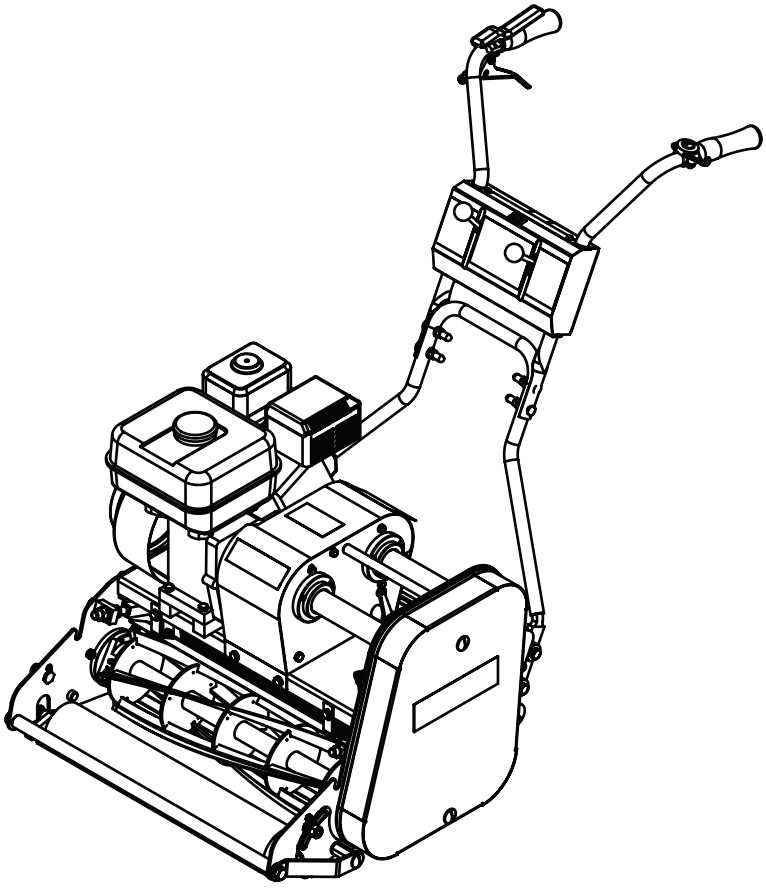
SIMPLEX



SIMPLEX CYLINDER MOWER INSTRUCTION MANUAL

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SP20006_REV_1
10/12

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Product Application Matrix

Application	FT	Razor Range	Razor 560	Simplex Ultra 560	G560 Range	SuperSix G680	G660/G760 Range	Premier G860	Contractor Range	Bray Hand	S500 Tools	Gang Plus	Mower
Bowling Green		✓	✓	✓			✓			✓	✓	✓	
Cricket Ground Maintenance:	wicket	✓	✓	✓						✓	✓	✓	
square	✓			✓	✓	✓	✓	✓					
outfield							✓	✓				✓	
Football Pitch							✓	✓				✓	
Golf Course Maintenance:	Tees	✓			✓	✓	✓	✓		✓	✓		
Greens	✓	✓	✓						✓	✓	✓		
Ornamental	✓			✓	✓	✓	✓						
Croquet Green		✓	✓	✓	✓		✓	✓		✓		✓	
Grass Tennis Court		✓	✓	✓			✓			✓	✓	✓	
Race Course Maintenance:	Parade Ring	✓			✓	✓	✓	✓	✓	✓			
Ornamental		✓			✓	✓	✓	✓	✓	✓			✓
Rugby Pitch							✓	✓				✓	
Hockey Pitch							✓	✓					
Sports Club Maintenance		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Schools, Colleges & University Grounds		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cemetery Maintenance				✓	✓	✓	✓						
Contractors, Private Lawns & Commercial		✓			✓	✓	✓	✓		✓			✓
Local Authority & Government Contracts		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ornamental Lawn		✓			✓	✓	✓	✓	✓	✓			✓

NOTE

THIS INFORMATION IS INTENDED FOR GUIDANCE PURPOSES ONLY. WE RECOMMEND THAT YOU DISCUSS YOUR SPECIFIC REQUIREMENT WITH OUR HEAD OFFICE, SALES MANAGERS OR YOUR LOCAL DENNIS DEALER.

Certificate of Conformity

Simplex Cylinder mowers powered by Honda GX Petrol Engine

Manufacturer:- Howardson Ltd, Howardson Works, Kirk Langley, Derby, DE6 4NJ. UK

Owner of Technical Document:- Mr I.D. Howard, Howardson Ltd, Howardson Works Kirk Langley, Derby, DE6 4NJ, UK

Notified Body:- AV Technology Ltd, AVTECH house, Arkle Avenue, Stanley Green Trading Estate, Handforth, Cheshire, SK9 3RW, UK

I the under signed Declare that these machines:-

Model	Cutting Width	Power (Honda)	Measured Sound Power Level	Guaranteed Sound Power Level	Serial Number
510	20" (510mm)	GX120	91dB Lwa	94dB Lwa	See Product ID range
610	24" (610mm)	GX120	91dB Lwa	94dB Lwa	See Product ID range

Tested at:- Howardson Works test site September 2011

Complies with the applicable requirements of:-
- Machine Directive 2006/42/EC
- Noise Directive 2000/14/EC (Annex VI Procedure 1)

Managing Director

Ian Howard

Serial Numbers

NOTE *MAKE A NOTE OF THE SERIAL NUMBERS OF YOUR MACHINE & ENGINE AND ALWAYS QUOTE THEM IN ANY COMMUNICATION WITH PERSONNEL AT DENNIS.*

MACHINE SERIAL NUMBER

ENGINE SERIAL NUMBER

Introduction

The reliability and quality of performance of the **DENNIS SIMPLEX** depends upon some simple care maintenance carried out regularly. This manual has been prepared to allow the user to carry out all such work.

It is advisable to read the instructions carefully. Proper care and attention will enable the machine to give a continuous, satisfactory, and reliable service. Failure to carry out regular lubrication and maintenance as outlined in this manual may render any guarantee or warranty invalid.

In the case of any difficulty, or if further information or advice is required, our Service Department is always at your call. In the interests of speed and accuracy of information please quote the serial numbers of the machine and engine when making enquiries.

For the mower, this is to be found on a plate attached to the side frame. The engine number is stamped on either the crank case or the gear casing facing towards the front of the machine. We suggest you write the numbers on the front page of this book.

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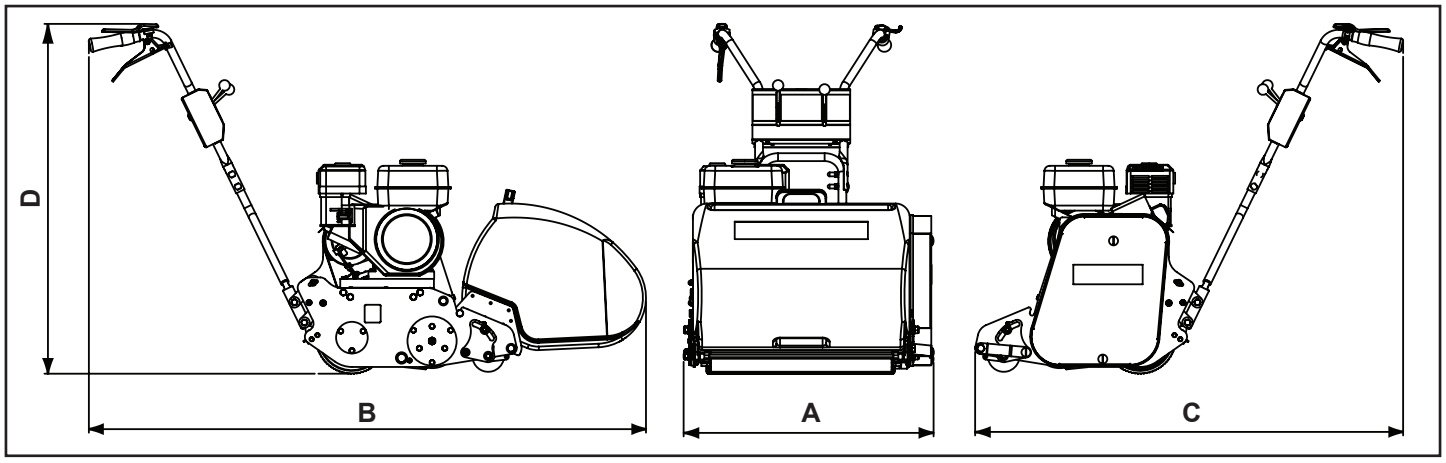
Technical Data



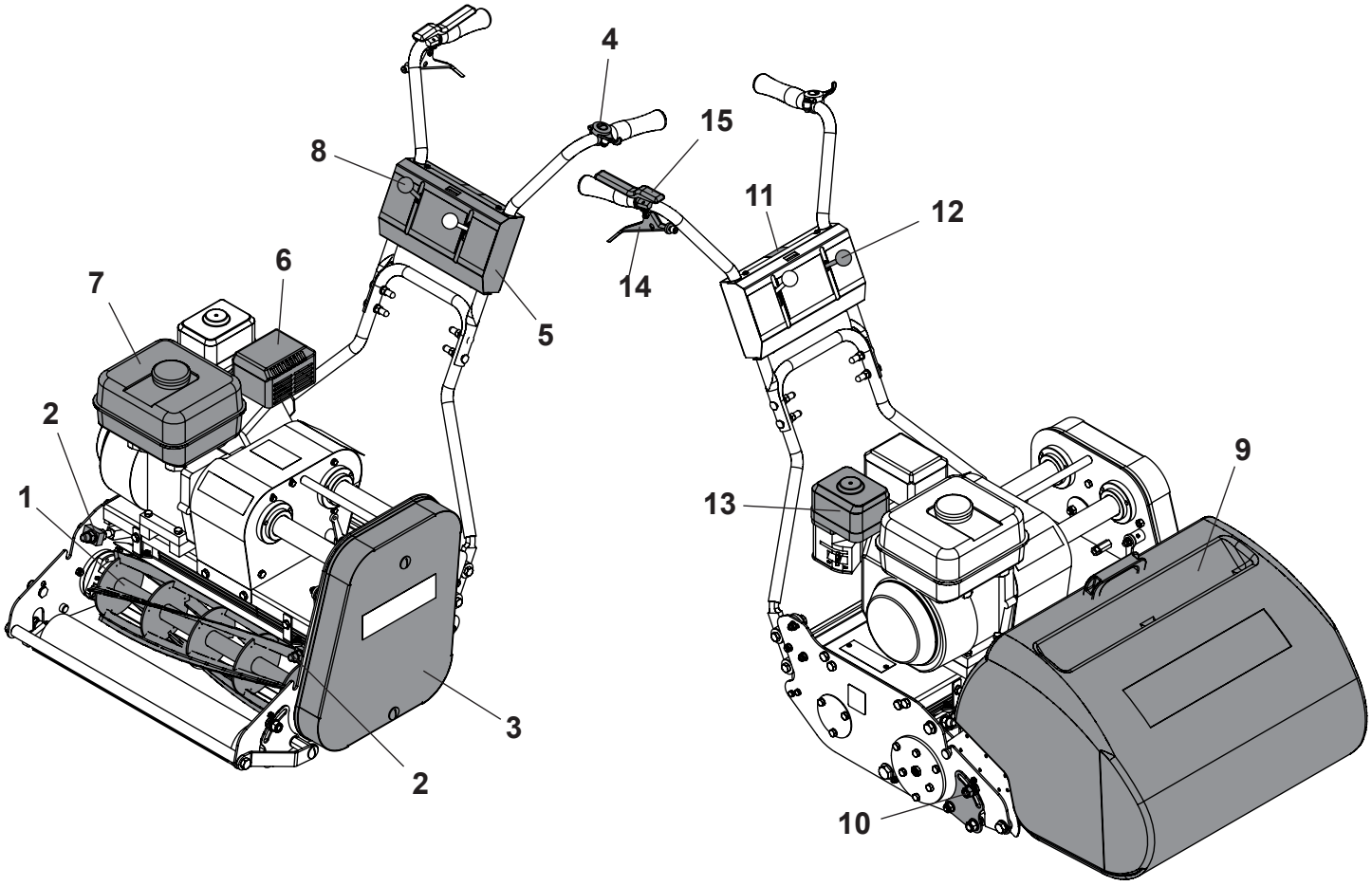
Model	510	610
A - Width (mm)	703	803
B - Length with Grassbox (mm)	7566	1566
C - Length without Grassbox (mm)	1203	1203
D - Height (mm)	983	983
Weight (Kg)	120	125
Cutting Width (mm)	510	610
Cylinder	5 or 7 blade	5 or 7 blade
Height of Cut (mm)	6 - 30	6 - 30
Cut Performance (5 Blade)	100 cuts/m (92 cuts/yd)	100 cuts/m (92 cuts/yd)
Cut Performance (7 Blade)	140 cuts/m (128 cuts/yd)	140 cuts/m (128 cuts/yd)
Engine	Honda GX120	Honda GX120
Drive System	“V” Belt	“V” Belt
Final Drive	Poly “V” high performance belts under constant tension	Poly “V” high performance belts under constant tension
Hand Arm Vibration (m/sec^2)	1.9	1.9
Measured Sound Power Level dB(A) LWA	91	91
Guaranteed Sound Power Level dB(A) LWA	95	95

Manufactured with a 20” (51cm), or 24” (61cm) cutting width, this range of machines is powered by a 4.0hp air cooled, single cylinder, four stroke petrol engine.

