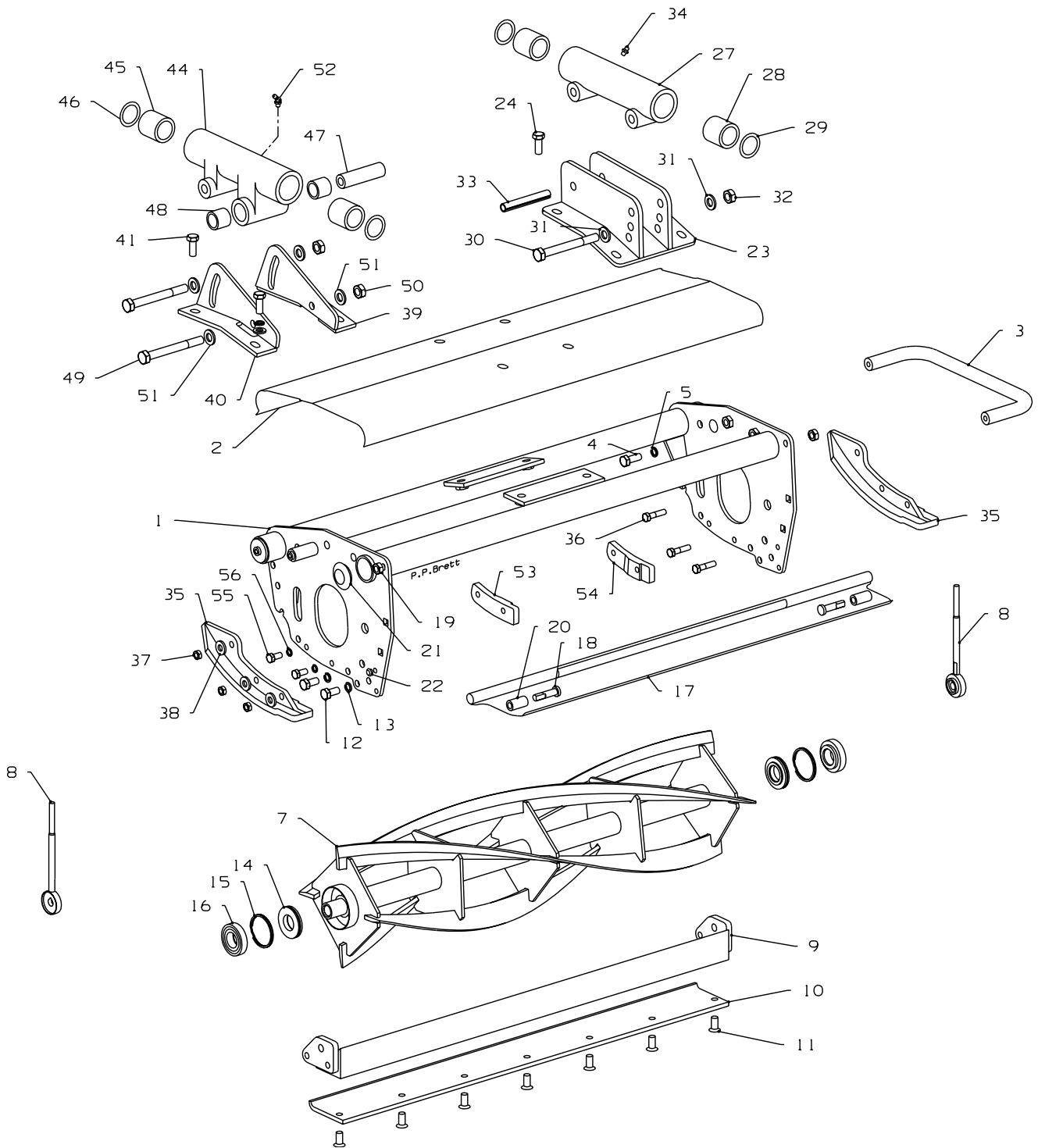
**LIST OF PARTS**


ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
9	MBE1151	BOTTOM BLOCK ASSY	1	WITH STANDARD BLADE
9	MBE1527	BOTTOM BLOCK ASSY	1	WITH THIN BLADE
9*		• BOTTOM BLOCK	1	
10	MBA7024A	• BOTTOM BLADE (STD.)	1	
10*	MBA7037A	• BOTTOM BLADE (THIN)	1	
11	A119000	• SCREW 3/8 X 11/16	7	
12	450213	SCREW M10 X 20	4	
13	450412	S.L.WASHER 10MM	4	
14	MBE1185	RING CARRIER	2	220 M28 / MOTOR 350D MK5 / PARKWAY 225
14*	MBE2231	RING CARRIER	2	COMMANDER 3500DX/3510/3520 TG 3400 & 4650 / PARKWAY 2250 PARKWAY 2250 + / HIGHWAY 2130
15	A230013	SEAL RING	2	220 M28 / MOTOR 350D MK5 / PARKWAY 225
15*	A230021	SEAL RING	2	COMMANDER 3500DX/3510/3520 TG 3400 & 4650 / PARKWAY 2250 PARKWAY 2250 + / HIGHWAY 2130
16	A205902	BEARING	2	220 M28 / MOTOR 350D MK5 / PARKWAY 225
16*	A209044	BEARING	2	COMMANDER 3500DX/3510/3520 TG 3400 & 4650 / PARKWAY 2250 PARKWAY 2250 + / HIGHWAY 2130
17	MBC8328D	DEFLECTOR (SHORT)	1	MOTOR 350D / PARKWAY 225
17*	MBG2190	DEFLECTOR (SHORT)	1	PARKWAY 2250 / TG3400 & 4650
17*	MBC9586A	DEFLECTOR (LONG)	1	MOTOR 350D / PARKWAY 225
18	MBC8956A	BOLT	2	
19	450379	STIFFNUT M10	2	
20	A298383	SPACER	2	
21	A295274	PLASTIC PLUG	2	
22	A295286	ROUND INSERT	2	(PARKWAY 225)

\* NOT ILLUSTRATED

**RANSOMES  
SPORT 200  
MAGNA 250**

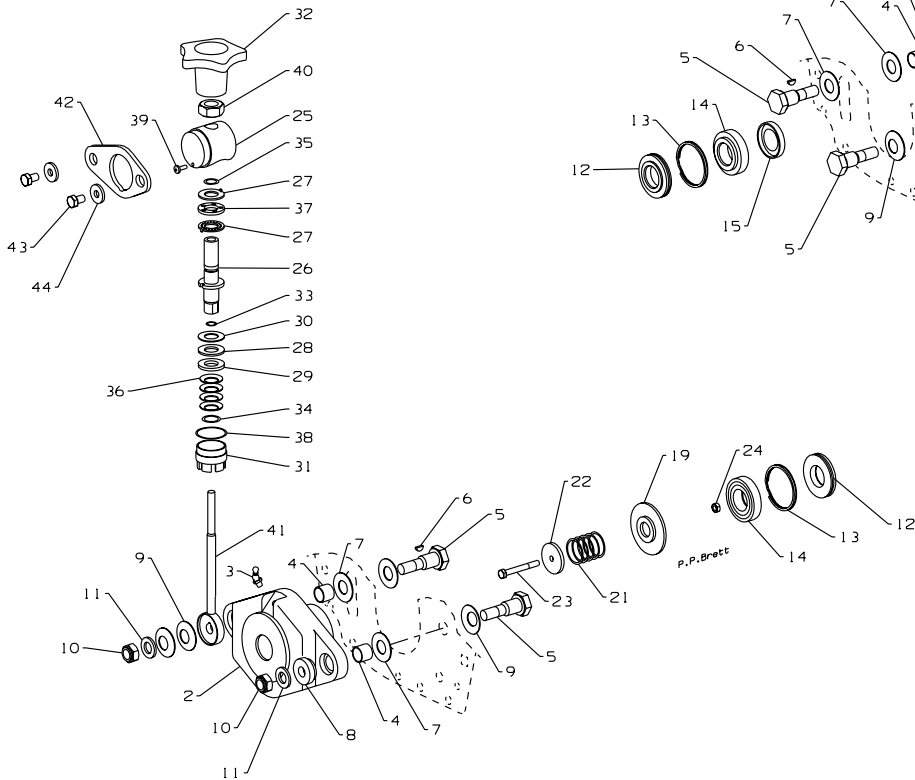
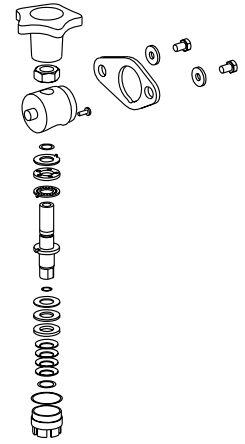
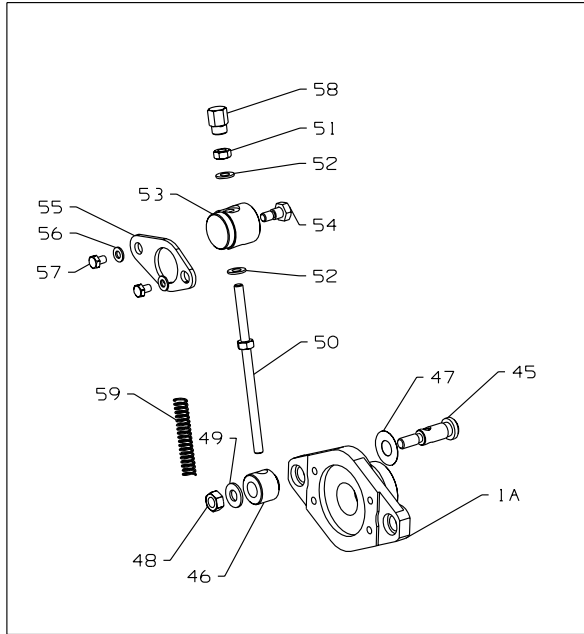
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ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
		<b>FIXED HEAD MOUNTING.</b>		
23	MBC9623	PIVOT BRACKET	1	
24	450479	SCREW M10 X 30	4	
27	MBC8414	PIVOT BEARING	1	
28	A219331	BUSH	2	
29	A221321	O RING	2	
30	450059	BOLT M12 X 100	1	
31	450392	WASHER 12MM	2	
32	450380	STIFFNUT M12	1	
33	451807	TENSION PIN	1	
34	A299301	LUBRICATOR	1	
35	MBC8985	SKID	2	
36	450014	BOLT M8 X 30	6	
37	450378	STIFFNUT M8	6	
38	A907207	WASHER	6	
		<b>FLOATING HEAD MOUNTING</b>		
39	MBC9591	PIVOT BRACKET RH	1	
40	MBC9592	PIVOT BRACKET LH	1	
41	450479	SCREW M10 X 25	4	
44	MBE0022	PIVOT BEARING	1	
45	A219331	BUSH	2	
46	A221321	O RING	2	
47	MBC8417	PIVOT TUBE	1	
48	GSF3002TG	BUSH	2	
49	450061	BOLT M12 X 110	2	
50	450380	STIFFNUT M12	2	
51	450392	WASHER 12MM	4	
52	A299306	LUBRICATOR	1	
53	MBE2205	PAD LH	1	MOTOR 350D / PARKWAY 225
54	MBE2206	PAD RH	1	MOTOR 350D / PARKWAY 225
55	A110304	SCREW M8 X 20	4	MOTOR 350D / PARKWAY 225
56	A151008	S.L.WASHER 8MM	4	MOTOR 350D / PARKWAY 225
57*	A903468	DECAL - (-<->+)	4	
58*	A903816	DECAL - RANSOMES	1	
59*	A903818	DECAL - SPORT 200	1	
60*	A903494	DECAL - DANGER -	1	CUTTING CYLINDER

