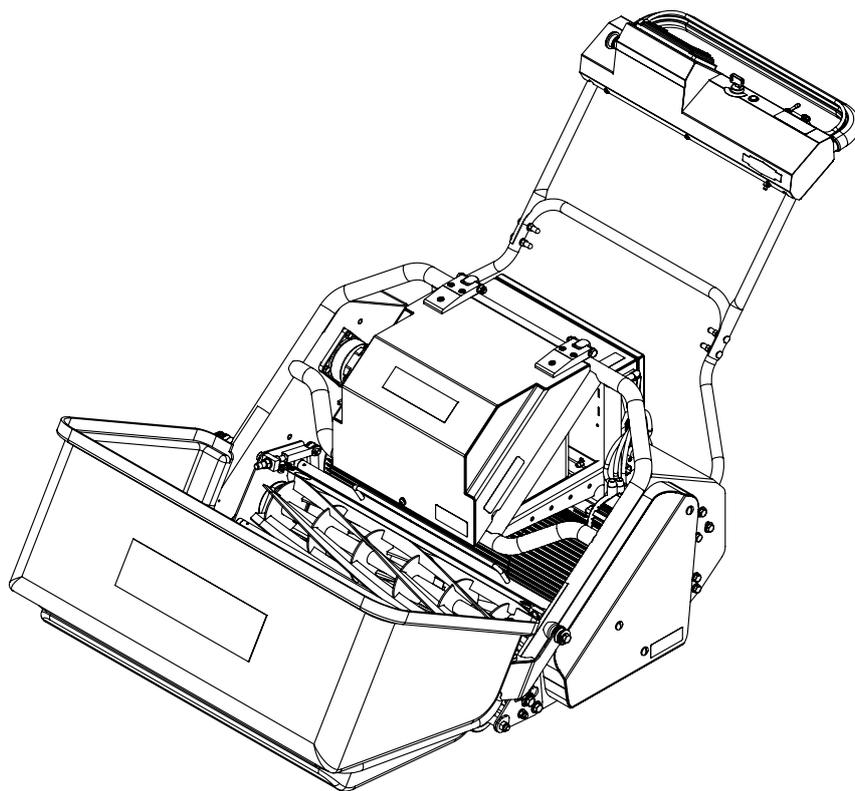




ES-860 / ES-760 ELECTRIC CASSETTE MOWER

INSTRUCTION MANUAL



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1. CERTIFICATE OF CONFORMITY

ES-860 Cassette Cylinder Mower powered by Electric Motors

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:-

- Vincotte, NB0026, Jan Olieslagerslaan 35, B-1800 Vilvoorde, Belgium

I the undersigned declare that this machine:-

Model	Cutting Width	Power	Measured Sound Power Level	Guaranteed Sound Power Level	Serial Number
ES-860	860mm	InMotion 103 (Drive) InMotion 106 (Cylinder)	88dB Lwa	91dB Lwa	See product ID Range

Tested at:-

- Howardson Works

Complies with the applicable requirements of:-

- Machine Directive 2006/42/EC
- Noise Directive 2000/14/EC (Annex VI Procedure 1)

Managing Director



Ian Howard

2. SERIAL NUMBER



NOTE:-

MAKE A NOTE OF THE SERIAL NUMBER OF YOUR MACHINE AND ALWAYS QUOTE IT IN ANY COMMUNICATION WITH PERSONNEL AT DENNIS.

MACHINE SERIAL NUMBER

CHASSIS SERIAL NUMBER	
BATTERY SERIAL NUMBER	
MOTOR SERIAL NUMBERS	
ROLLER MOTOR (with Gearbox)	CYLINDER MOTOR

3. IMPORTANT SAFETY INSTRUCTIONS



CAUTION:-

READ THE INSTRUCTIONS. We want you to obtain the best performance from this machine. If you have any difficulty in carrying out the following instructions please contact your local DENNIS dealer.

TRAINING

- 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 near by.
- Keep in mind that the operator or user is responsible for accidents or hazards occurring to the other people or their property.

PREPARATION

- Thoroughly inspect where the equipment is to be used and remove all stones, sticks, wire, bones and other foreign objects.
- Before using the machine always inspect the safety devices, including the emergency cut-off switch, as well as checking the blades for excessive wear or damage. Replace if necessary.
- While mowing always wear substantial footwear and long trousers. Do not operate the mower barefoot or in open sandals.
- In dry, dusty or windy conditions it may be necessary to wear eye protection to protect your eyes from flying debris.

OPERATION

- 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, especially when changing direction.
- Do not mow steep slopes.
- Use extreme caution when reversing or pulling the machine towards you.
- Stop the blades and tilt the mower back on the rear roller when crossing surfaces other than grass or when transporting between areas to be mown.
- Never operate the mower with defective guards or shields or without safety devices, for example without the deflector plate or grass box in place.
- Do not put hands or feet near the under rotating parts. Keep clear of the discharge opening at all times.
- Never pick up or carry the mower while the motors are running.



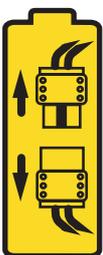
NEVER

- Carry out adjustments whilst the machine is running.
- Allow any unauthorised person to handle machines, in any way, at any time.
- Open or attempt any work inside the electrical box. Opening the box will void the warranty.
- Replace any electrical components or motors with non OEM parts.
- Attempt to charge the machine from any non OEM charger.
- Operate mower if electrical wires are damaged or bare cable is exposed.



ALWAYS

- Read the operating instructions carefully and understand the controls before commencing work.
- Use safety guards and make sure they are correctly fitted in position. They are supplied for your protection.
- Before starting work always visually check machine for damage or wear to parts.
- Look behind before starting to reverse and watch out for children or pedestrians.
- Respect powered machines. Always keep hands and feet clear of moving parts and remember that brushes and rollers can continue to rotate even after the power unit is switched off.
- Switch off the power and disconnect the battery before servicing or making repairs.
- Never lift or carry a machine whilst any parts are moving.



4. INTRODUCTION

This operating manual is an essential tool to ensure the proper and safe operation of the ES-860 / ES-760 Electric Cassette Mower. This user manual contains important information regarding the safe, proper and efficient operation of the machine. Adherence to this manual will help to avoid risk, lower repair costs and reduce downtimes while simultaneously increasing the service life of the machine itself. The operating manual must always be available, and every person tasked with working on or with the machine must read and follow the instructions.

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 when making enquiries. For the machine, this is to be found on a plate attached to the side of the chassis. We suggest you write the numbers on the front page of this book.

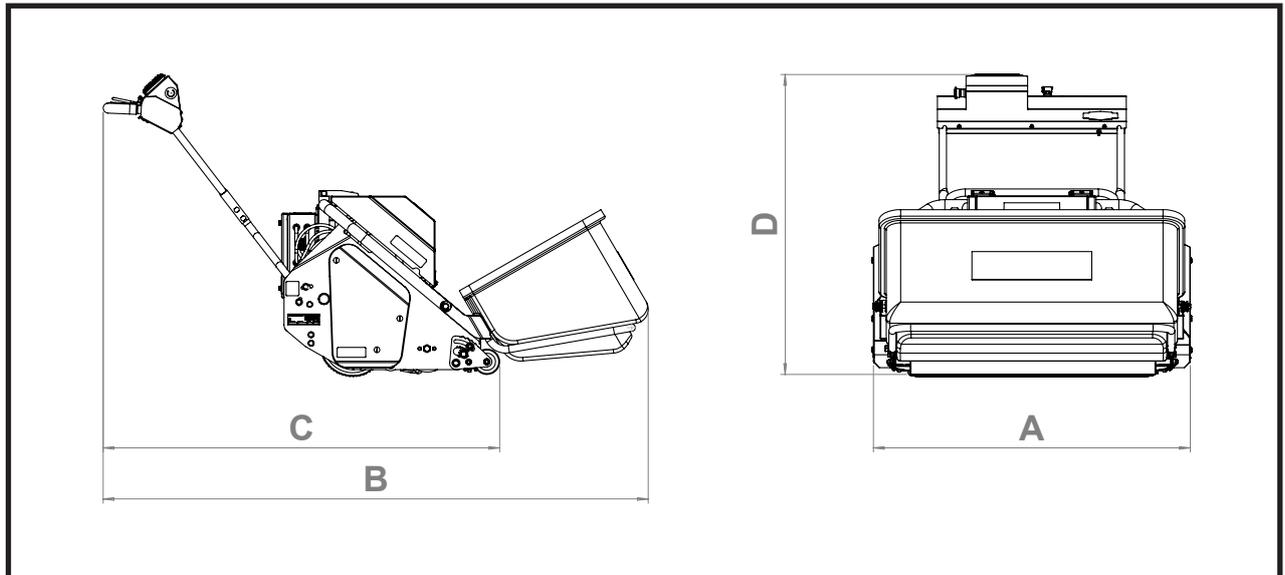
5. MACHINE DESCRIPTION

Manufactured with 34" (86cm) or 30" (76cm) cutting width this machine is run by a pair of 48V high efficiency brushless permanent magnet AC motors powered from an 111 Ah lithium ion battery.

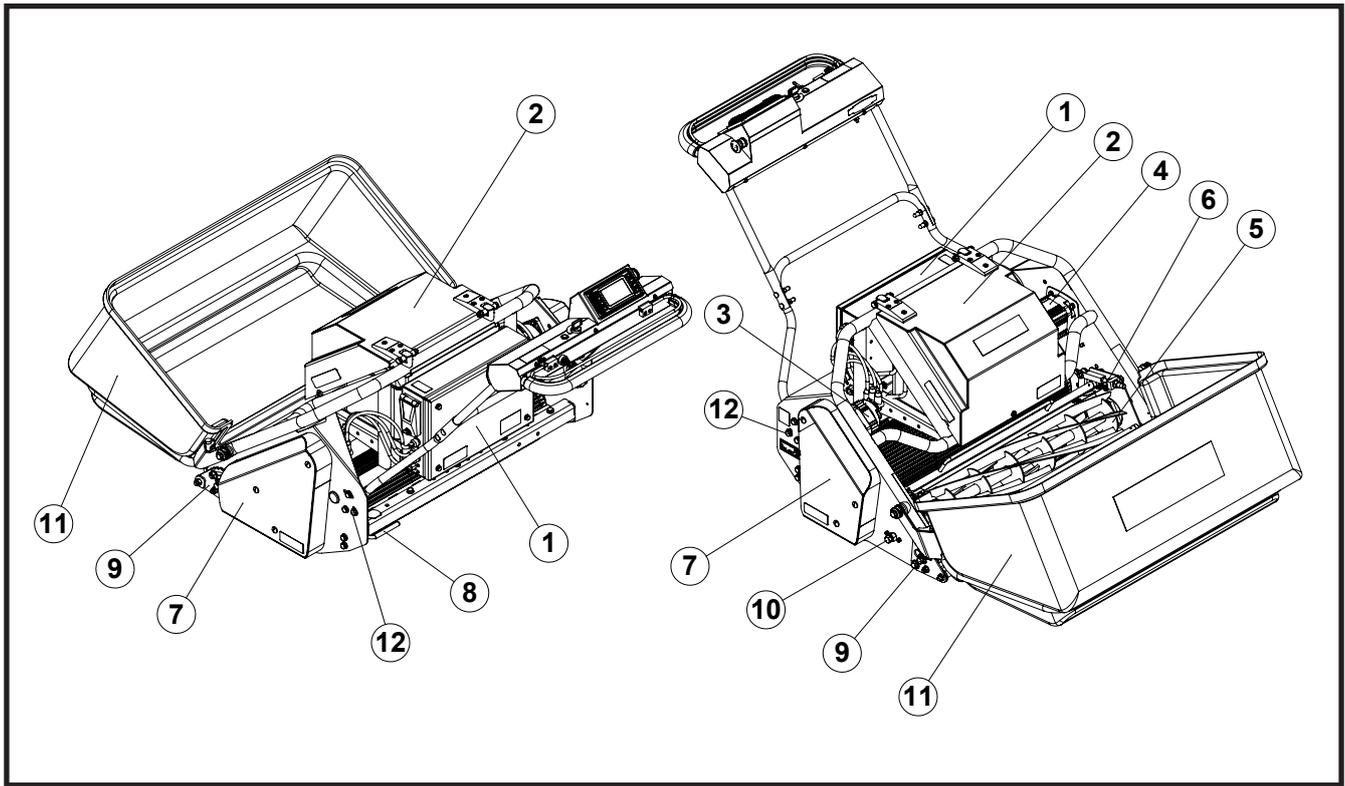
The rear roller and cutter are controlled independently via belt drives operated from the display screen on the upper handle bar. A mechanical parking brake is fitted for added safety when working around uneven ground, when applied this disengage drive to both motors for added safety.

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 Electrical Drive system, the Rear Roller Unit and the Front Roller Unit, each of which can be readily removed individually from the main Frame Chassis Unit.

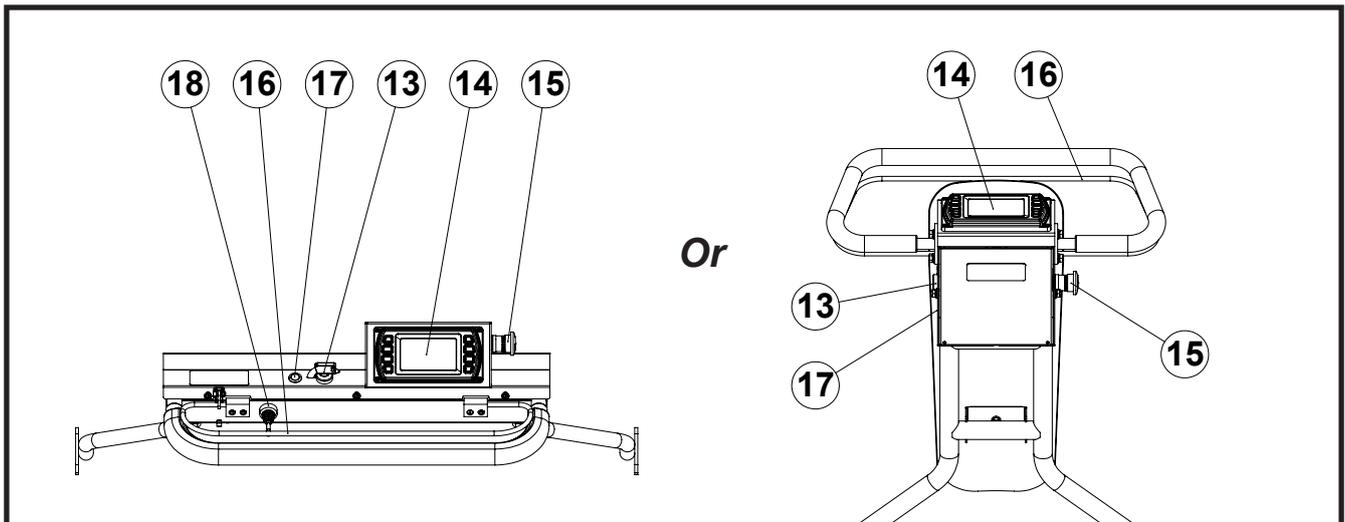
The interchangeable cassette system allows a variety of cassettes to be used for varying applications. Dennis 860 / 34" cassette are interchangeable between the ES-860 & G-860 (petrol machine). Dennis 760 / 30" cassette are interchangeable between the ES-760 & G-760 (petrol machine).



	ES-760	ES-860
DIMENSIONS		
A - WIDTH (mm)	1010	1110
B - LENGTH with Grass Box (mm)	1860	
C - LENGTH without Grass Box (mm)	1340	
D - HEIGHT (mm)	1100	
WEIGHT with Cutting Cassette (Kg)	223	235
WEIGHT without Cassette (Kg)	188	195
Cutting Width	760mm / 30"	860mm / 34"
DRIVE SYSTEM		
Roller Motor (W)	630	
Roller Drive System	Timing Belt	
Cylinder Motor (W)	1200	
Cylinder Drive System	Multi V belt	
ELECTRICAL SYSTEM		
Battery Type	Lithium Ion	
System Voltage	48	
Battery Capacity (Ah)	111	
Self Discharge @ 25 °C	< 2% per month	



NUMBER	PART	NUMBER	PART
1	Electrical Box	7	Belt Guards
2	Battery Cover	8	Mechanical Hand Brake
3	Roller Motor	9	Cutting Height Adjuster
4	Cylinder Motor	10	Cassette Retaining Bolt
5	Cassette	11	Grass Box
6	Bottom Blade Adjustment Knob	12	Handle Bar Adjusters



NUMBER	PART	NUMBER	PART
13	Key Switch	16	Deadman's Handle
14	Display Screen	17	Start Button
15	Emergency Stop	18	Hand Controls

FOR THE LOCATION OF CONTROLS AND COMPONENTS REF "MACHINE DESCRIPTION" & 'TECHNICAL DATA' PAGES. BE FAMILIAR WITH THE CONTROLS AND THE PROPER USE OF THE EQUIPMENT BEFORE STARTING.

KEY SWITCH & START BUTTON (ITEM 13 & 17)

This switch cuts power to the electrical components and can be used to do so at any time during the operation of the machine. See *basic operations page* for more information

DEADMANS CONTROLS (ITEM 16)

This is an operator presence control. This must be depressed before the drive and cylinder motors will engage. Releasing the handle during operation will cut power to both motors.

MECHANICAL PARKING BRAKE (ITEM 8)

This applies a mechanical brake to the rear roller. It is only to be engaged when the machine is stationary, it is NOT to stop the machine. Push the lever forward to engage and pull back behind brake plate to disengage. The display will automatically display PARK on the gear selection icon when the brake is engaged. The brake must be disengaged before the gear selection can be changed by the operator.



NOTE:-

THE MECHANICAL PARKING BRAKE MUST BE DISENGAGED TO ALLOW THE MOWER DISPLAY TO BE SET TO DRIVE OR REVERSE.



NOTE:-

PUSHING THE MOWER WHEN NOT MOTOR DRIVEN SHOULD ALWAYS BE DONE IN NEUTRAL TO AVOID DAMAGING THE INTERNAL MOTOR BRAKE.

CONTROL SCREEN (ITEM 14)

Mower operations can be undertaken from the HOME screen. See (8) BASIC SCREEN OPERATIONS on the next page outline mower controls from this screen. From the HOME screen, Drive start/stop, Drive speed, Cylinder start/stop, Reverse & Turning Speed can be operated.

Other setting changes can be controlled through the MENU settings. These include Clip Rate, RPM, Password Protect, Speed Defaults & many others. See (9) SCREEN MENUS.

To navigate back to the HOME screen from any other menu screen press the HOME screen icon (see below).



HOME SCREEN

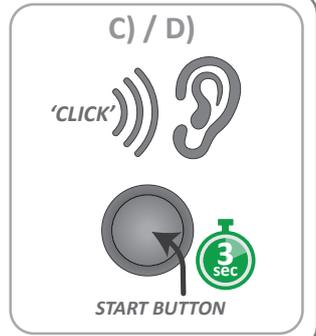
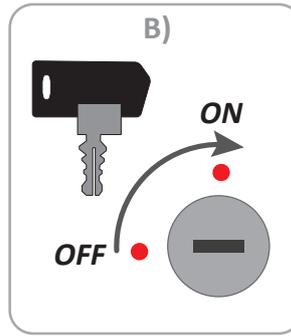
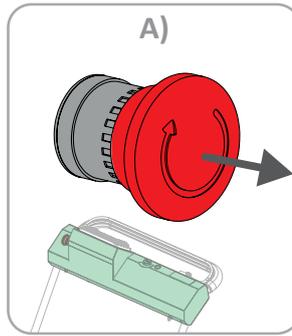
(Return to HOME screen from menus)

8. BASIC SCREEN CONTROLS

(Hand controls for machines manufactured after Summer 2022)

KEY START

- A) Release **E-Stop**
- B) Key mower to 'ON' position on the barrel
- C) Push and Hold START button
- D) Listen for 'CLICK' from the electrical box
- E) Release button & wait for display screen to boot



Cylinder START / STOP
In DRIVE or NEUTRAL
(on Button only)



TIME - DATE

- TRIP DISTANCE
- TRIP TIME
- SELECTED CLIP RATE or RPM name

Roller START / STOP
In DRIVE, REVERSE or NEUTRAL*
(on Button or Hand controls*)

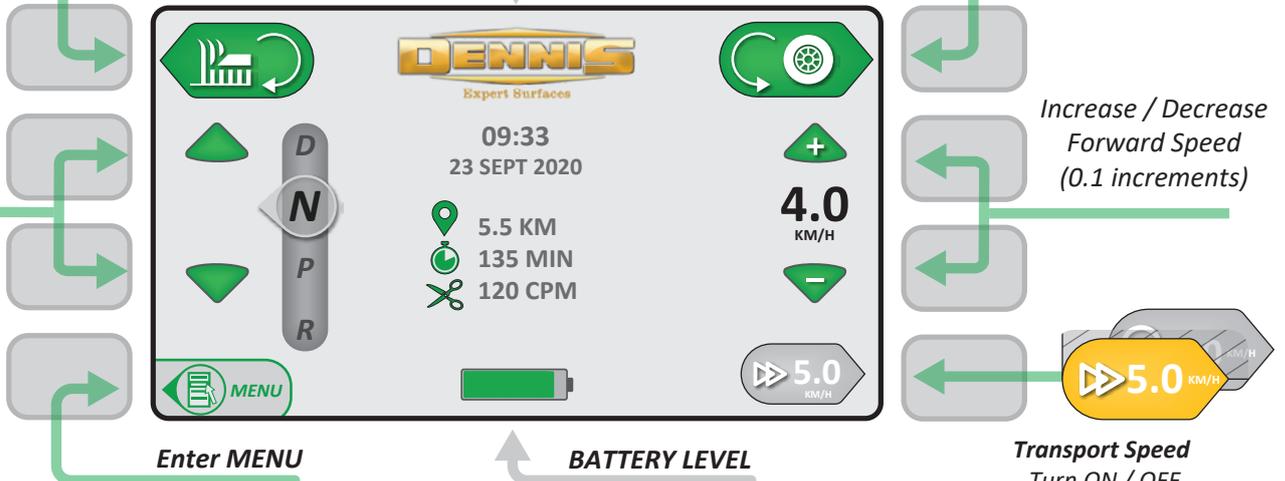


Diagram showing four drive mode selector buttons: DRIVE (green), NEUTRAL (grey), PARK (red), and REVERSE (yellow).

- DRIVE** - To operate mower from on screen controls
- NEUTRAL** - Free rolling & operating from hand controls
- PARK** - Mechanical parking brake is ON
- REVERSE** - Roller direction backwards select for use with hand controls



LATCHING | NUDGE

2-axis joystick. *Direction 1* - sprung loaded, *direction 2* - latching to maintain roller drive. Joystick can be rotated through 90 or 180 degrees if required.

Machine can still be operated from display buttons but hand controls will override display button controls.



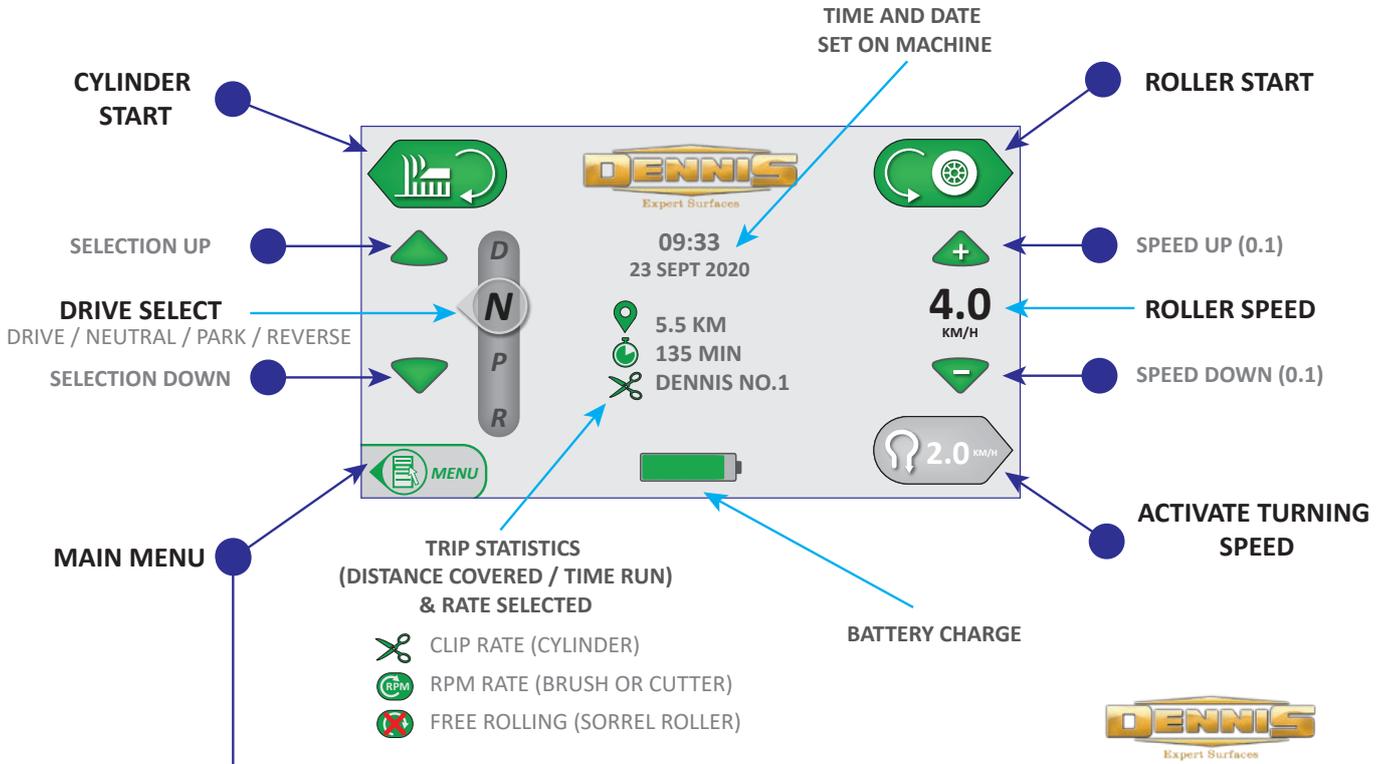
NOTE:- DEADMAN'S HANDLE MUST ALWAYS BE HELD TO OPERATE ROLLER AND CYLINDER DRIVE.