The rear roller and cutter are controlled independently via belt clutches operated from the console on the upper handle bar. (ITEM 5). A parking brake is fitted for added safety when working on sloping ground.

In the design of the machine, special attention has been given to the importance of easy service and maintenance with the construction based on a sectional assembly system. These are the Engine Unit, the Cylinder, the Rear Roller Unit, and the Front Roller Unit, each of which can be readily removed individually from the main Frame Chassis Unit.

The interchangeable cassette system allows a variety of cassettes to be used for varying applications.



1. Cylinder
2. Bottom Blade Adjuster Knob
3. Belt Guard
4. Throttle Control Lever
5. Operating Console
6. Exhaust
7. Fuel Tank
8. Brake Lever
9. Grassbox
10. Cutting Height Adjustment
11. On / Off Switch
12. Cylinder Control Lever
13. Air Filter
14. Driving Control Lever
15. Deadmans Handle
16. On / Off Switch

In order to operate the machine safely please follow these Health and Safety guidelines.

TRAINING

CAUTION *READ THE INSTRUCTIONS CONTAINED IN THIS MANUAL WITH CARE. IF YOU ARE IN ANY DOUBT PLEASE ASK YOUR EMPLOYER OR CONTACT US DIRECT AT **DENNIS**.*

- Be familiar with the controls and the proper use of the equipment.
- Never allow children or people unfamiliar with these instructions to use the mower. Local regulations or insurance may restrict the age of the operator.
- Never mow while people, especially children, or pets are nearby.
- Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.

PREPARATION

- While mowing always wear substantial footwear and long trousers. Do not operate the mower barefoot or in open sandals.
- Thoroughly inspect where the equipment is to be used and remove all stones, sticks, wire, bones and other foreign objects.

WARNING *PETROL IS HIGHLY FLAMMABLE AND WILL DAMAGE GRASS IF SPILT.*

A) Store fuel in containers specifically designed for this purpose.
B) Refuel out doors and do not refuel whilst smoking.
C) Add fuel before starting the engine. Never remove the cap of the fuel tank or add petrol while the engine is running or when the engine is hot.
D) If petrol is spilled do not attempt to start the engine but move the machine away from the area of spill and avoid creating any sources of ignition until the vapours have dissipated.

- Replace damaged or faulty silencers.
- Before using the machine always inspect the safety devices including the cut off switch and the blades for excessive wear or damage. Replace if necessary.

OPERATION

- Do not operate the engine in a confined space where dangerous **CARBON MONOXIDE** fumes can collect.
- Mow only in daylight or good artificial light.
- Avoid operating the machine in wet grass where feasible.
- Always be sure of your footing on slopes.
- Walk. Never run.
- Walk across the face of slopes, never up and down.
- Exercise extreme care on slopes when changing direction.
- Do not mow excessively steep slopes.
- Use extreme caution when reversing or pulling the machine towards you.
- Stop the blades if the mower has to be tilted for transportation when crossing surfaces other than grass and when transporting the mower to and from the area to be mown.
- Never operate the mower with defective guards or shields or without the safety devices, for example without the deflector plate or grassbox in place.
- Do not change the engine governor settings or overspeed the engine.
- Disengage all blades and drive clutches before starting.
- Start the engine carefully following the instructions with feet well away from the blades.
- Do not tilt the mower when starting the engine.
- Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times.
- Never pick up or carry the mower while the engine is running.

FOR THE LOCATION OF CONTROLS AND COMPONENTS REF "MACHINE DESCRIPTION", PAGE 5

ON / OFF SWITCH (Item 11)

This switch stops the engine and can be used to do so at anytime during the operation of the machine. Ensure it is in the **"ON"** position before attempting to start the engine.

DEADMANS CONTROL (Item 15)

This is an operator presence control. The engine will tick over without need for this to be depressed when the cylinder and drive are disengaged. This must be depressed before the drive or cylinder can be engaged. Failure to do so will cause the engine to stop.

NOTE *IF THE **"DEADMANS CONTROL LEVER"** IS DEPRESSED WHILE THE PARKING BRAKE IS ON THE ENGINE WILL STOP.*

PARKING BRAKE CONTROL (Item 8)

This controls the parking brake. It is only to be engaged when the machine is stationary, it is **NOT** to stop the machine. Push lever forwards to engage and pull back to disengage.

NOTE *IF THE **"DEADMANS CONTROL LEVER"** IS DEPRESSED WHILE THE PARKING BRAKE IS **ON** THE ENGINE WILL STOP.*

THROTTLE CONTROL (Item 4)

This controls the RPM of the engine and the resultant speed of the machine. Pushing the lever forwards will increase the RPM, pulling it back returns the engine to idle.

DRIVE CONTOL (Item 14)

This controls the machine movement. Pulling the lever upwards will engage the belt clutch and cause the machine to drive. Returning it to the original position will cause the machine to stop.

CYLINDER CONTROL (Item 12)

This controls the cylinder drive. Pushing the lever forwards will engage the belt clutch and cause the cylinder to rotate. Returning it to the original position will cause the cylinder to stop.

CAUTION *BEFORE YOU OPERATE THIS MACHINE **YOU MUST READ** AND **STUDY** THIS MANUAL. IF YOU ARE IN ANY DOUBT PLEASE ASK YOUR EMPLOYER OR CONTACT US DIRECT.*

PREPARATION FOR USE

- Before commencing ensure the turf is free from stones or other obstructions which may damage the cassette unit.
- Set the height of cut to the required level (see page 10)
- Check the engine.
- Fill the fuel tank 3/4 full with unleaded petrol.
- Always check the oil levels of the machine prior to commencing. Full details are given in the **ENGINE** Manual, which accompanies this book. A daily check is recommended. (Recommended grade oil is SAE 10W-40).
- Disengage the cylinder drive. (see next page)
- Set the throttle control on the handle bars to the idle position.

CAUTION ***IMPORTANT INFORMATION** PLEASE READ ALL THE DETAILS IN THIS SECTION AND FAMILIARIZE YOURSELF AND ALL MACHINE OPERATORS WITH THE CONTENTS.*

STARTING THE ENGINE

Once the preparatory steps have been completed as outlined on page 7 the engine may be started. (See manufacturer operating manual for full details).

1) Switch on the fuel tap.
2) Switch the handlebar cut off switch to **ON**, or depress deadmans handle (Item 1)
3) Set the throttle control to a half open position.
3) Shift the choke lever to the appropriate position. Honda engine set to the **CLOSE** position). The choke is not required if the engine is warm or the air temperature high.
4) Grasp the recoil start handle until resistance is felt, then pull it with force.
5) Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.
6) Once the engine is started gradually 'open' the choke lever (move the lever towards the **RUNNING**, or **OPEN** position). Warm-up running of 3-5 minutes is recommended.

STOPPING THE ENGINE

1) Set the throttle control to the **CLOSED** position.
2) Switch the handlebar cut off to **OFF** or release deadmans handle.
3) Close the fuel tap.

TO COMMENCE DRIVING (TRANSPORT BETWEEN SITES / NO CUTTING)

- Ensure the **"Parking Brake"** is disengaged.
- Depress the **"Deadmans Handle"** (Item 15)
- Pull the **"Drive Control Lever"** (Item 14) upwards.
- Set the **"Throttle Control Lever"** to increase / reduce speed.

TO STOP DRIVING

- Release the **"Drive Control Lever"** (Item 14) backwards.

TO COMMENCE CUTTING

- Depress the **"Deadmans Handle"** (Item 15)
- Push the **"Cylinder Control Lever"** (Item 12) forwards.
- Push the **"Drive Control Lever"** (Item 14) forwards.
- Set the **"Throttle Control Lever"** to increase / reduce speed.

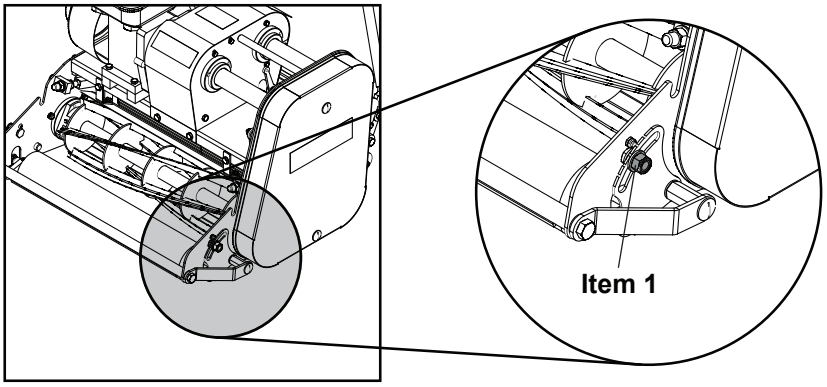
TO STOP CUTTING

- Release the **"Drive Control Lever"** (Item 14)
- Pull the **"Cylinder Control Lever"** (Item 16) backwards.
- Release the **"Deadmans Handle"** (Item 15)

NOTE *RELEASING THE "**DEADMANS CONTROL LEVER"** WITH THE CUTTER ENGAGED WILL CAUSE THE ENGINE TO STOP*

SETTING FOR HEIGHT OF CUT

Always stop the engine before adjusting the height of cut. Failure to do this may result in serious injury. The length of grass after cutting depends on the setting of the front roller in relation to the main frame of the machine.

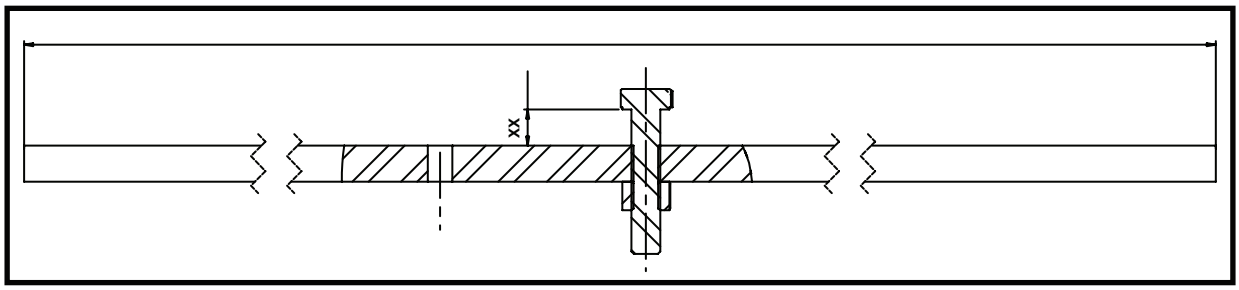


To set:

- Slacken the clamp nuts on the front roller quadrants (Item 1) [19mm spammer].
- Rotate the quadrants, raising and lowering the machine. As a guide, there are notches in the quadrant and holes in the side plate. Align these on both sides to level the machine.

To check the height of cut and that the machine is level a setting bar (229524) can be used. Place the bar between the front and rear rollers, resting the underside of the bolt head on the lip of the shear blade.

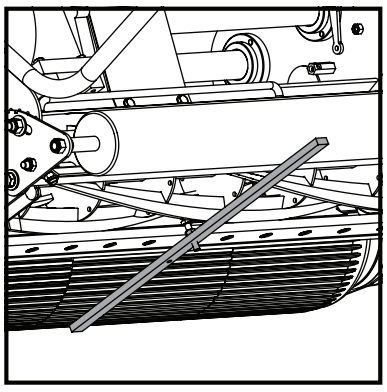
Either a ruler or pile of coins can be used to set the setting bar to the correct position. You are measuring the distance between the bar and the underside of the button head screw (***'XX'*** in the Image below).