\* NOT ILLUSTRATED

**RANSOMES  
SPORT 200  
MAGNA 250**



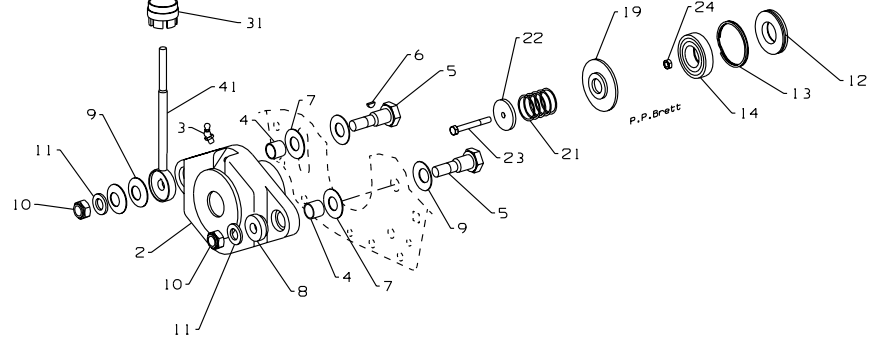
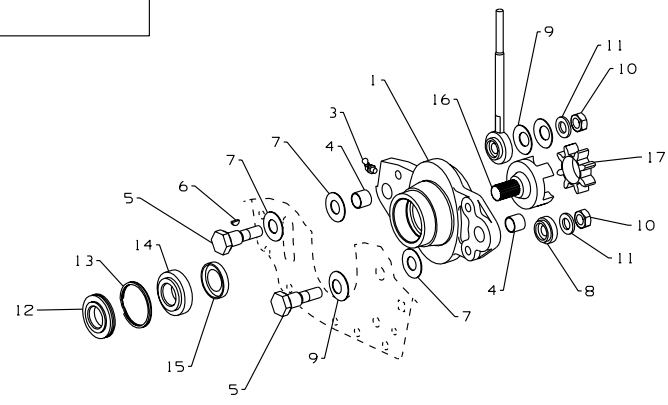
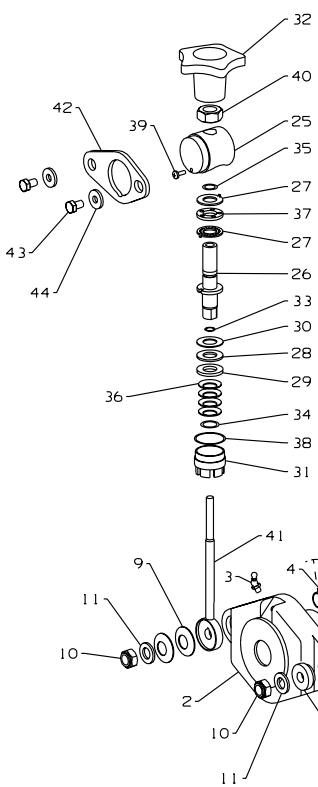
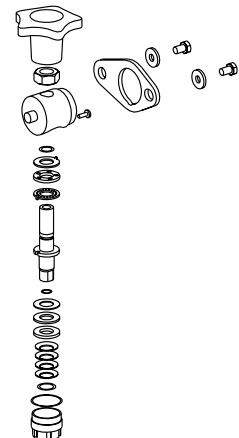
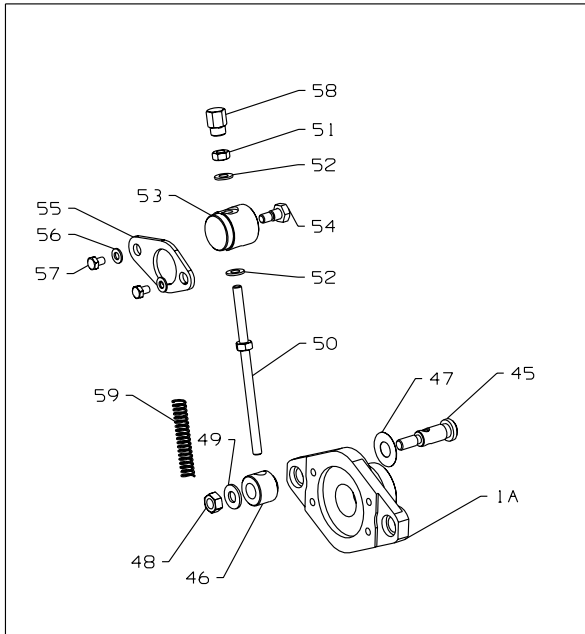
**CYLINDER ADJUSTER & BEARING HOUSINGS**

**LIST OF PARTS**

ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
1	LMSE057	BEARING HOUSING	1	(DRIVE SIDE) 220 M28 / PARKWAY 225 / MOTOR 350D MK5
*	A199302	• HELICOIL INSERT	4	
1A	MBE2229C	BEARING HOUSING	1	(DRIVE SIDE) PARKWAY 2250 / COMMANDER 3500DX / TG 3400 & 4650
2	MBC9180C	BEARING HOUSING	1	(NON DRIVE SIDE)
2A	MBG4936	BEARING HOUSING	1	COMMANDER 3520
3	A299316	LUBRICATOR	2	
4	A219324	BUSH	4	
5	MBC8191B	PIVOT PIN	4	
5A*	MBF1785	PIVOT PIN	2	COMMANDER 3520 (NON STANDARD DRIVE SIDE - CENTRE UNIT)
6	A163401	WOODRUFF KEY	4	
7	A159991	WASHER	6	
8	MBE0359	COLLAR	2	
9	A292122	DISC SPRING	6	
10	450380	STIFFNUT M12	4	
11	450392	WASHER 12MM	4	
12	MBE1185	RING CARRIER	2	220 M28 / MOTOR 350D MK5 / PARKWAY 225
12*	MBE2231	RING CARRIER	2	COMMANDER 3500DX/3510/3520 TG 3400 & 4650 / PARKWAY 2250 PARKWAY 2250 + / HIGHWAY 2130
13	A230021	SEAL RING	2	220 M28 / PARKWAY 225 / MOTOR 350D MK5
13*	A230013	SEAL RING	2	COMMANDER 3500DX/3510/3520 TG 3400 & 4650 / PARKWAY 2250 PARKWAY 2250 + / HIGHWAY 2130
14	A205902	BEARING	2	220 M28 / PARKWAY 225 / MOTOR 350D MK5
14*	A209044	BEARING	2	COMMANDER 3500DX/3510/3520 TG 3400 & 4650 / PARKWAY 2250 PARKWAY 2250 + / HIGHWAY 2130
15	A229987	SEAL	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
15*	A230019	SEAL	1	COMMANDER 3500DX/3510/3520 TG 3400 & 4650 / PARKWAY 2250 PARKWAY 2250 + / HIGHWAY 2130


\* NOT ILLUSTRATED

**RANSOMES  
SPORT 200  
MAGNA 250**



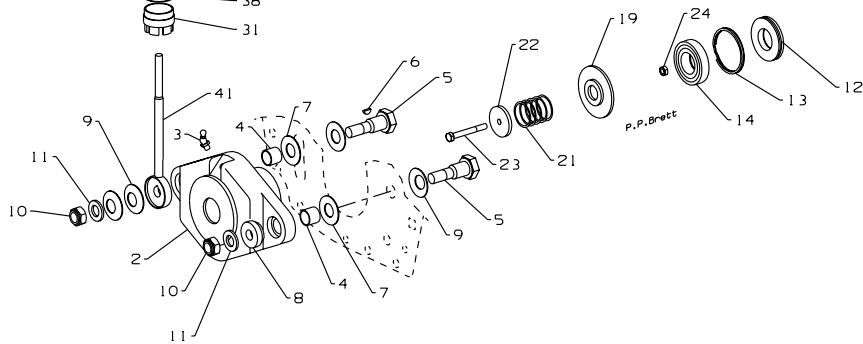
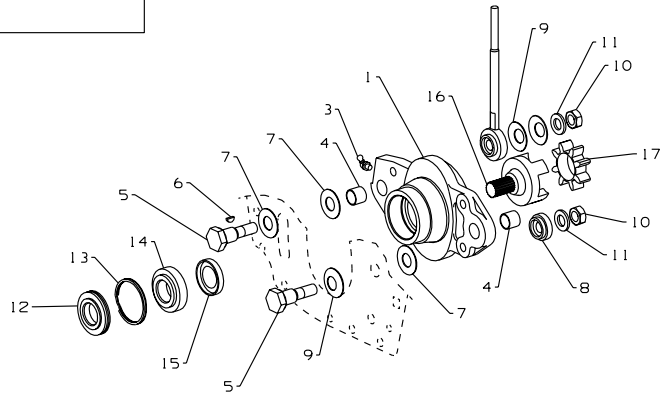
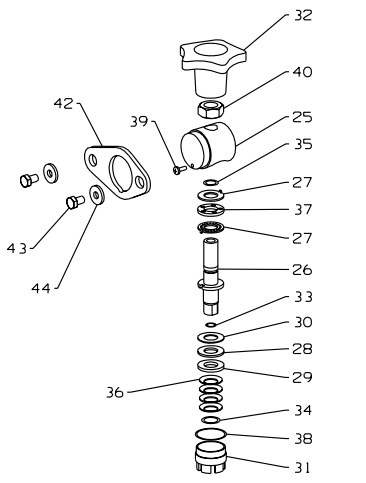
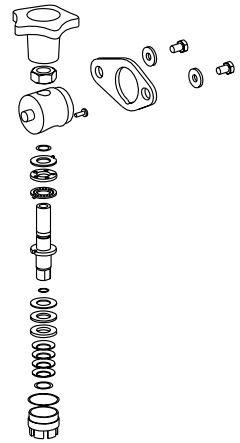
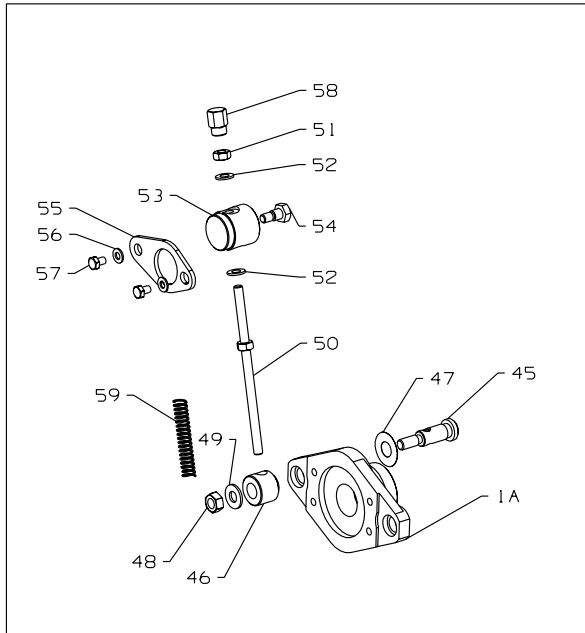
CYLINDER ADJUSTER & BEARING HOUSINGS

LIST OF PARTS

ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
16	MBC7984C	DRIVE SHAFT	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
17	A299456	ELEMENT	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
18	LMSE113	PLUNGER KIT	1	
19	MBE1392	• PLUNGER	1	
21	A291094	• SPRING	1	
21A*	A291132	• SPRING	1	COMMANDER 3520 (NON STANDARD DRIVE SIDE - CENTRE UNIT)
21B*	MBG4955	COLLAR	1	COMMANDER 3520 (NON STANDARD DRIVE SIDE - CENTRE UNIT)
22	MBF0544	• PLATE	1	
23	450004	• BOLT M6 X 50	1	
24	450377	• STIFFNUT M6	1	
	LMSE116	ADJUSTER ASSEMBLY (MAGNA)	2	
	LMSE117	ADJUSTER ASSEMBLY (SPORT)	2	
25	MBC9706B	• TRUNNION	1	
26	MBC9699A	• ADJUSTING NUT	1	
27	MBE0376	• CAM RING	2	
28	A207529	• THRUST BEARING	1	
29	A207530	• THRUST WASHER	1	
30	A207531	• THRUST WASHER	1	
31	MBC9814B	• GLAND NUT	1	
32	A299074	• HANDWHEEL	1	
33	A221014	• O RING	1	
34	A221012	• O RING	1	
35	A221017	• O RING	1	
36	A292293	• DISC SPRING	4	
37	MBE0473A	• BALL & CAGE ASSY	1	
38	A221027	• O RING	1	
39	450517	• SCREW M4 X 12	1	
40	450327	• NUT M16	1	
41	MBE0270	• ADJUSTING ROD (MAGNA)	1	
41*	MBE0271	• ADJUSTING ROD (SPORT)	1	
42	MBC9905A	PLATE	2	
43	450188	SCREW M8 X 12	4	
44	A907207	WASHER	4	