HOME SCREEN



	BUTTON SELECTION
	SCREEN INFO

OPERATING SCREEN FOR MOWER. ALWAYS AN OPTION ON OTHER SCREENS TO GET STRAIGHT BACK TO THIS SCREEN (TOP LEFT ICON).

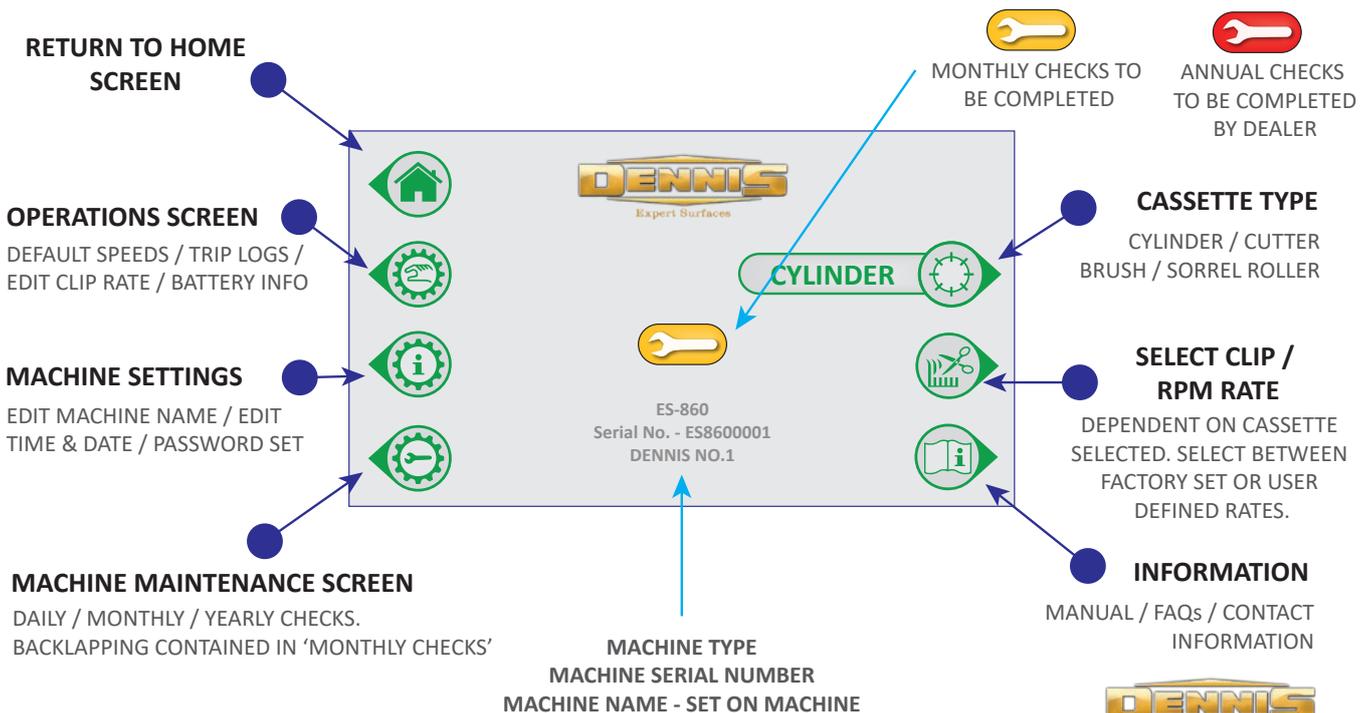


MAIN MENU



	BUTTON SELECTION
	SCREEN INFO

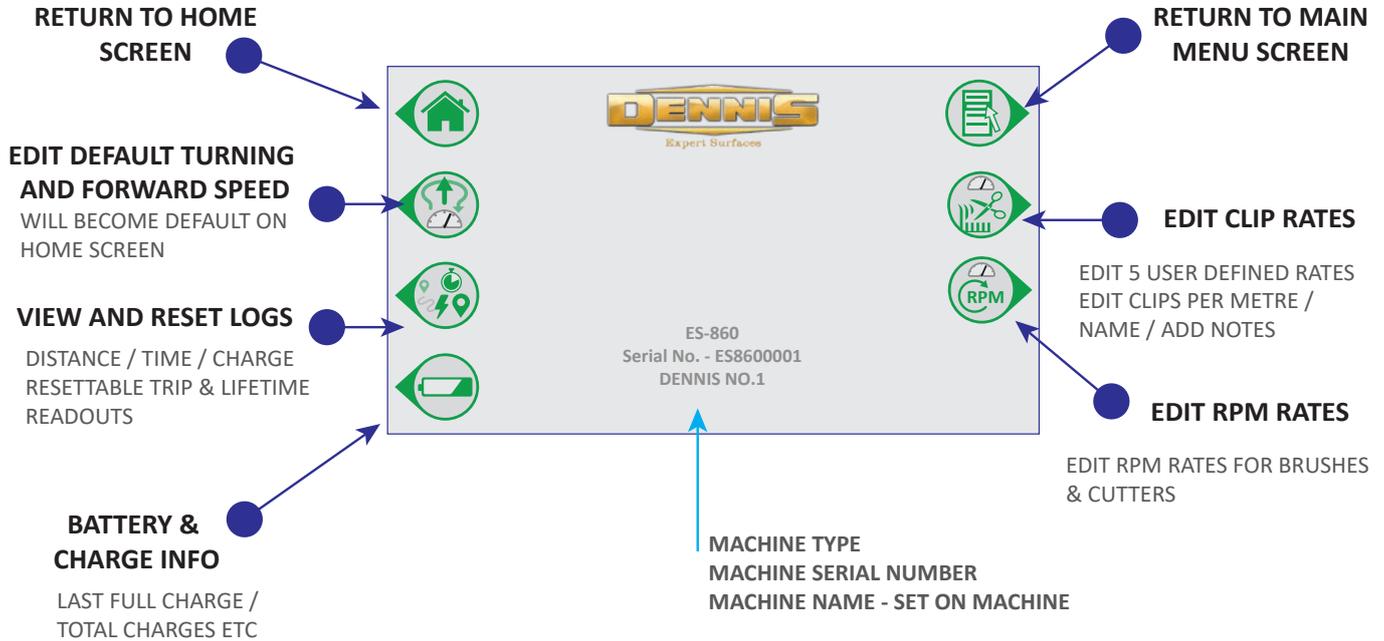
MAIN MENU SCREEN. ALWAYS AN OPTION ON OTHER SCREENS TO GET STRAIGHT BACK TO THIS SCREEN (TOP RIGHT ICON).



OPERATIONS SCREEN



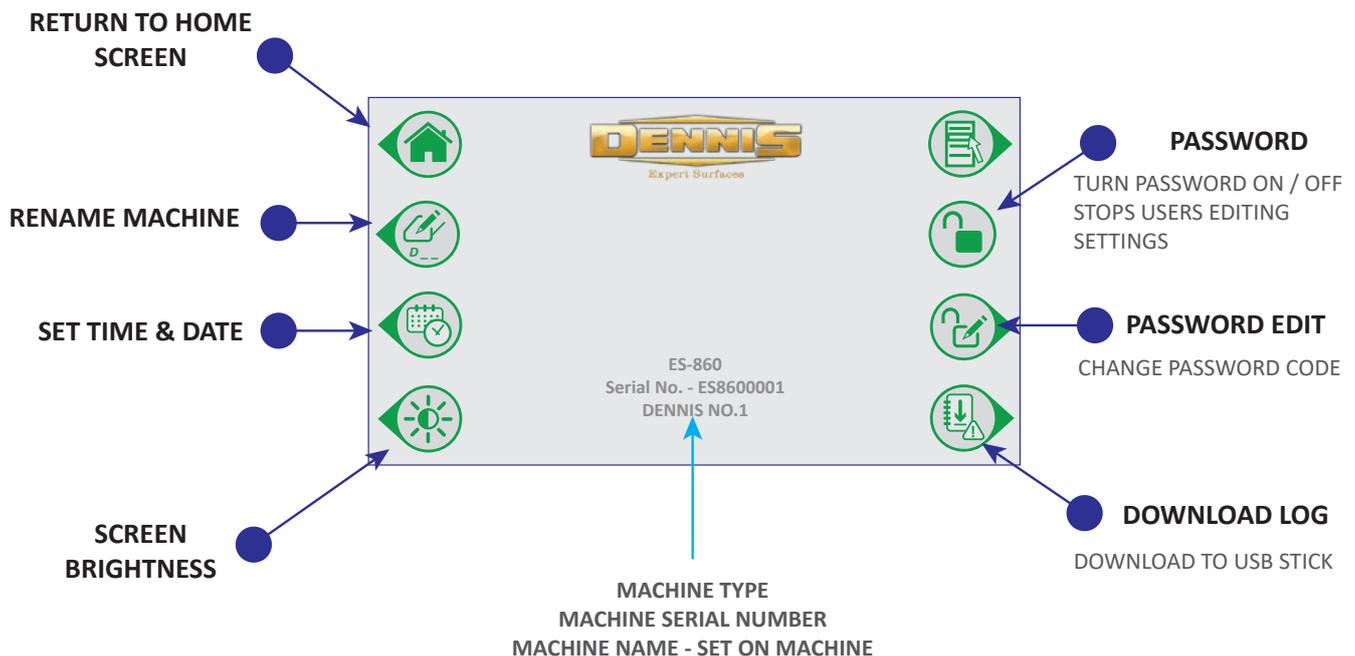
	BUTTON SELECTION
	SCREEN INFO



MACHINE SETTINGS



	BUTTON SELECTION
	SCREEN INFO

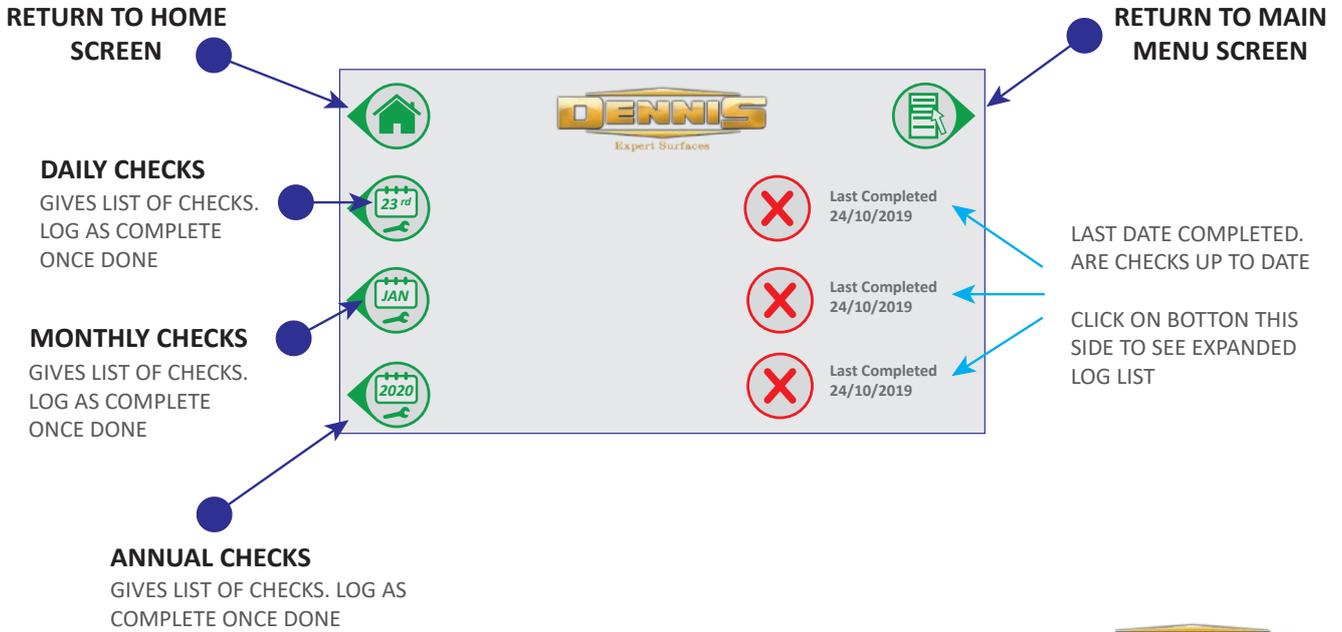


MAINTENANCE SCREEN



	BUTTON SELECTION
	SCREEN INFO

MAINTENANCE SCREEN. SELECT AND SIGN OFF DAILY / WEEKLY & YEARLY CHECKS. BACKLAPPING (REVERSE CYLINDER) IN MONTHLY CHECKS.

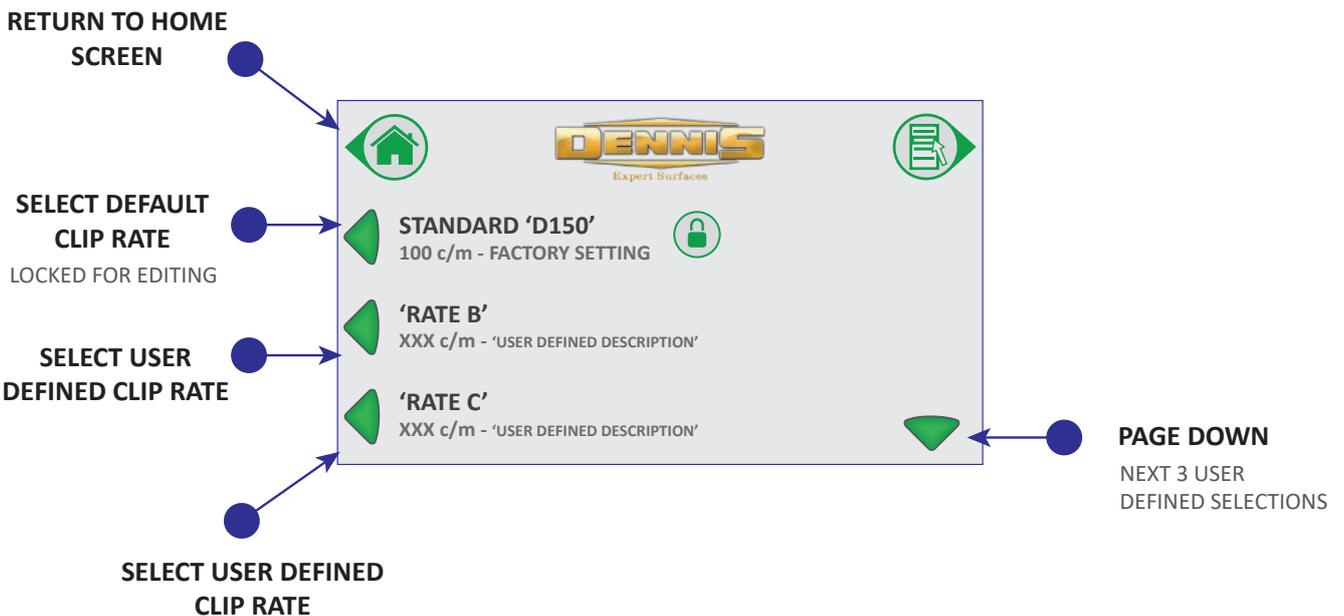


RATE SELECTION



	BUTTON SELECTION
	SCREEN INFO

SELECT YOUR CLIP RATE OR RPM DEPENDENT ON THE CASSETTE TYPE YOU HAVE SELECTED. WHEN CHOSEN IT WILL RETURN YOU TO HOME SCREEN READY TO OPERATE. CLIP RATE MAINTAINED EVEN WHEN SPEED ALTERED. RPM WILL REMAIN CONSTANT.

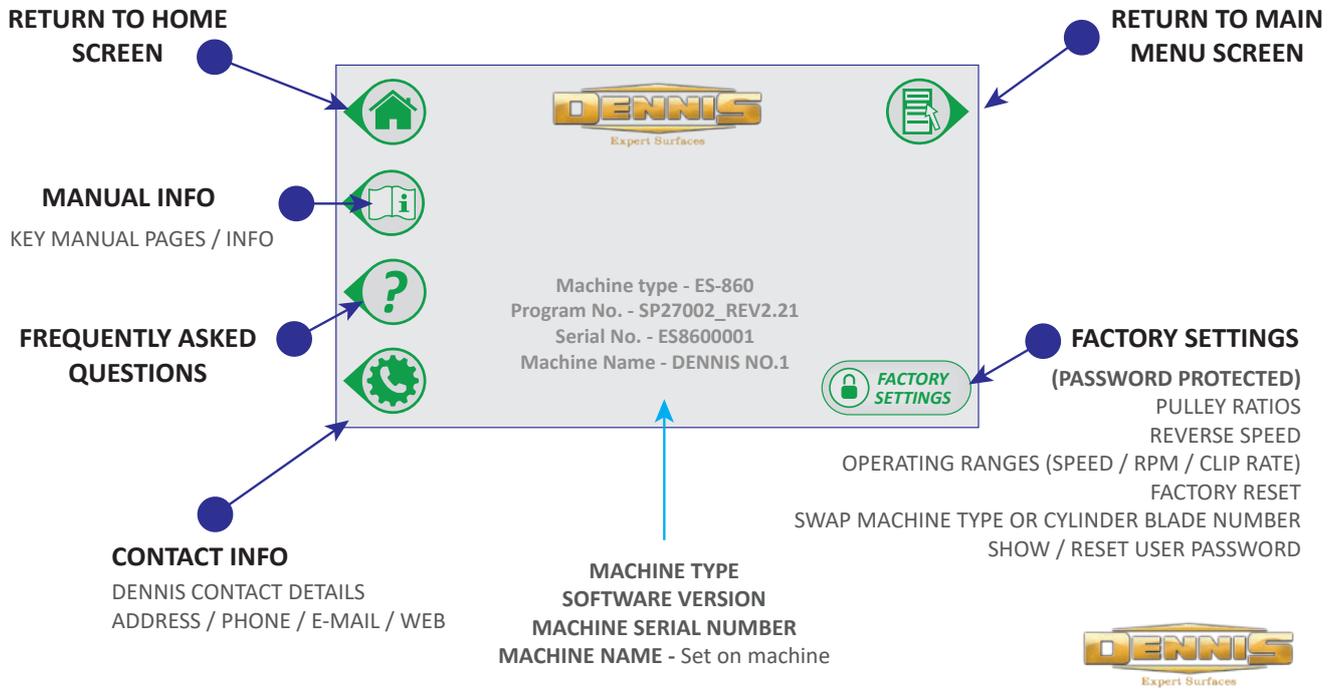


INFORMATION SCREEN



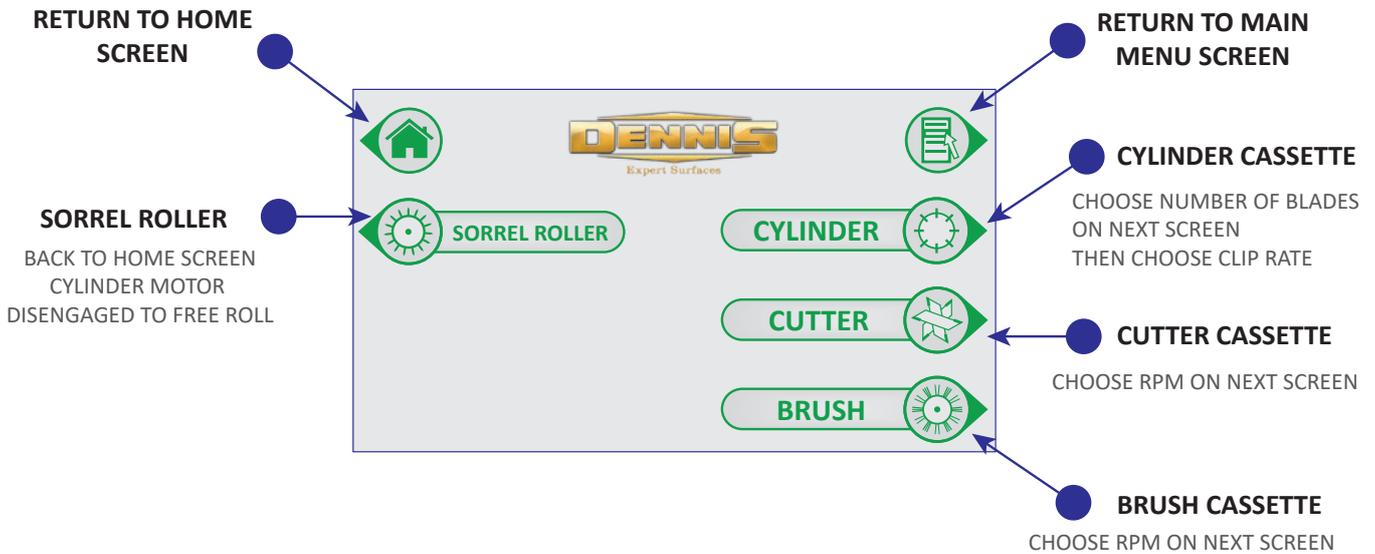
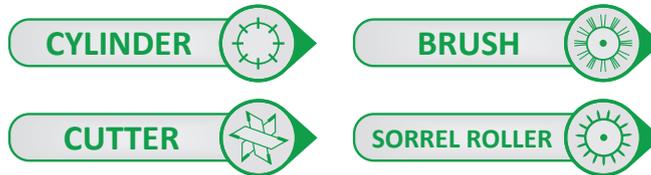
	BUTTON SELECTION
	SCREEN INFO

INFORMATION SCREEN. VIEW SELECT MANUAL PAGES, FREQUENTLY ASKED QUESTIONS AND DENNIS CONTACT DETAILS.