As an indication coins measure the following:-

- 1p 1.58mm (0.063") *- 2p 1.80mm (0.071")* *- 5p 1.73mm (0.067")*
- 10p 1.84mm (0.072") *- 50p 1.84mm (0.072")* *- £1.00 3.14mm (0.124")*

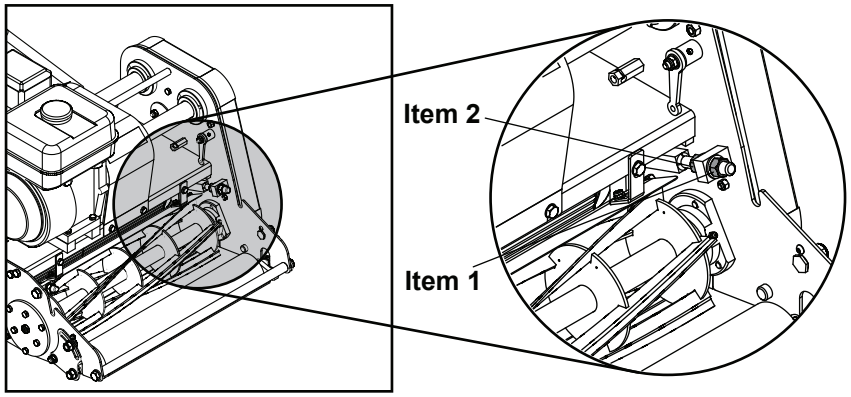
Remember height of cut is effected by moisture of turf , weight of machine and the thatch density. Different makes of machine cut at different heights when set to the same position with the setting bar. We suggest you set it to a couple of mm above your planned height and then come down in height by trial.



Always check height of cut/operation with the setting bar provided. Check in two positions i.e. one at either end of the cassette. Failure to do this could result in an uneven cut.

SETTING THE CYLINDER

The cylinder cassette can be set either in or out of the machine. To remove the cassette see page 12.



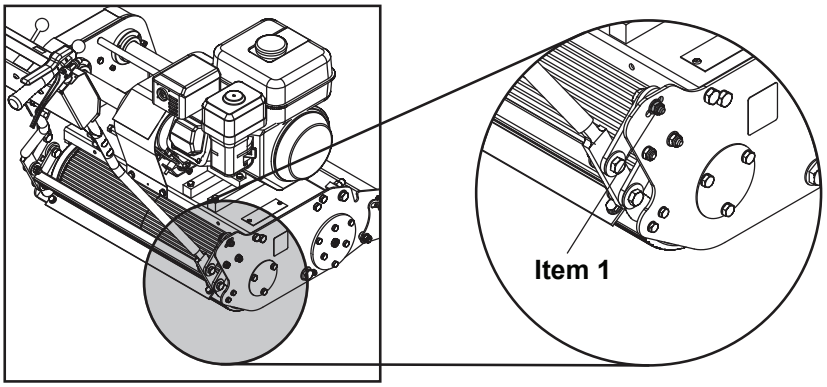
To set:

- Slacken 2-off lock nuts (item 1) [19mm spanner]
- Rotate nut (item 2) anti-clockwise to bring the blade towards the cylinder.
- Check the setting using thin paper along the length of the cylinder.
- Adjust until it cuts along the whole length.
- When set, tighten the lock nut (item 1)
- Recheck adjustment.
- **DO NOT** set the cylinder hard to the bottom blade. This will cause excessive wear of both components and increase fuel consumption.

HANDLEBAR ADJUSTMENT

The height of the Handle Bars can be adjusted to suit various operators. Follow the below instructions:-

1. Remove Bolt (Item 1) on both sides of the machine.
2. Select the required position out of the 3 available.
3. Replace the Bolt on both sides of the machine.



GRASS BOX

If using the grass box, place the two locating tabs (projecting from the grass box support plates) into the slots on the machine side plate. Lower the front of the box until the box support plates rest on the front cross bar of the machine. Ensure both box support plates are properly located before proceeding.

Always disengage the cylinder drive before removing the grass box for emptying or access by reducing the engine revs to tick over. Wait for the cutter to stop before removing.

Always keep fingers away from the cylinder when the engine is running. Stop the machine before making any adjustments.

Hold the grass box firmly on the lip of the aperture and place the other hand on the front edge of the box.

ENGINE

The machines are fitted with a Honda GX160 or GX200 petrol engine.
For full specifications please refer to the manufacturers instruction manual included.

Area	Maintenance	First 4 Hours	First Month / 20 Hours	3 Months / 50 Hours	6 Months / 100 Hours
Engine Oil	Check Level	✓			
Engine Oil	Change		✓		✓
Air Filter	Check Condition / Clean		✓		✓
Spark Plug	Change				✓

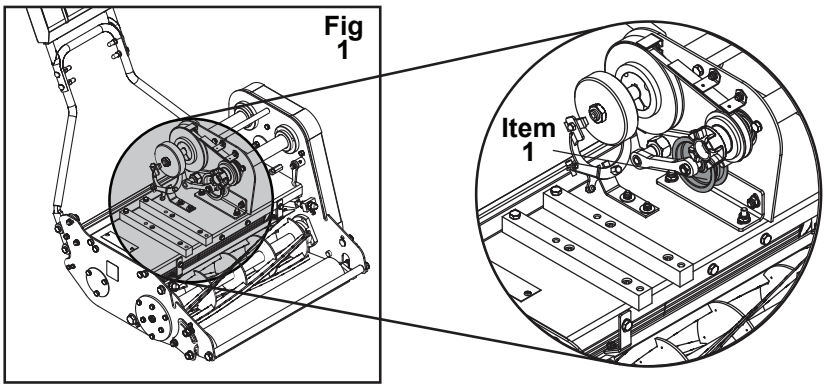
OIL / FUEL TYPE & QUANTITY - SPARK PLUG TYPE

Engine Model	Oil Type	Quantity (Ltr)	Fuel Type	Capacity (Ltr)	Spark Plug Type	Electrode Gap (mm)
Honda GX120 Petrol	SAE 10W-40	0.6	Unleaded	2.5	BM6ES or BPR6ES	0.7 - 0.8

ROLLER CLUTCH

The Primary Rear roller drive belt is shown in Fig 1. This is a special Kevlar V belt design for clutching applications. The Rear roller clutch pulley moves into tension the belt via a control cable. The tension in the cable can be adjusted as shown in Fig 1 [13mm spanner].

Under tensioning this belt will lead to slip and cause rapid wear. Over tension will put excessive stain on the belt and bearings.



The Secondary Rear roller drive belt is shown in Fig 2 (item1). This is a hard wearing poly-V belt. Belt tension is the single most important factor necessary for long,
satisfactory service life of any belt drive.

Under-tensioning leads to belt slip causing rapid wear; over tensioning means excessive strain on belt and bearings. Between these two extreme conditions is a reasonable range of tension within which the belt will operate. Belt tension can be assessed by the ‘deflection’ method.

NOTE

CORRECTION CAN BE MADE BY ADJUSTMENT OF THE BELT TENSIONERS. REMOVE THE DRIVING BELT COVER. THE BELT TENSIONERS ARE RETAINED IN A SLOTTED HOLE ALLOWING ADJUSTMENT TO BE MADE ONCE THE HOLDING HEXAGON HEADED BOLTS HAVE BEEN LOOSENED. WHEN ADJUSTED CORRECTLY THE TENSIONERS SHOULD STILL ROTATE EASILY WITH FINGER PRESSURE. ENSURE THE TENSIONER BOLTS ARE SECURE BEFORE REPLACING THE COVER.

“Belts will be sufficiently tensioned if the deflection force applied at mid span to produce a deflection equal to 16mm per meter of span distance falls between 5 and 9 Newtons per Rib” (TBA Belting).

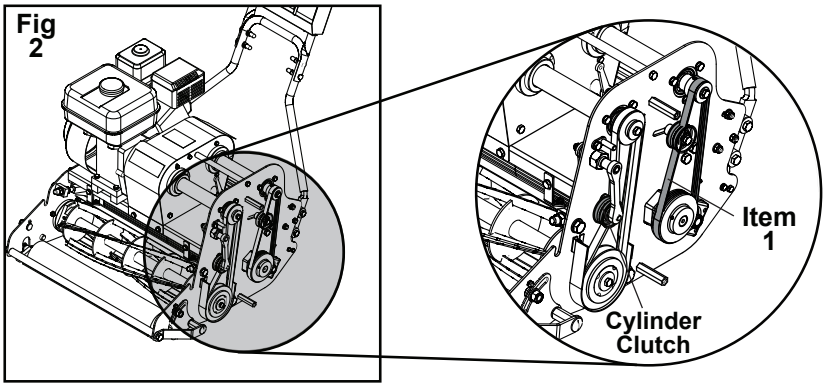
In practical terms this relates to about 5mm of deflection under moderate finger pressure on the non tensioner side.

If fitting new belts it is advisable to observe the drive for the first 20-30 minutes. It may be necessary to make an adjustment to compensate for the normal drop in tension during the run-in period.

CYLINDER CLUTCH

The Cylinder drive belts are shown in fig 2 (item 2). There are special Kevlar V belts fitted in pairs and designed for clutching applications. The cylinder clutch pulley moves into tension the belt via a control cable. The tension in the cable can be adjusted as shown in fig 2 [13mm spanner].

Under tensioning this belt will lead to slip and cause rapid wear. Over tension will put excessive stain on the belt and bearings.



CABLE ADJUSTMENT

Over time the cables that operate the clutch pulleys and the brake will need adjusting. This adjustment can be carried out at either end of the cables [10mm spanner].

NOTE *NEITHER CLUTCHES OR BRAKE SHOULD OPERATE WITH THE CONTROLS IN THE OFF POSITION.*

NOTE *ENSURE THE LOCK NUTS ARE TIGHT AND SECURE AND CHECK OPERATION IS SATISFACTORY BEFORE REPLACING THE CLUTCH COVER AND SCREWS.*

Storage

The machine should always be kept in a clean dry place, free from condensation. After use ensure that the machine is thoroughly clean, dry and free from grass and mud. Before off season storage smear a thin layer of grease on to the cutter blades and the shear blade.

Under no circumstances must the machine be steam cleaned as this may remove grease from the pre packed bearings.

Because of the nature of lead free petrol we recomend that if the machine is being left unused for more than 2 weeks the carburetor is run dry. Allow the engine to run out of fuel with the fuel tap switched off.

REAR ROLLER

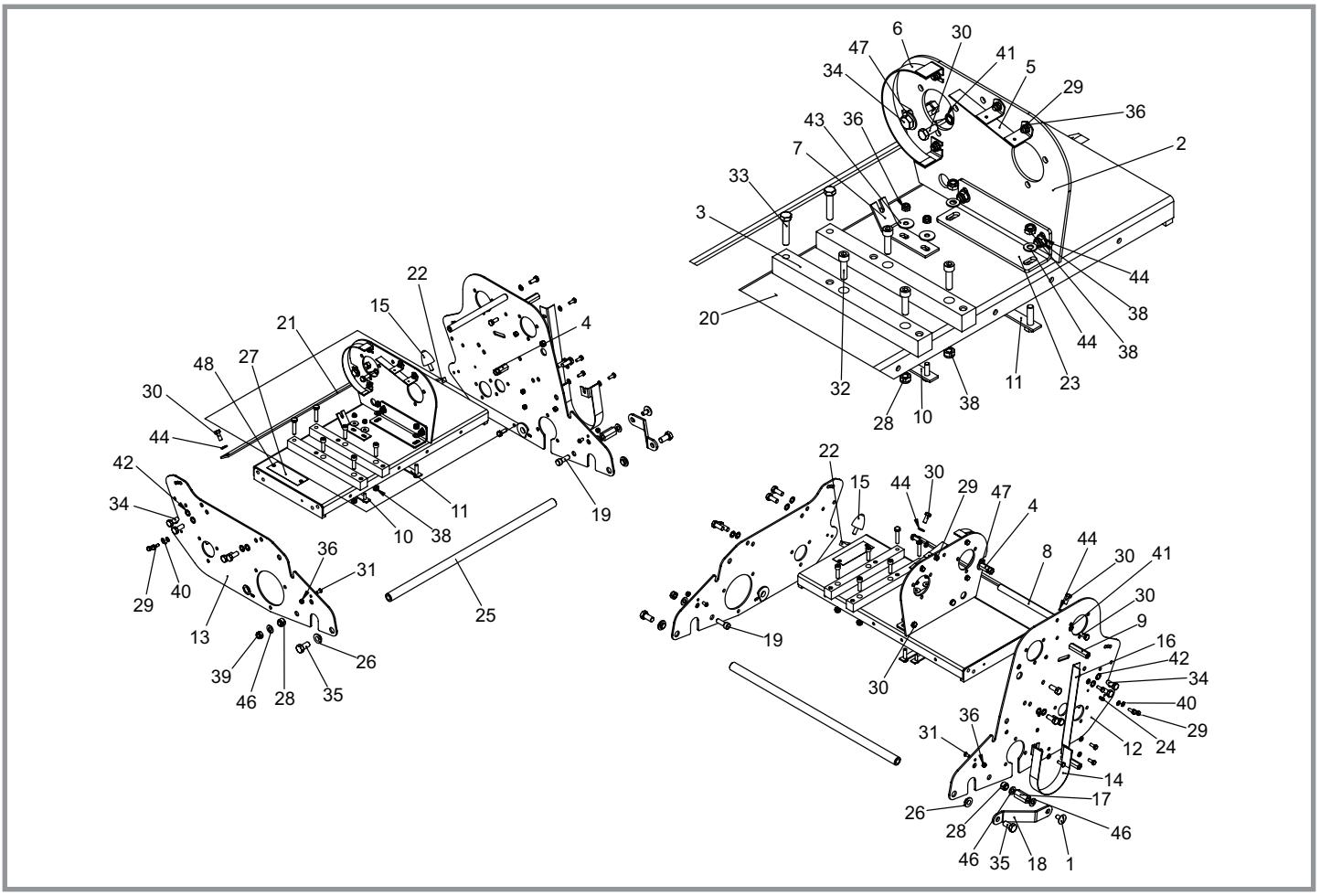
(1-month)
A grease point is located under the belt guard on the side plate of the machine. This is to lubricate the internal spur gear that provides drive to the rear roller. Apply one pump of grease. Do not over grease.