\* NOT ILLUSTRATED


**RANSOMES  
SPORT 200  
MAGNA 250**





CYLINDER ADJUSTER & BEARING HOUSINGS

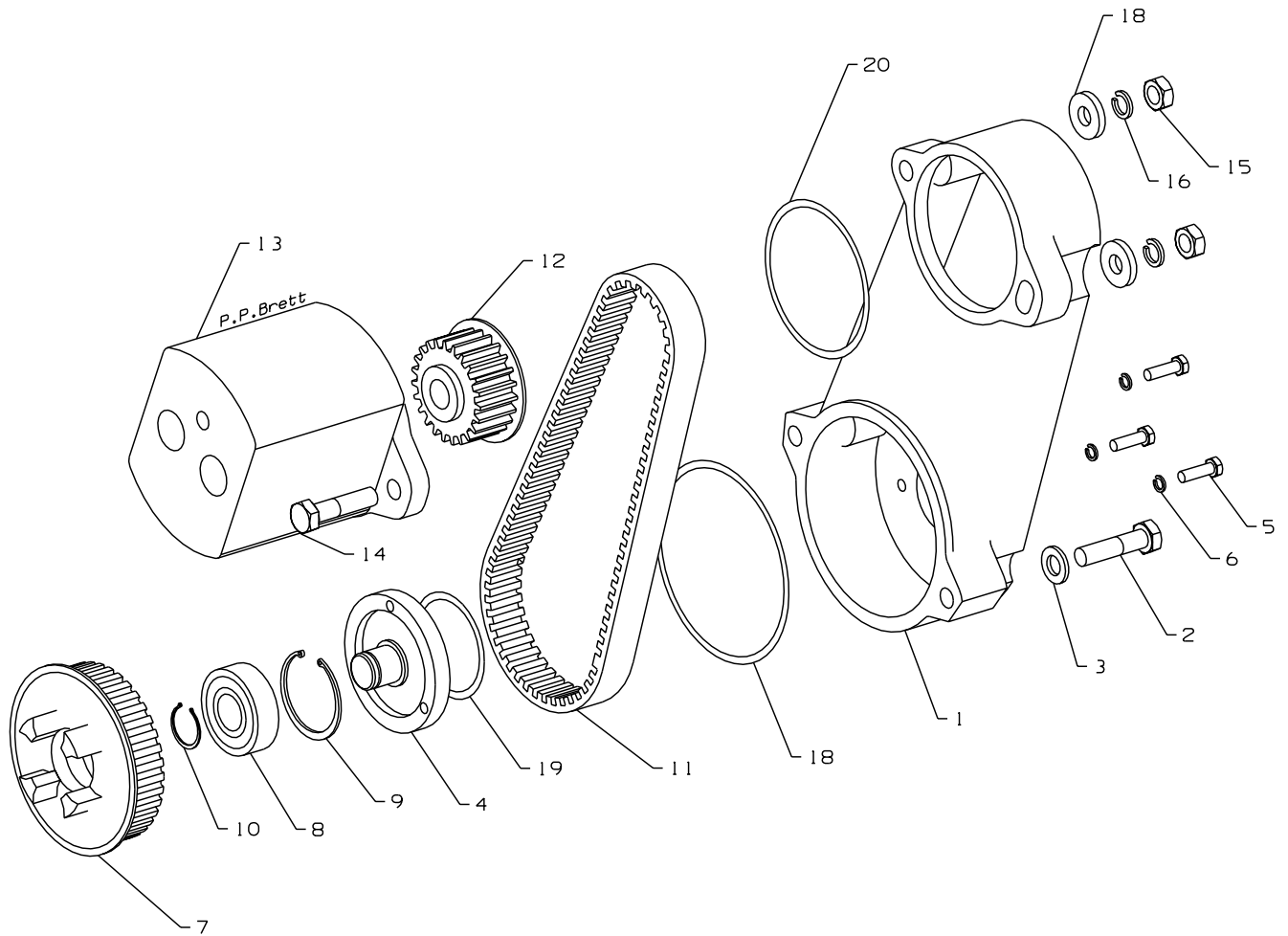
LIST OF PARTS

ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
		SPANNER ADJUSTMENT		
45	MBF1415	CLAMP PIVOT	2	COMMANDER 3520 (NON STANDARD DRIVE SIDE - CENTRE UNIT)
45A*	MBF2135	CLAMP PIVOT	1	
46	MBF1418	CLAMP COLLAR	2	18 X 40 X 0.25
47	A159421	WASHER	2	
48	450380	NUT M12 NYLOC	2	
49	450402	WASHER M12	2	
50	MBG3957	STUD ASSEMBLY	2	
51	450325	NUT M10	2	
52	A292083	DISC SPRING	8	
53	MBF1413A	TRUNNION	2	
54	MBF1439	SHOULDER BOLT	2	
55	MBC9905A	PLATE	2	
56	A907207	SPECIAL WASHER	4	
57	450188	SCREW M8 X 12 HEX HD	4	
58	MBB2580	ADJUSTER	2	
59	A291130	SPRING	2	

\*NOT ILLUSTRATED


**RANSOMES  
SPORT 200  
MAGNA 250**

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**BELT DRIVE ASSEMBLY**

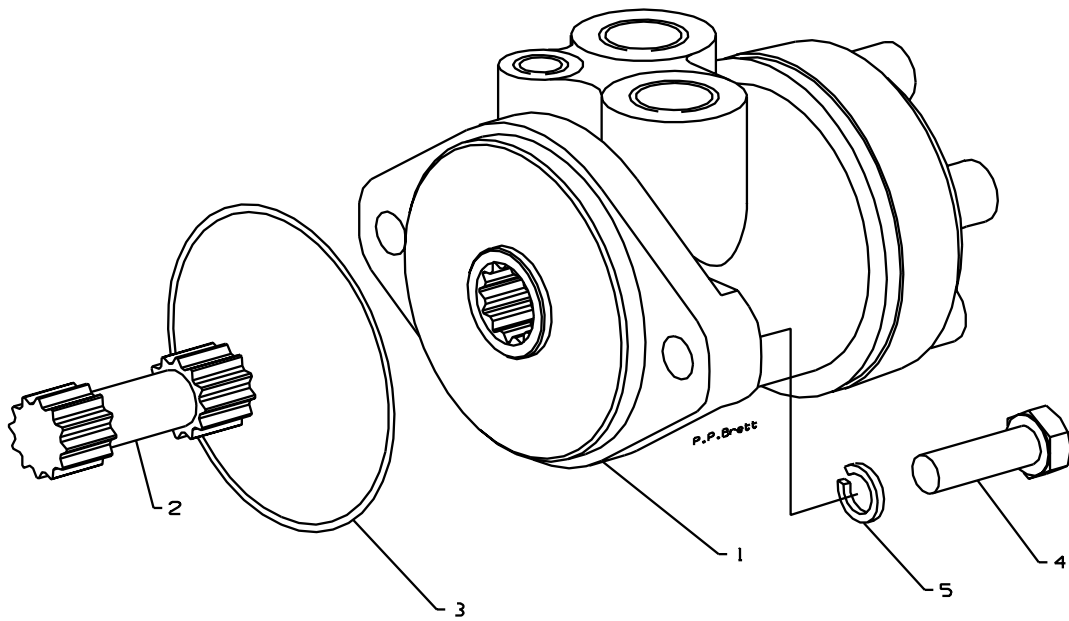
**LIST OF PARTS**


ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
1	MBC9522B	DRIVE HOUSING	1	
2	A100409	BOLT M10 X 45	2	
3	A151010	S.L.WASHER 10MM	2	
4	MBC8166A	STUB SHAFT	1	
5	A110204	SCREW M6 X 20	3	
6	A151006	S.L.WASHER 6MM	3	
7	MBE0192A	PULLEY (DRIVEN)	1	
8	A203604	BEARING	1	
9	A170047	CIRCLIP	1	
10	A171020	CIRCLIP	1	
11	A492107	DRIVE BELT (TOOTHED)	1	
12	MBE0190A	PULLEY (DRIVING)	1	
13	A800008	HYDRAULIC MOTOR 22CC/REV	1	BI-DIRECTIONAL
13	A809624	HYDRAULIC MOTOR 22CC/REV	1	CLOCKWISE
13	A809625	HYDRAULIC MOTOR 22CC/REV	1	ANTICLOCKWISE
14	A100409	BOLT M10 X 45	2	
15	A130010	NUT M10	2	
16	A151010	S.L.WASHER 10MM	2	
17	MBC8846	WASHER	2	
18	A221046	ORING	1	
19	A221029	ORING	1	
20	A221043	ORING	1	

\* NOT ILLUSTRATED

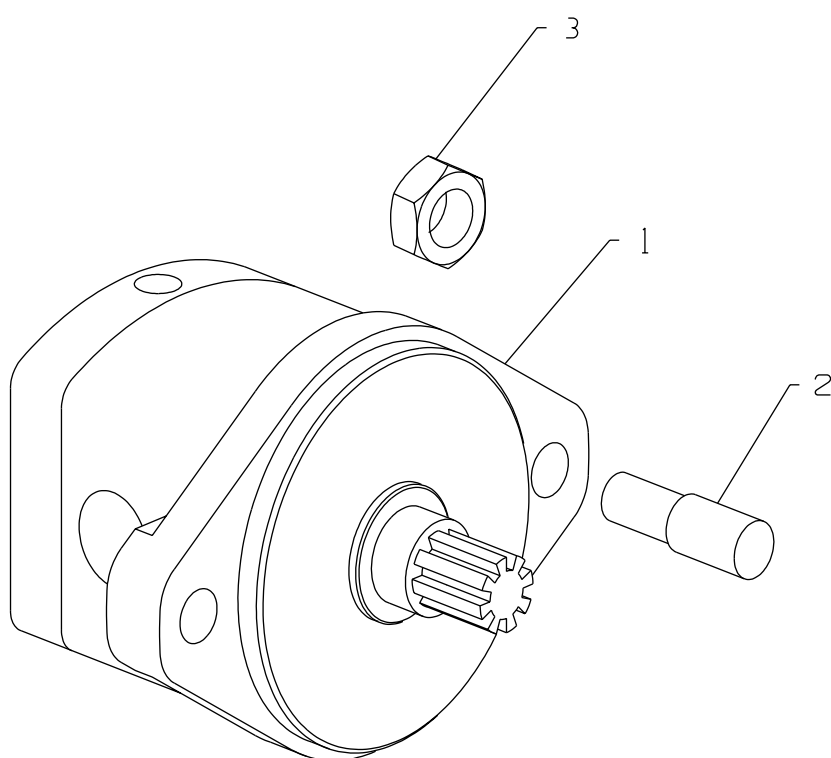
RANSOMES  
SPORT 200  
MAGNA 250

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ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
1	A800020	HYDRAULIC MOTOR DANFOSS	1	
*	A230038	SEAL KIT	1	
2	A800019	EXTERNAL CARDAN SHAFT	1	
3	A221327	O RING (1 TO BRG. HSG.)	1	
4	A110406	SCREW M10 X 30	2	
5	A151010	S.L.WASHER 10MM	2	