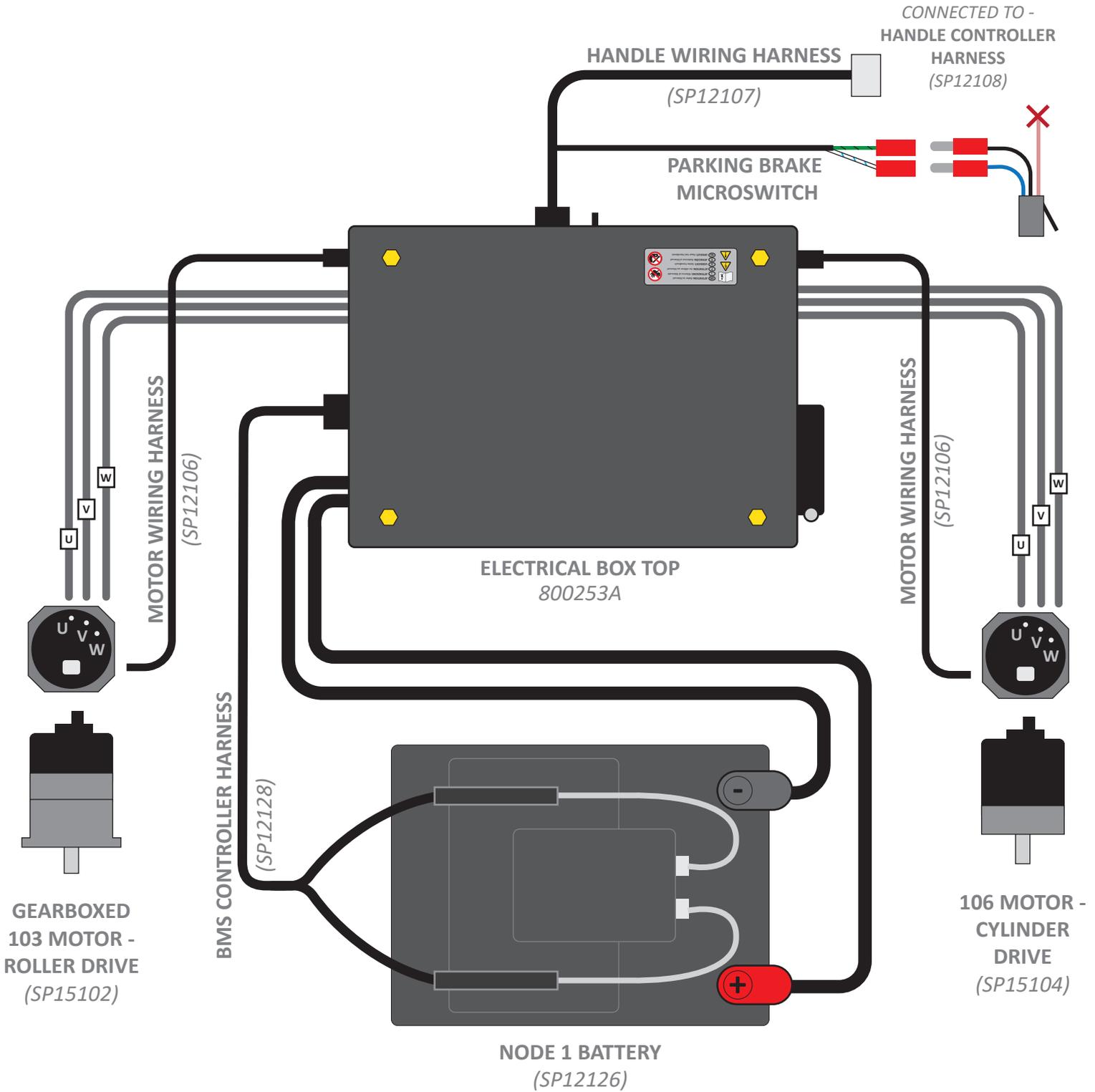


CASSETTE SELECTION

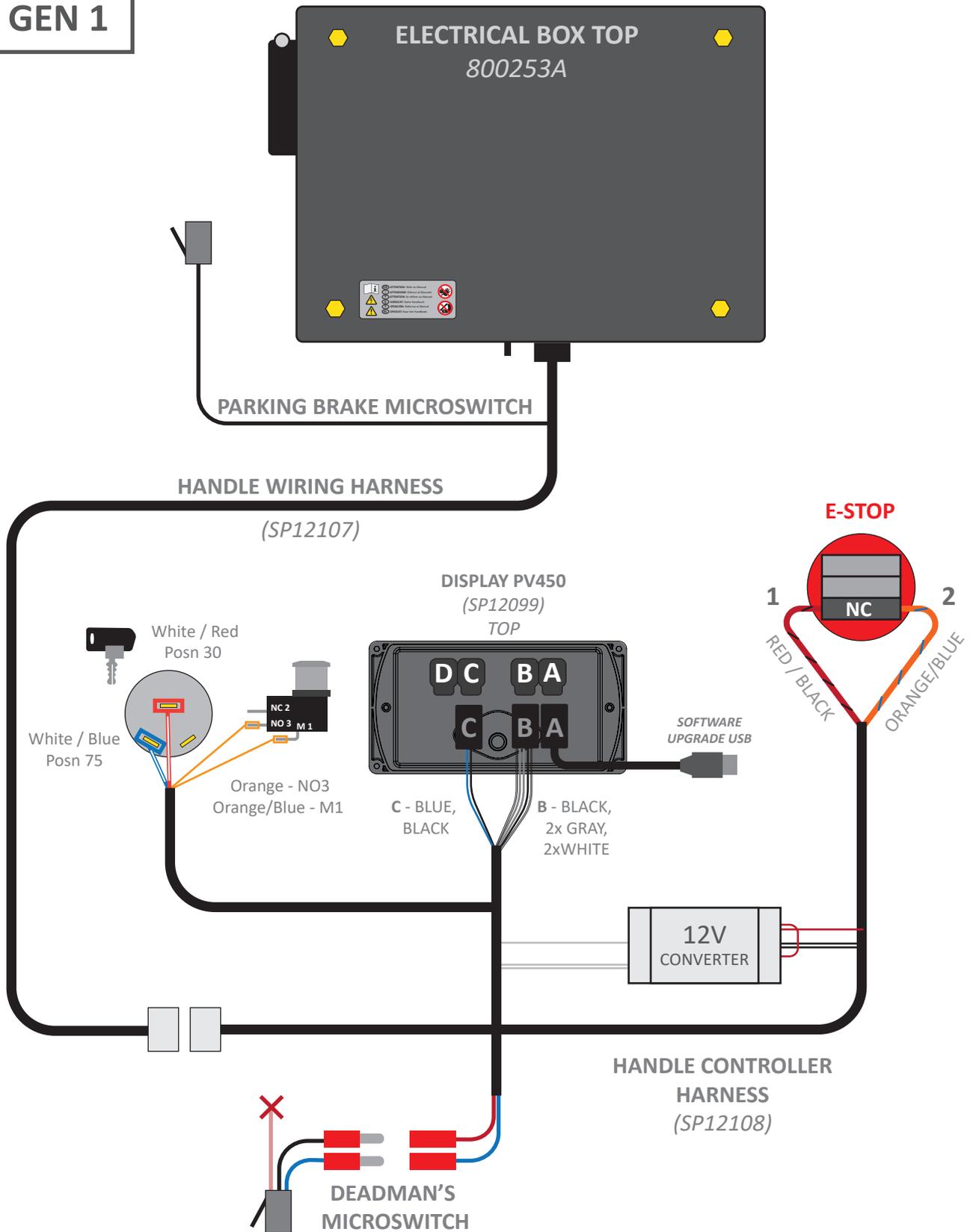
SELECT THE TYPE OF CASSETTE FITTED INTO THE MACHINE.



HYPERDRIVE - HYP-00-2890



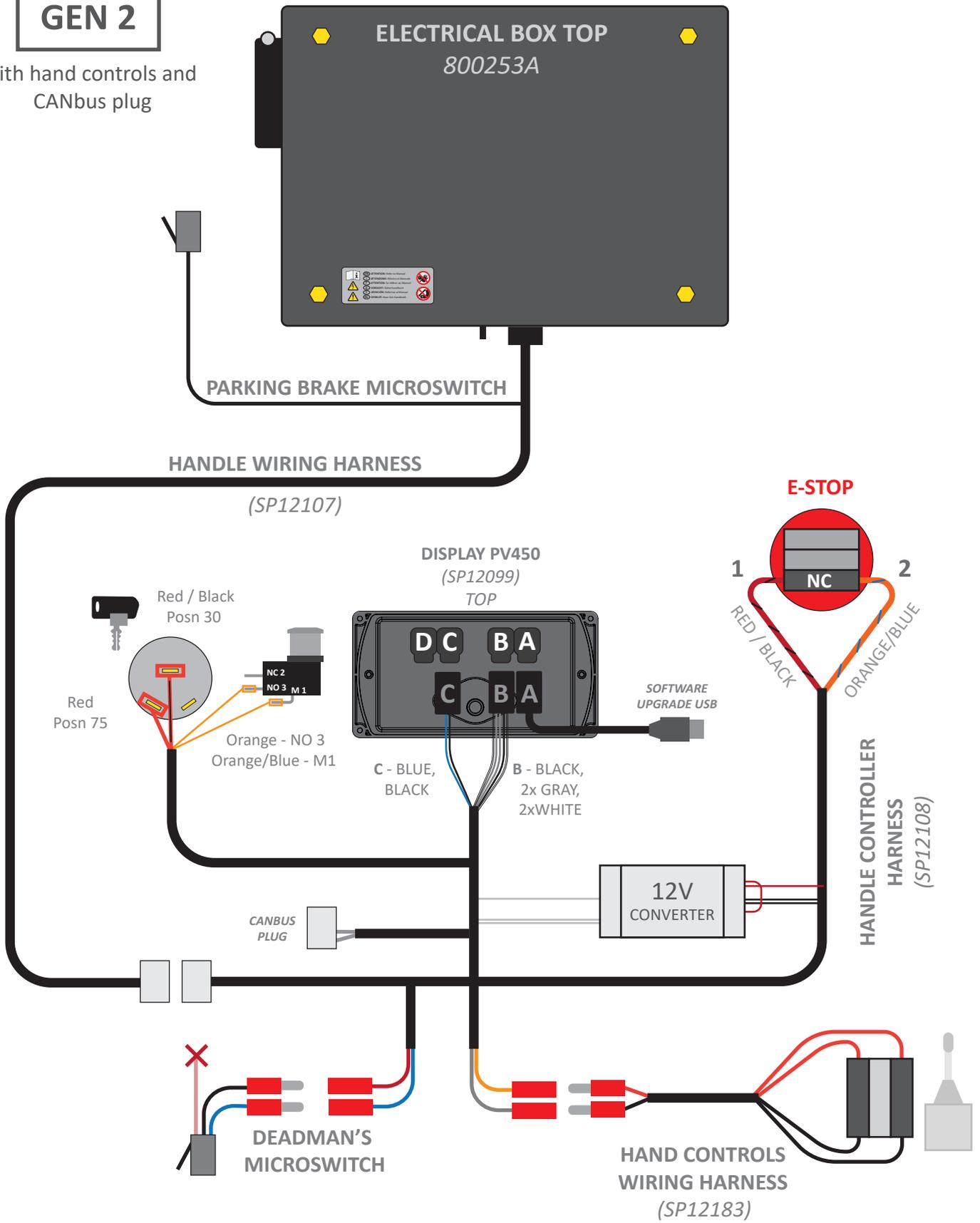
GEN 1



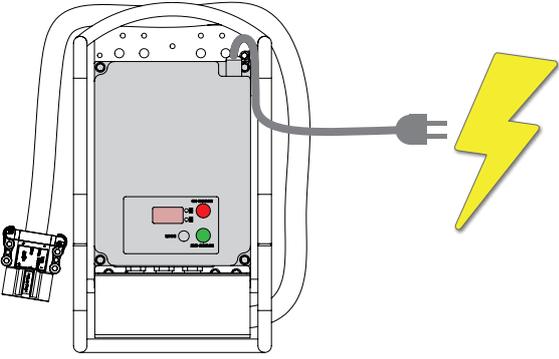
HYPERDRIVE - HYP-00-2890

GEN 2

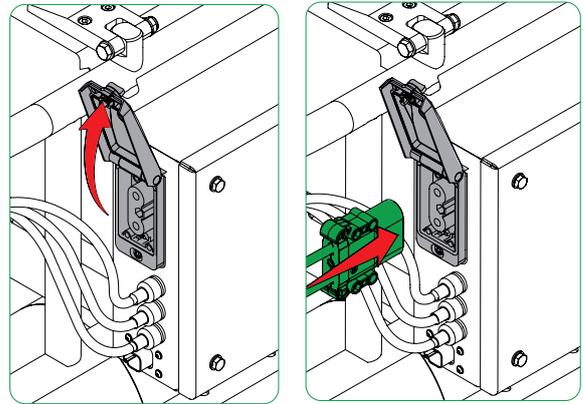
with hand controls and
CANbus plug



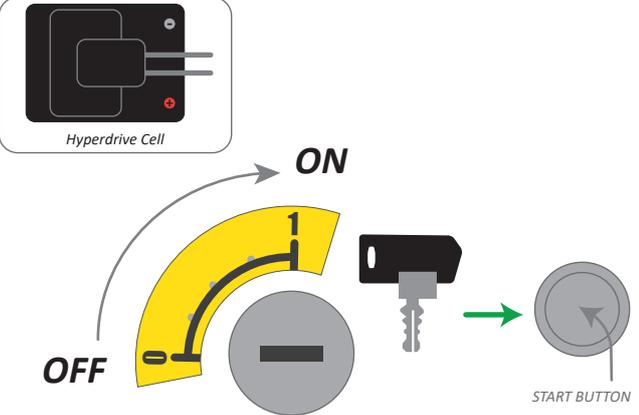
Follow charging instruction shown below -



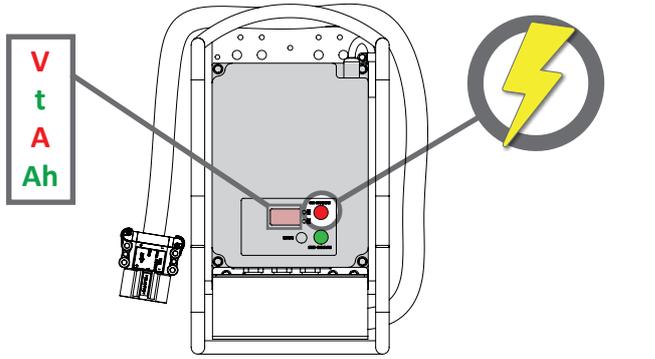
PLUG CHARGER (D153) INTO WALL/POWER SUPPLY. MAKE SURE DISPLAY/LIGHTS ARE ILLUMINATED TO BE SURE POWER IS LIVE TO CHARGER



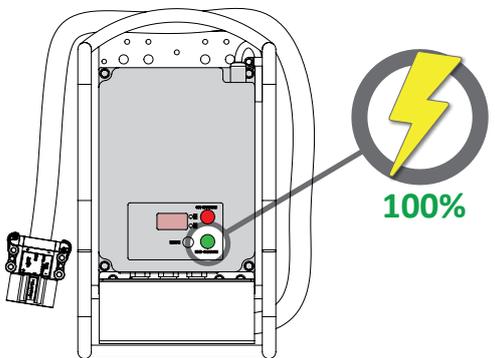
OPEN CHARGING COVER ON ELECTRICAL BOX AND CONNECT CHARGER INTO MOWER



KEY MACHINE TO ON POSITION, PUSH START BUTTON (LISTEN FOR 'CLICK'). DISPLAY SCREEN WILL SHOW THE MACHINE IS IN CHARGE MODE



CHARGER SOLID LARGE RED LIGHT TO INDICATE CHARGING. (SCREEN WILL BE BLANK). DISPLAY ON CHARGER CYCLING BETWEEN VOLTAGE, CURRENT, TIME & AMP HOURS

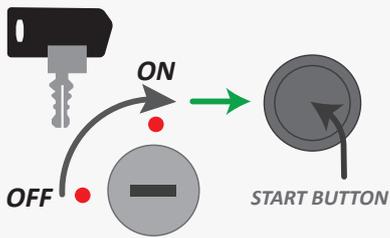


SOLID GREEN LIGHT WHEN FULLY CHARGED. CHARGER CAN BE REMOVED AND COVER CLOSED

(SAFE TO REMOVE CHARGER AT ANY TIME DURING CHARGE)

12. FREQUENTLY ASKED QUESTIONS

How do I start my E-Series machine?



- Check E-Stop is released
- Key mower to 'ON' position on the barrel
- Push and hold **START** button
- Listen for 'CLICK' from the electrical box
- Release button & wait for display screen to boot

What do the 'Main Menu' icons mean?



Operations
Default speeds / Info / Edit Clip rates



Machine Settings
Password / Time & Date / Screen Brightness



Maintenance
Daily / Monthly / Annual

Cassette Select (860)
Select cassette type fitted



Clip / RPM select
Select from default and user defined rates



Information
Contact / Manual / FAQs



How do I edit RPM & Clip Rates?



How do I edit the default Forward & Turning speed?



How do I backlap my cylinder?



START / STOP icon - Run cylinder in reverse direction. Set at 120 rpm

WARNING! NEVER PUT ANY BODY PART NEAR AN OPERATIONAL CYLINDER

Why does 'Daily Checks' show on start up?



The 'Daily Checks' screen will show on start up each day until the operator confirms they have completed the daily checks required before initial operation.

Once checks have been completed they can be registered as complete (tick icon), which will log the date on the checks register.



Confirm checks have been completed and can be logged

Log List

View completed log list. Available for DAILY, MONTHLY & ANNUAL checks

What is the default password?



DEFAULT PASSWORD - 1 1 1 1



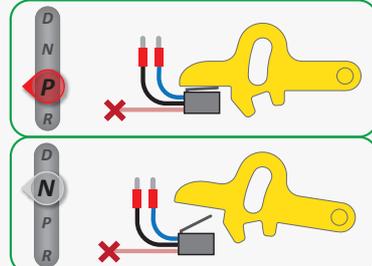
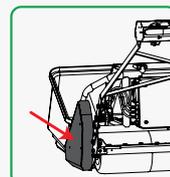
Password protecting your mower will stop unauthorised modification of values and setting while still allowing an operator to use the machines.

Contact Dennis or your dealer if you have changed and forgotten your password. They can talk you through resetting your password.



The 'Parking Brake' icon won't disengage?

Parking brake microswitch stuck 'ON' in closed position. (image right) Check hammer is disengaging.



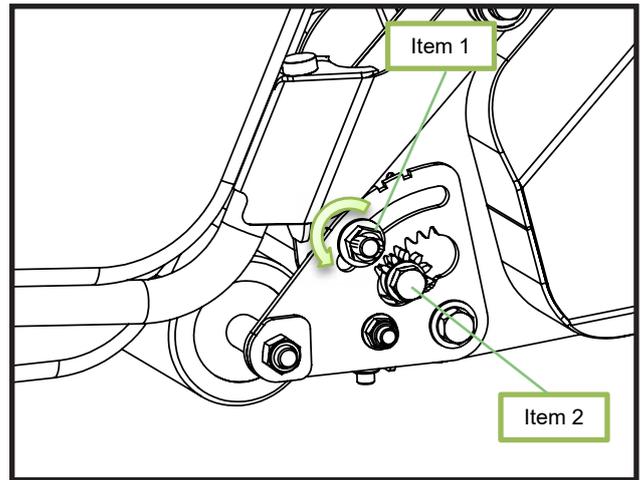
FAQ section also available within the 'Information' section -> 'FAQ' on the mower display screen.

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 and the depth of SCARIFICATION / DETHATCHING / BRUSHING, 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 (see image opposite) [19mm spanner] - *Item 1*
- Rotate the quadrants using the toothed gear [19mm spanner], 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. - *Item 2*



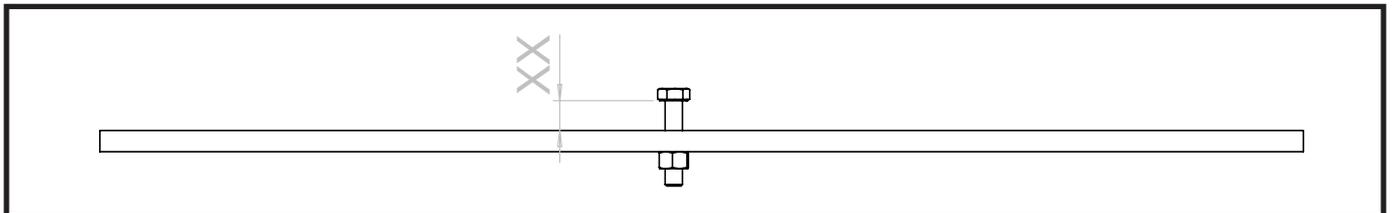
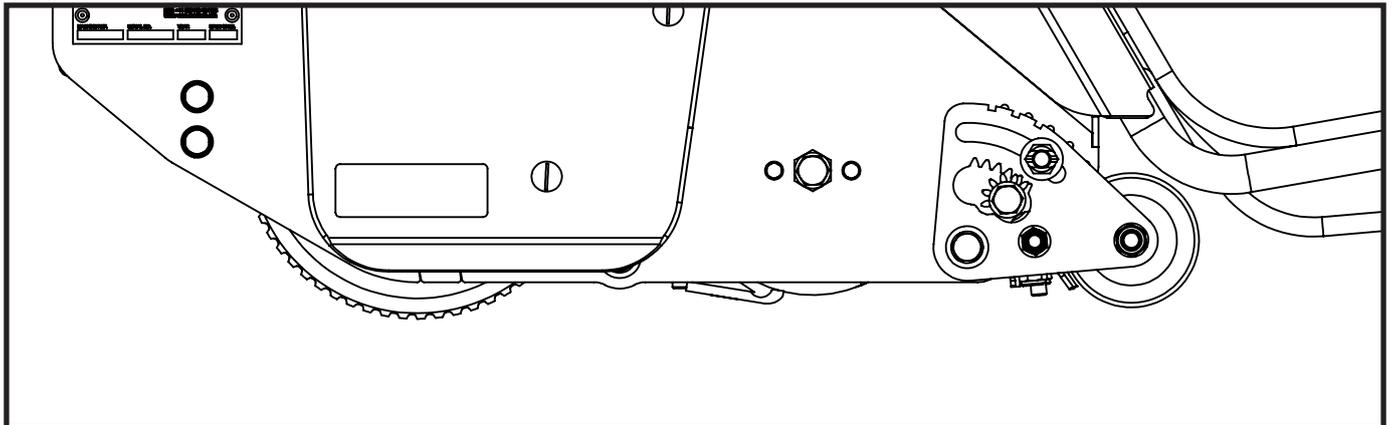
NOTE:-

DO NOT ATTEMPT TO USE THE DETHATCHING CASSETTES OR BRUSH CASSETTES ON TOO LOW A SETTING AS THIS WILL RESULT IN DAMAGE TO THE BLADES AND BRUSHES.



NOTE:-

DO NOT ATTEMPT TO SCARIFY ON TOO LOWER SETTING WHEN THE GROUND CONDITIONS ARE DRY AS THIS COULD CAUSE THE BELT TO SLIP AND WEAR AT AN INCREASED RATE.



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

A ruler 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 above)

Remember height of cut is affected 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.

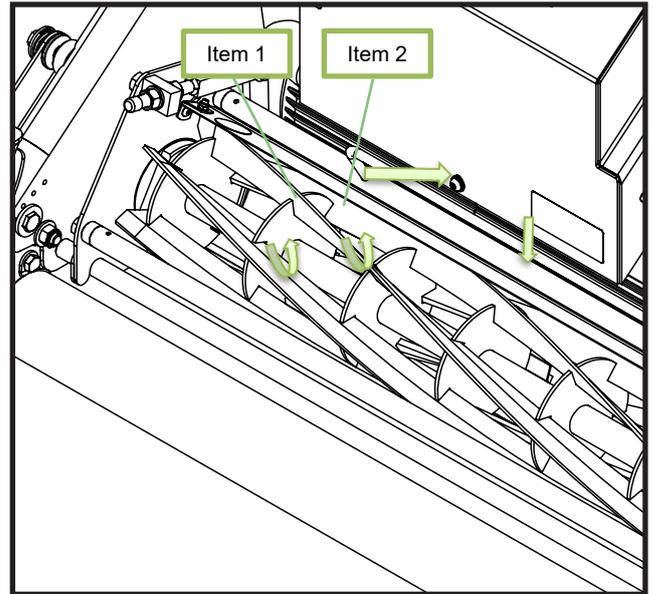
Always check height of cut/operation with the setting bar provided. Check in two positions i.e. one at either end of the cassette. Failure to do this could result in an uneven cut.

SETTING THE CYLINDER

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

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 across 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 power consumption.

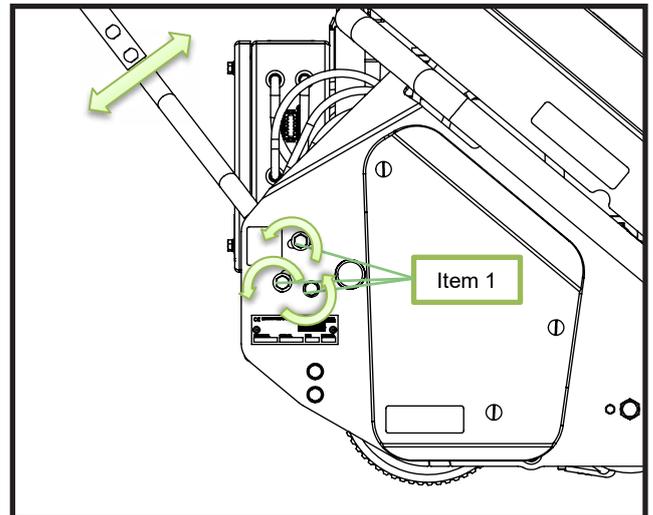


HANDLEBAR ADJUSTMENT

The "Handle Bars" are adjustable to achieve the correct working height for the operator.