CONTROL LEVERS AND CABLES

(2-months)
Apply a small amount of oil to the control cables. Flow down the protective cables can be assisted by operating the lever a few times after lubricating.

FRONT ROLLER ADJUSTERS

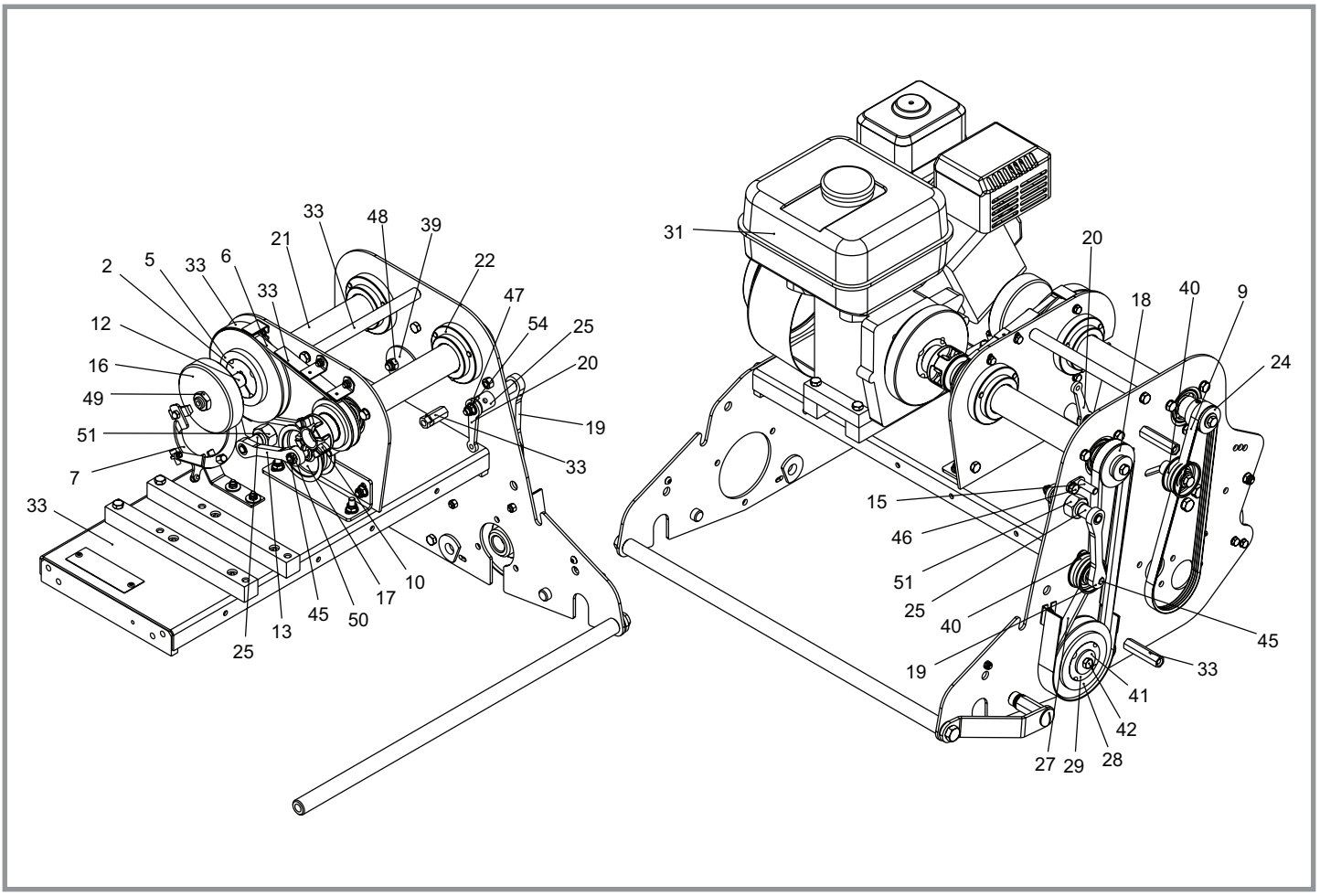
(2-months)
Apply a small quantity of copper grease or similar to the adjuster studs to prevent corrosion and ease adjustment.



1.01 Chassis - Main Assembly

Item No.	Part No.	Description	Quantity
1	194946	Chain Case Screw	1
2	229000	Support Plate	1
3	229004	Engine Bearers	2
4	229005	Cable Stop	2
5	229006	Belt Guide Roller Clutch Top	1
6	229007	Belt Guide Roller Clutch Pulley	1
7	229035	Brake Bracket	1
8	229089	20" Tie Bar	1
8	229254	24" Tie Bar	1
9	229115	Chain Case Stud	2
10	229153	Clamp Plate Assy	1
11	229492	Retaining Plate Assy	1
12	229719	Side Plate Simplex Assy L.H.	1
13	229720	Side Plate Simplex Assy R.H.	1
14	229737	Belt Guide Assy	1
15	229742	Buffer	2
16	229744	Belt Guide	1
17	229746	Hex Collar	1
18	229747	Guard Bracket	1
19	229748	Quadrant Pivot Stud	2
20	229811	20" Engine Bed (Simplex)	1
20	229721	24" Engine Bed (Simplex)	1
21	229815	20" Rear Roller Scraper	1
21	229743	24" Rear Roller Scraper	1
22	229846	Buffer Block	2
23	230004	Support Bracket	1
24	J20064	Grease Nipple 1/4" UNF	1
25	J20235	20" Front Cross Bar	1
25	J24235	24" Front Cross Bar	1
26	J20292	Collar Front Tie Bar	2
27	J20297	Serial Number Plate	1
28	J209111	Bush Quadrant	2
29	SP01008	Hex Set Screw M6 x 16	12
30	SP01009	Hex Set Screw M8 x 20	8
31	SP01016	Button Head M6 x 12	2
32	SP01025	Cap Head M8 x 30	4
33	SP01027	Hex Set Screw M8 x 40	2
34	SP01035	Hex Set Screw M10 x 25	10

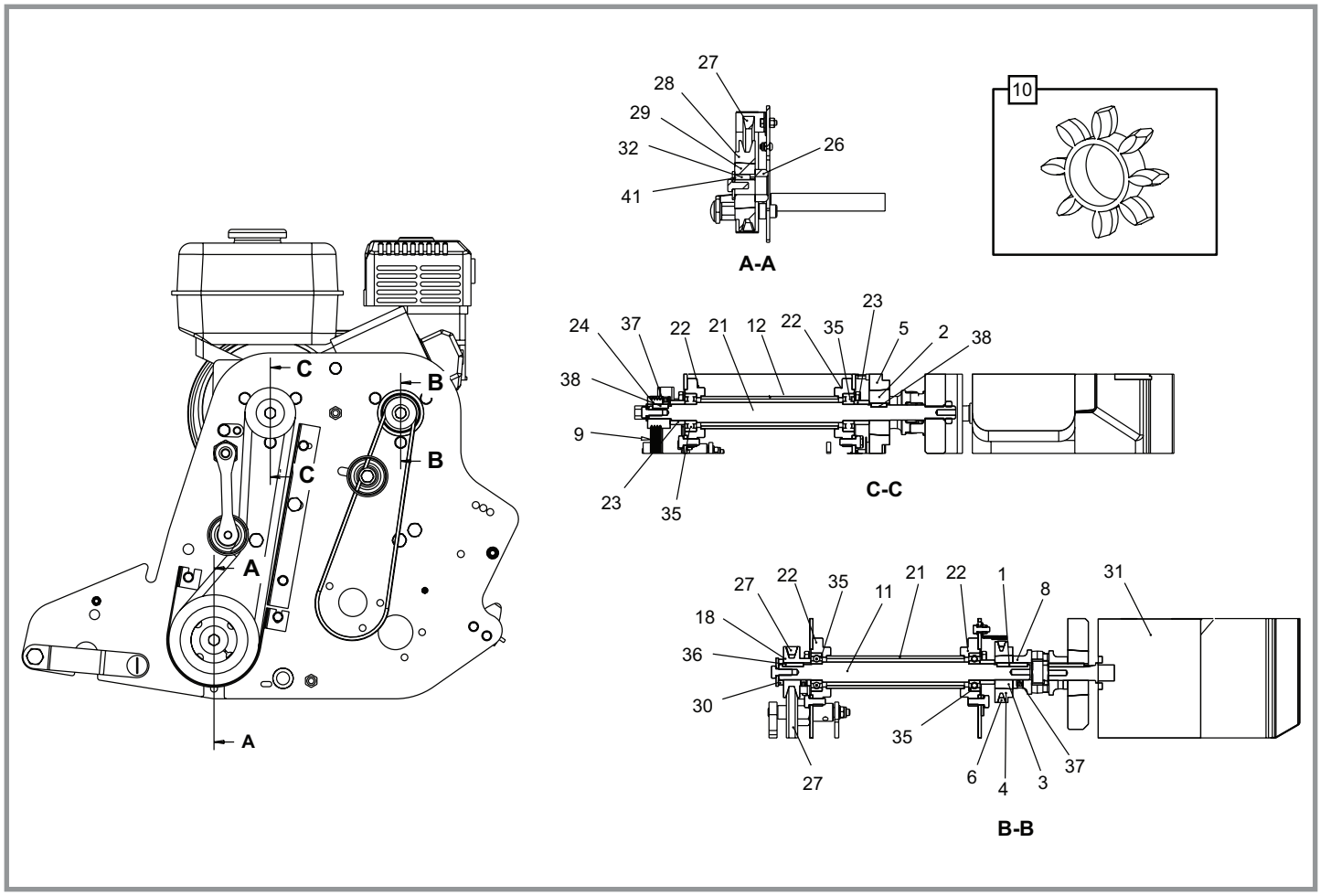
Item No.	Part No.	Description	Quantity
35	SP01053	Hex Set Screw 1/2" Unf x 1"	2
36	SP02004	Nut M6 Nyloc	8
37	SP02005	Nut M8 Std	2
38	SP02006	Nut M8 Nyloc	10
39	SP02008	Nut M10 Nyloc	1
40	SP03003	Washer M6 Toothed	4
41	SP03004	Washer M8 Toothed	2
42	SP03005	Washer M10 Toothed	8
43	SP03007	Washer M6 x 18	2
44	SP03008	Washer M8 Form A	6
45	SP03010	Washer M6 Form A	10
46	SP03011	Washer M10 Form A	3
47	SP03016	Washer M10 Form C	2
48	SP05001	Rivet 4.8 x 10	2



2.01 Drive - Main Assembly 1

Item No.	Part No.	Description	Quantity
1	73445	Key 3/16" x 3/16" x 2 1/4" Rd End	1
2	228001	Tapered Bush 1610 - 3/4"	1
3	228002	Tapered Bush 1108 - 3/4"	1
4	228004	Pulley SPZ-71	1
5	228005	Pulley SPZ-132	1
6	228007	Belt V X10-665 LP	1
7	228009	Brake Caliper	1
8	228011	Coupling Half (3/4")	1
9	228012	Belt Ribbed 4PK 698	1
10	228103	Coupling Element	1
11	229001	20" Layshaft Cutter Drive	1
11	229246	24" Layshaft Cutter Drive	1
12	229002	24" Layshaft Roller Drive	1
12	229247	20" Layshaft Roller Drive	1
13	229009	Drive Idler Arm	1
14	229013	Pulley Spacer	1
15	229014	Belt Guide Peg	2
16	229036	Brake Disc	1
17	229038	Tensioner Pulley	1
18	229040	Pulley A Section 56mm	1
19	229043	Cutter Idler Arm	1
20	229044	Idler Lever	2
21	229090	20" Layshaft Guard	2
21	229257	24" Layshaft Guard	2
22	229091	Bearing Housing	4
23	229092	Bearing Spacer	3
24	229322	4 Groove Drive Pulley	1
25	229382	Brg Housing	2
26	229706	Cylinder Spacer Simplex	1
27	229750	Belt X13 850 V-Belt	1
28	229751	Pulley SPA 106 X1	1
29	229752	Tapered Bush 1610 - 3/4"	1
30	230460	Top Drive Spacer (Simplex)	1
31	REF. 2.03	Engine Assy	1
32	BA1011	Key 1/4" x 1/4" x 3/4" Rd End	1
33	REF. 1.01	Chassis Assy	1