\* NOT ILLUSTRATED



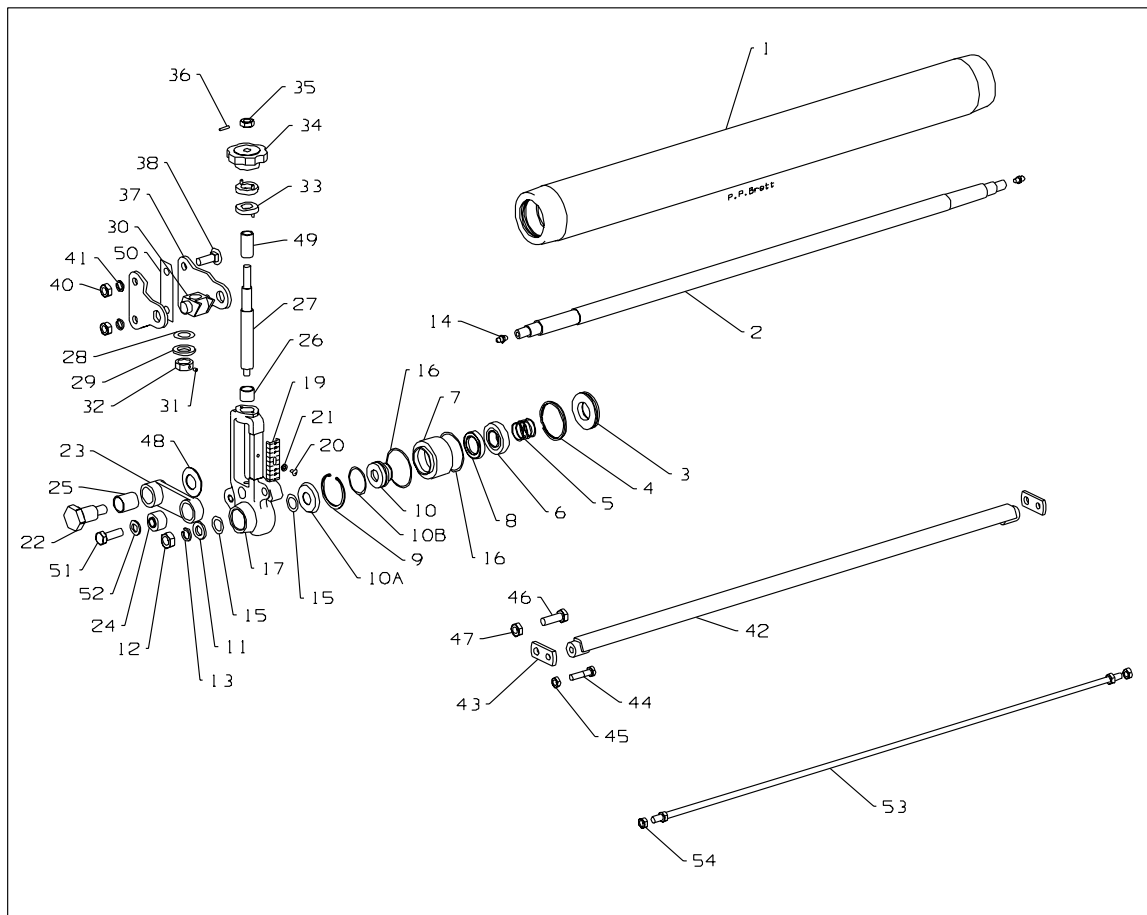
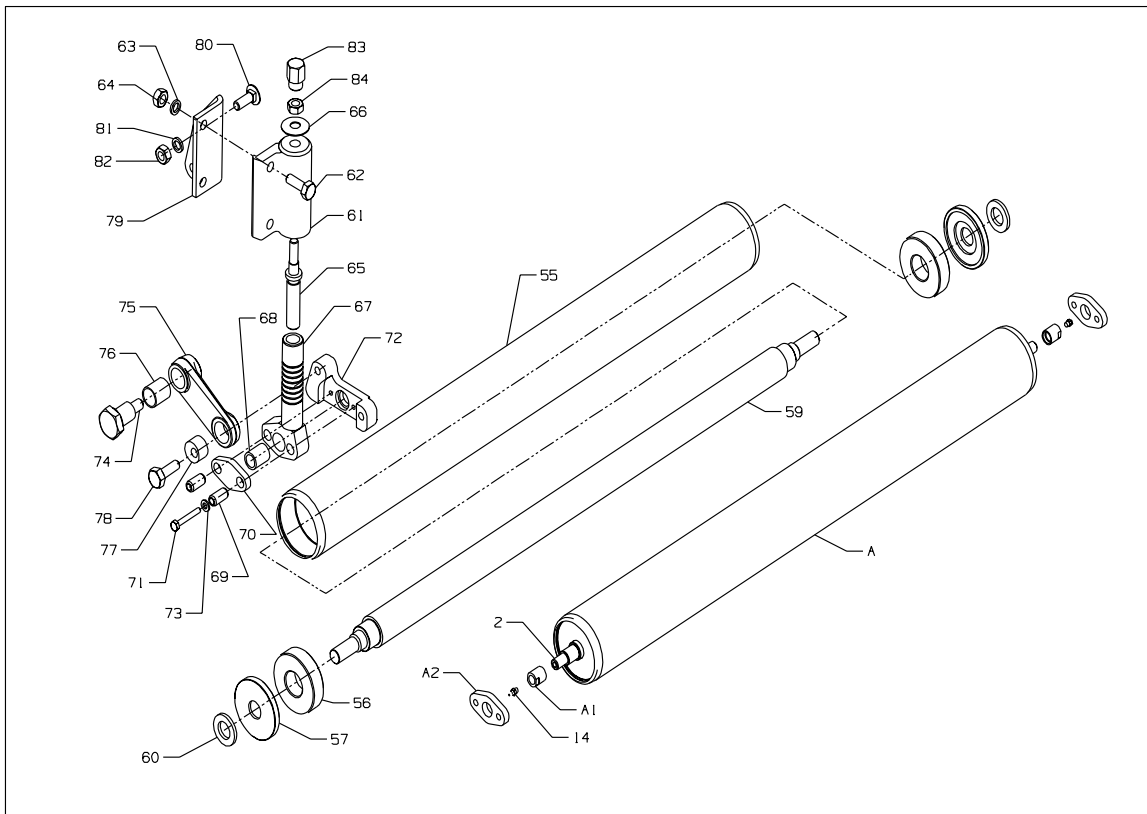
**DIRECT DRIVE MOTOR (BI-DIRECTIONAL) WITH SPLINED SHAFT**

**LIST OF PARTS**

ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
1	A800604	HYDRAULIC MOTOR (ULTRA)		TOP DRAIN
1	A800651	HYDRAULIC MOTOR (ULTRA)		BOTTOM DRAIN
*	A230110	• SEAL KIT	1	
2	2203039	STEP STUD	2	
3	450379	NUT	2	
4*	W158061-04	'O' RING	1	COMMANDER 3520 (QTY 2 CENTRE UNIT)

\* NOT ILLUSTRATED


**RANSOMES  
SPORT 200  
MAGNA 250**





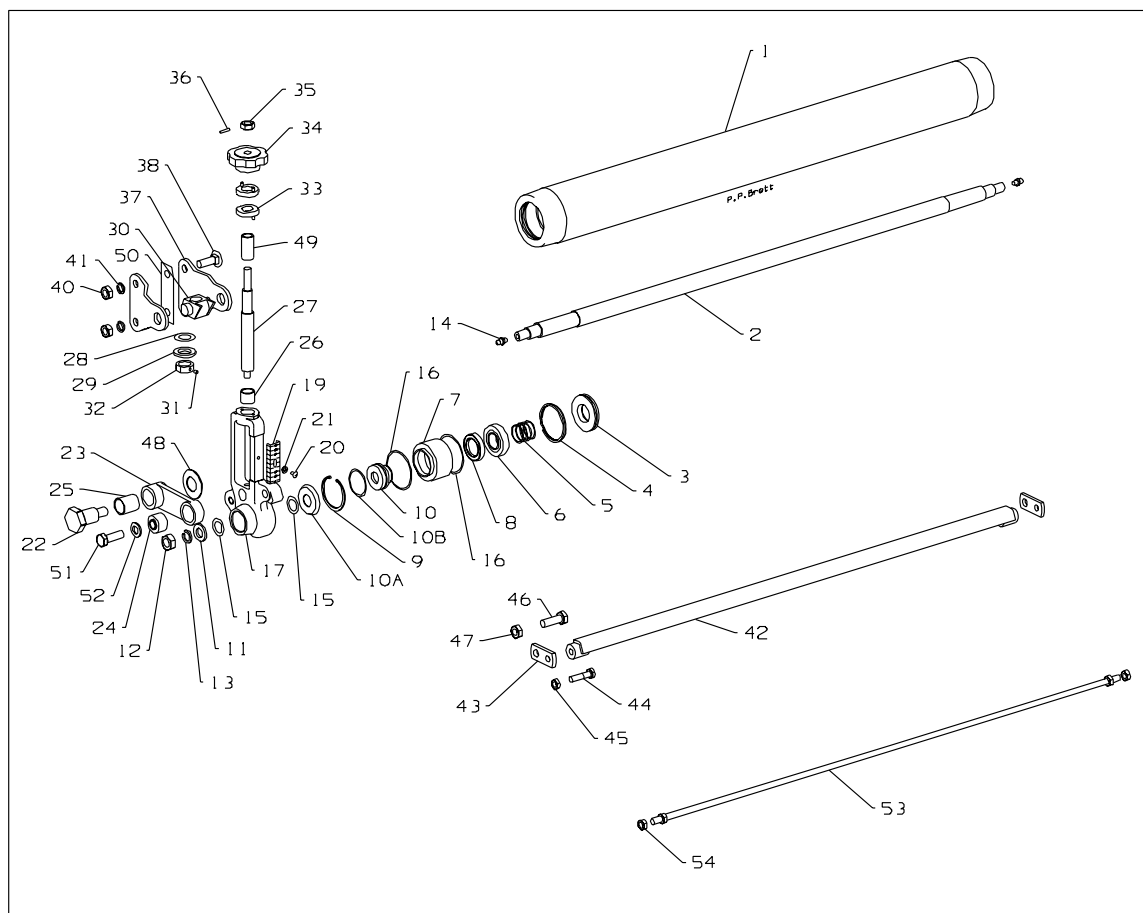
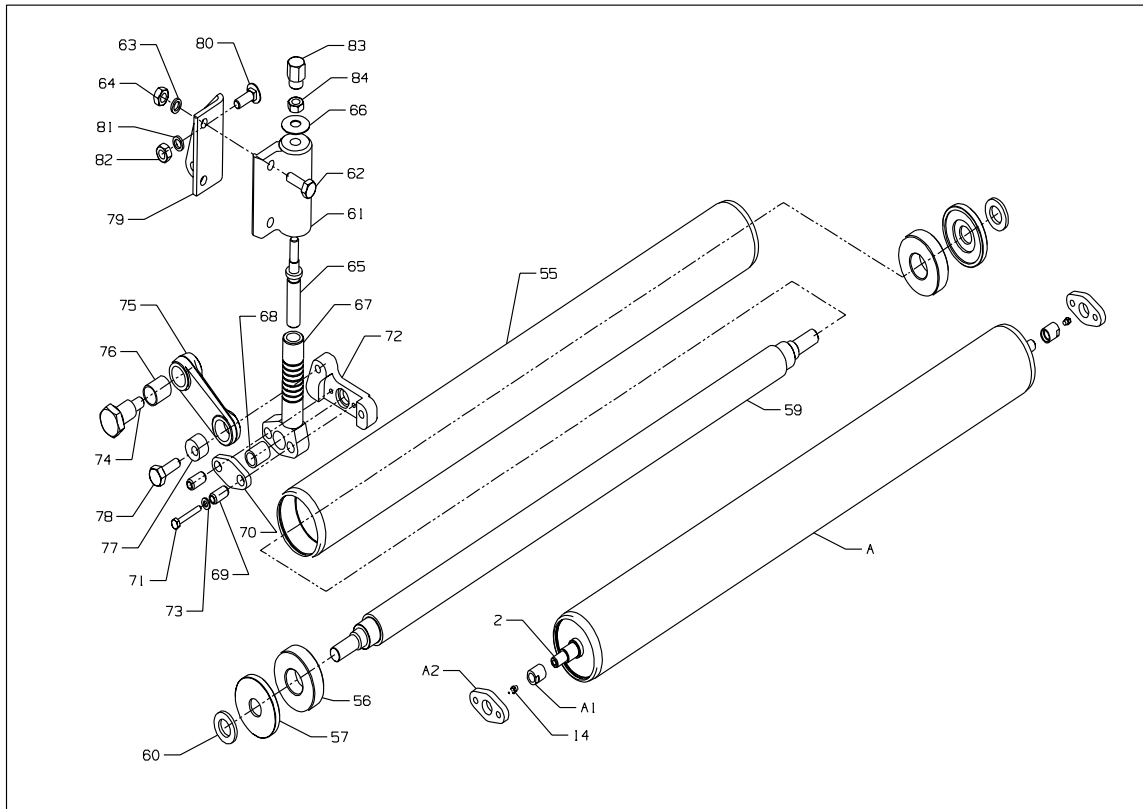
REAR ROLL ASSEMBLY & ADJUSTERS