To set:

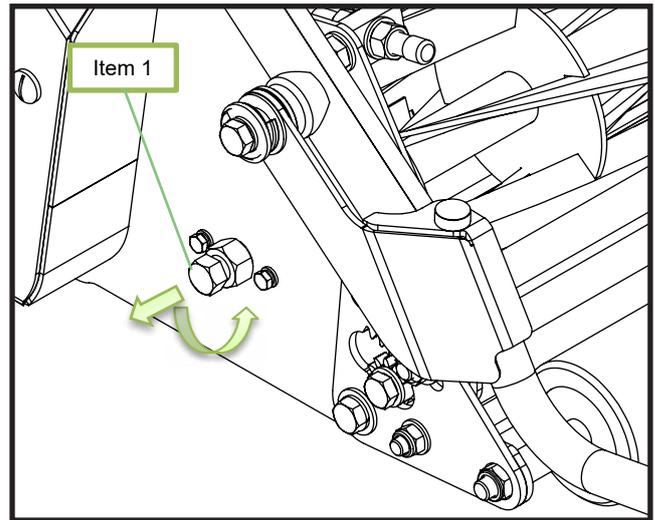
- Slacken off 6-off nuts (Item 1) ¼" turn [17mm spanner]
- Raise / lower the "Handle Bar" to the desired position.
- When set, tighten the nuts (Item 1)



14. REMOVING THE CASSETTE UNIT

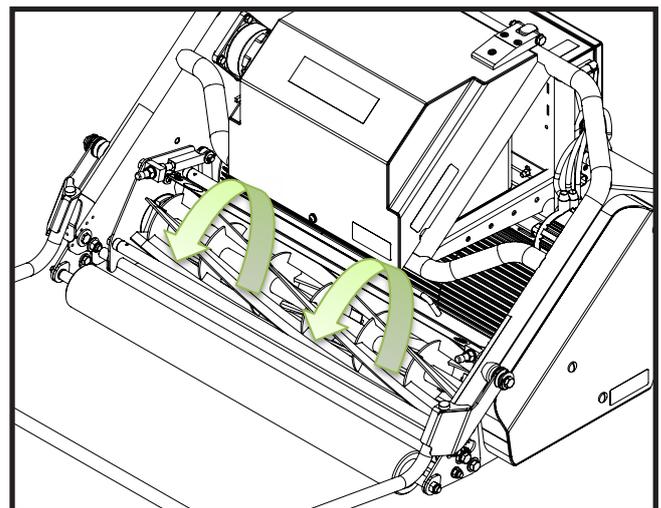
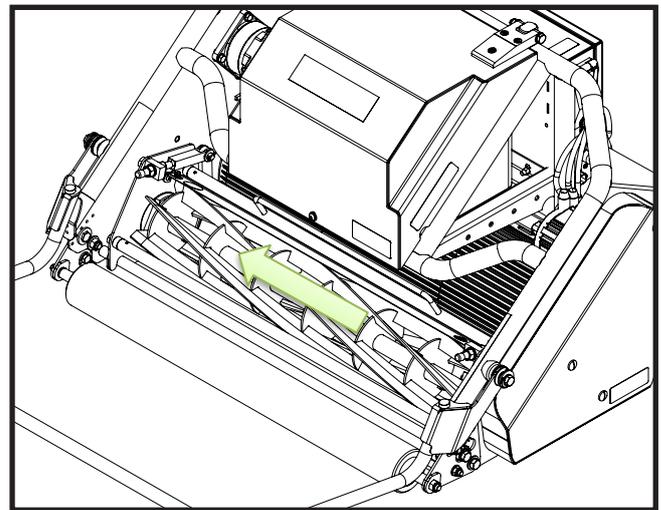
To remove the cassette unit for maintenance or to exchange cassettes the following procedure should be followed:-

1. Unscrew the bolt (Item 1) [24mm Spanner] for about half-an-inch (13mm) until the pip end is inside the nut on the side frame.
2. Slide the cassette unit along the tie bars as far as it will go until the cutter nut and coupling is clear of the three pins in the driving coupling.
3. Remove the unit from the chassis by lifting in a swinging motion from the back.



To replace the cassette unit:-

1. Place the front slots of the cassette unit frames on the two front retaining pins seen projecting from inside the frame.
2. Carefully lower the unit in a downward swinging motion until the rear slots of the cassette unit frame rest on the cross tie bar.
3. Move in a lateral direction away from the retaining pin until the three holes of the cassette nut and coupling are in full engagement with the three pins of the driving coupling.
4. Screw up the bolt (Item 1) [24mm Spanner], engaging the hole in the side frame on the opposite side. Do not over tighten.



16. ROUTINE MAINTENANCE

ROLLER TIMING BELT

Check timing belt condition for wear or damage and check tension on belt.

CASSETTE MULTI V BELT

Check timing belt condition for wear or damage and check tension on belt. Over tension will put excessive strain on the belt and bearings. Under tension will lead to slip, poor performance and cause rapid wear.

DRIVE & CYLINDER MOTORS

Check condition of outer motor casing for damage. Check power cables from the electrical box fitted securely and nuts tightened.

LITHIUM BATTERY

Visibly check the condition of the outer casing for damage. NEVER USE A MOWER WITH A DAMAGED BATTERY!

ELECTRICAL HARNESES

Check cables are not split or damaged and plug connections are all fitted correctly. Damaged cables should be replaced before the machine is next operated.



NOTE:-

NEVER USE A MOWER WITH A DAMAGED BATTERY OR ELECTRICAL BOX. IF IN ANY DOUBT CONTACT YOUR DEALER OR DENNIS DIRECT.



48V

NOTE:-

NEVER ATTEMPT ANY ELECTRICAL WORK. ANY ATTEMPT WILL VOID THE WARRANTY!

15. GENERAL LUBRICATION

REAR ROLLER

(6-months)

The main drive roller is split into three sections incorporating a differential gear system running in an oil bath. The old oil should be drained off and the bath replenished with 1 pint (550ml) of clean oil.

FRONT ROLLER ADJUSTERS

(2-months)

Apply a small quantity of copper grease or similar to the adjuster studs to prevent corrosion and ease adjustment.

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 and damage electrical components.



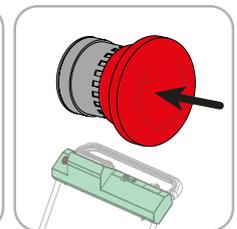
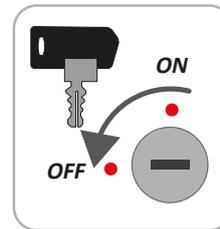
KEY INFORMATION – Lithium battery packs will self-discharge over extended periods of time without maintenance. Once lithium-ion cells discharge below a certain voltage they become unusable and must not be discharged further (*Deep Discharge state*). Regular monitoring and maintenance is essential for long storage or idle periods. Dennis will not be held responsible for damage due to neglect.



Recommendations to ensure maximum battery life:

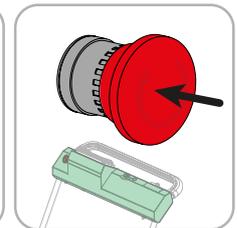
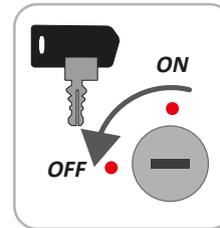
Leaving your mower for a few days

- Never leave the mower below 15% charge when stored
- Always turn the key off and press the E-Stop in



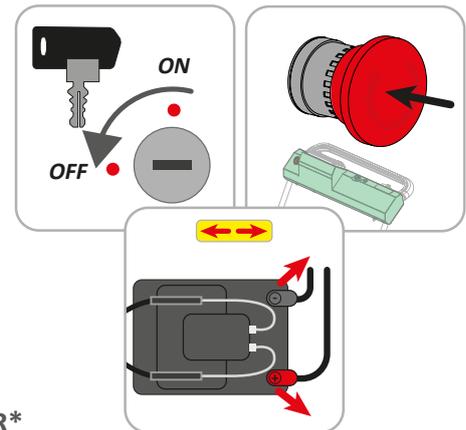
Leaving your mower stored for any extended period of time (>30 days)

- Never leave the mower with below 50% charge when stored
- Always turn the key off and press the E-Stop in
- Ideally disconnect the battery terminals from the top of the battery
- If left for more than 45 days, it is important that it is checked periodically and if necessary, charged to ensure that the voltage remains above 50.12V



Transporting your mower

- Never ship the mower with below 25% charge (50.12V)
- Charge mower to approx. 70% SOC for transport
- Always turn the key off and press the E-Stop in
- Always disconnect the terminals from the top of the battery



RECOMMENDATIONS FROM BATTERY MANUFACTURER*

Battery State of Charge (SOC)	Typ. Voltage	Until Deep Discharge
50%	51.24V	55Ah = 1.3 years
25%	50.12V	28Ah = 8.3 months
5%	46.9V	5.5Ah = 49 days
2%	45.92V	4.5Ah = 40 days
0%	44.1V	2Ah = 18 days
DEEP DISCHARGE	39.2V	0Ah = 0 days

*Hyperdrive Modular Pack User Manual – HYP-131-MAN-Z-001

18. BATTERY CARE INFORMATION

No hazards occur during the normal operation of a Battery as it is described in the instructions for use that are provided with the Battery. Battery modules are electrical devices that must be handled and used with care. Improper use or handling could lead to electrical leakage, electrolyte leakage, overheating, smoke, fire, and serious injury. Smoke and debris from a module fire may contain hazardous dust, fumes, and corrosive gases, such as Hydrogen Fluoride.



HIGH VOLTAGE INSIDE

The inside of the battery is high voltage.

Do not attempt to disassemble or repair. Electric shock may occur!

Avoid contacting the batteries and fluid with eyes, skin or clothes. In the event of a spill, flush with water and seek medical help immediately.

Keep children and unauthorised personnel away from this unit.



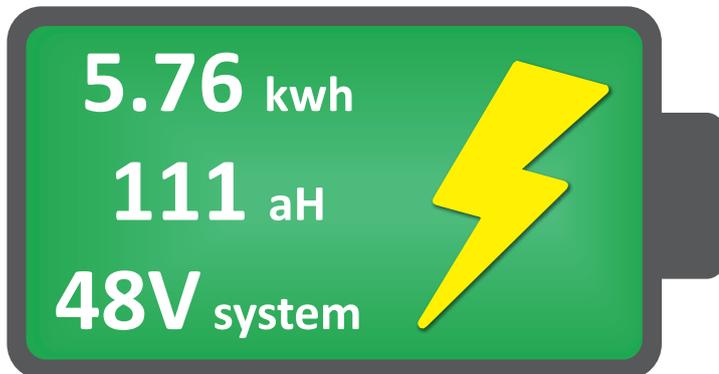
To avoid explosions or fire which can result in serious injury:

Do NOT immerse in water or allow condensation to occur within the unit.

Do NOT touch with wet hands.

Do NOT expose to fire or open flame.

Do NOT strike or puncture the battery or its housing.



PART NUMBER: SP12126

BATTERY TYPE: HYP-00-2890

WEIGHT: 37 Kg

CHEMISTRY:

MANGANESE LAMINATED LI-ION
(LMNC)



OPERATING TEMP. RANGE:

CHARGE: -25°C TO +45°C

DISCHARGE: -25°C TO +60°C



STORAGE CONDITIONS:

TEMP.: -40°C TO +70°C

HUMIDITY: BELOW 75%

LIMITED WARRANTY

>85% capacity for minimum 2000 cycles when cycled to 100% DoD at 50A at a cell temperature of 25°C. Deviation from these conditions will be assessed on a case by case basis. See Hyperdrive website for further details.

www.hyperdriveinnovation.com/

RETURN OF BATTERIES AT END OF LIFE

Hyperdrive Innovation as a producer of Industrial batteries can take back batteries free of charge at the end of their designated life (<85% capacity). Please contact Hyperdrive for further information.

RETURN OF BATTERIES WITH A POSSIBLE FAULT

Where batteries are not performing as expected please contact Hyperdrive for guidance.

RETURN OF BATTERIES AFTER DAMAGE OR ABUSE

If batteries have been damaged / misused, the customer will be responsible for all costs and expenses relating to the disposal of such batteries. Please contact Hyperdrive for guidance.

STANDARDS

EMC	Designed to meet: EN61000-6-2:2005 and EN61000-6-3:2007 + A1:2011
TRANSPORT	UN38.3 rev6 including impact and vibration testing
OTHER	RoHS directive and WEEE directive



RoHS

19. CASSETTES AND THEIR USES

ES-860 / G-860



Order reference number:	-	-	D860 – D054-1
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6 BLADE CYLINDER

High quality British steel blades in a single spiral format. Incorporating easy to set cutter adjustment.



Order reference number:	-	-	D860 – D054-7
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8 BLADE CYLINDER

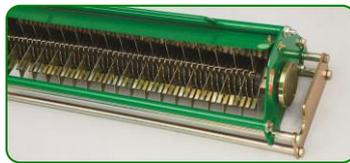
High quality British steel blades in a single spiral format. Incorporating easy to set cutter adjustment.



Order reference number:	-	-	D860 – D054-9
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11 BLADE CYLINDER

High quality British steel blades in a single spiral format. Incorporating easy to set cutter adjustment.



Order reference number:	-	-	D860 – D054-3
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1mm SCARIFIER

1mm thick replaceable, wear resistant blades. 12mm spacing for thatch removal throughout the season and autumn/spring renovation work.



Order reference number:	-	-	D860 – D054-4
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2mm SCARIFIER

2mm thick replaceable, wear resistant blades. 12mm spacing for thatch removal throughout the season and autumn/spring renovation work.



Order reference number:	-	-	D860 – D054-4TT
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2mm SCARIFIER TUNGSTEN TIPPED

The ultimate scarifier with tungsten tipped blades for heavy duty thatch removal throughout the season and autumn/spring renovation work .



Order reference number:	-	-	D860 – D054-5 soft
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BRUSH SOFT BRISTLE

For moss and debris removal and use as a light scarifier for final pre cut preparations.



Order reference number:	-	-	D860 – D054-5 hard
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BRUSH HARD BRISTLE

For moss and debris removal and use as a light scarifier for final pre cut preparations.



Order reference number:	-	-	D860–D054-5 multi
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BRUSH MULTI DENSE

For moss and debris removal and use as a light scarifier for final pre cut preparations.



Order reference number:	-	-	D860 – D054-2
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VERTI-CUTTER

1mm thick 10 fingered replaceable discs. Regular use controls, thatch, lateral growth and the ingress of unwanted species such as annual meadow grass.



Order reference number:	-	-	D860 – D054-2TT
-------------------------	---	---	-----------------

VERTI-CUTTER TUNGSTEN TIPPED

Gives extra durability for heavy usage.



Order reference number:	-	-	D860 – D054-6
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SORREL ROLLER

Replaceable spikes relieves surface tension and allows penetration of air, water and fertilizer to the root zone.

6 BLADE CYLINDER

- For cutting fine turf areas.

8 BLADE CYLINDER

- For cutting fine turf areas.

Settings – Expressed as above and below ground level i.e. by placing the setting bar between the front and rear rollers, the top of the bar represents ground level.

VERTICUTTER

Used from ground +3mm to ground -3mm to control thatch, cutting lateral growths and standing up lying grasses ready for cutting and lifting with the comb. Good for removing mosses. Start on the green at (say) +3mm



NOTE – **NOT FOR CUTTING SOIL, ONLY THATCH**

RESULT – Speed improvement on greens, reduced end of season maintenance. Promotes healthy plant growth, promotes strong roots, and maximises fertilizer penetration.

SCARIFIER

Used for ground to ground -10mm controlling thatch, removing thatch, cutting lateral growth, pruning roots, removing moss, aerating top layer for ingress of water, air, fertilizer and seed. Choice of 1mm or 2mm thick blades (generally 1mm used in summer, 2mm used in winter). Do not try to cut too deep – must be adjusted to suit conditions. Keep engine revs reasonably high with a slow forward movement to remove as much material as possible. The machine may tend to walk along on its own in some conditions.

RESULT – Speed increase of playing surface. Maximises fertilizer penetration & promotes strong healthy plant growth and strong roots.

BRUSH

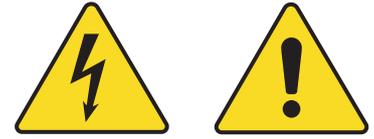
Used for light scarifying, brushing, removing debris, cigarette ends, pine needles, moss, excess top dressing etc. set at +3mm to +1mm for ground debris depending on conditions. Remove comb.

SORREL ROLLER NOT DRIVEN

Used for surface pricking. Lets air, water fertilizer into the root zone. Good for over seeding and preparing damaged areas for repair. Reduces surface tension.

	Bowls	Cricket	Golf
Verticutter	Monthly	Fortnightly	Monthly
Scarifier	1-2 months	1-2 months	1-2 months
Brush	As required	As required	As required
Ironing roller	Match days	Pre-season	As required
Sorrel Roller	1-2 weeks	Monthly / Repairs	Monthly / Repairs

My mower won't switch on



Nothing happens when I try and start my mower. The screen doesn't attempt to boot.

If this is a brand-new machine please see 'E-Series Initial Connection' information sheet / paperwork attached to the mower (SP19028). Battery terminals will have been disconnected for transport.

Follow the check list below point by point until the issue is resolved –

1. Check the E-Stop has been released on the side of the handle bars
2. Make sure the key has been fully inserted and turns freely into the 'ON' position
3. Make sure the 'START' button has been held for >3 seconds to give the electrical system on the machine time to engage
4. Check the handle harness plug connection into the electrical box
5. Check the battery terminals are connected (*mowers should be shipped with these disconnected*). The terminals are on top on the battery under the battery cover
6. Make sure there is no visible signs of damage on any of the battery cables. **NEVER TOUCH ANY EXPOSED WIRES!**
7. Open handle bar console cover to trouble shoot the wiring connection. **NEVER TOUCH ANY CONNECTIONS** without the E-Stop pressed and the white harness connector plug disconnected! (refer to manual or INFO sheet 'SP19031')
 - a) Check there is a green light on the 12V converter indicating power is getting to the handle bar
 - b) If there is no light on the converter check the white wiring harness plug is correctly connected
 - c) Check connections to START button C (Common) & NO (Normally Open) terminals to be connected
 - d) Check connections to E-Stop (wired into NC (Normally Closed) contact block)
 - e) Check connections to Key Switch (Position 30 & Position 75)
 - f) Check screen connections – plug positions B & C fitted the correct way around
8. Check the battery has not been fully drained. Plug the mower into the charger and power the machine on to see if the display starts up with the 'On Charge Screen'

If the problem persists please contact your dealer or Dennis directly

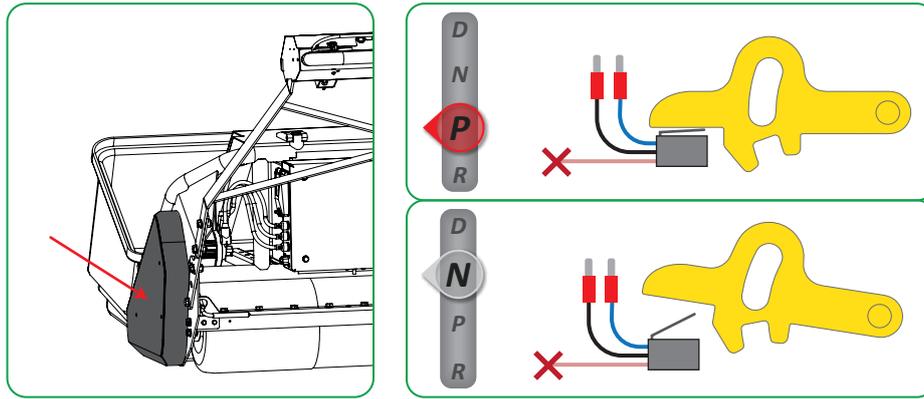
My screen powers on briefly then switches off

'Loading...' briefly shows on the screen then disappears.

- Make sure the START button is held in until you hear a 'click' from the electrical box. The button needs to be held for 2-3 seconds to engage the electrical system on the mower
- Check connections to START button. C (Common) & NO (Normally Open) terminals to be connected

The on screen 'Parking Brake' icon won't disengage

The 'P' on gear selection is stuck on and I can't put my mower into Drive or Reverse. This means the mechanical parking is engaged, the icon will automatically switch to 'N' (Neutral) when the brake is fully disengaged.



- Check the mechanical brake has been disengaged (handle on the lower left-hand side of the machine)
- Check the parking brake microswitch is being disengaged from the brake hammer under the left-hand side guard

My mower won't operate and displays a 'PLEASE HOLD DEADMAN HANDLE' message ***OR***

My mower doesn't disengage when I release the bail bar

- Check the bail bar is being held or fully released when attempting to operate
- Listen if you can hear the quiet 'click' of the microswitch operation under the handle bar console, if not the microswitch position might need repositioned on its bracket to correctly engage / disengage
- Check microswitch bullet connectors are attached under the handle bar console cover (Blue & Black wires on microswitch)
- Check continuity of the micro switch with a multimeter

My mower isn't charging

(also see 'Charging Info' in the mower manual or document SP19023)

- Check charger is plugged in and receiving power. Lights and screen on charger should be illuminated
- Check charger is correctly plugged into mower
- Check E-stop is released and correct start sequence has been followed (holding START button until 'click')

Charger display and lights should be cycling through VOLTS / TIME / CURRENT / AMP HOURS to indicate that the mower is charging. The display will also show the state of charge on screen.

There are no lights on my charger / Lights are flashing on my charger

No lights illuminating on the charge indicate the charger is not receiving power. Check the charger has been plugged in and check the condition of the fuse in the plug

The lights on the charge cycle between red and green when correctly charging the mower. This shows time on charge, voltage, current and amp hours being put into the mower battery

'BMS Comms' error showing on screen

OR

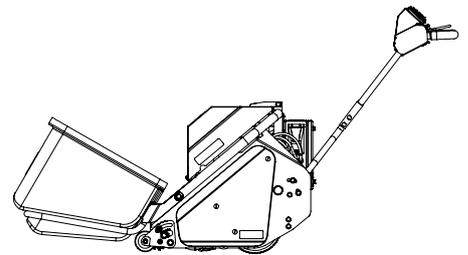
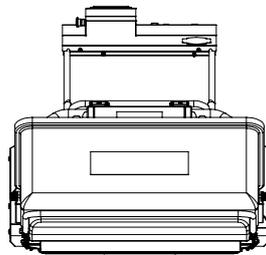
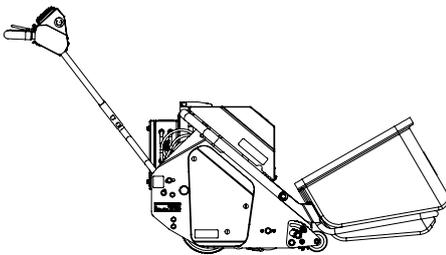
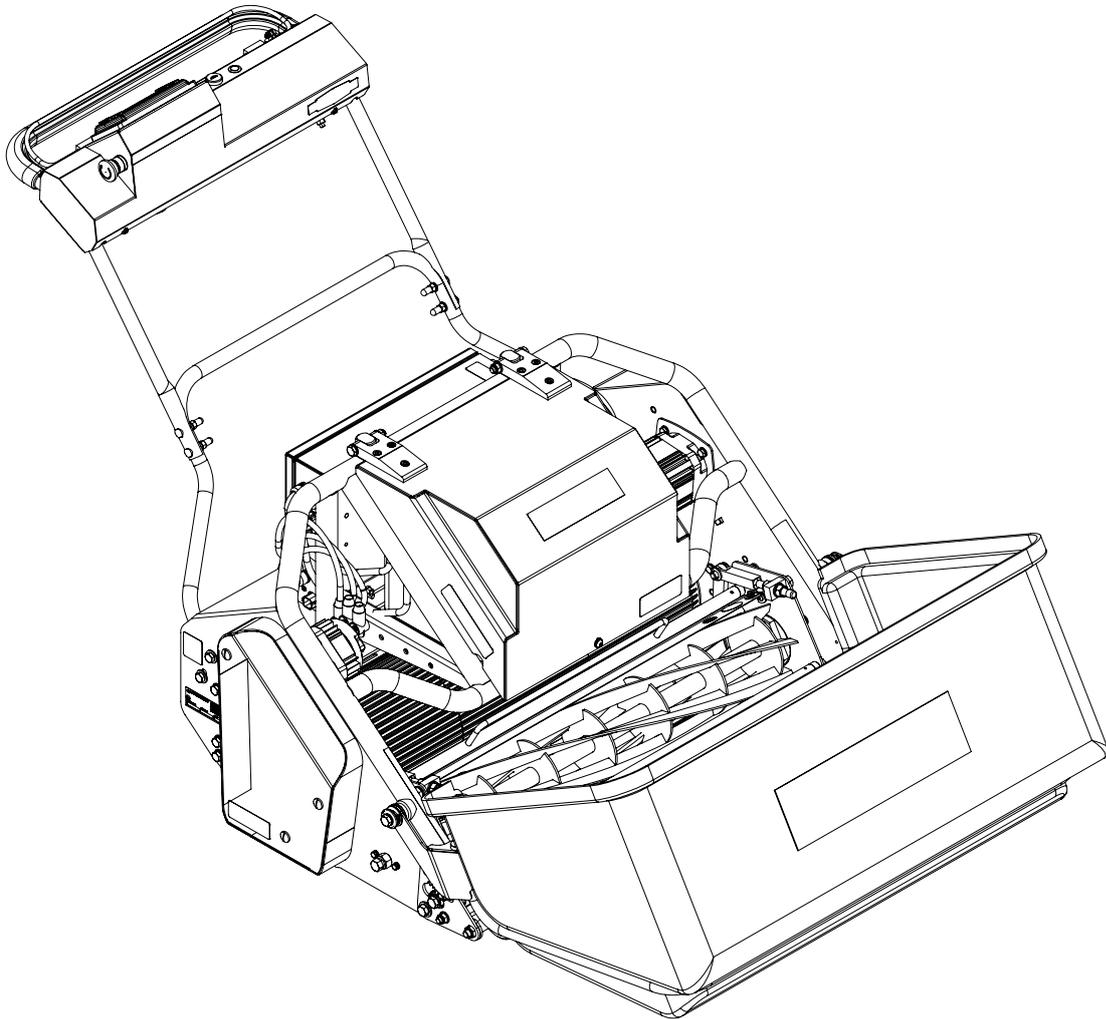
My mower battery won't show charge (always showing empty)