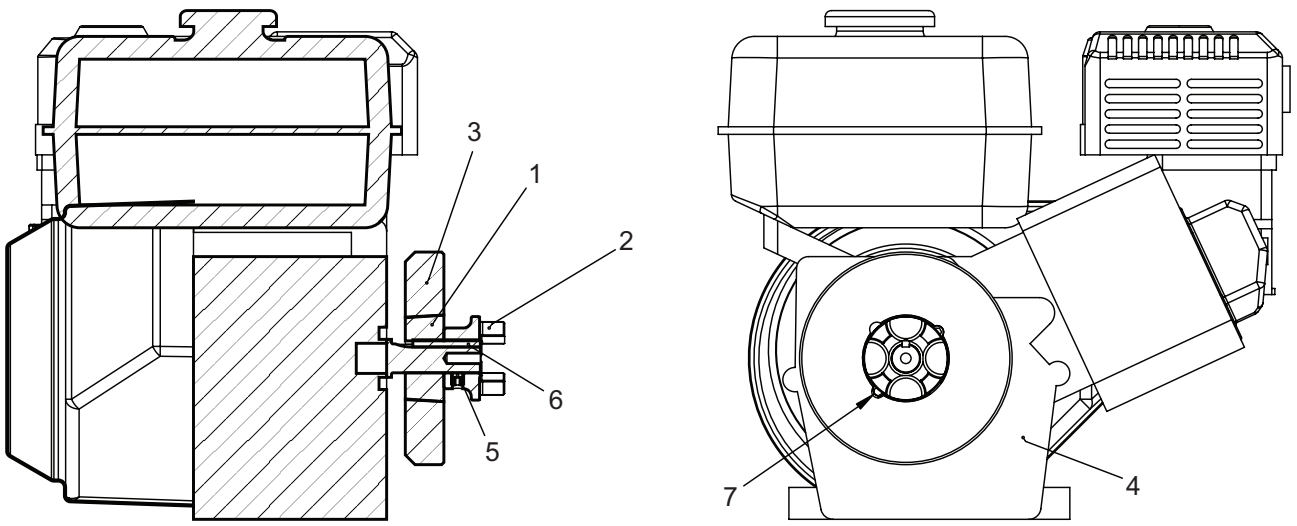
Item No.	Part No.	Description	Quantity
34	J20023	Unit Limiting Stud	2
35	J20052	Bearing 6204-2RS 3	4
36	J20457	Key 3/16" x 3/16" x 1" Rd End	1
37	J20467	Grub Screw M8 x 8	3
38	J209030	Key 3/16" x 3/16" x 3/4" Rd End	2
39	J209043	Tensioner Back Plate	1
40	J209047	Tensioner Pulley	2
41	J209249	Washer 9 x 35 x 3	2
42	SP01009	Hex Set Screw M8 x 20	15
43	SP01027	Hex Set Screw M8 x 40	4
44	SP01068	Hex Set Screw 3/8" UNF x 2 1/2"	1
45	SP01071	Hex Set Screw 3/8" UNF x 1 1/2"	2
46	SP01076	Hex Set Screw M8 x 16	1
47	SP02006	Nut M8 Nyloc	4
48	SP02018	Nut 3/8" UNF Nyloc	1
49	SP02029	Nut M16 Lock (Thin)	1
50	SP02033	Nut 3/8" Unf Lock (Thin)	1
51	SP02034	Nut 3/4" UNF Std	2
52	SP03002	Washer 3/8"	2
53	SP03004	Washer M8 Toothed	15
54	SP03008	Washer M8 Form A	2
55	SP03015	Washer M8 Form C	1



2.02 Drive - Main Assembly 2

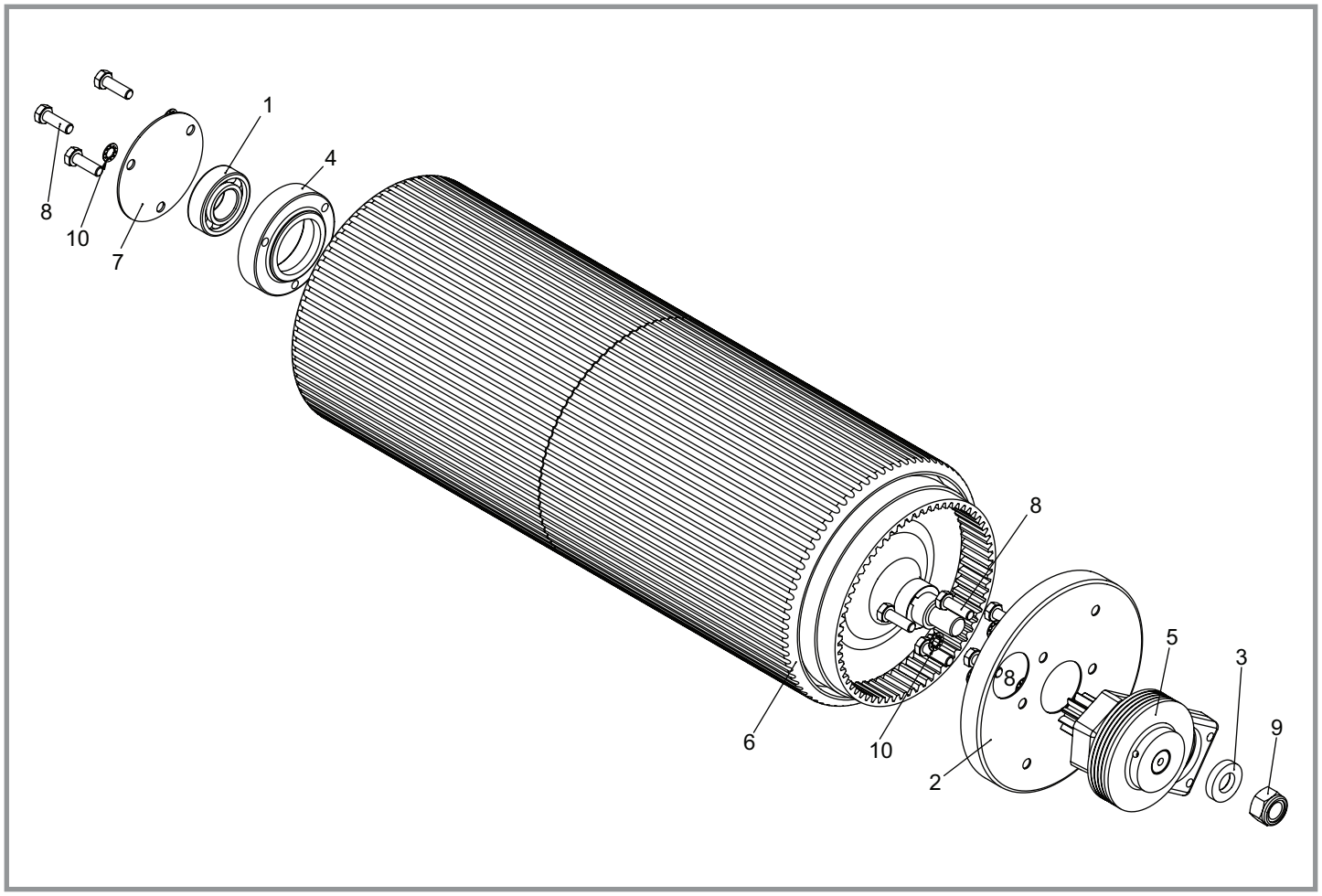
Item No.	Part No.	Description	Quantity
1	73445	Key 3/16" x 3/16" x 2 1/4" Rd End	1
2	228001	Tapered Bush 1610 - 3/4"	1
3	228002	Tapered Bush 1108 - 3/4"	1
4	228004	Pulley SPZ-71	1
5	228005	Pulley SPZ-132	1
6	228007	Belt V X10-665 LP	1
7	228009	Brake Caliper	1
8	228011	Coupling Half (3/4")	1
9	228012	Belt Ribbed 4PK 698	1
10	228103	Coupling Element	1
11	229001	20" Layshaft Cutter Drive	1
11	229246	24" Layshaft Cutter Drive	1
12	229002	24" Layshaft Roller Drive	1
12	229247	20" Layshaft Roller Drive	1
13	229009	Drive Idler Arm	1
14	229013	Pulley Spacer	1
15	229014	Belt Guide Peg	2
16	229036	Brake Disc	1
17	229038	Tensioner Pulley	1
18	229040	Pulley A Section 56mm	1
19	229043	Cutter Idler Arm	1
20	229044	Idler Lever	2
21	229090	20" Layshaft Guard	2
21	229257	24" Layshaft Guard	2
22	229091	Bearing Housing	4
23	229092	Bearing Spacer	3
24	229322	4 Groove Drive Pulley	1
25	229382	Brg Housing	2
26	229706	Cylinder Spacer Simplex	1
27	229750	Belt X13 850 V-Belt	1
28	229751	Pulley SPA 106 X1	1
29	229752	Tapered Bush 1610 - 3/4"	1
30	230460	Top Drive Spacer (Simplex)	1
31	REF. 2.03	Engine Assy	1
32	BA1011	Key 1/4" x 1/4" x 3/4" Rd End	1
33	REF. 1.01	Chassis Assy	1

Item No.	Part No.	Description	Quantity
34	J20023	Unit Limiting Stud	2
35	J20052	Bearing 6204-2RS 3	4
36	J20457	Key 3/16" x 3/16" x 1" Rd End	1
37	J20467	Grub Screw M8 x 8	3
38	J209030	Key 3/16" x 3/16" x 3/4" Rd End	2
39	J209043	Tensioner Back Plate	1
40	J209047	Tensioner Pulley	2
41	J209249	Washer 9 x 35 x 3	2
42	SP01009	Hex Set Screw M8 x 20	15
43	SP01027	Hex Set Screw M8 x 40	4
44	SP01068	Hex Set Screw 3/8" UNF x 2 1/2"	1
45	SP01071	Hex Set Screw 3/8" UNF x 1 1/2"	2
46	SP01076	Hex Set Screw M8 x 16	1
47	SP02006	Nut M8 Nyloc	4
48	SP02018	Nut 3/8" UNF Nyloc	1
49	SP02029	Nut M16 Lock (Thin)	1
50	SP02033	Nut 3/8" Unf Lock (Thin)	1
51	SP02034	Nut 3/4" UNF Std	2
52	SP03002	Washer 3/8"	2
53	SP03004	Washer M8 Toothed	15
54	SP03008	Washer M8 Form A	2
55	SP03015	Washer M8 Form C	1



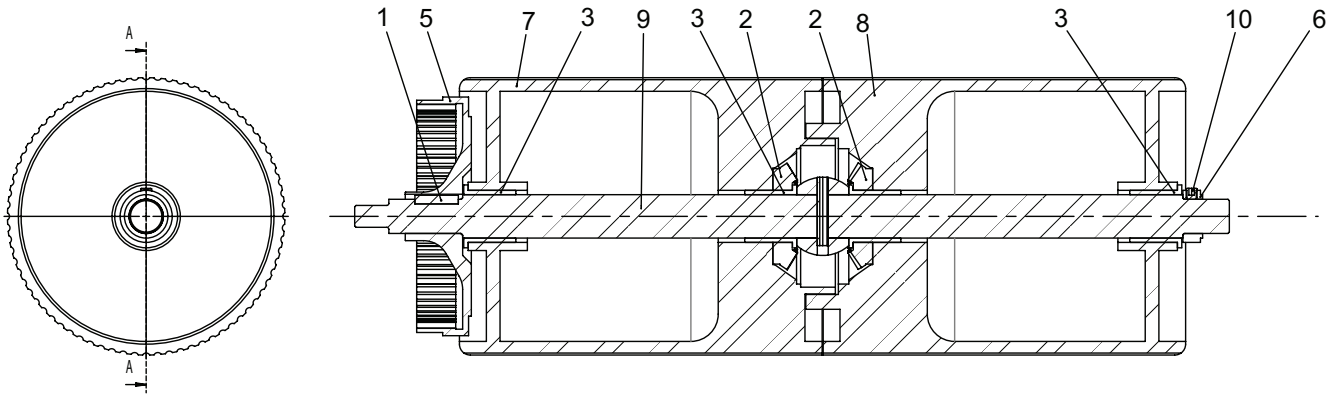
2.03 Drive - Engine Assembly

Item No.	Part Number	Description	Quantity
1	*228001*	*Tapered Bush 1610 - 3/4”*	*1*
2	*228011*	*Coupling Half (3/4”)*	*1*
3	*229015*	*Flywheel*	*1*
4	*229900*	*Engine 4.5 Hp Honda GX120 Q9 Type*	*1*
5	*J20467*	*Grub Screw M8 x 8*	*1*
6	*J209025*	*Key 3/16” x 3/16” x 1 3/4” Rd End*	*1*
7	*SP01079*	*Grub Screw 3/8” x 5/8”*	*2*