LIST OF PARTS

ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
A	LMSE027	ROLL ASSEMBLY	1	
1	MBE2174C	• ROLL	1	
2	MBG0836	• ROLL SPINDLE	1	
3	MBF0349	• RING CARRIER	2	
3A	MBF0002	• WASHER	2	
3B	A292134	• DISC SPRING	AR	
4	A230013	• SEAL RING	2	
5	A291115	• SPRING	2	
6	A205929	• BEARING	2	
7	MBE2429	• BEARING HOUSING	2	
8	A220254	• SEAL	2	
9	451982	• CIRCLIP	2	
10	MBE2430	• SEAL JOURNAL	2	
10A	MBE2431B	• SHIELD	2	
10B	A230021	• SEAL RING	2	
11	MBE1372	• WASHER	2	
12	450326	• NUT M12	2	
13	450413	• S.L.WASHER 12MM	2	
14	A299301	• LUBRICATOR	2	
15	A221910	• O RING	4	
16	A221137	• O RING	4	
17	MBE1401A	ROLL SUPPORT LH	1	
18*	MBE1402A	ROLL SUPPRT RH	1	
19	A903461	INDICATOR	2	
20	450515	SCREW M4 X 8	2	
21	450387	WASHER 4MM	2	
22	MBC8156A	PIN	2	
23	MBC9333B	LEVER	2	
24	A217001	RUBBER BUSH	2	
25	A219323	BUSH	2	
26	A219327	BUSH	2	
27	MBC9172A	ADJUSTING SCREW	2	
28	A221911	ORING	2	
29	450393	WASHER 16MM	2	
30	MBC8160B	TRUNNION NUT	2	
31	450940	GRUBSCREW M4 X 4	2	
32	MBC8568	STOP COLLAR	2	
33	A914651	LOCKING WASHER	4	
34	A913331	HANDWHEEL	2	
35	450325	NUT M10	2	
36	A141424	TENSION PIN	2	
37	MBC8158B	BRACKET	4	
38	452586	BOLT M10 X 30	3	
39	452587	BOLT M10 X 35	1	
40	450325	NUT M10	4	
41	450412	S.L.WASHER 10MM	4	
42	MBE1434	SCRAPER (BAR)	1	
43	MBE1415	PLATE	2	
44	450016	BOLT M8 X 40	2	


\* NOT ILLUSTRATED

**RANSOMES  
SPORT 200  
MAGNA 250**



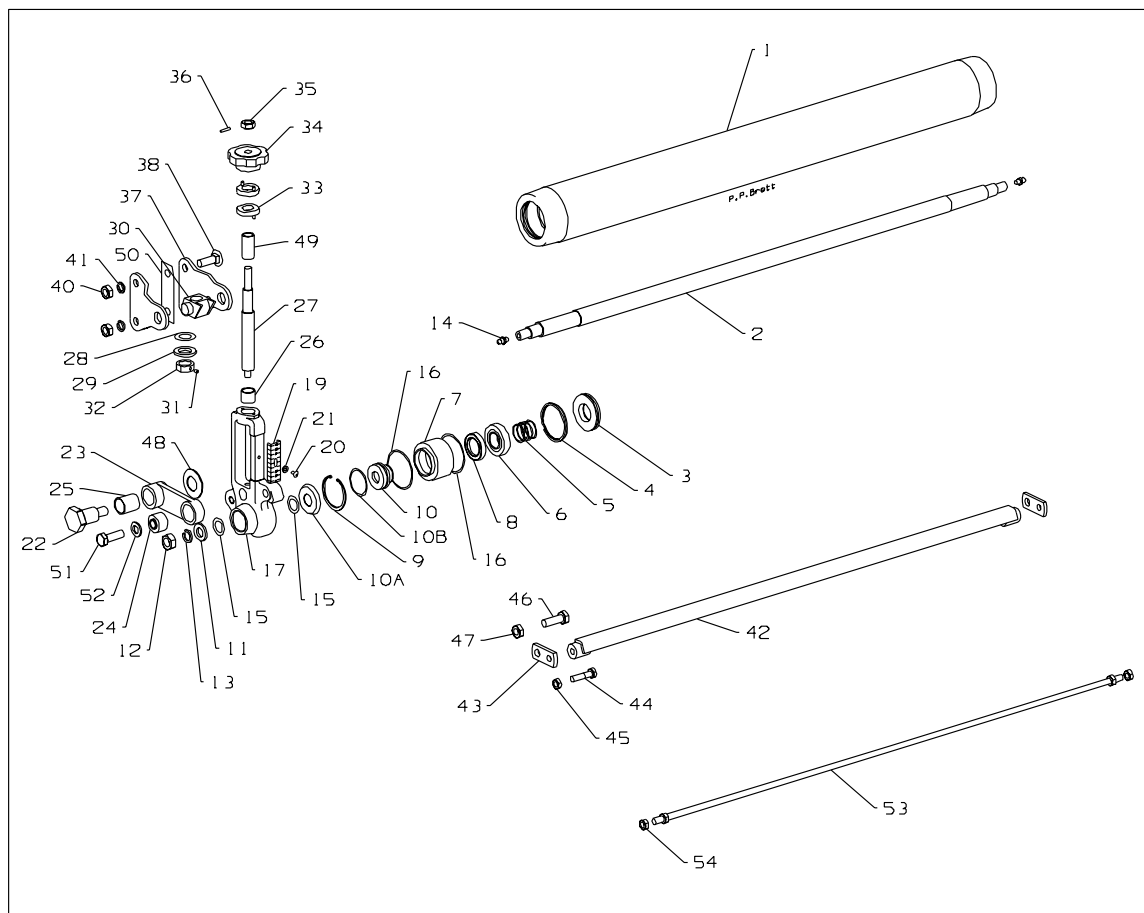
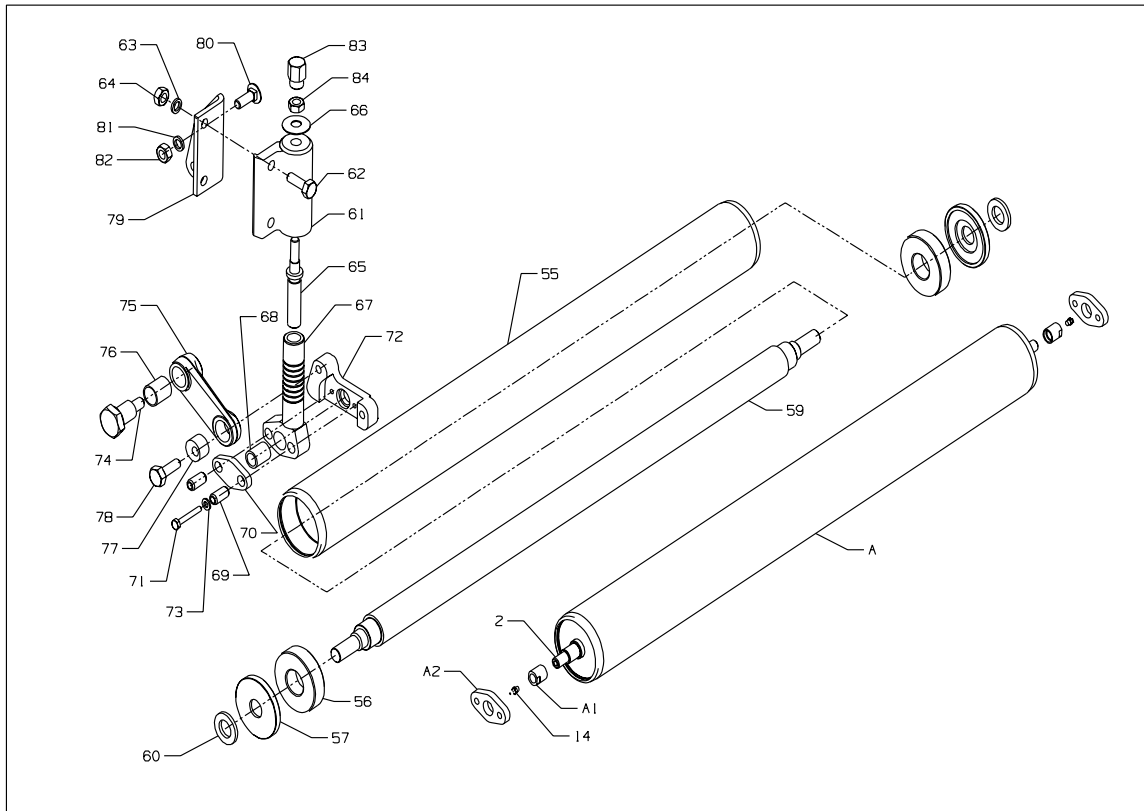
REAR ROLL ASSEMBLY & ADJUSTERS

LIST OF PARTS

ITEM	RANSOMES PARTNO	DESCRIPTION 	QTY	REMARKS
45	450378	STIFFNUT M8	2	
46	450215	SCREW M10 X 30	2	
47	450379	STIFFNUT M10	2	
48	A292134	DISC SPRING	2	
49	A219332	BUSH	2	
50	MBE2252A	PLATE	2	VERTICUT UNIT ONLY
51	450215	SCREW M10 X 30	2	
52	450391	WASHER 10MM	2	
53*	A906712	SCRAPER (WIRE)	1	
54*	450378	STIFFNUT M8	2	
*	MBE3195A	SPRING RETAINER TOOL	1	TO DISMANTLE C/U ROLL.
		<b>SPANNER ADJUSTMENT</b>		
	MBF1426	ROLL ASSEMBLY	1	PLAIN
55	MBG2925	• ROLL TUBE	1	
56	A203940	• BEARING	2	28 X 68 X 18
57	MBF1107A	• BEARING SPACER	2	
58	451998	• INT. CIRCLIP	2	
59	MBG2924A	• ROLL SPINDLE	1	
60	A230086	• RB20 GAMMA SEAL	2	
61	MBB6818	OUTER SLEEVE LH	1	
*	MBB6817	OUTER SLEEVE RH	1	
62	450215	SCREW M10 X 30 HEX HD	4	
63	450412	S.L. WASHER M10	4	
64	450325	NUT M10	6	
65	MBB2579A	SCREW	2	
66	A292121	DISC SPRING	2	
67	4119718	SKID MOUNTING ASSEMBLY	2	M8 MOUNTING HOLES
	MBC8148	SKID MOUNTING ASSEMBLY	2	M6 MOUNTING HOLES
68	MBB2587	BUSH	2	
69	451761	TENSION PIN 12 X 24	4	FOR USE WITH M6 BOLTS
70	4119722	OUTER PLATE	2	USE WITH DISPOSABLE ROLL
	MBG6096	OUTER PLATE	2	M6 MOUNTING HOLES
*	4119721	OUTER PLATE	2	USE WITH STANDARD ROLL
	MBF0885C	OUTER PLATE	2	M6 MOUNTING HOLES
71	450016	BOLT M8 X 40 HEX HD	4	
	450003	BOLT M6 X 40 HEX HD	4	
72	4119720	SUPPORT PLATE LH	1	M8 MOUNTING HOLES
	MBF1858A	SUPPORT PLATE LH	1	M6 MOUNTING HOLES
*	4119719	SUPPORT PLATE RH	1	M8 MOUNTING HOLES
	MBF1857A	SUPPORT PLATE LH	1	M6 MOUNTING HOLES
*	A292110	SPRING DISK 16.3 X 31.5 X .08	2	
73	450390	WASHER M8	4	
74	MBC8156A	PIN	4	
75	MBC9333B	LEVER	2	
76	A219323	BUSH	2	
77	MBG2168A	ECCENTRIC BUSH	2	
78	MBF1421	CLAMP BOLT - ECCENTRIC	2	
79	MBG3970A	BRACKET REAR ROLL LH	1	
*	MBG3969A	BRACKET REAR ROLL RH	1	
80	452586	BOLT M10 X 30 SQ NECK	4	