- Check Battery Management System (BMS) cable is connected correctly
- Unplug the (BMS) cable from the battery and check the condition of the internal pins. Bent internal pins in the cable mean a replacement cable will be required

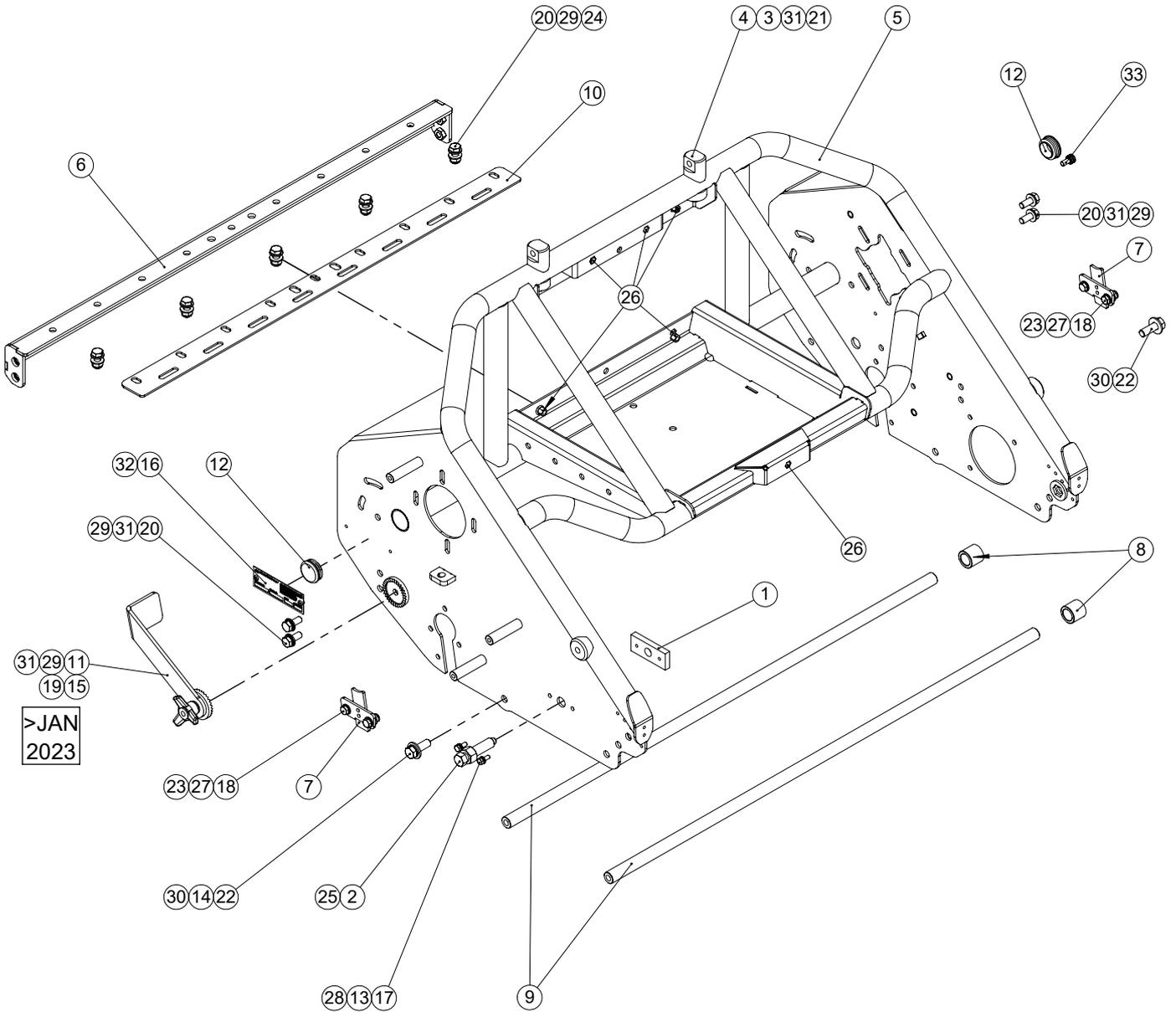
'Motor comms' error showing on screen

- Check motor cable connections going from electrical box into the motors
- Check all three power cables to each motor are connected and the letters on the wires match those on the motor (**U, V and U**)

If your problem isn't referenced on this document or you are still having problems please contact your dealer or Dennis Mowers directly.



22. CHASSIS MAIN ASSEMBLY



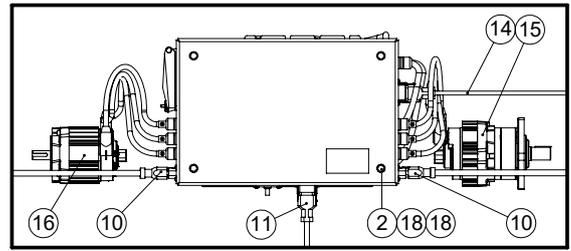
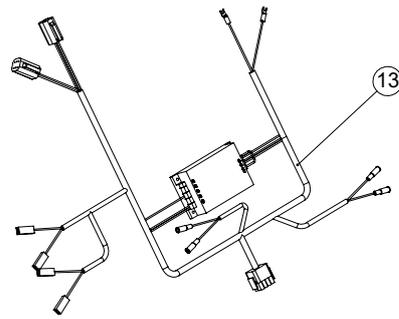
ES-860

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	171885_REV1	CASSETTE THRUST PLATE	1
2	229394_REV3	CASSETTE BOLT	1
3	340073_REV0	SADDLE WASHER	2
4	340156_REV0	HINGE PIVOT	2
5	370001_REV5	ES-860 CHASSIS W.A.	1
6	370015_REV0	SCRAPER BAR W.A.	1
7	370027_REV1	COVER PLATE W.A.	2
8	370050_REV0	TIE BAR STOP	2
9	370052_REV0	TIE BAR 34"	2
10	370145_REV0	REAR SCRAPPER BAR	1
11	370370_REV0	860 STAND W/A	1
12	BA0067_REV1	TUBE BUNG (C3137)	2
13	E1-1061_REV0	WASHER M6 SPRING	2
14	E1-1065_REV0	WASHER M12 SPRING LOCK	2
15	F21063_REV1	LOCK KNOB	1
16	J20297_REV2	SERIAL NO PLATE (DENNIS)	1
17	SP01008_REV0	HEX SET SCREW M6 X 16	2
18	SP01009_REV0	HEX SET SCREW M8 X 20	4
19	SP01031_REV0	HEX SET SCREW M10 X 50	1
20	SP01035_REV0	HEX SET SCREW M10 X 25	9
21	SP01047_REV0	HEX SET SCREW M10 X 60	2
22	SP01111_REV0	HEX SET SCREW M12 X 35	2
23	SP02006_REV0	NUT M8 NYLOC (T)	4
24	SP02008_REV0	NUT M10 NYLOC (T)	5
25	SP02037_REV0	NUT 5/8" UNF STD	1
26	SP02044_REV0	RIVNUT HEX M8 (0.5-3.0) [NO HEAD]	7
27	SP03008_REV0	WASHER M8 FORM A	8
28	SP03010_REV0	WASHER M6 FORM A	2
29	SP03011_REV0	WASHER M10 FORM A	15
30	SP03017_REV0	WASHER M12 FORM C	2
31	SP03034_REV0	WASHER M10 SPRING LOCK	7
32	SP05001_REV0	RIVET 4.8 X 10	2
33	SP12092_REV0	GROMMET EXTENDED 6MM	1

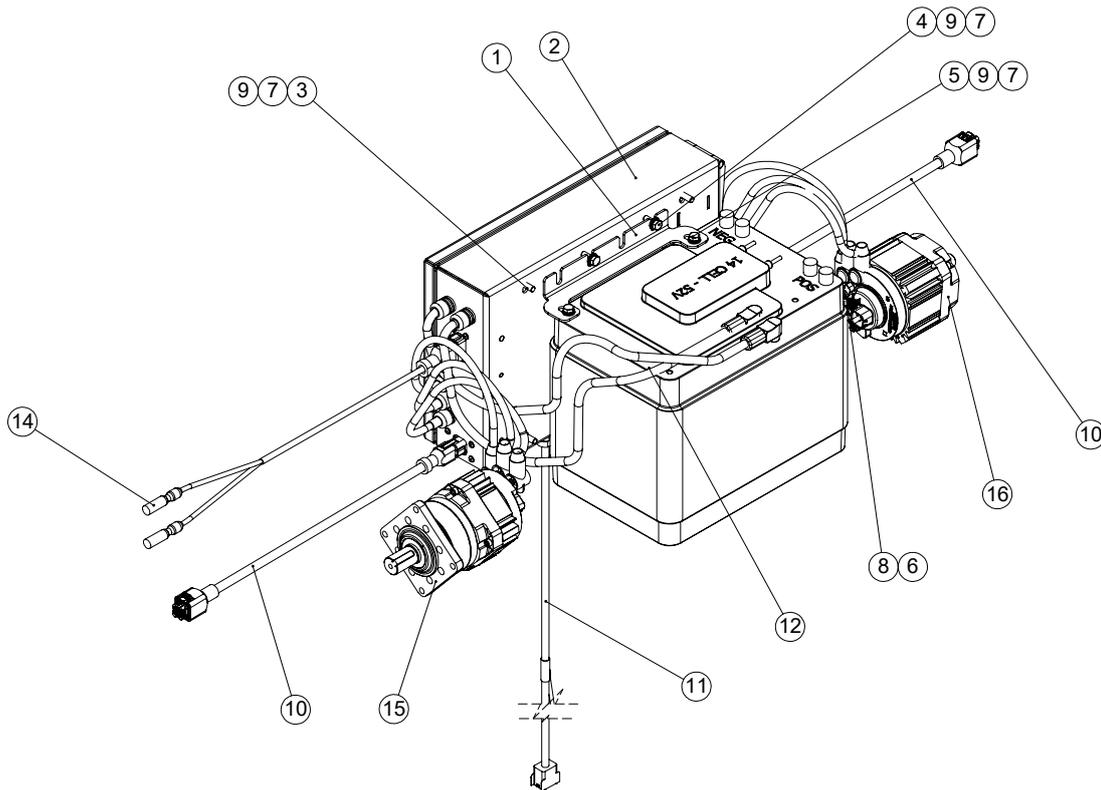
ES-760

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
5	370301_REV3	ES-760 CHASSIS W.A.	1
6	370315_REV0	SCRAPER BAR (760) W.A.	1
9	370352_REV0	TIE BAR 30"	2
10	370345_REV0	REAR SCRAPPER BAR (760)	1

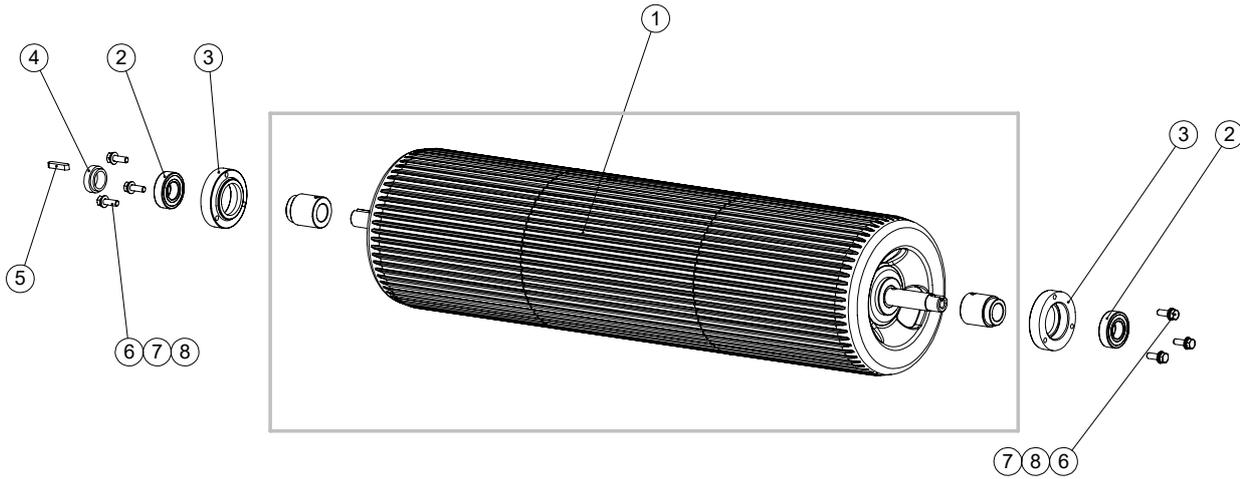
SEE HANDLE
WIRING FOR
CONNECTIONS



REAR VIEW



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	370154_REV0	HYPERDRIVE BATTERY RETAINER	1
2	800253_REV5	ES-34 CONFIGURATION	1
3	F20384_REV1	CAP HEAD M8 X 25	4
4	SP01009_REV0	HEX SET SCREW M8 X 20	2
5	SP01045_REV0	HEX SET SCREW M8 X 25	2
6	SP02004_REV0	NUT M6 NYLOC	6
7	SP03008_REV0	WASHER M8 FORM A	8
8	SP03010_REV0	WASHER M6 FORM A	6
9	SP03029_REV0	WASHER M8 SPRING LOCK	8
10	SP12106_REV0	MOTOR WIRING HARNESS (F42066)	2
11	SP12107_REV2	HANDLE WIRING HARNESS - HYP (F42214)	1
12	SP12126_REV0	HYPERDRIVE CELL - HYP-00-2890	1
13	SP12127_REV2	HYP HANDLE CONTROLLER HARNESS (F42216)	1
14	SP12128_REV0	HYP BMS CONTROLLER HARNESS (F42213)	1
15	SP15102_REV0	ASM103A 48V MOTOR & GEARBOX	1
16	SP15104_REV0	ASM106 48V MOTOR	1

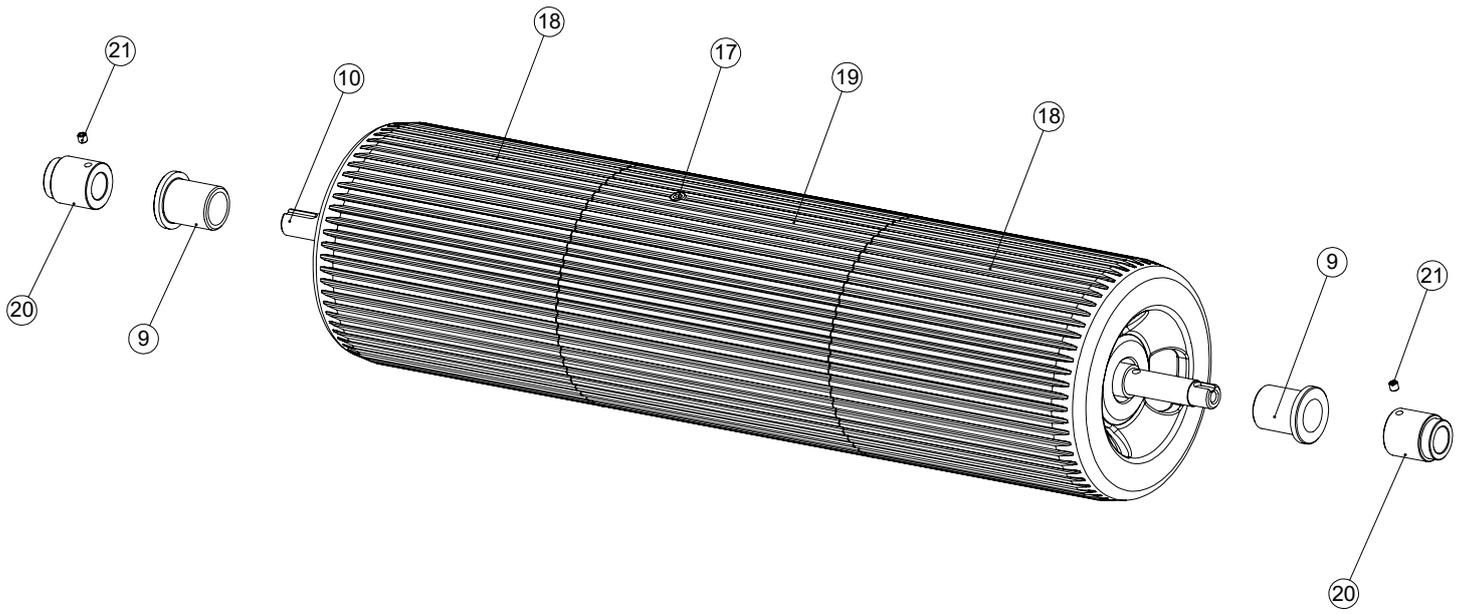


ES-860

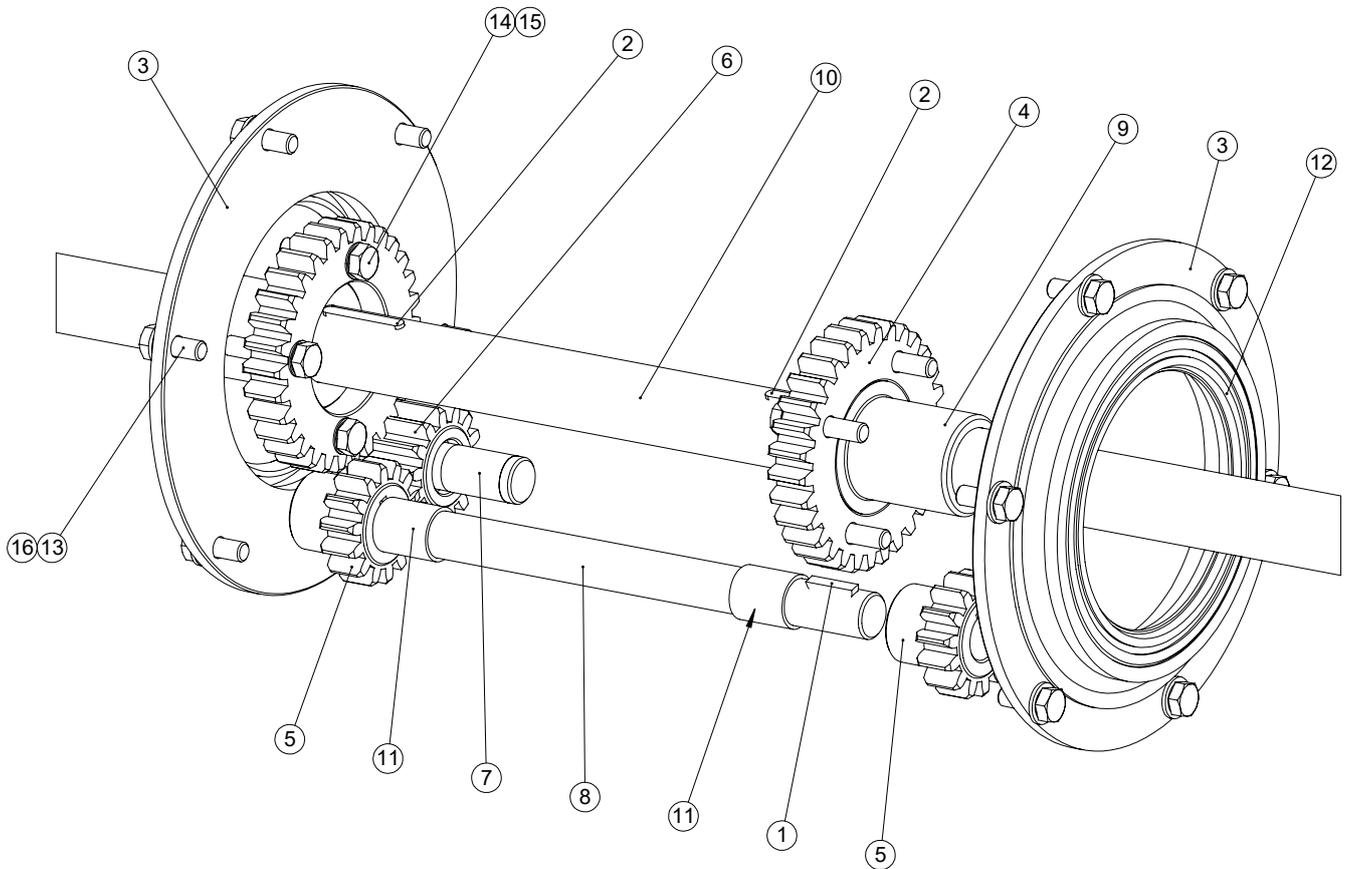
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	800577_REVO	ES-860 REAR ROLLER ASSEMBLY	1
2	062662_REV1	BEARING 6205-2RS 3	2
3	229104_REV1	LANDROLL BEARING HOUSING	2
4	340034_REVO	ROLLER END SPACER	1
5	F21884_REVO	KEY 8 X 7 X 35	1
6	SP01045_REVO	HEX SET SCREW M8 X 25	6
7	SP03008_REVO	WASHER M8 FORM A	6
8	SP03029_REVO	WASHER M8 SPRING LOCK	6

ES-760

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	800578_REVO	ES-760 REAR ROLLER ASSEMBLY	1



CENTRE ROLLER INTERNAL DETAIL

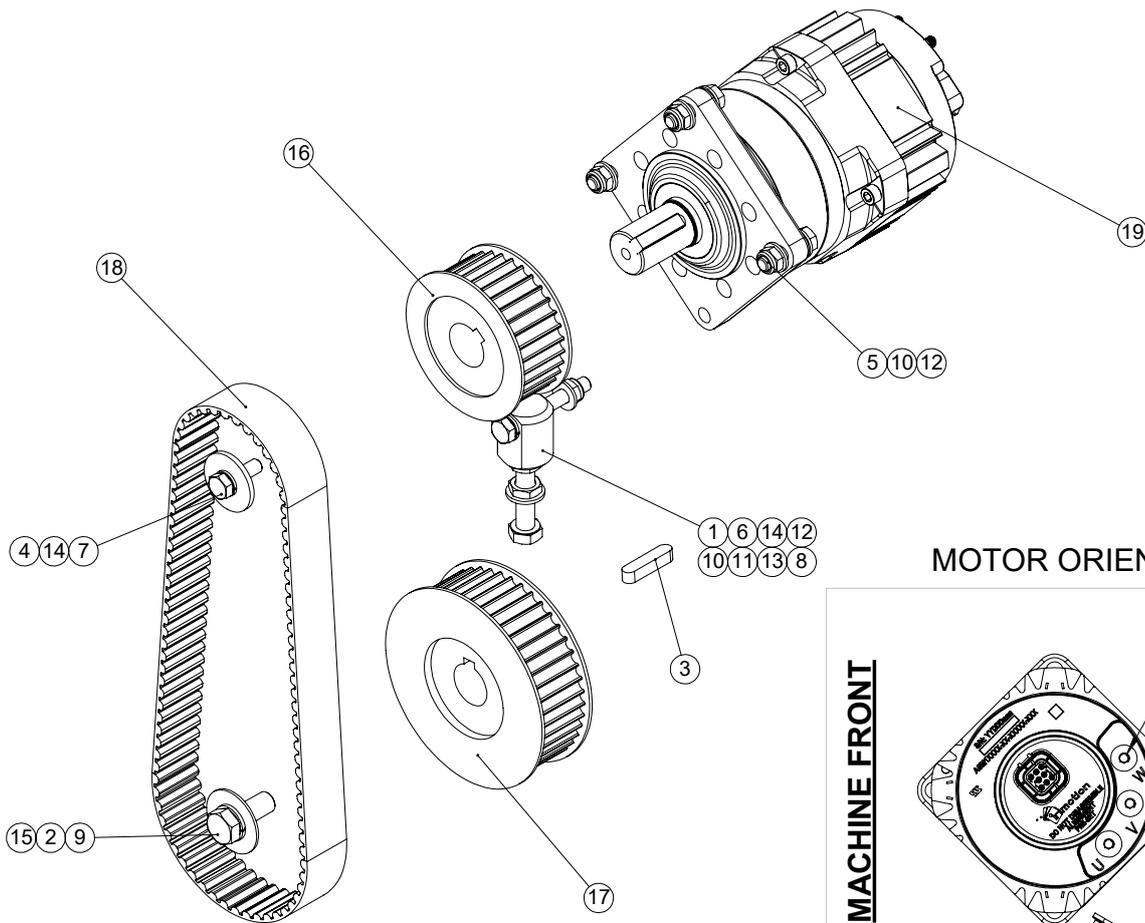


ES-860

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	016386_REV0	KEY WOODRUFF 3/16" X 7/8"	2
2	073445_REV0	KEY 3/16" X 3/16" X 1 1/2" RD END	2
3	195077_REV1	OIL SEAL HOUSING	2
4	195078_REV1	DIFFERENTIAL WHEEL	2
5	195079_REV1	DIFFERENTIAL PINION	2
6	195080_REV1	DOUBLE DIFFERENTIAL PINION	1
7	195094_REV1	PIVOT PIN	1
8	229451_REV2	DIFF SHAFT G860	1
9	229484_REV1	BUSH FOR END ROLLER	4
10	370021_REV2	REAR ROLLER SHAFT 34"	1
11	601620_REV1	BUSH 12DU16	3
12	605857_REV1	SEAL REAR ROLLER	2
13	SP01009_REV0	HEX SET SCREW M8 X 20	12
14	SP01036_REV0	HEX SET SCREW M8 X 35	8
15	SP03004_REV0	WASHER M8 TOOTHED	8
16	SP03008_REV0	WASHER M8 FORM A	12
17	171702_REV1	GRUB SCREW 3/8" BSPT	1
18	195076_REV3	OUTER ROLLER 11" (MACHINED)	2
19	229227_REV4	CENTRE ROLLER 12" (MACHINED)	1
20	370022_REV0	SHAFT SPACER	2
21	J20467_REV0	GRUB SCREW M8 X 8	2