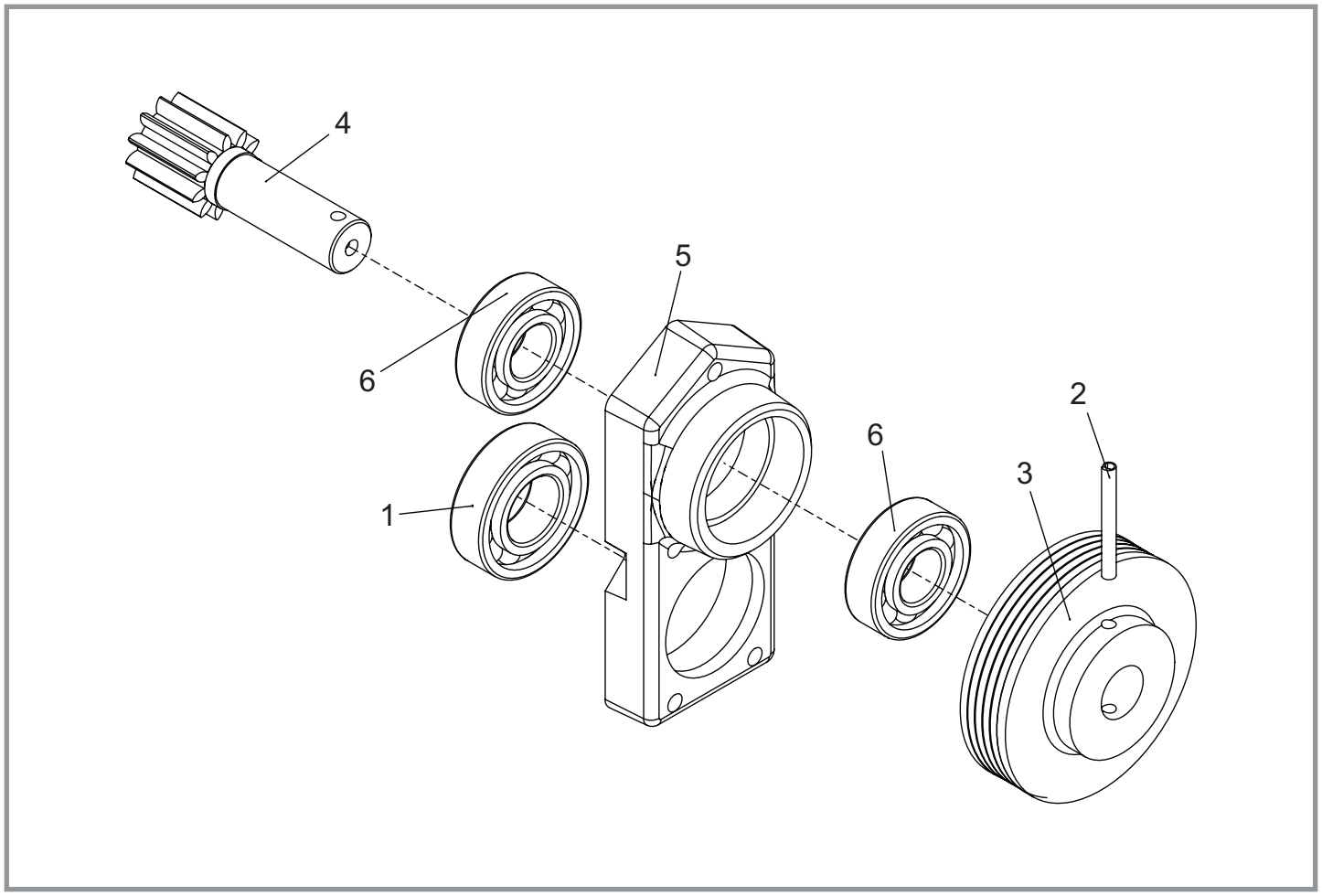
3.01 Rear Roller - Main Assembly

Item No.	Part No.	Description	Quantity
1	*62662*	*Bearing 6205-2RS 3*	*1*
2	*229031*	*Dirt Excluder*	*1*
3	*229039*	*Landroll Collar*	*1*
4	*229104*	*Landroll Bearing Housing*	*1*
5	*REF. 3.03*	*Drive Bearing Housing Assy*	*1*
6	*REF. 3.02*	*Rear Roller Assy*	*1*
7	*J20009*	*Blanking Plate*	*1*
8	*SP01045*	*Hex Set Screw M8 x 25*	*8*
9	*SP02028*	*Nut M16 Nyloc*	*1*
10	*SP03004*	*Washer M8 Toothed*	*8*



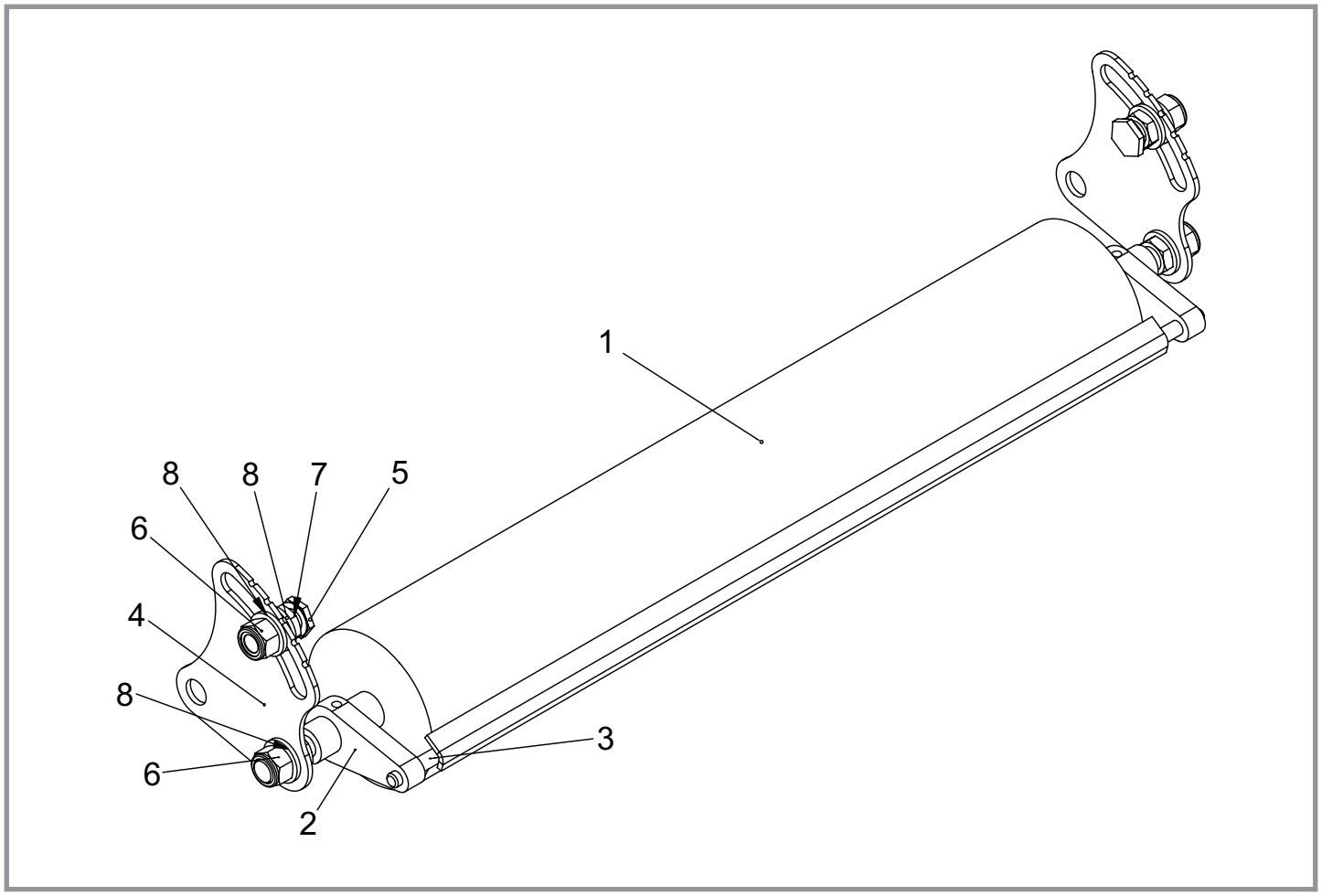
3.02 Rear Roller - Roller Assembly

Item No.	Part No.	Description	Quantity
1	*228049*	*Key 1/4" x 1/4" x 1 1/4" Rd End*	*1*
2	*229022*	*30 Tooth Bevel Gear*	*2*
3	*229023*	*Bush Oilite MBC AJ2024 x 1.5*	*4*
4	*229025*	*20 Tooth Bevel Gear*	*2*
5	*229030*	*Internal Gear*	*1*
6	*229032*	*Roller Locking Collar*	*1*
7	*229801*	*20" LH Rear Ribbed Roller*	*1*
7	*229703*	*24" LH Rear Ribbed Roller*	*1*
8	*229802*	*20" RH Rear Ribbed Roller*	*1*
8	*229702*	*24" RH Rear Ribbed Roller*	*1*
9	*800170*	*20" Rear Roller Shaft Assy*	*1*
9	*800179*	*24" Rear Roller Shaft Assy*	*1*
10	*J20467*	*Grub Screw M8 x 8*	*1*
11	*J209249*	*Washer 9 x 35 x 3*	*2*
12	*SP01012*	*Button Head M8 x 12*	*2*



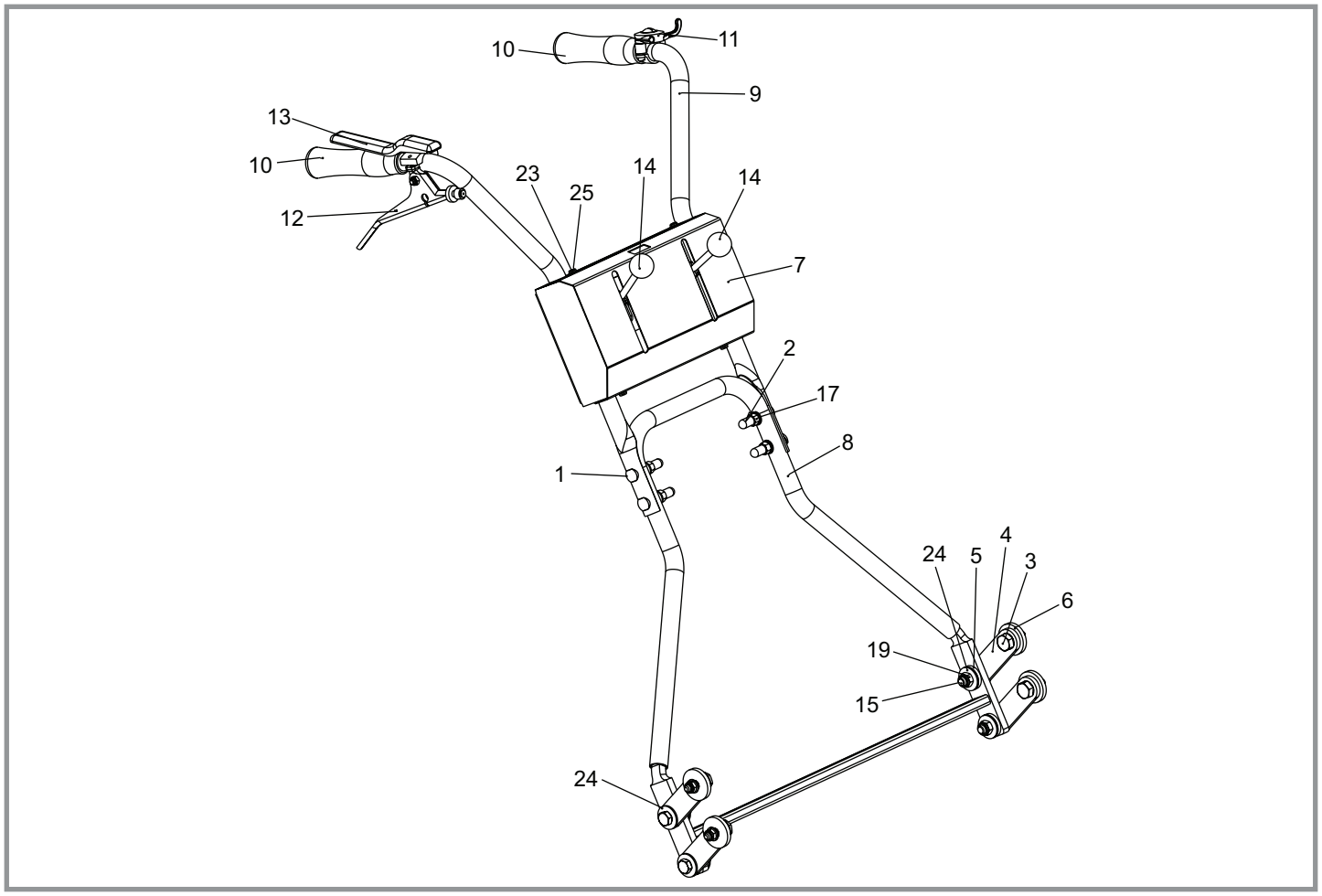
3.03 Rear Roller - Drive Bearing Housing Assembly