\* NOT ILLUSTRATED

**RANSOMES  
SPORT 200  
MAGNA 250**



**REAR ROLL ASSEMBLY & ADJUSTERS**

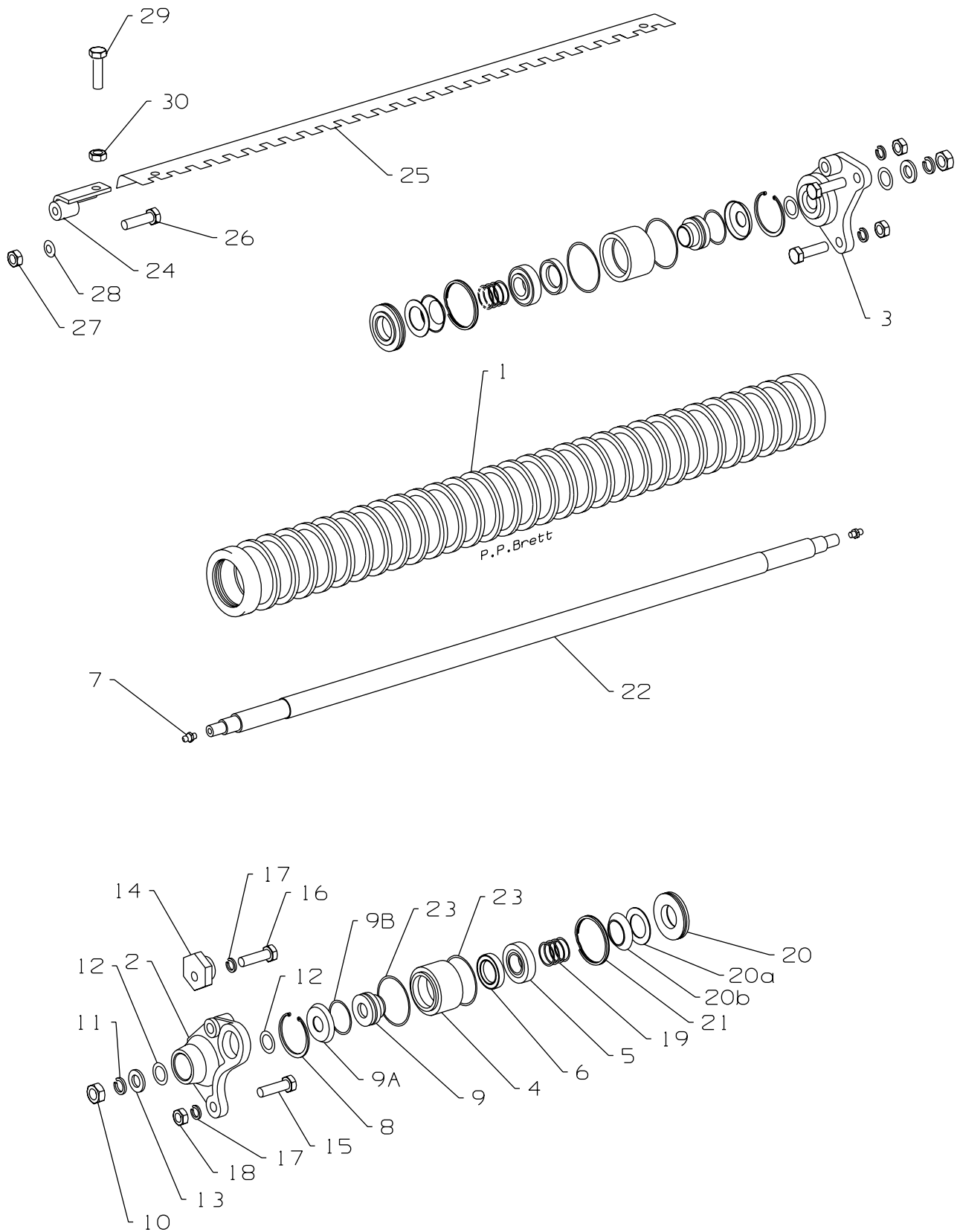
**LIST OF PARTS**

ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
81	450412	S.L.WASHER M10	4	
82	450325	NUT M10	4	
83	MBB2580	ADJUSTER	2	
84	450325	NUT M10	2	
A1	MBF1693	SPINDLE ADAPTER	2	FOR ROLL LMSE027 WITH SPANNER HEIGHT AJUSTMENT.
A2	MBF0855C	OUTER PLATE	2	

\* NOT ILLUSTRATED


**RANSOMES  
SPORT 200  
MAGNA 250**

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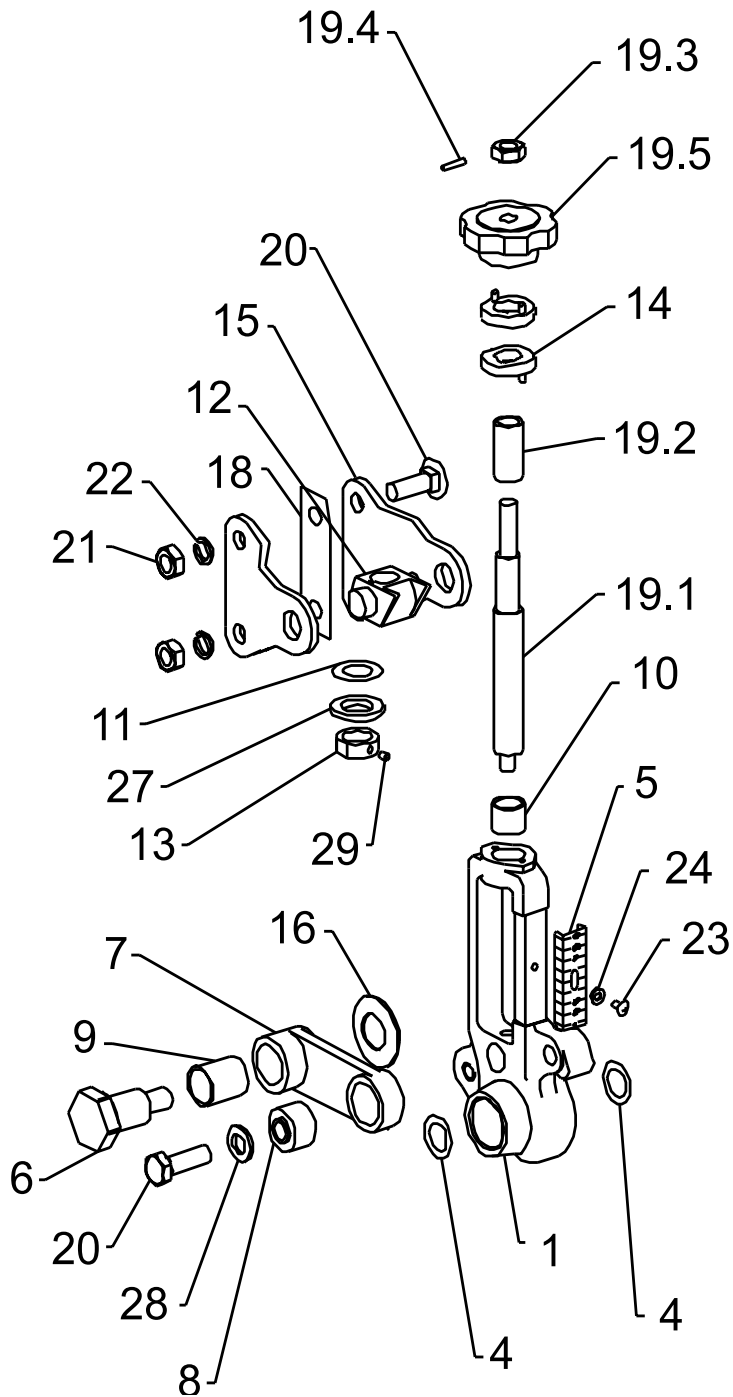


**FRONT ROLL ASSEMBLY AND ADJUSTERS**

**LIST OF PARTS**

ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
1	MBE1361A	ROLL TUBE	1	(CONT ITEM 1, 4 -13, 19 - 23)
2	MBE1413B	SUPPORT LH	1	
3	MBE1414B	SUPPORT RH	1	
4	MBE2429	BEARING HOUSING	2	
5	A205929	BEARING	2	
6	A220254	SEAL	2	
7	A299301	LUBRICATOR	2	
8	451982	CIRCLIP	2	
9	MBE2430	SEAL JOURNAL	2	
9A	MBE2431B	SHIELD	2	
9B	A230021	SEAL RING	2	
10	450326	NUT M12	2	
11	450413	S.L.WASHER 12MM	2	
12	A221910	ORING	4	
13	MBE1372	WASHER	2	
14	MBC8317A	ECCENTRIC NUT	1	
15	450215	SCREW M10 X 30	3	
16	450216	SCREW M10 X 35	1	
17	450412	S.L.WASHER 10MM	4	
18	450325	NUT M10	3	
19	A291115	SPRING	2	
20	MBF0349	RING CARRIER	2	
20A	MBF0002	WASHER	2	
20B	A292134	DISC SPRING	AR	
21	A230013	SEAL RING	2	
22	MBG0836	ROLL SPINDLE	1	
23	A221137	ORING	4	
	LMSE028	ROLL ASSEMBLY	1	
24	MBF0034	PIVOT	2	
25	MBG0095	SCRAPER	1	
26	450020	BOLT, M8 X 60, HEX HD	2	
27	450378	NUT, M8 NYLOC	2	
28	A292134	DISC SPRING	4	
29	450192	SCREW M8 X 25	2	
30	450378	NUT M8 STAYTITE	1	