ES-760

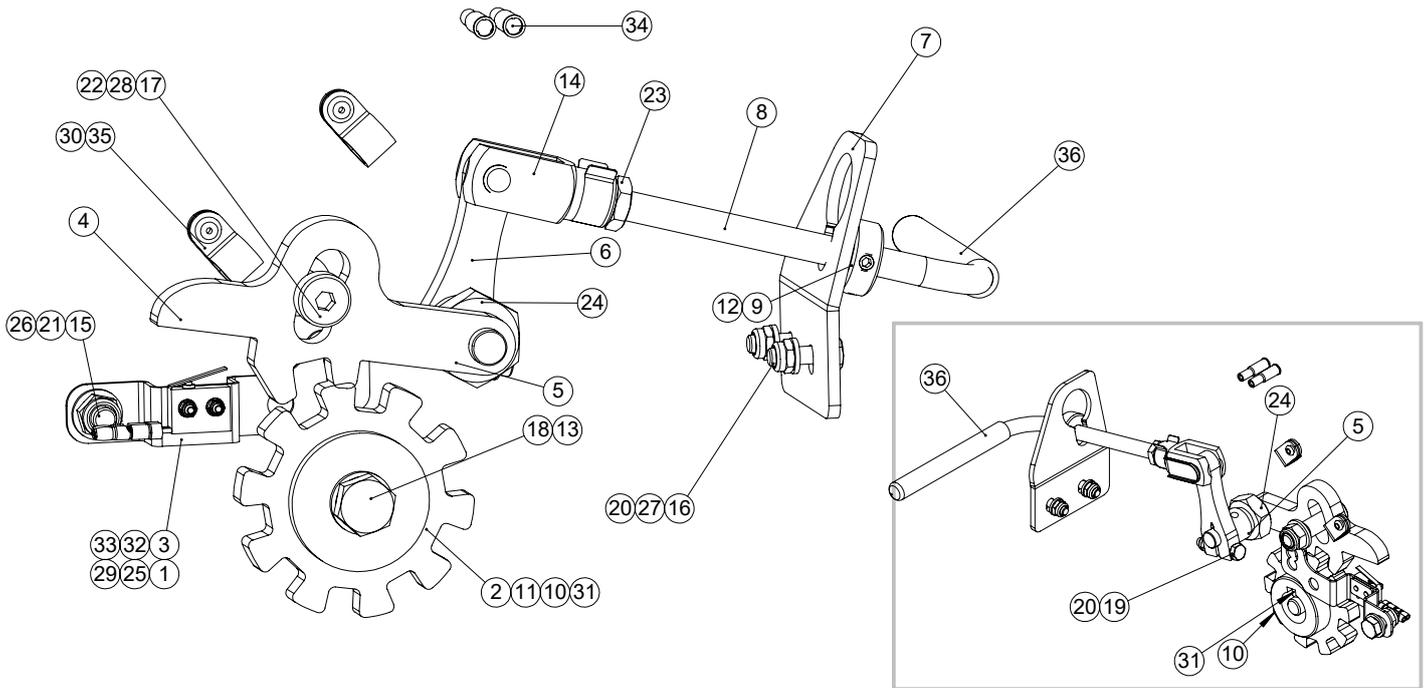
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
8	195082_REV2	DIFF SHAFT G760	1
10	370321_REV0	REAR ROLLER SHAFT 30"	1
19	195074_REV3	CENTRE ROLLER 8" (MACHINED)	1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	
1	370096_REVO	TENSIONER BLOCK	1	
2	E1-1065_REVO	WASHER M12 SPRING LOCK	1	
3	F21884_REVO	KEY 8 X 7 X 35	1	
4	J209249_REVO	WASHER 9 X 35 X 3	1	
5	SP01005_REVO	HEX SET SCREW M8 X 30	3	
6	SP01023_REVO	HEX SET SCREW M8 X 60	1	
7	SP01045_REVO	HEX SET SCREW M8 X 25	1	
8	SP01047_REVO	HEX SET SCREW M10 X 60	1	
9	SP01065_REVO	HEX SET SCREW M12 X 30	1	
10	SP02006_REVO	NUT M8 NYLOC (T)	4	
11	SP02013_REVO	NUT M10 LOCK (THIN)	2	
12	SP03008_REVO	WASHER M8 FORM A	7	
13	SP03011_REVO	WASHER M10 FORM A	1	
14	SP03029_REVO	WASHER M8 SPRING LOCK	2	
15	SP03040_REVO	WASHER M12 REPAIR	1	
16	SP11115_REVO	32-8M-30 6F MACHINED 26DIA	1	(>08/2021)
17	SP11117_REVO	44-8M-30 6F MACHINED DIA 25	1	(>08/2021)
18	SP11118_REVO	BELT HTD 760-8M-30	1	(>08/2021)
19	SP15102_REVO	ASM103A 48V MOTOR & GEARBOX	1	

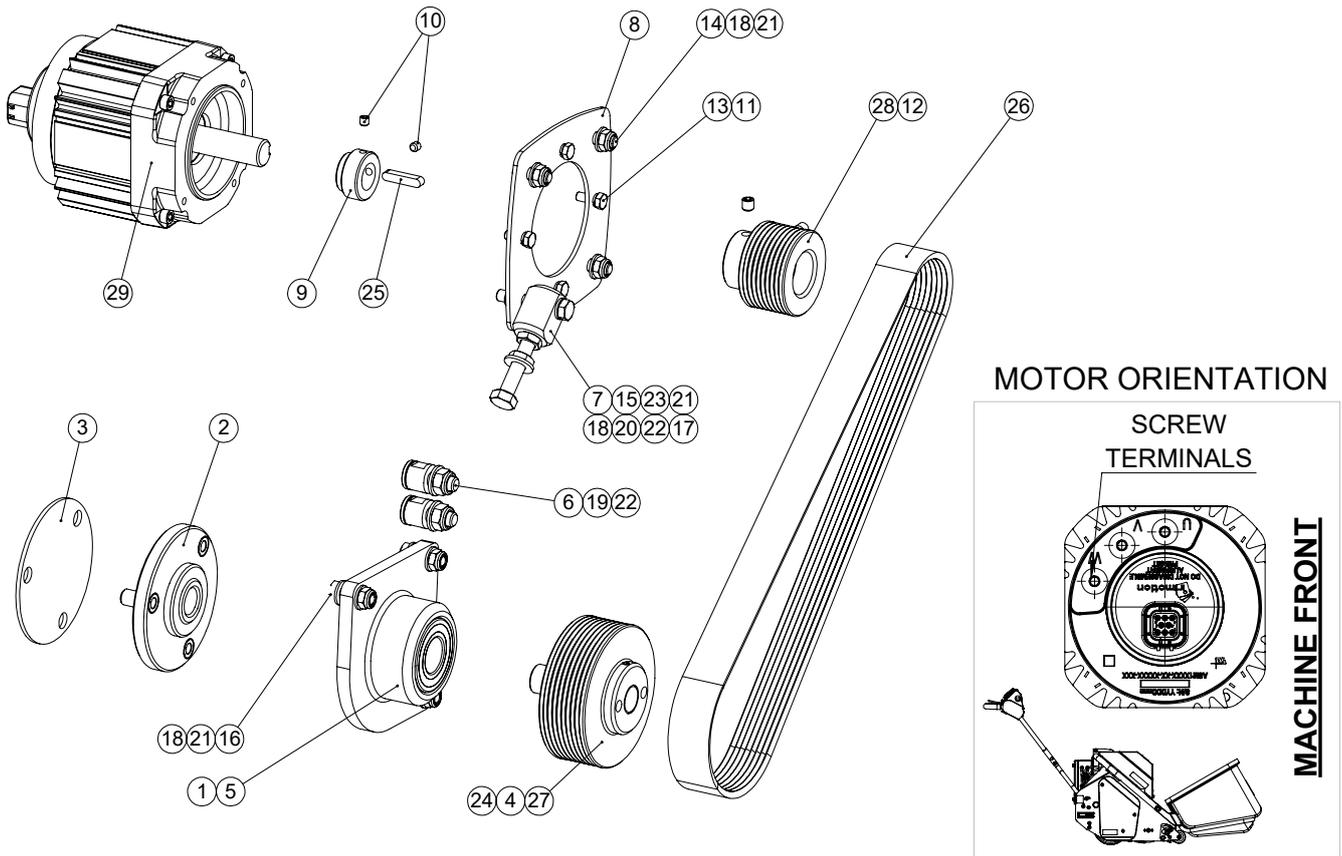
(<08/2021) 16 - SP11096 / 17 - 240020 / 18 - SP11097

26. MECHANICAL PARKING BRAKE

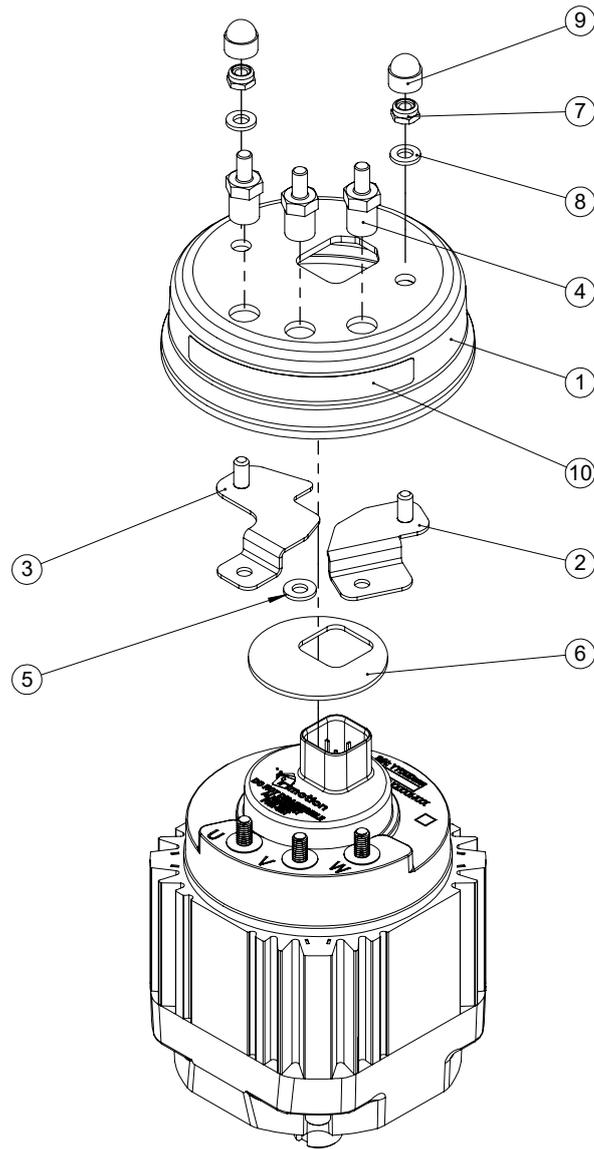


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	340135_REV0	MICROSWITCH MOUNT PLATE	1
2	340185_REV1	BRAKE DISC	1
3	340189_REV1	BRAKE SENSOR BRACKET	1
4	340195_REV2	BRAKE HAMMER W.A.	1
5	340197_REV0	BRAKE BUSH	1
6	340200_REV2	BRAKE CLAMP	1
7	370140_REV0	PARKING BRAKE PLATE	1
8	370141_REV0	BRAKE BAR	1
9	370142_REV0	BRAKE LOCK COLLAR	1
10	370175_REV0	BRAKE BOSS	1
11	370176_REV0	BRAKE WASHER	1
12	D8068_REV0	GRUB SCREW M6 X 6	2
13	E1-1065_REV0	WASHER M12 SPRING LOCK	1
14	HURM216_REV0	CLEVIS ASSY M10 SHORT	1
15	SP01009_REV0	HEX SET SCREW M8 X 20	1
16	SP01028_REV0	HEX SET SCREW M6 X 20	2
17	SP01029_REV0	SHOULDER BOLT 12 X 25 M10	1
18	SP01065_REV0	HEX SET SCREW M12 X 30	1
19	SP01054_REV0	HEX SET SCREW M6 X 35	1
20	SP02004_REV0	NUT M6 NYLOC	3
21	SP02006_REV0	NUT M8 NYLOC (T)	1
22	SP02008_REV0	NUT M10 NYLOC (T)	1
23	SP02013_REV0	NUT M10 LOCK (THIN)	1
24	SP02034_REV0	NUT 3/4" UNF STD	1
25	SP02059_REV0	NUT M2.5 NYLOC (P)	2
26	SP03008_REV0	WASHER M8 FORM A	2
27	SP03010_REV0	WASHER M6 FORM A	4
28	SP03011_REV0	WASHER M10 FORM A	1
29	SP03039_REV0	WASHER M2.5 FORM A	2
30	SP05001_REV0	RIVET 4.8 X 10	2
31	SP10001_REV2	KEY 8 X 7 X 20 RD END	1
32	SP12007_REV0	MICRO SWITCH DC1C-C3LB	1
33	SP12014_REV0	ELECTRICAL CONNECTOR MALE BULLET (RED)	2
34	SP12015_REV0	ELECTRICAL CONNECTOR FEMALE BULLET (RED)	2
35	SP14019_REV0	P CLIP 10MM NYLON	2
36	SP14050_REV0	HANDLE GRIP (S&R - DG187) RED	1

27. CYLINDER DRIVE

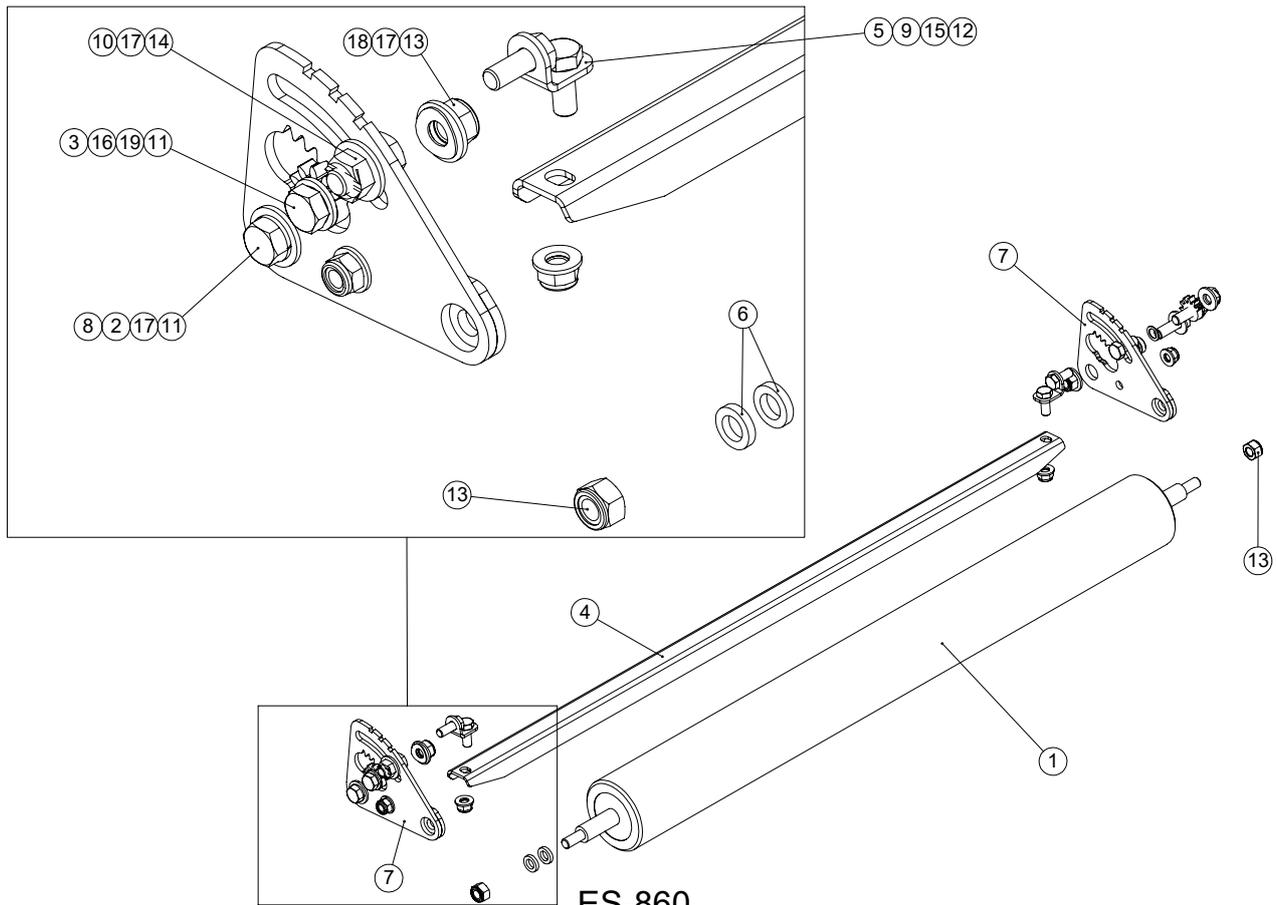


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	062662_REV1	BEARING 6205-2RS 3	2
2	229302_REV1	DRIVE MALE COUPLING	1
3	229335_REV1	DRIVE GASKET	1
4	370031_REVO	PULLEY SHAFT	1
5	370037_REVO	BEARING HOUSING	1
6	370053_REV1	STOP BUSH	2
7	370096_REVO	TENSIONER BLOCK	1
8	370135_REVO	MOTOR PLATE	1
9	370185_REVO	CYLINDER MOTOR SPACER	1
10	D8068_REVO	GRUB SCREW M6 X 6	2
11	E1-1061_REVO	WASHER M6 SPRING	4
12	J20467_REVO	GRUB SCREW M8 X 8	2
13	SP01008_REVO	HEX SET SCREW M6 X 16	4
14	SP01009_REVO	HEX SET SCREW M8 X 20	3
15	SP01022_REVO	HEX SET SCREW M8 X 50	1
16	SP01045_REVO	HEX SET SCREW M8 X 25	3
17	SP01047_REVO	HEX SET SCREW M10 X 60	1
18	SP02006_REVO	NUT M8 NYLOC (T)	7
19	SP02008_REVO	NUT M10 NYLOC (T)	2
20	SP02013_REVO	NUT M10 LOCK (THIN)	2
21	SP03008_REVO	WASHER M8 FORM A	13
22	SP03011_REVO	WASHER M10 FORM A	3
23	SP03029_REVO	WASHER M8 SPRING LOCK	1
24	SP05008_REVO	PIN SPIROL M5 X 50	1
25	SP10005_REVO	KEY 6 X 6 X 30 RD END	1
26	SP11086_REVO	BELT V-RIBBED 8 PK 940	1
27	SP11087_REVO	CYLINDER DRIVE PULLEY	1
28	SP11088_REVO	PULLEY DIA 60 PK 8 RIB	1
29	SP15104_REVO	ASM106 48V MOTOR	1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	370400_REV0	ASM MOTOR BACK SHELL	1
2	370401_REV0	ASM MOTOR CLIP - A	1
3	370402_REV0	ASM MOTOR CLIP - B	1
4	370407_REV0	MOTOR STUD	3
5	370408_REV0	MOTOR STUD SPACER	1
6	370409_REV0	MOTOR COMPRESSION PAD	1
7	SP02004_REV0	NUT M6 NYLOC	2
8	SP03010_REV0	WASHER M6 FORM A	2
9	SP14058_REV0	NUT COVER CAP M6 (10mm AF)	2
10	SP18050_REV0	U, V, W MOTOR COVER DECAL	1

29. FRONT ROLLER

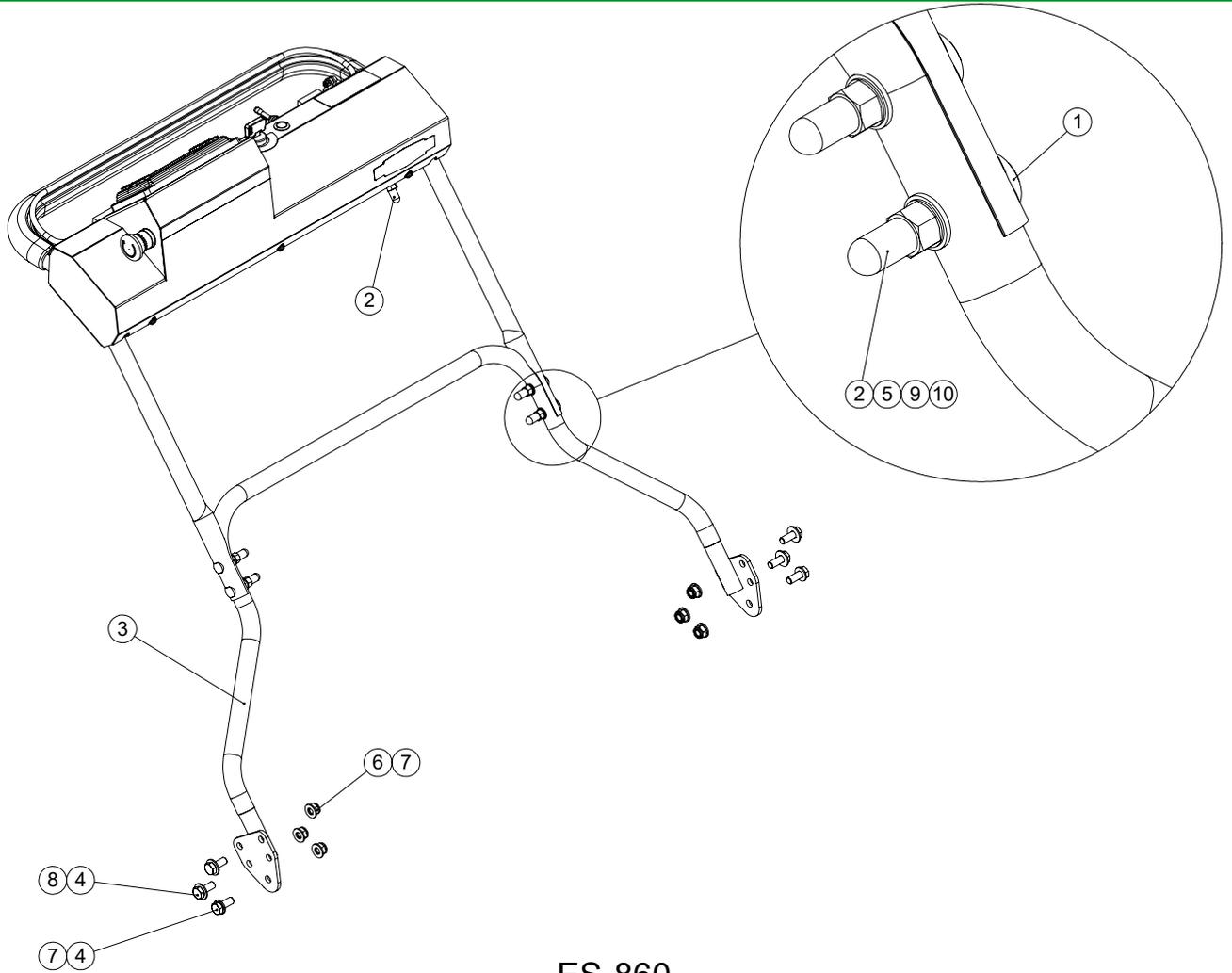


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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	229233_REV1	FRONT ROLLER 34"	1
2	229310_REV1	QUADRANT SPACER	2
3	230741_REV0	QUADRANT GEAR	2
4	370014_REV0	FRONT ROLLER SCRAPER 34"	1
5	370017_REV0	SCRAPER BRACKET	2
6	370130_REV0	FRONT ROLLER SPACER	2
7	370170_REV0	ES QUADRANT W/A	2
8	E1-1065_REV0	WASHER M12 SPRING LOCK	2
9	SP01035_REV0	HEX SET SCREW M10 X 25	4
10	SP01059_REV0	HEX SET SCREW M12 X 25	2
11	SP01111_REV0	HEX SET SCREW M12 X 35	4
12	SP02008_REV0	NUT M10 NYLOC (T)	4
13	SP02010_REV0	NUT M12 NYLOC (T)	4
14	SP02054_REV0	NUT M12 BINK	2
15	SP03011_REV0	WASHER M10 FORM A	4
16	SP03012_REV0	WASHER M12 FORM A	2
17	SP03017_REV0	WASHER M12 FORM C	6
18	SP03019_REV0	WASHER M12 WAVE	2
19	SP03020_REV0	SHIM 12 X 18 X 1	2