Item No.	Part No.	Description	Quantity
1	*062662*	*Bearing 6205-2RS 3*	*1*
2	*SP05008*	*Pin Spirol M5 x 50*	*1*
3	*229003*	*Drive Pulley Land Roll*	*1*
4	*229011*	*Pinion Shaft 11T*	*1*
5	*229033*	*Roller Bearing Housing Oblong*	*1*
6	*J20052*	*Bearing 6204-2RS 3*	*2*



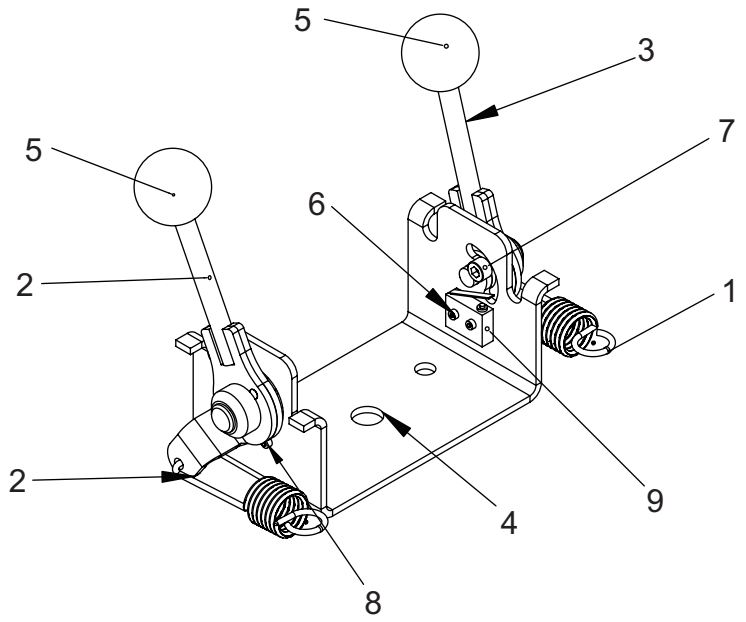
4.01 Front Roller - Main Assembly

Item No.	Part No.	Description	Quantity
1	*J20550*	*20" Front Roller*	*1*
1	*J24550*	*24" Front Roller*	*1*
2	*J20551*	*Scraper Bar Ear*	*2*
3	*J20552*	*20" SS Scraper Bar*	*1*
3	*J24552*	*24" SS Scraper Bar*	*1*
4	*J209225*	*S.S. Roller Quadrant*	*2*
5	*J209252*	*Lock Screw*	*2*
6	*SP02010*	*Nut M12 Nyloc*	*4*
7	*SP02014*	*Nut M12 Lock (Thin)*	*4*
8	*SP03012*	*Washer M12 Form A*	*8*



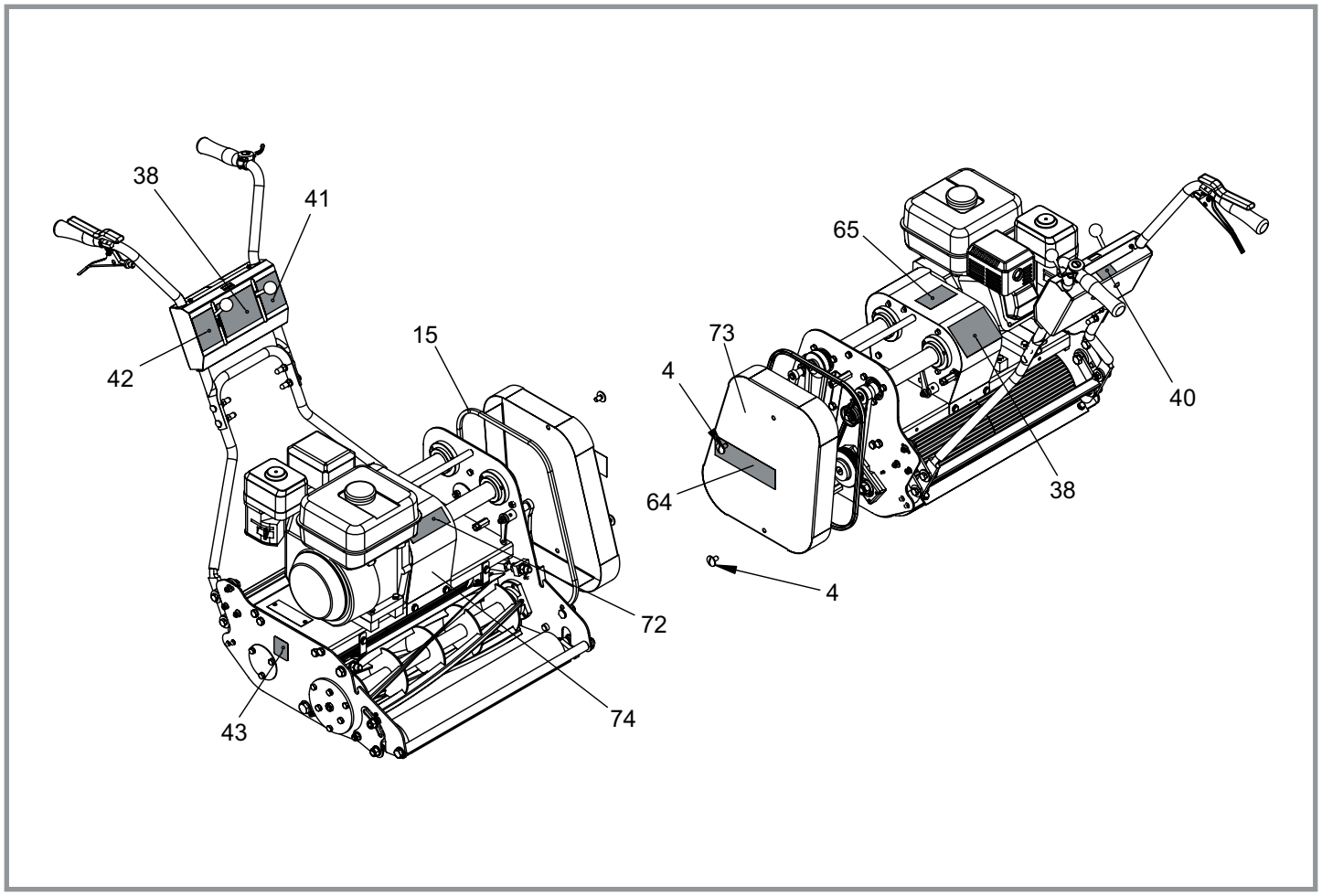
5.01 Handle - Main Assembly

Item No.	Part No.	Description	Quantity
1	*228093*	*Bolt Saddle M8 x 43*	*4*
2	*228094*	*End Tip 5/16”*	*4*
3	*229724*	*Arm Pivot Bush*	*4*
4	*229725*	*Pivot Arm Lower Handle*	*4*
5	*229726*	*Bush Handle Pivot*	*4*
6	*229736*	*Pivot Bolt*	*4*
7	*230014*	*Console Cover (Switched)*	*1*
8	*230020*	*20” Handle Lower W.A.*	*1*
9	*230040*	*Handle Upper W.A.*	*1*
10	*J20107*	*Handle Grip Rubber*	*2*
11	*229698*	*Throttle Control Lever*	*1*
12	*229754*	*Clutch Lever*	*1*
13	*SP12010*	*Deadmans Handle*	*1*
14	*REF. 5.02*	*Lever Assy*	*1*
15	*SP01020*	*Hex Set Screw M10 x 40*	*4*
16	*SP01048*	*Button Head M8 x 16*	*2*
17	*SP02005*	*Nut M8 STD*	*4*
18	*SP02006*	*Nut M8 Nyloc*	*6*
19	*SP02008*	*Nut M10 Nyloc*	*4*
20	*SP03004*	*Washer M8 Toothed*	*3*
21	*SP03004*	*Washer M8 Toothed*	*1*
22	*SP03008*	*Washer M8 Form A*	*8*
23	*SP03009*	*Washer M5 Form A*	*4*
24	*SP03018*	*Washer M10 Form G*	*8*
25	*SP04001*	*Screw M5 x 16 Slotted*	*4*
NOT SHOWN			
-	*J20112*	*Throttle Cable*	*1*
-	*800097*	*Throttle Cable Assembly*	*1*
-	*229723*	*Drive Clutch Cable*	*1*
-	*800098*	*Drive Clutch Cable Assembly*	*1*
-	*229122*	*Brake Cable*	*1*
-	*800099*	*Brake Cable Assembly*	*1*



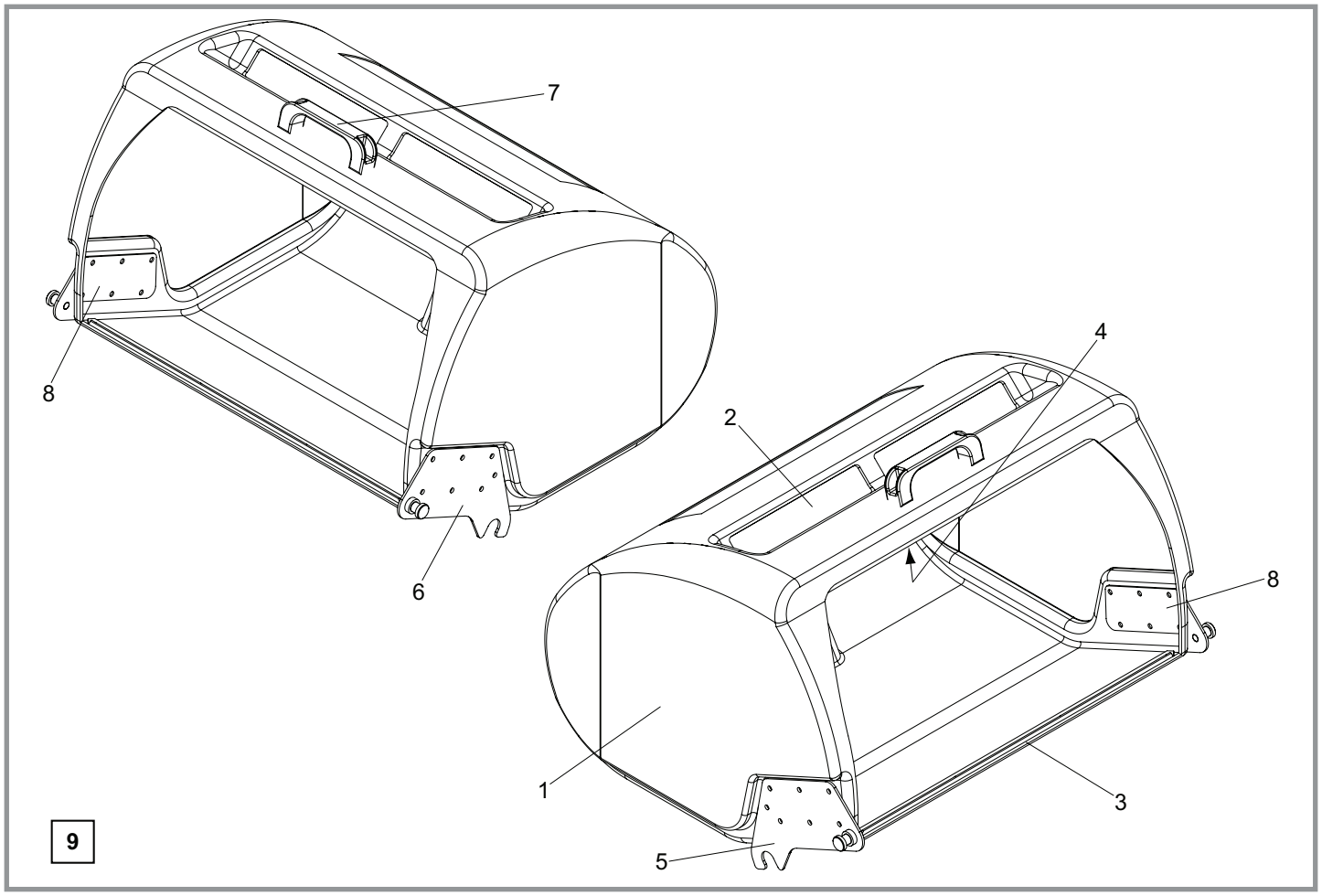
5.02 Handle - Lever Assembly

Item No.	Part No.	Description	Quantity
1	*229167*	*Clutch Spring*	*2*
2	*230170*	*Lever R.H. W.A.*	*1*
3	*230171*	*Lever L.hH W.A.*	*1*
4	*230207*	*Lever Bracket Assy*	*1*
5	*J20017*	*Knob - Red*	*2*
6	*SP01070*	*Cap Head M2 x 12*	*4*
7	*SP01081*	*Cap Head M5 x 12*	*2*
8	*SP02038*	*Nut M2 (Bush)*	*4*
9	*SP12007*	*Wiring Harness*	*1*