\* NOT ILLUSTRATED





**HIGH HIGHT OF CUT KIT (FRONT) FOR FLOATING HEAD  
SPORT 200 (COMMANDER 3500, 3510 & 3520)**

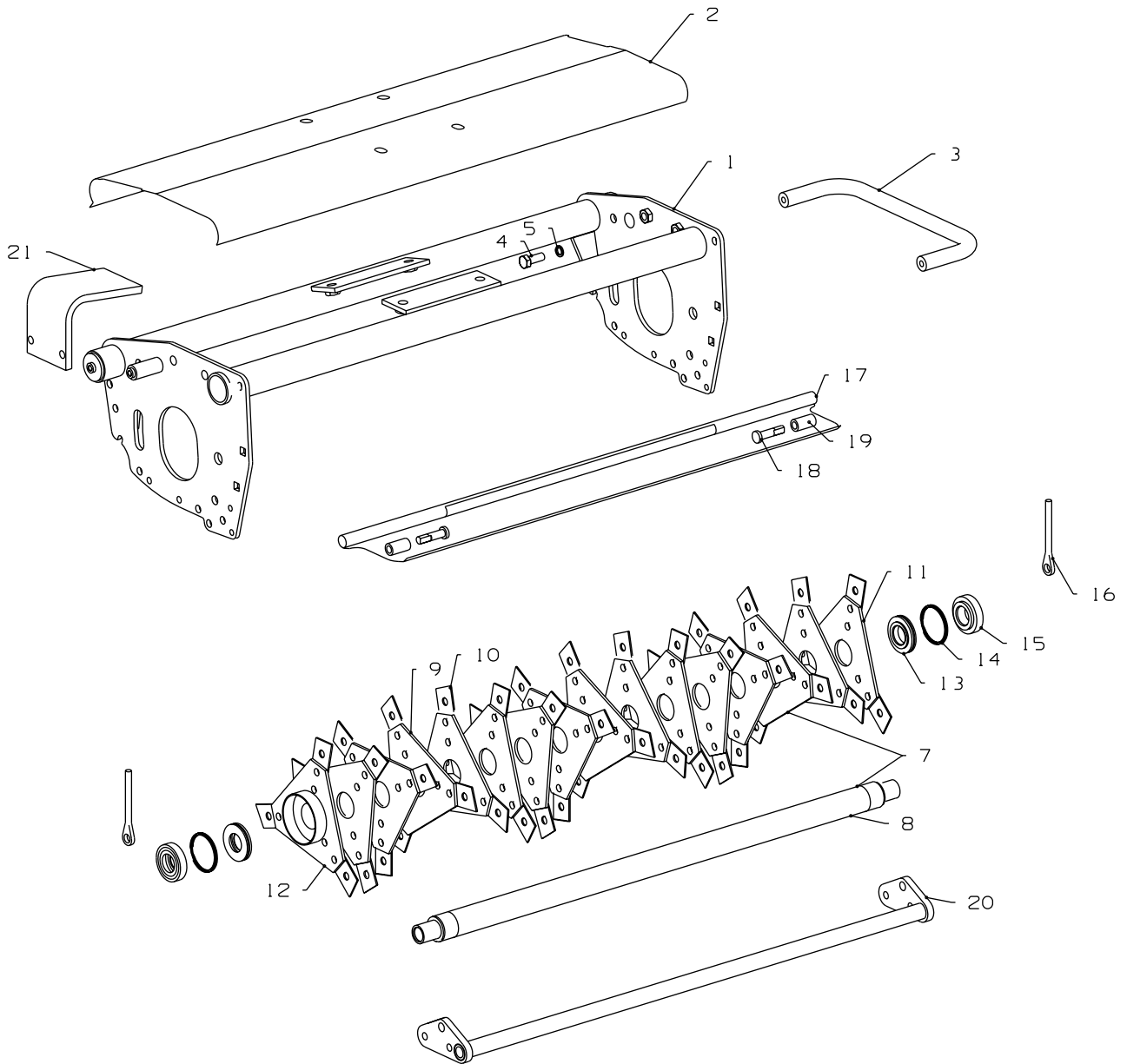
**LIST OF PARTS**

ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
	LMAB212	HIGHHOC KIT		FOR FLOATING HEAD
1	MBE1401A	• SUPPORT, LH ROLL	1	
2*	MBE1402A	• SUPPORT, RH ROLL	1	
3*	002993013	• LUBRICATOR-M6 STR	2	
4	002219100	• O-RING 16 ID X 4 SECT	4	
5	009034612	• INDICATOR	2	
6	MBC8156A	• PIN	2	
7	MBC9333C	• LEVER	2	
8	002170013	• RUBBER BUSH	2	
9	002193237	• BUSH-NYLON 20 X 23 X 25	2	
10	002193279	• BUSH-NYLON 16 X 18 X 12	2	
11	002219110	• O-RING 16 ID X 6 SECT	2	
12	MBC8160B	• NUT, TRUNNION	2	
13	MBC8568	• COLLAR, STOP	2	
14	009146512	• LOCKING WASHER — NYLON	4	
15	MBC8158B	• BRACKET	4	
16	002921345	• SPRG-DISC 20.4 X 40 X 1.5	2	
17*	MBE1372	• WSHR-12.5 X 26.15 X 3	2	FOR ITEM 6
18	MBE2252A	• PACKER	2	
19	MBE2638	• HANDWHEEL	2	
19.1	MBC9172A	•• ADJUSTING SCREW	1	
19.2	002193320	•• BUSH-NYLON 13 X 15.65 X 31	1	
19.3	450325	•• NUT-HEX M10	1	
19.4	451579	•• PIN-TENSION 3 X 16	1	
19.5	009133317	•• HANDWHEEL	1	
20	450215	• SCREW-HEX M10 X 30	6	
21	450325	• NUT-HEX M10	4	
22	450412	• LOCKWSHR-M10 X 15.9 X 2.5	4	
23	450515	• SCRW-PAN HD M4 X 8	2	
24	450387	• WSHR-M4 X 9 X 0.9	2	
25*	450380	• NUT-HEX M12 NYLOC	2	FOR ITEM 6
27	450393	• WSHR-M16 X 30 X 3.3	2	
28	450391	• WSHR-M10 X 21 X 2.2	2	
29	450940	• SCRW-SET M4 X 4, CUP PNT	2	

\* NOT ILLUSTRATED

**RANSOMES  
SPORT 200  
MAGNA 250**

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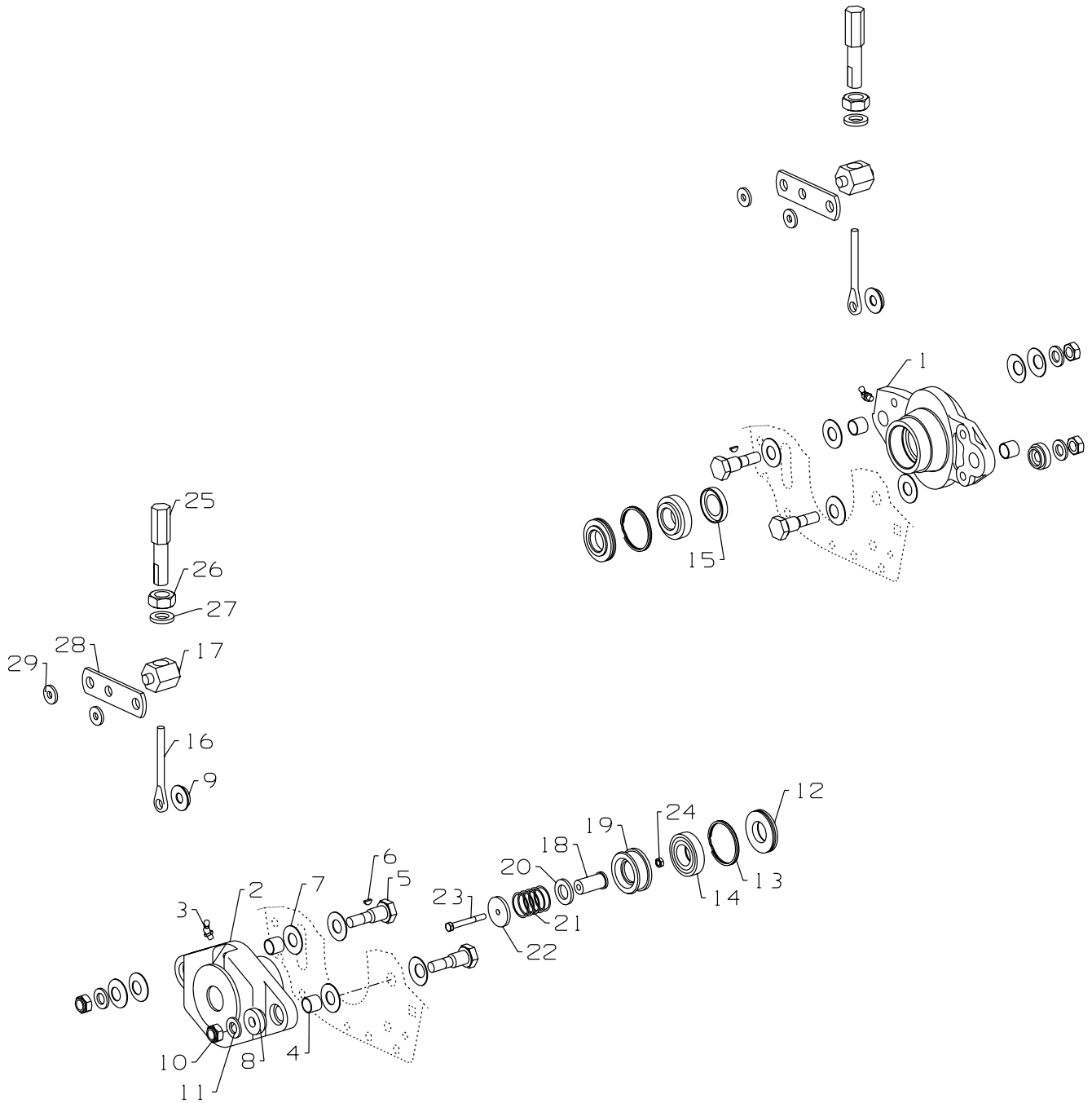


ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
1	MBC8950B	FRAME ASSEMBLY	1	
*	A295274	PLASTIC PLUG	2	
2	MBC8936	COVER	1	
3	MBE2649	GUARD	1	
4	A110396	SCREW M8 X 16	1	
5	A150008	WASHER 8MM	1	
7	MBE2669	VERTICUT CYLINDER	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
7*	MBE4148	VERTICUT CYLINDER	1	COMMANDER 3500DX / 3510
7A*	MBF1471	VERTICUT CYLINDER	1	COMMANDER 3520
8	MBC9896	SPINDLE	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
8*	MBE1627	SPINDLE	1	
9	MBE2673	COLLAR ASSY.	16	
10	A920038	BLADE	3	
10*	A110494	SCREW	3	
10*	A151010	WASHER	3	
10*	A141522	TENSION PIN	3	
11	MBE2672	END COLLAR ASSY LH	1	
12	MBE2671	END COLLAR ASSY RH	1	
13	MBE1185	RING CARRIER	2	220 M28 / PARKWAY 225 / MOTOR 350D MK5
13*	MBE2231	RING CARRIER	2	COMMANDER 3500DX / 3510 / 3520
14	A231003	SEAL RING	2	220 M28 / PARKWAY 225 / MOTOR 350D MK5
14*	A230021	SEAL RING	1	COMMANDER 3500DX / 3510 / 3520
14*	A205902	BEARING	2	220 M28 / PARKWAY 225 / MOTOR 350D MK5
14*	A209044	BEARING	2	COMMANDER 3500DX / 3510 / 3520
16	MBE2701	ADJUSTING ROD	2	
17	MBC8328D	DEFLECTOR (SHORT)	1	
18	MBC8956	BOLT	2	
19	A298383	SPACER	2	
20	MBE2679A	SUPPORT	1	
21	MBE1276	ROLLER BRACKET	2	

\* NOT ILLUSTRATED

**RANSOMES  
SPORT 200  
MAGNA 250**

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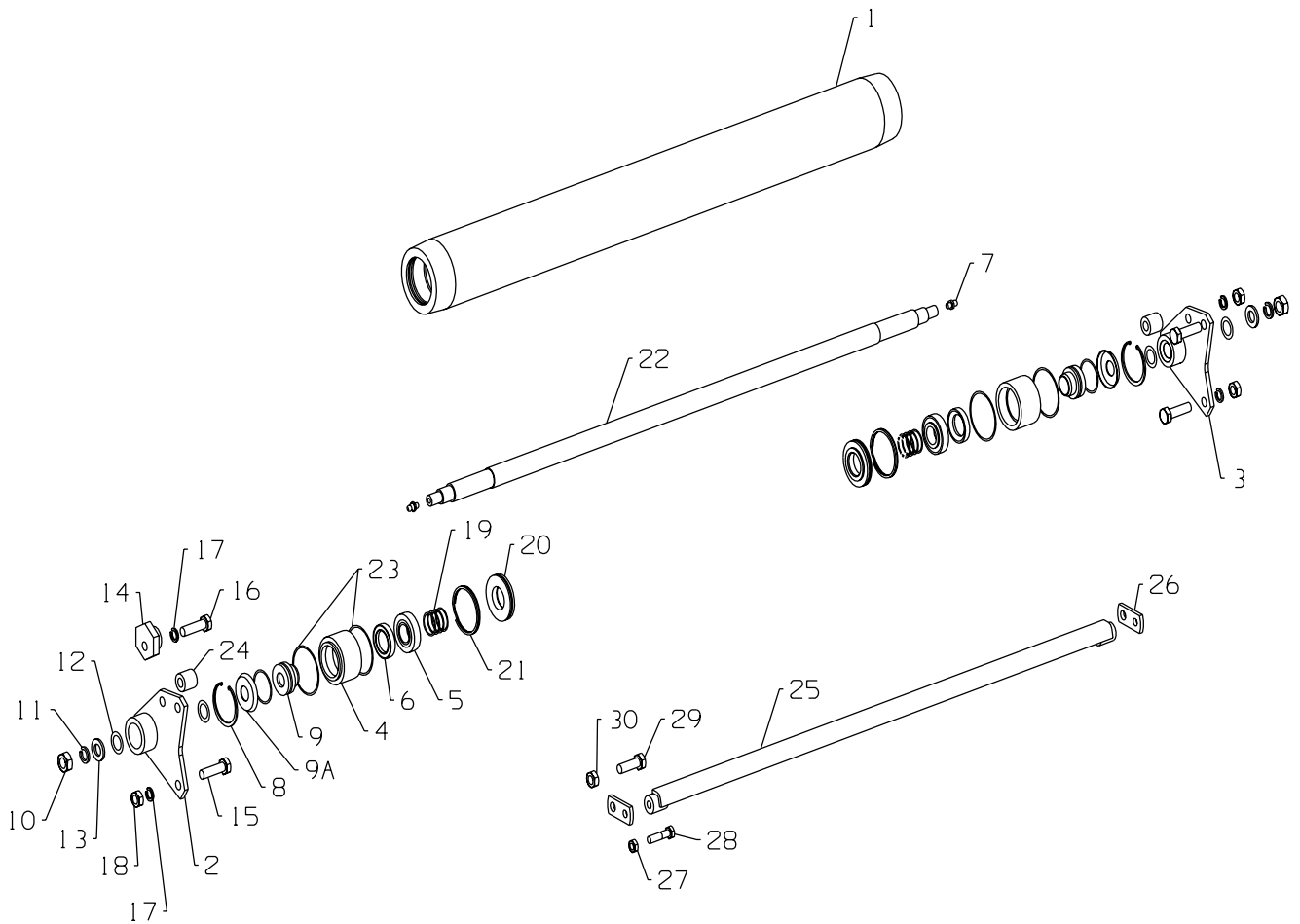


ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
1	LMSE057	BEARING HOUSING	1	(DRIVE SIDE) 220 M28 / PARKWAY 225 / MOTOR 350D MK5
*	A199302	• HELICOIL INSERT	4	
1*	MBE2229B	BEARING HOUSING	1	(DRIVE SIDE) PARKWAY 2250 / COMMANDER 3500DX / 3510 / TG 3400 & 4650
2	MBC9180B	BEARING HOUSING	1	NON DRIVE SIDE
3	A299316	LUBRICATOR	2	
4	A219324	BUSH	4	
5	MBC8191B	PIVOT PIN	4	
6	A163401	WOODRUFF KEY	4	
7	A159991	WASHER	6	
8	MBE0359	COLLAR	2	
9	MBE2703	COLLAR	2	
10	A133212	STIFFNUT M12	4	
11	A150012	WASHER 12MM	4	
12	MBE1185	RING CARRIER	2	220 M28 / PARKWAY 225 / MOTOR 350D MK5
12*	MBE2231	RING CARRIER	2	COMMANDER 3500DX / 3510
13	A230013	SEAL RING	2	220 M28 / PARKWAY 225 / MOTOR 350D MK5
13*	A230021	SEAL RING	2	COMMANDER 3500DX / 3510
14	A205902	BEARING	2	220 M28 / PARKWAY 225 / MOTOR 350D MK5
14*	A209044	BEARING	2	COMMANDER 3500DX / 3510
15	A229987	SEAL	1	220 M28 / PARKWAY 225 / MOTOR 350D MK5
15*	A230019	SEAL	1	COMMANDER 3500DX / 3510
16	MBE2701	ADJUSTING ROD	2	
17	MBE2699	TRUNNION	2	
18	MBC9178	GUIDE	1	
19	MBC9175	PLUNGER	1	
20	A150016	WASHER 16MM	1	
21	A291094	SPRING	1	
22	MBC9177	PLATE	1	
23	A100210	BOLT M6 X 50	1	
24	A133206	STIFFNUT M6	1	
25	MBE2700A	ADJUSTER	2	
26	A130016	NUT M16	2	
27	MBC9251	COLLAR	2	
28	MBE2702	PLATE	2	
29	MBE2263	WASHER	4	

\* NOT ILLUSTRATED


**RANSOMES  
SPORT 200  
MAGNA 250**

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## FRONT ROLL ASSEMBLY AND ADJUSTERS FOR VERTICUT.

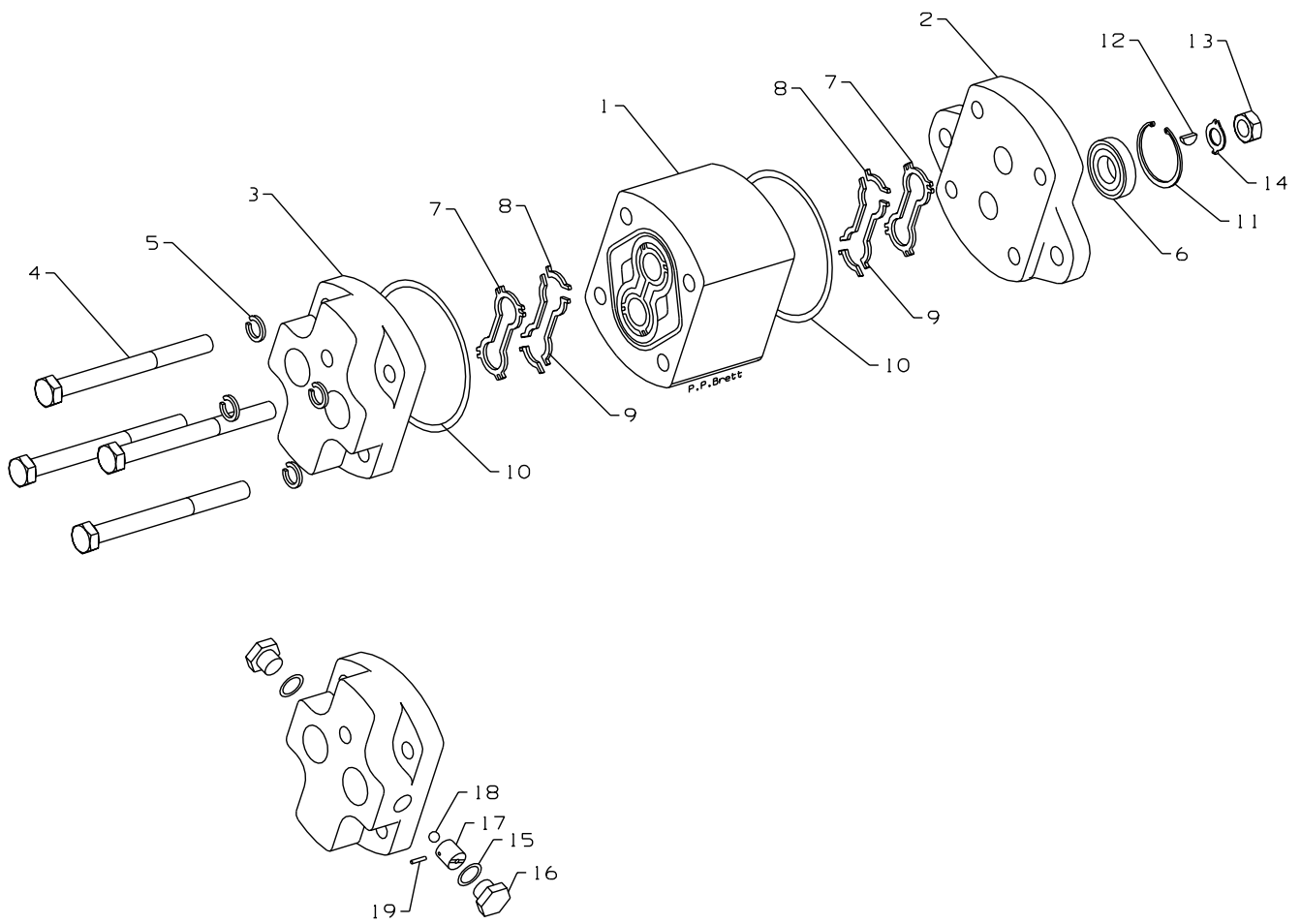
## LIST OF PARTS

ITEM	RANSOMES PART NO	DESCRIPTION 	QTY	REMARKS
1	MBE2174	ROLL TUBE	1	
2	MBE2676	SUPPORT LH	1	
3	MBE2675	SUPPORT RH	1	
4	MBE2429	BEARING HOUSING	2	
5	A205929	BEARING	2	
6	A220254	SEAL	2	
7	A299301	LUBRICATOR	2	
8	A170052	CIRCLIP	2	
9	MBE2430	SEAL JOURNAL	2	
9A	MBE2431	SHIELD	2	
9B	A230021	SEAL RING	2	
10	A130012	NUT M12	2	
11	A151012	S.L.WASHER 12MM	2	
12	A221910	ORING	4	
13	MBE1372	WASHER	2	
14	MBC8317A	ECCENTRIC NUT	1	
15	A110406	SCREW M10 X 30	3	
16	A110407	SCREW M10 X 35	1	
17	A151010	S.L.WASHER 10MM	4	
18	A130010	NUT M10	3	
19	A291115	SPRING	2	
20	MBE1363	RING CARRIER	2	
21	A230013	SEAL RING	2	
22	MBE1362	ROLL SPINDLE	1	
23	A221137	ORING	4	
24	MBE3454	SPACER	2	
25	MBE1434	SCRAPER	1	
26	MBE1415	PLATE	2	
27	A133208	STIFFNUT M8	2	
28	A100308	BOLT M8 X 40	2	
29	A110406	SCREW M10 X 30	2	
30	A133210	STIFFNUT M10	2	
30*	MBE3195A	SPRING RETAINER TOOL	1	TO DISMANTLE C/U ROLL.
31*	A906712	SCRAPER (WIRE)	1	
32*	A133208	STIFFNUT M8	2	

\* NOT ILLUSTRATED

**RANSOMES  
SPORT 200  
MAGNA 250**

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# HYDRAULIC MOTOR (BELT DRIVE)

# LIST OF PARTS

Motor identification      A800008 - Ultra code - 1MR022R 8604 (new code 1761) Used on Parkway 225 L & RH Drive Unit  
 A800008 - Ultra code - 1MR022R 8604 (new code 1761) Used on 220 M28 4WD L & RH Drive Unit  
 A809624 - Ultra code - 1MR022C 8628 (new code 3362) Used on Motor 350D Mk5 RH Drive Unit  
 A809625 - Ultra code - 1MR022A 8628 (new code 3361) Used on 350D Mk5 LH Drive Unit

ITEM	RANSOMES PART NO	DESCRIPTION	QTY	REMARKS
				
	A800008	HYDRAULIC MOTOR	1	
	A809624	HYDRAULIC MOTOR	1	
	A809625	HYDRAULIC MOTOR	1	
1	N/A	• BODY ASSEMBLY	1	
1	N/A	• DOWEL AND MATCHED	1	
1	N/A	• GEARS	1	
2	N/A	• FLANGE	1	
3	N/A	• COVER	1	
4		• BOLT	4	
5		• S.L.WASHER	4	
	A230018	• SEAL KIT (ITEM 6 - 14)	1	FOR A800008
	A230020	• SEAL KIT (ITEM 6 -15)	1	FOR A809624/A809625
6	A229945	•• SHAFT SEAL	1	
7	N/A	•• BACK UP SEAL	2	
8	N/A	•• BUSH SEAL	4	
9	N/A	•• BUSH SEAL	4	
10	N/A	•• O RING	2	
11	N/A	•• CIRCLIP	1	
12	GSF2230AF	•• KEY	1	
13	GSF2051AD	•• NUT	1	
14	H200038	•• TAB WASHER	1	
	A230020	• SEAL KIT (ITEM 6 -15)	1	FOR A809624/A809625
6	A229945	•• SHAFT SEAL	1	
7	N/A	•• BACK UP SEAL	2	
8	N/A	•• BUSH SEAL	4	
9	N/A	•• BUSH SEAL	4	
10	N/A	•• O RING	2	
11	N/A	•• CIRCLIP	1	
12	GSF2230AF	•• KEY	1	
13	GSF2051AD	•• NUT	1	
14	H200038	•• TAB WASHER	1	
15	N/A	•• O RING	2	
16		• PLUG	2	
	A809630	• CHECK VALVE (ITEM 17-19)	1	
17	N/A	•• BODY	1	
18	N/A	•• BALL	1	
19	N/A	•• SPRING PIN	1	

\* NOT ILLUSTRATED







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Ransomes Jacobsen Limited  
Central Avenue, Ransomes Europark, Ipswich, England, IP3 9QG  
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