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	229232_REV1	FRONT ROLLER 30"	1
4	370314_REV0	FRONT ROLLER SCRAPER 30"	1



ES-860

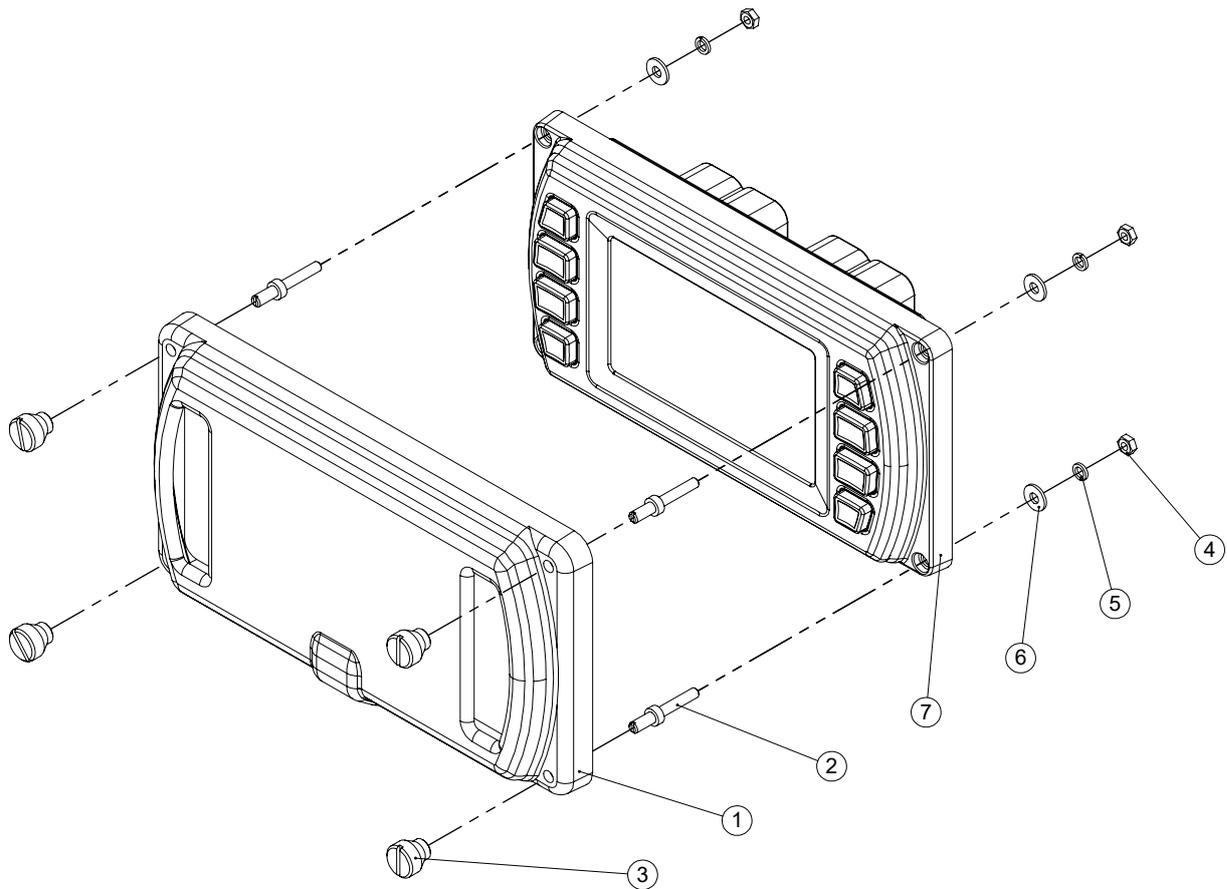
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	228093_REV0	BOLT SADDLE M8 X 43	4
2	228094_REV0	END TIP 5/16"	5
3	370160_REV2	ES-860 LOWER HANDLE	1
4	SP01035_REV0	HEX SET SCREW M10 X 25	6
5	SP02005_REV0	NUT M8 STD	6
6	SP02008_REV0	NUT M10 NYLOC (T)	8
7	SP03011_REV0	WASHER M10 FORM A	8
8	SP03016_REV0	WASHER M10 FORM C	6
9	SP03004_REV0	WASHER M8 TOOTHED	4
10	SP03008_REV0	WASHER M8 FORM A	4

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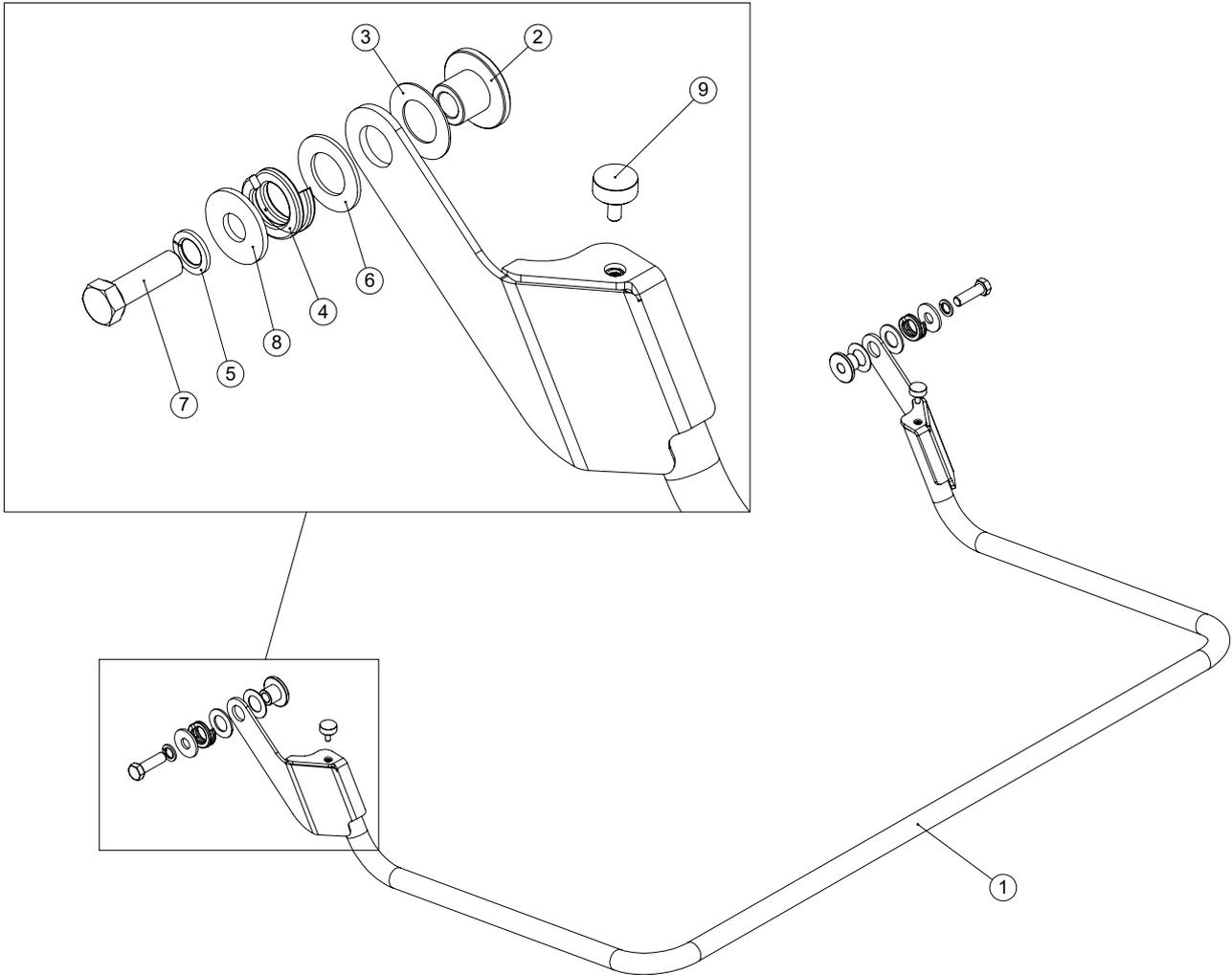
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
3	370360_REV1	ES-760 LOWER HANDLE	1
49	370370_REV0	860 STAND W/A	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	228020_REV1	CLEVIS GM5 (5MM)	1
2	229167_REV1	CLUTCH SPRING	1
3	229585_REV1	PIVOT BLOCK	2
4	229590_REV1	SAFETY SWITCH BRACKET	1
5	229595_REV2	SAFETY LEVER PLUNGER W.A.	1
6	229620_REV2	BOLT FOR SPRING	1
7	230180_REV0	SAFETY BAR W.A.	1
8	370110_REV3	CONSOLE COVER ES860 W/A	1
9	370191_REV0	E-SERIES HANDLE BODY W.A.	1
10	403596_REV0	HANDLE BAR ASSY	1
11	SP01019_REV0	BUTTON HEAD M6 X 16	2
12	SP01043_REV0	CAP HEAD M5 X 16	1
13	SP01070_REV0	CAP HEAD M2 X 12	2
14	SP01101_REV0	SCREW M6 X 25 SLOTTED	4
15	SP01178_REV0	M3.5 x 20 CHEESE HEAD	6
16	SP02002_REV0	NUT M5 NYLOC (T)	2
17	SP02004_REV0	NUT M6 NYLOC	6
18	SP02005_REV0	NUT M8 STD	2
19	SP02008_REV0	NUT M10 NYLOC (T)	2
20	SP02038_REV0	NUT M2 (BUSH)	2
21	SP02041_REV0	RIVNUT HEX M5 (0.5-3.0) [NO HEAD]	6
22	SP02073_REV0	M3.5 NUT STD	6
23	SP03010_REV0	WASHER M6 FORM A	6
24	SP03013_REV0	WASHER M5 FORM C	6
25	SP03016_REV0	WASHER M10 FORM C	2
26	SP03046_REV0	M3.5 SPRING WASHER	6
27	SP03047_REV0	WASHER M3.5 FORM A	8
28	SP04001_REV0	SCREW M5 X 16 SLOTTED	6
29	SP12007_REV0	MICRO SWITCH DC1C-C3LB	1
30	SP12014_REV0	ELECTRICAL CONNECTOR MALE BULLET (RED)	2
31	SP12099_REV0	DISPLAY PV450	1
32	SP12101_REV0	E-STOP	1
34	SP12102_REV1	KEY SWITCH (ON/OFF - 2 POS)	1
36	SP12132_REV1	MOMENTARY PUSH SWITCH	1
37	SP12182_REV0	2 AXIS LATCHING JOYSTICK	1
38	SP12183_REV0	E-SERIES HAND CONTROLS WIRING HARNESS	1
39	SP18026-3_REV0	E-SERIES DECAL	1
40	SP18026-5_REV0	IGNITION DECAL	1

32. SCREEN PROTECTOR



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	390450_REV0	VAC FORMED SCREEN PROTECTOR	1
2	390451_REV0	SCREEN PROTECTOR STUD	4
3	390452_REV0	SCREEN PROTECTOR NUT	4
4	SP02073_REV0	M3.5 NUT STD	4
5	SP03046_REV0	M3.5 SPRING WASHER	4
6	SP03047_REV0	WASHER M3.5 FORM A	4
7	SP12099_REV0	DISPLAY PV450	1

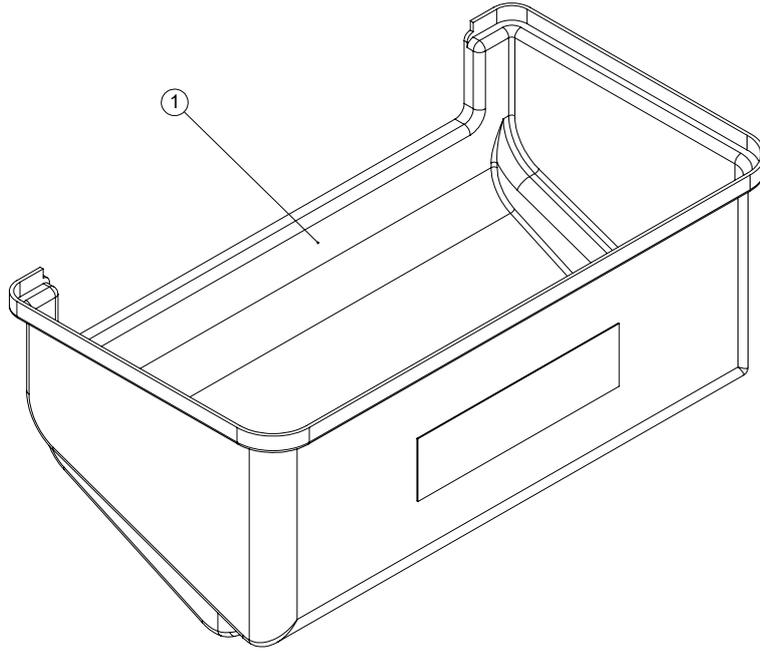


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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	370040_REV1	34" ELECTRIC CRADLE W.A.	1
2	370180_REV0	GRASSBOX ARM PIVOT	2
3	370181_REV0	1MM ID21 SHIM	2
4	604761_REV1	THACKERY WASHER	2
5	E1-1065_REV0	WASHER M12 SPRING LOCK	2
6	E1-1081_REV0	WASHER M20 FORM B	2
7	SP01078_REV0	HEX SET SCREW M12 X 40	2
8	SP03048_REV0	WASHER M12 FORM G	2
9	SP14049_REV0	20DIA 8mm BUMP STOP	2

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	370340_REV0	30" ELECTRIC CRADLE W.A.	1

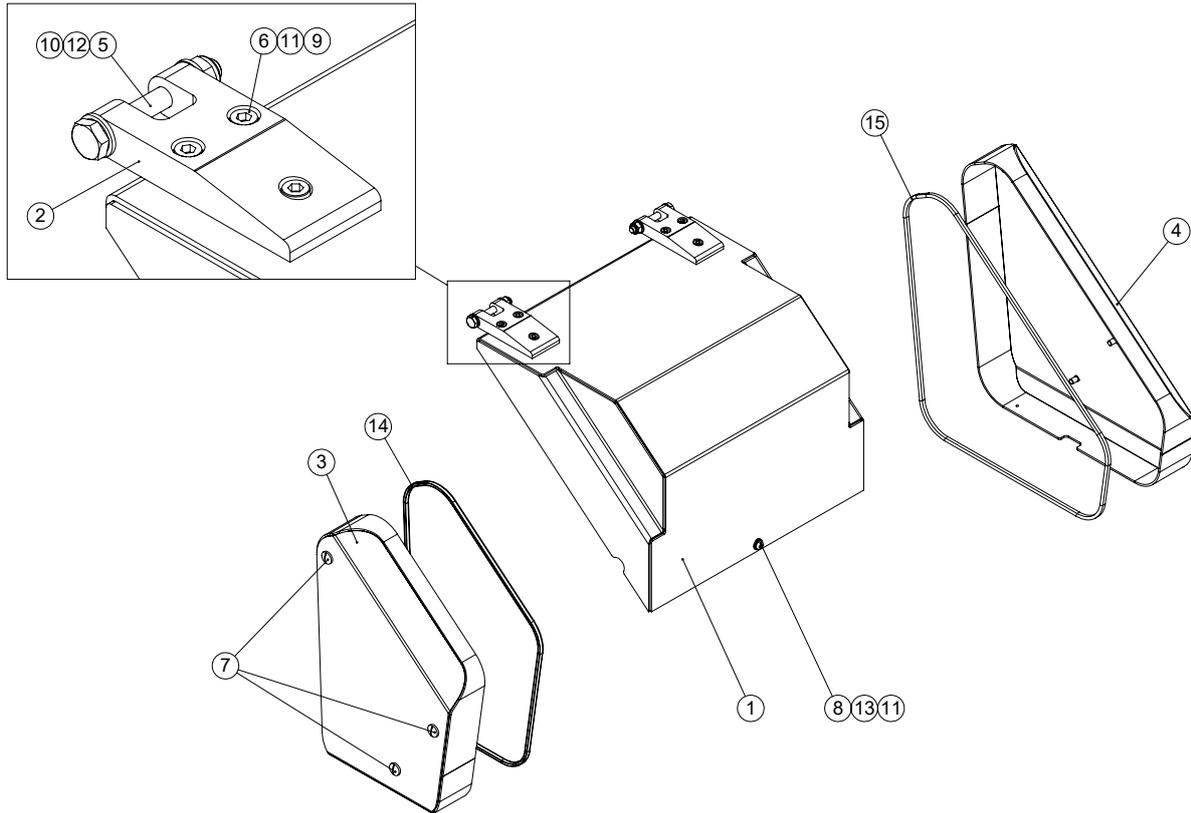


ES-860

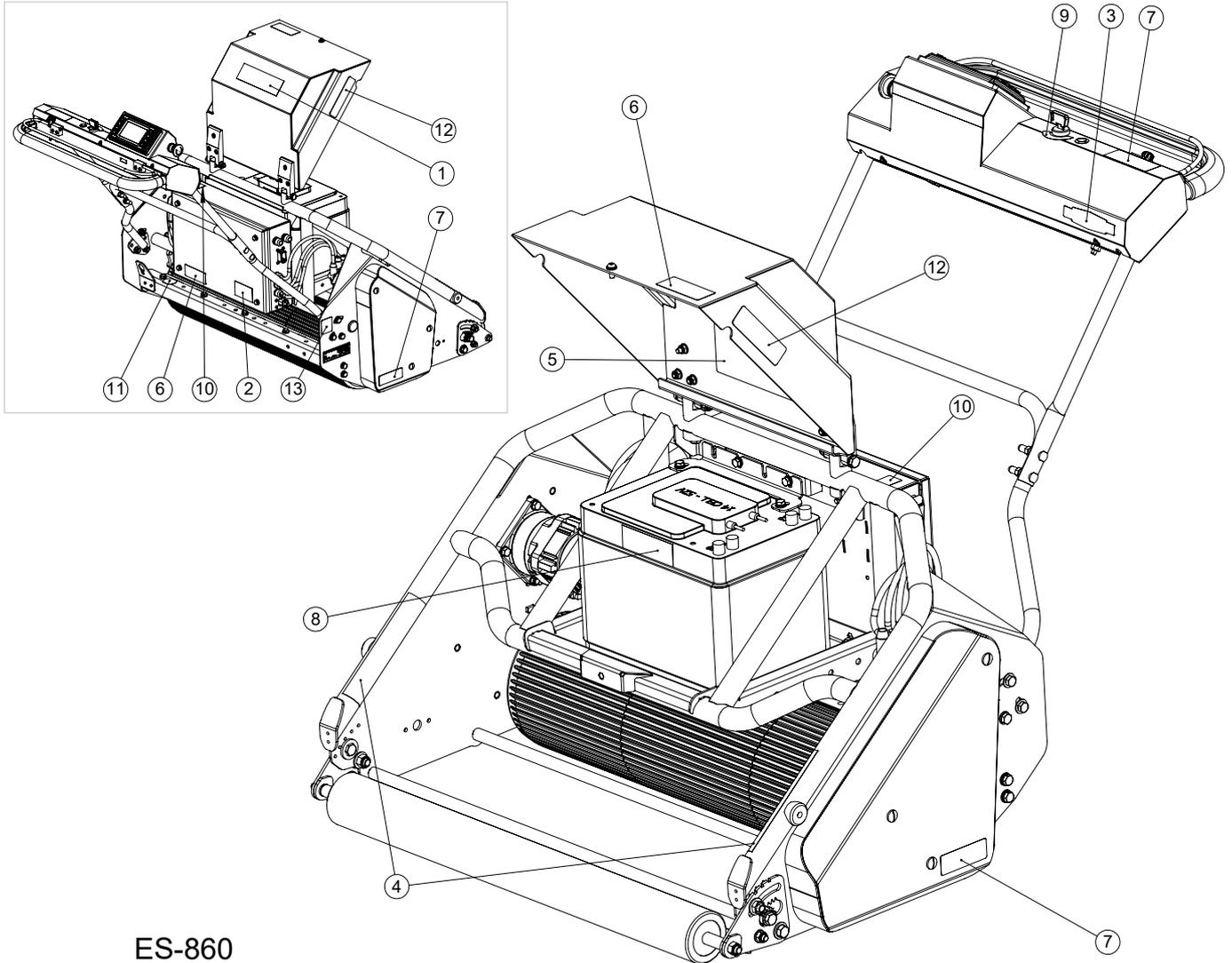
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	229243_REV1	GRASS BOX 860	1

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	229242_REV1	GRASS BOX 760	1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	340150_REV0	BATTERY COVER W.A.	1
2	340155_REV0	BATTERY COVER HINGE	2
3	370065_REV1	R.H. GUARD W.A.	1
4	370066_REV1	L.H. GUARD W.A.	1
5	E1-1133_REV0	HEX BOLT M10 X 75	2
6	F20384_REV1	CAP HEAD M8 X 25	6
7	J209074_REV1	BRAKE BAND COVER SCREW	6
8	SP01006_REV0	BUTTON HEAD M8 X 20	1
9	SP02006_REV0	NUT M8 NYLOC (T)	6
10	SP02008_REV0	NUT M10 NYLOC (T)	2
11	SP03008_REV0	WASHER M8 FORM A	7
12	SP03011_REV0	WASHER M10 FORM A	4
13	SP03029_REV0	WASHER M8 SPRING LOCK	1
14	228031-1220_REV0	CHAIN CASE SEAL - 122cm	1
15	228031-1420_REV0	CHAIN CASE SEAL - 142cm	1



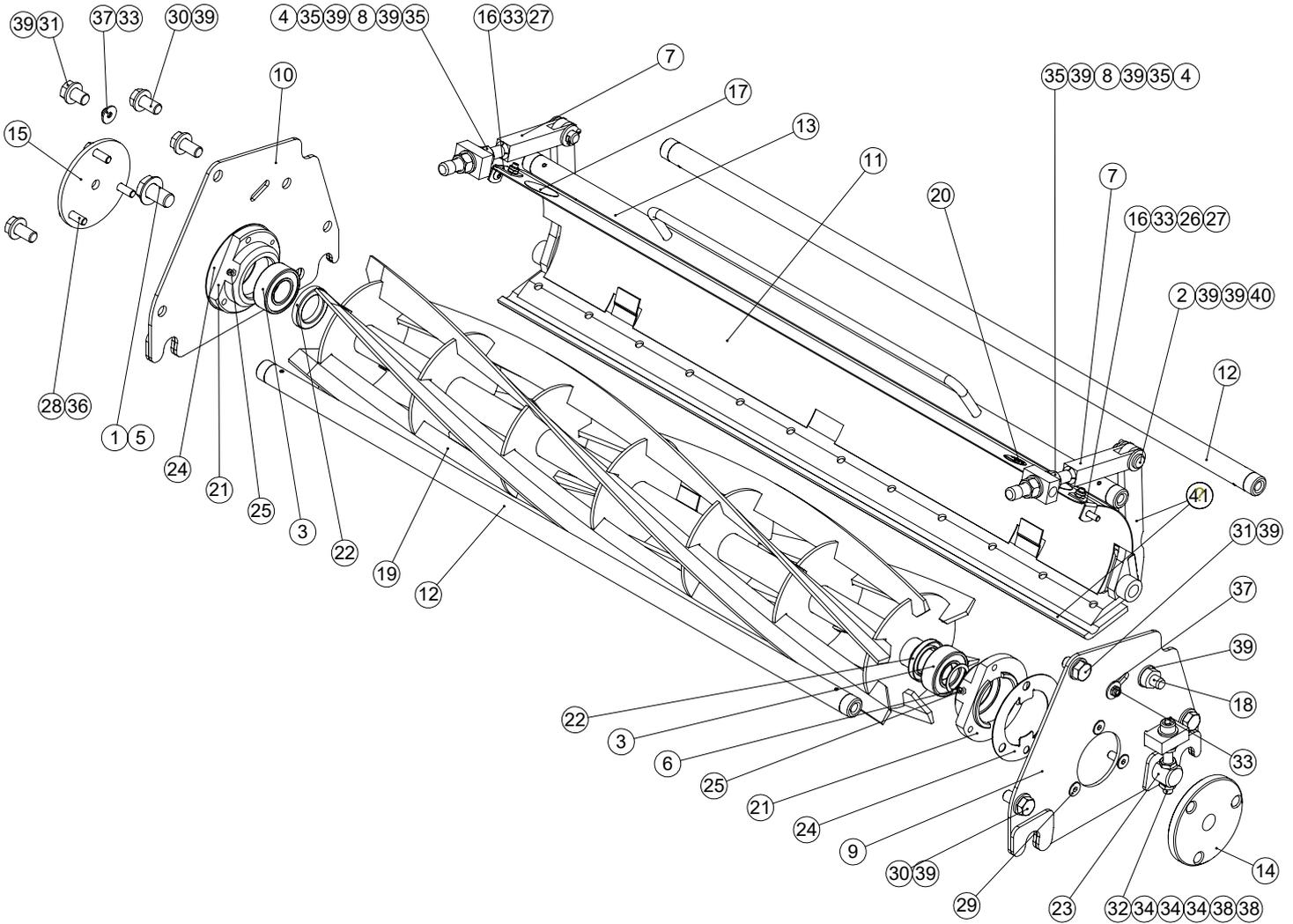
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B32902_REV2	DECAL DENNIS 200 X 50 (LARGE)	1
2	B32903_REV0	DECAL UNION JACK	1
3	J20362_REV2	DECAL DENNIS 120 X 30 (SMALL)	1
4	SP18025_REV0	ANTI SCRATCH DECAL	2
5	SP18026-1_REV0	ELECTRICAL WARNING DECAL	1
6	SP18026-2_REV0	WARNING DECAL	2
7	SP18026-3_REV0	E-SERIES DECAL	3
8	SP18026-4_REV0	BATTERY DISCONNECT DECAL	1
9	SP18026-5_REV0	IGNITION DECAL	1
10	SP18026-6_REV0	BATTERY DECAL	1
11	SP18026-7_REV0	PARKING BRAKE DECAL	1
12	SP18027_REV0	ES-860 DECAL	2
13	SP18032_REV0	91 Db DECAL	1