6.01 Guards & Decals

Item No.	Description	Part Number	Quantity
4	*194946*	*Chain Case Screw*	*2*
15	*228031H*	*Chain Case Seal*	*1*
38	*229375*	*Warning Decal*	*2*
40	*229599*	*Engine On / Off Decal*	*1*
41	*229600*	*Cutting Cylinder Decal*	*1*
42	*229603*	*Parking Brake Decal*	*1*
43	*229604*	*94db Decal*	*1*
64	*B32902*	*Decal Dennis*	*1*
65	*B32903*	*Union Jack Decal*	*1*
72	*J20362*	*Dennis Decal Small*	*1*
73	*229722*	*Chain Case*	*1*
74	*229093*	*Transmission Cover*	*1*

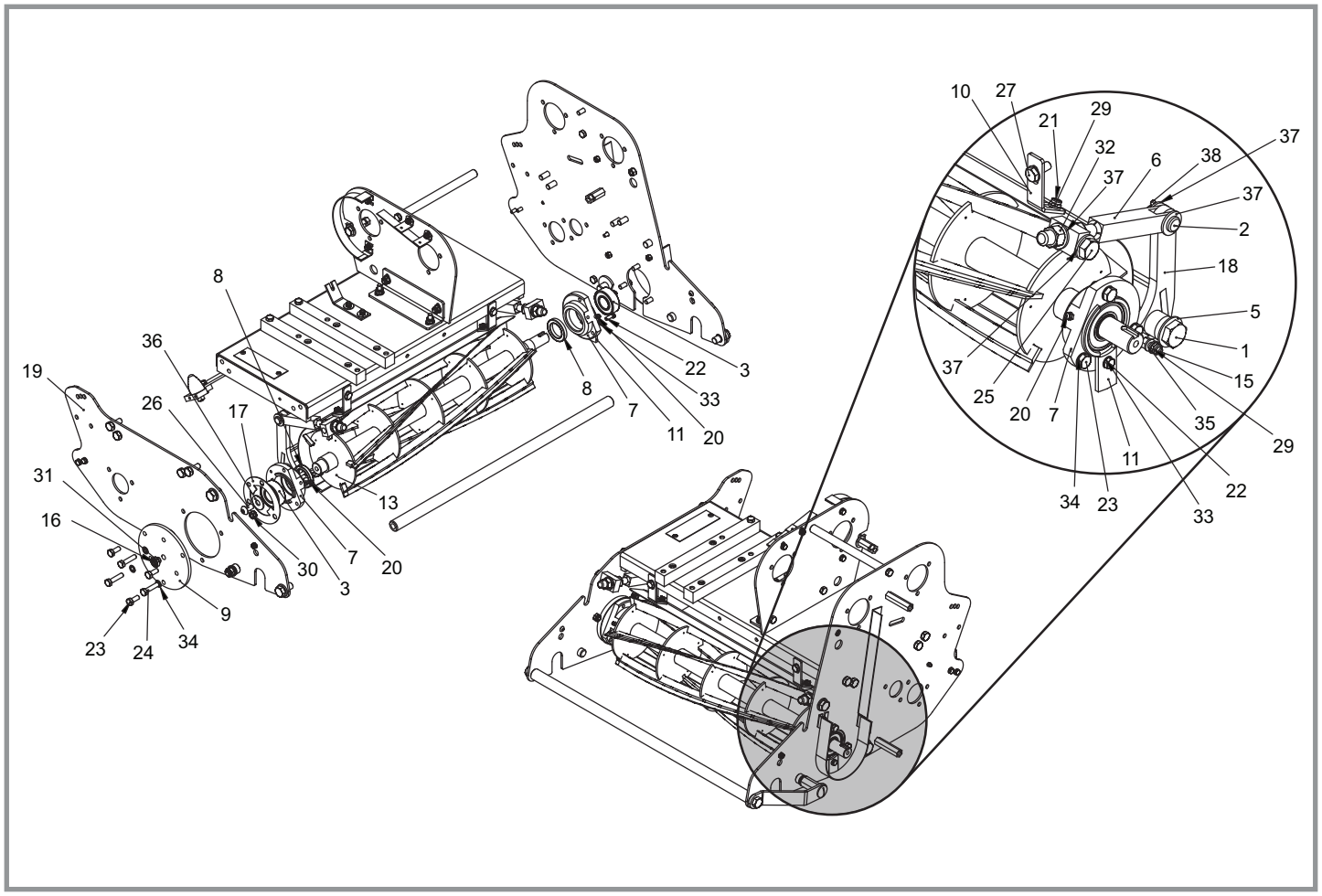


7.01 Grassbox

Item No.	Part No.	Description	Quantity
1	*J209237*	*510 Grassbox Moulding*	*1*
1	*J179237*	*610 Grassbox Moulding*	*1*
2	*J209062*	*Mesh (510)*	*1*
2	*J249062*	*Mesh (610)*	*1*
3	*J209063*	*20” Grassbox Edging Strip*	*1*
3	*J249063*	*24” Grassbox Edging Strip*	*1*
4	*J209064*	*Handle Plate Grass Box*	*1*
5	*J209222*	*LH Grassbox Wing*	*1*
6	*J209224*	*RH Grassbox Wing*	*1*
7	*J209243*	*Handle Grassbox*	*1*
8	*J209060*	*Grassbox Support Plate*	*2*
9	*800017*	*20” Grassbox Complete*	*1*
9	*800042*	*24” Grassbox Complete*	*1*

Not Shown

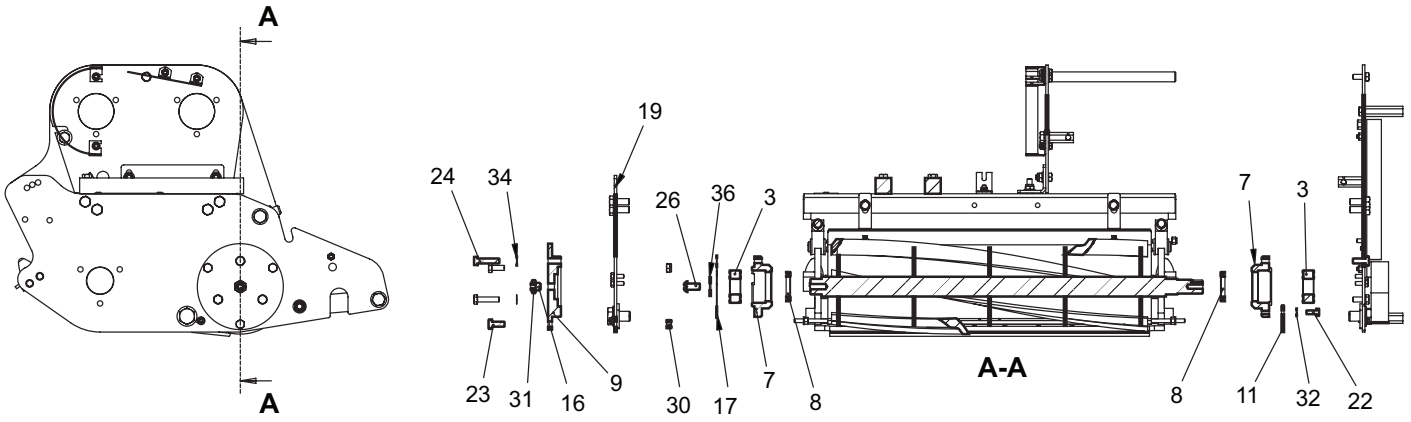
-	*SP04002*	*Screw M6 x 16 Slotted (To fit Item 5 & 6)*	*8*
-	*SP02004*	*Nut M6 Nyloc (To fit Item 5 & 6)*	*8*
-	*SP01008*	*Hex Set Screw M6 x 16 (To fit Item 7)*	*2*
-	*SP03007*	*Washer M6 x 20 (To fit Item 7)*	*2*



8.01 Cylinder - Main Assembly 1

Item No.	Part No.	Description	Quantity
1	185379	5/8" UNF Hex Screw	2
2	228022	Clevis Pin	2
3	228029	Bearing 2205 2RS	2
4	228070	Black Cap	2
5	228074	D315163175 Belleville Washer	2
6	229049	Adjuster Rod	2
7	229622	Cutter Bearing Housing	2
8	229701	Oil Seal 32 x 47 x 7	2
9	229707	Cylinder End Plate	1
10	229718	Deflector Plate Bracket	2
11	229745	Blank Plate	1
12	229749	Adjuster Stop	2
13	229806	20" Cylinder 5 Blade (Simplex)	1
13	229836	20" Cylinder 7 Blade (Simplex)	1
13	229710	24" Cylinder 5 Blade (Simplex)	1
13	229762	24" Cylinder 7 Blade (Simplex)	1
14	229816	20" Deflector Plate W.A.	1
14	229715	24" Deflector Plate W.A.	1
15	229817	20" Pivot Rod	1
15	229756	24" Pivot Rod	1
16	229845	Grub Screw M12 x 16	1
17	230326	Bearing Spacer Cassette Outer	1
18	800117	20" Shear Blade Assy	1
18	800118	24" Shear Blade Assy	1
19	REF. 1.01	Chassis	1
20	J20064	Grease Nipple 1/4" UNF	2
21	SP01007	Coach Bolt M6	2
22	SP01008	Hex Set Screw M6 x 16	1
23	SP01009	Hex Set Screw M8 x 20	6
24	SP01036	Hex Set Screw M8 x 35	3
25	SP01060	Hex Set Screw 1/2" UNF x 3/4"	2
26	SP01062	Button Head M10 x 20	1
27	SP01066	Hex Taptite Screw M8 x 20	2
28	SP02003	Nut M6 Std	2
29	SP02004	Nut M6 Nyloc	4
30	SP02006	Nut M8 Nyloc	3

Item No.	Part No.	Description	Quantity
31	SP02014	Nut M12 Lock (Thin)	1
32	SP02016	Nut 1/2" UNF	4
33	SP03003	Washer M6 Toothed	1
34	SP03004	Washer M8 Toothed	6
35	SP03010	Washer M6 Form A	6
36	SP03018	Washer M10 Form G	1
37	SP03024	Washer 1/2"	10
38	SP05010	Split Pin 1/8" x 1"	2



8.02 Cylinder - Main Assembly 2

Item No.	Part No.	Description	Quantity
1	185379	5/8" UNF Hex Screw	2
2	228022	Clevis Pin	2
3	228029	Bearing 2205 2RS	2
4	228070	Black Cap	2
5	228074	D315163175 Belleville Washer	2
6	229049	Adjuster Rod	2
7	229622	Cutter Bearing Housing	2
8	229701	Oil Seal 32 x 47 x 7	2
9	229707	Cylinder End Plate	1
10	229718	Deflector Plate Bracket	2
11	229745	Blank Plate	1
12	229749	Adjuster Stop	2
13	229806	20" Cylinder 5 Blade (Simplex)	1
13	229836	20" Cylinder 7 Blade (Simplex)	1
13	229710	24" Cylinder 5 Blade (Simplex)	1
13	229762	24" Cylinder 7 Blade (Simplex)	1
14	229816	20" Deflector Plate W.A.	1
14	229816	20" Deflector Plate W.A.	1
15	229817	20" Pivot Rod	1
15	229756	24" Pivot Rod	1
16	229845	Grub Screw M12 x 16	1
17	230326	Bearing Spacer Cassette Outer	1
18	800117	20" Shear Blade Assy	1
18	800118	24" Shear Blade Assy	1
19	REF. 1.01	Chassis	1
20	J20064	Grease Nipple 1/4" UNF	2
21	SP01007	Coach Bolt M6	2
22	SP01008	Hex Set Screw M6 x 16	1
23	SP01009	Hex Set Screw M8 x 20	6
24	SP01036	Hex Set Screw M8 x 35	3
25	SP01060	Hex Set Screw 1/2" UNF x 3/4"	2
26	SP01062	Button Head M10 x 20	1
27	SP01066	Hex Taptite Screw M8 x 20	2
28	SP02003	Nut M6 Std	2
29	SP02004	Nut M6 Nyloc	4
30	SP02006	Nut M8 Nyloc	3

Item No.	Part No.	Description	Quantity
31	SP02014	Nut M12 Lock (Thin)	1
32	SP02016	Nut 1/2" UNF	4
33	SP03003	Washer M6 Toothed	1
34	SP03004	Washer M8 Toothed	6
35	SP03010	Washer M6 Form A	6
36	SP03018	Washer M10 Form G	1
37	SP03024	Washer 1/2"	10
38	SP05010	Split Pin 1/8" x 1"	2

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