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
12	SP18047_REV0	ES-760 DECAL	2

37. CUTTER CASSETTE

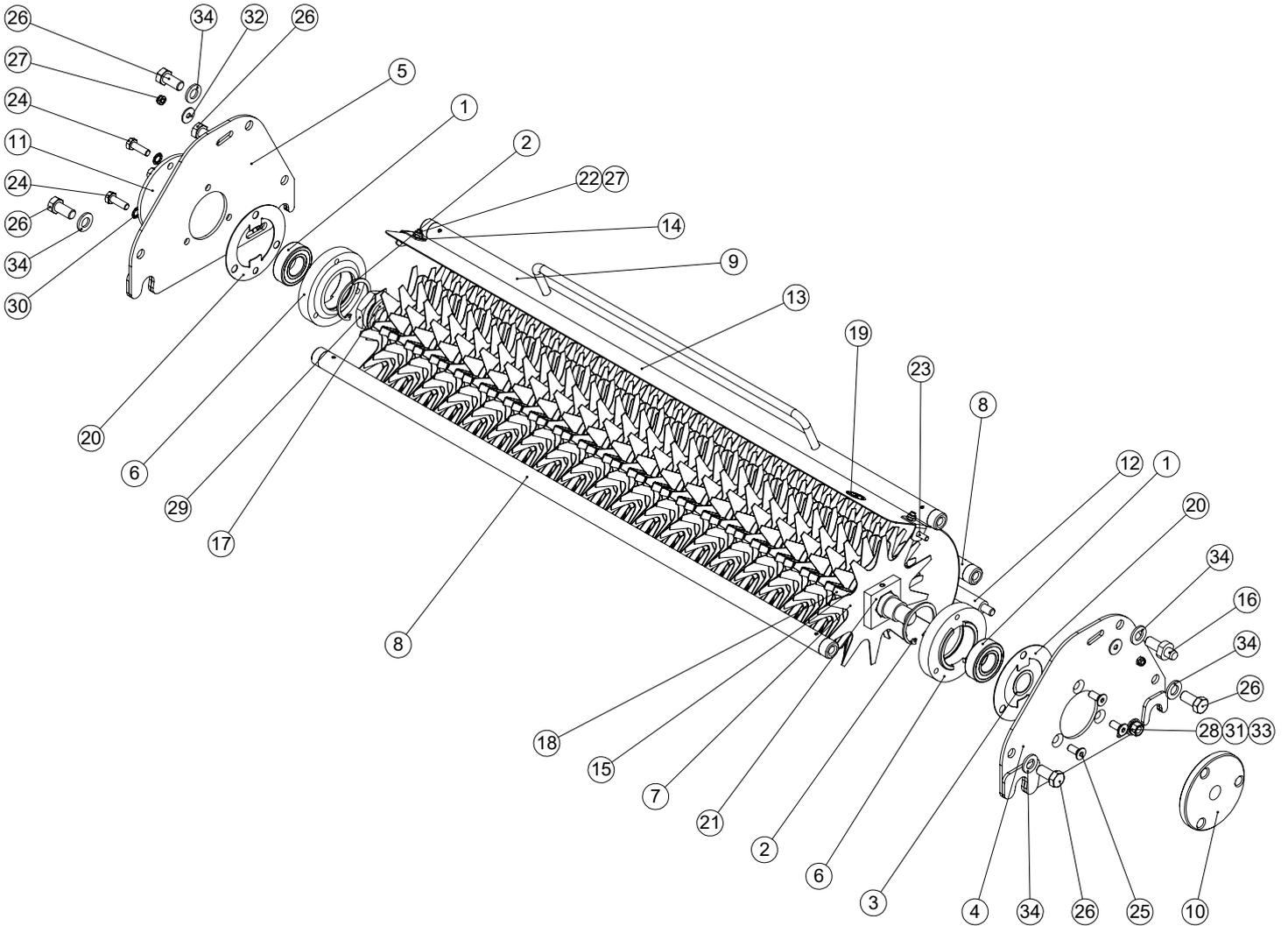


MODEL DIFFERENCES

ITEM No.	MODEL	PART NUMBER	DESCRIPTION	QTY
11	G660	229662	DEFLECTOR PLATE 26"	1
11	G760 / ES-760	229260	DEFLECTOR PLATE 30"	1
11	G860 / ES-860	229261	DEFLECTOR PLATE 34"	1
12	G660	229657	26" TIE BAR	2
12	G760 / ES-760	229295	30" TIE BAR	2
12	G860 / ES-860	229296	34" TIE BAR	2
13	G660	229658	26" HANDLE TIE BAR	1
13	G760 / ES-760	229297	30" HANDLE TIE BAR	1
13	G860 / ES-860	229298	34" HANDLE TIE BAR	1
19	G660	229650	CYLINDER 6 BLADE 26"	1
19	G660	229619	CYLINDER 8 BLADE 26"	1
19	G760 / ES-760	229572	CYLINDER 6 BLADE 30"	1
19	G760 / ES-760	229615	CYLINDER 8 BLADE 30"	1
19	G860 / ES-860	230614	CYLINDER 4 BLADE 34"	1
19	G860 / ES-860	229573	CYLINDER 6 BLADE 34"	1
19	G860 / ES-860	229568	CYLINDER 8 BLADE 34"	1
19	G860 / ES-860	230610	CYLINDER 11 BLADE 34"	1
25	G660	229652	SHEAR BLADE 26"	1
25	G760 / ES-760	067171	SHEAR BLADE 30"	1
25	G860 / ES-860	229229	SHEAR BLADE 34"	1
25	G660	229656	26" SHEAR BLADE CARRIER	1
25	G760 / ES-760	229312	30" SHEAR BLADE CARRIER	1
25	G860 / ES-860	229313	34" SHEAR BLADE CARRIER	1
NOT SHOWN	G660, G760, G860, ES-860, ES-760	185378	BOTTOM BLADE SCREW	AS REQUIRED

ITEM NO.	PART NUMBER	DESCRIPTION	Default/QTY.
1	185379_REV1	5/8" UNF HEX SCREW	1
2	228022_REV4	CLEVIS PIN	2
3	228029_REV1	BEARING 2205 2RS	2
4	228070_REV1	BLACK CAP	2
5	228074_REV1	D315163175 BELLEVILLE WASHER	1
6	228092_REV1	SHIM ID 25.8 X 1 THK	1
7	229049_REV2	ADJUSTER ROD	2
8	229051_REV1	ADJUSTER STOP	2
9	229215_REV1	CASSETTE SIDE PLATE W.A. L.H.	1
10	229216_REV2	CASSETTE SIDE PLATE W.A. R.H.	1
11	229261_REV1	DEFLECTOR PLATE 34"	1
12	229296_REV1	34" TIE BAR	2
13	229298_REV1	34" HANDLE TIE BAR	1
14	229299_REV1	DRIVEN / FEMALE COUPLING	1
15	229318_REV2	BEARING COVER	1
16	229355_REV1	DEFLECTOR PLATE BRACKET	2
17	229376_REV0	CUT DECAL	2
18	229385_REV2	STOP BOLT	1
19	229573_REV4	CYLINDER 6 BLADE 34"	1
20	229580_REV0	DECAL INSPECTION	1
21	229622_REV2	CUTTER BEARING HOUSING	2
22	229701_REV1	OIL SEAL 32 X 47 X 7	2
23	230002_REV2	PIVOT BOLT - CASSETTE	1
24	230326_REV0	BEARING SPACER CASSETTE OUTER	2
25	J20064_REV0	GREASE NIPPLE 1/4" UNF	2
26	SP01016_REV0	BUTTON HEAD M6 X 12	2
27	SP01019_REV0	BUTTON HEAD M6 X 16	2
28	SP01045_REV0	HEX SET SCREW M8 X 25	3
29	SP01058_REV0	CSK CAP HEAD M8 X 20	3
30	SP01059_REV0	HEX SET SCREW M12 X 25	5
31	SP01060_REV0	HEX SET SCREW 1/2" UNF X 3/4"	2
32	SP01061_REV0	CAP HEAD M10 X 80 FULL THREAD	1
33	SP02004_REV0	NUT M6 NYLOC	4
34	SP02013_REV0	NUT M10 LOCK (THIN)	3
35	SP02016_REV0	NUT 1/2" UNF	4
36	SP03004_REV0	WASHER M8 TOOTHED	3
37	SP03007_REV0	WASHER M6 X 20	2
38	SP03011_REV0	WASHER M10 FORM A	2
39	SP03012_REV0	WASHER M12 FORM A	16
40	SP05010_REV0	SPLIT PIN 1/8" X 1"	2
41	229313_REV4	34" SHEAR BLADE CARRIER	1
42	229229_REV3	SHEAR BLADE 34" LIPPED	1
43	185378_REV1	SCREW 3/8" X 1/2" UNF	12

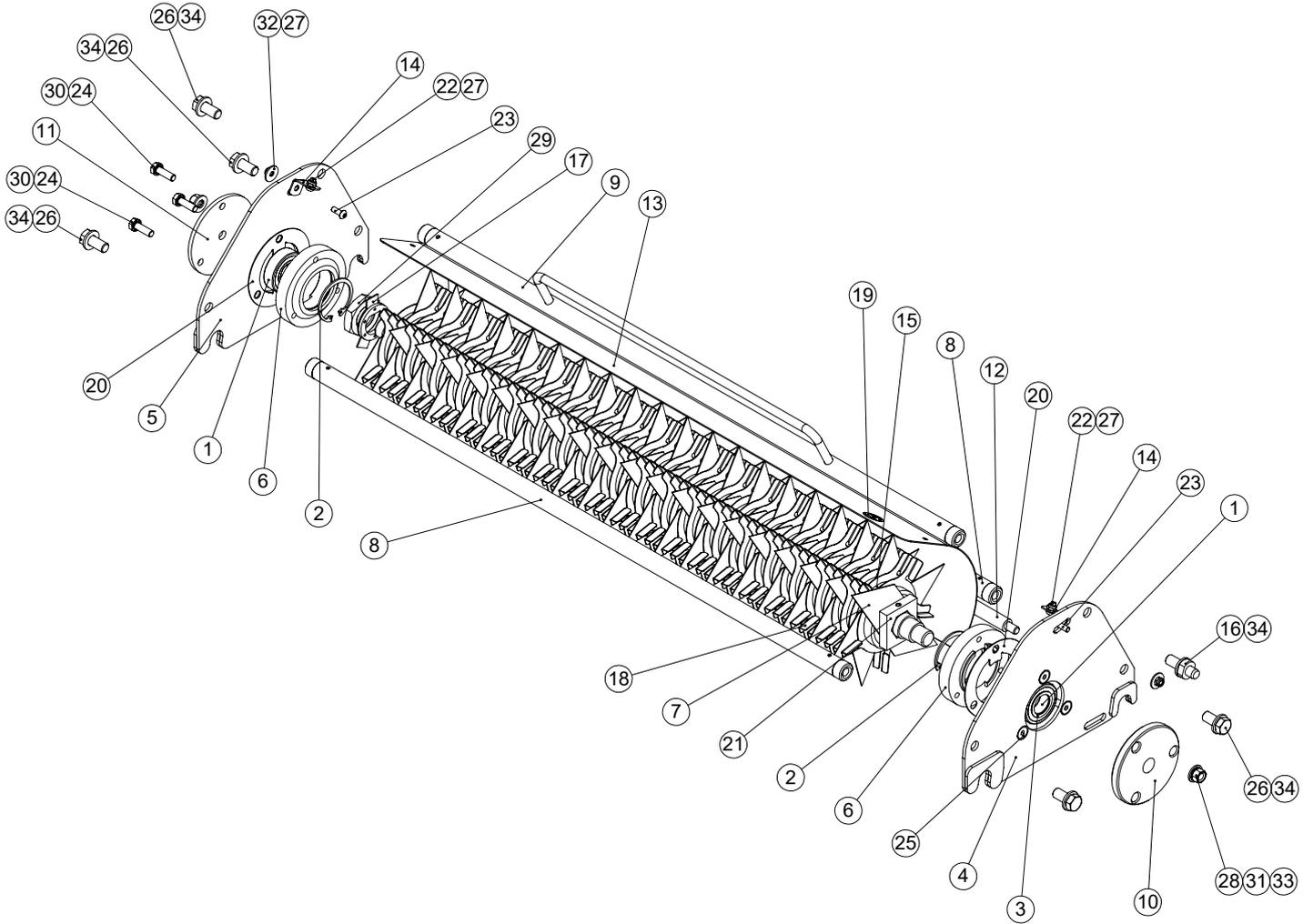
38. VERTICUTTER CASSETTE



MODEL DIFFERENCES				
ITEM No.	MODEL	PART NUMBER	DESCRIPTION	QTY
8	G660	229657	26" TIE BAR	2
8	G760 / ES-760	229295	30" TIE BAR	2
8	G860 / ES-860	229296	34" TIE BAR	2
9	G660	229658	26" HANDLE TIE BAR	1
9	G760 / ES-760	229297	30" HANDLE TIE BAR	1
9	G860 / ES-860	229298	34" HANDLE TIE BAR	1
12	G660	229660	26" NON CUTTER CASSETTE BAR	1
12	G760 / ES-760	229349	30" NON CUTTER CASSETTE BAR	1
12	G860 / ES-860	229350	34" NON CUTTER CASSETTE BAR	1
13	G660	229663	26" NON CUTTER DEFLECTOR W.A.	1
13	G760 / ES-760	229353	30" NON CUTTER DEFLECTOR W.A.	1
13	G860 / ES-860	229354	34" NON CUTTER DEFLECTOR W.A.	1
21	G660	800168	26" HEX SHAFT ASSY	1
21	G760 / ES-760	800164	30" HEX SHAFT ASSY	1
21	G860 / ES-860	800165	34" HEX SHAFT ASSY	1

ITEM NO.	PART NUMBER	DESCRIPTION	Default/QTY.
1	062662_REV1	BEARING 6205-2RS 3	2
2	228042_REV0	CIRCLIP D1300 0520	2
3	228092_REV1	SHIM ID 25.8 X 1 THK	1
4	229220_REV2	L.H. NON-CUT CASSETTE S'PLATE W.A.	1
5	229221_REV2	R.H. NON-CUT CASSETTE S'PLATE W.A.	1
6	229289_REV1	BEARING HOUSING NON-CUTTER	2
7	229290_REV1	VERTICUT BLADE	58
8	229296_REV1	34" TIE BAR	2
9	229298_REV1	34" HANDLE TIE BAR	1
10	229299_REV1	DRIVEN / FEMALE COUPLING	1
11	229318_REV2	BEARING COVER	1
12	229350_REV1	34" NON CUTTER CASSETTE BAR	1
13	229354_REV1	34" NON CUTTER DEFLECTOR W.A.	1
14	229355_REV1	DEFLECTOR PLATE BRACKET	2
15	229357_REV1	BLADE SPACER	57
16	229385_REV2	STOP BOLT	1
17	229483_REV1	WASHER TAB 30MM	1
18	229534_REV1	FAN BLADE LARGE	57
19	229580_REV0	DECAL INSPECTION	1
20	230326_REV0	BEARING SPACER CASSETTE OUTER	2
21	800165_REV1	34" HEX SHAFT ASSY	1
22	SP01016_REV0	BUTTON HEAD M6 X 12	2
23	SP01019_REV0	BUTTON HEAD M6 X 16	2
24	SP01045_REV0	HEX SET SCREW M8 X 25	3
25	SP01058_REV0	CSK CAP HEAD M8 X 20	3
26	SP01059_REV0	HEX SET SCREW M12 X 25	5
27	SP02004_REV0	NUT M6 NYLOC	4
28	SP02015_REV0	NUT 3/8" UNF	2
29	SP02027_REV0	NUT M30 LOCK (THIN)	1
30	SP03004_REV0	WASHER M8 TOOTHED	3
31	SP03005_REV0	WASHER M10 TOOTHED	2
32	SP03007_REV0	WASHER M6 X 20	2
33	SP03011_REV0	WASHER M10 FORM A	2
34	SP03012_REV0	WASHER M12 FORM A	6

39. SCARIFIER CASSETTE

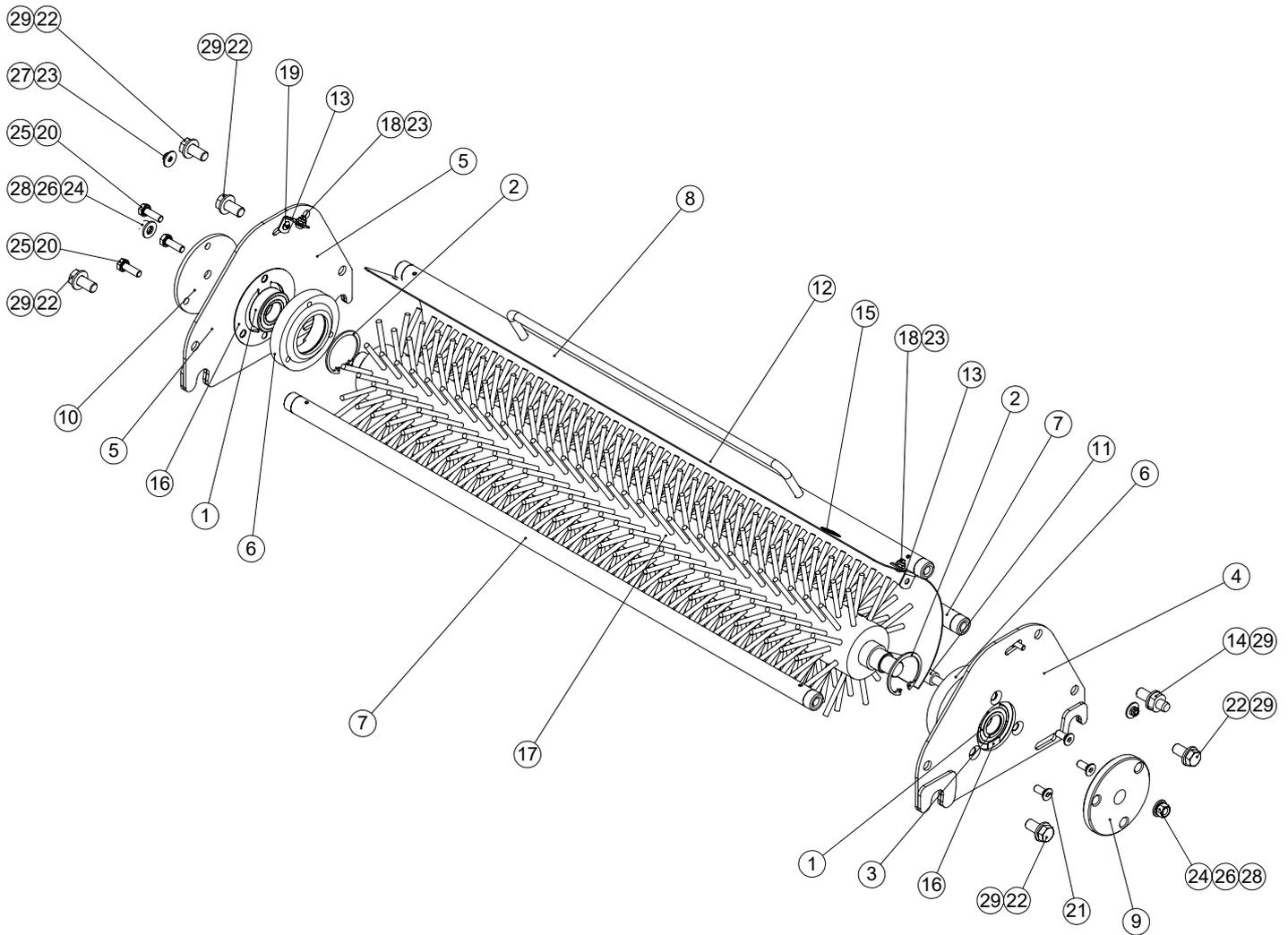


MODEL DIFFERENCES

ITEM No.	MODEL	PART NUMBER	DESCRIPTION	QTY
7	D055/3,D053/3, D054/3	229291	1mm SCARIFIER BLADE	AS REQUIRED
7	D055/4,D053/4, D054/4	229418	2mm SCARIFIER BLADE	AS REQUIRED
7	D055/4TT,D053/4TT, D054/4TT	230106	TT SCARIFIER BLADE	AS REQUIRED
8	G660	229657	26" TIE BAR	2
8	G760 / ES-760	229295	30" TIE BAR	2
8	G860 / ES-860	229296	34" TIE BAR	2
9	G660	229658	26" HANDLE TIE BAR	1
9	G760 / ES-760	229297	30" HANDLE TIE BAR	1
9	G860 / ES-860	229298	34" HANDLE TIE BAR	1
12	G660	229660	26" NON CUTTER CASSETTE BAR	1
12	G760 / ES-760	229349	30" NON CUTTER CASSETTE BAR	1
12	G860 / ES-860	229350	34" NON CUTTER CASSETTE BAR	1
13	G660	229663	26" NON CUTTER DEFLECTOR W.A.	1
13	G760 / ES-760	229353	30" NON CUTTER DEFLECTOR W.A.	1
13	G860 / ES-860	229354	34" NON CUTTER DEFLECTOR W.A.	1
21	G660	800168	26" HEX SHAFT ASSY	1
21	G760 / ES-760	800164	30" HEX SHAFT ASSY	1
21	G860 / ES-860	800165	34" HEX SHAFT ASSY	1

ITEM NO.	PART NUMBER	DESCRIPTION	Default/QTY.
1	062662_REV1	BEARING 6205-2RS 3	2
2	228042_REV0	CIRCLIP D1300 0520	2
3	228092_REV1	SHIM ID 25.8 X 1 THK	1
4	229220_REV2	L.H. NON-CUT CASSETTE S'PLATE W.A.	1
5	229221_REV2	R.H. NON-CUT CASSETTE S'PLATE W.A.	1
6	229289_REV1	BEARING HOUSING NON-CUTTER	2
7	229291_REV1	1MM SCARIFIER BLADE	58
8	229296_REV1	34" TIE BAR	2
9	229298_REV1	34" HANDLE TIE BAR	1
10	229299_REV1	DRIVEN / FEMALE COUPLING	1
11	229318_REV2	BEARING COVER	1
12	229350_REV1	34" NON CUTTER CASSETTE BAR	1
13	229354_REV1	34" NON CUTTER DEFLECTOR W.A.	1
14	229355_REV1	DEFLECTOR PLATE BRACKET	2
15	229357_REV1	BLADE SPACER	57
16	229385_REV2	STOP BOLT	1
17	229483_REV1	WASHER TAB 30MM	1
18	229534_REV1	FAN BLADE LARGE	57
19	229580_REV0	DECAL INSPECTION	1
20	230326_REV0	BEARING SPACER CASSETTE OUTER	2
21	800165_REV1	34" HEX SHAFT ASSY	1
22	SP01016_REV0	BUTTON HEAD M6 X 12	2
23	SP01019_REV0	BUTTON HEAD M6 X 16	2
24	SP01045_REV0	HEX SET SCREW M8 X 25	3
25	SP01058_REV0	CSK CAP HEAD M8 X 20	3
26	SP01059_REV0	HEX SET SCREW M12 X 25	5
27	SP02004_REV0	NUT M6 NYLOC	4
28	SP02015_REV0	NUT 3/8" UNF	2
29	SP02027_REV0	NUT M30 LOCK (THIN)	1
30	SP03004_REV0	WASHER M8 TOOTHED	3
31	SP03005_REV0	WASHER M10 TOOTHED	2
32	SP03007_REV0	WASHER M6 X 20	2
33	SP03011_REV0	WASHER M10 FORM A	2
34	SP03012_REV0	WASHER M12 FORM A	6

40. BRUSH CASSETTE

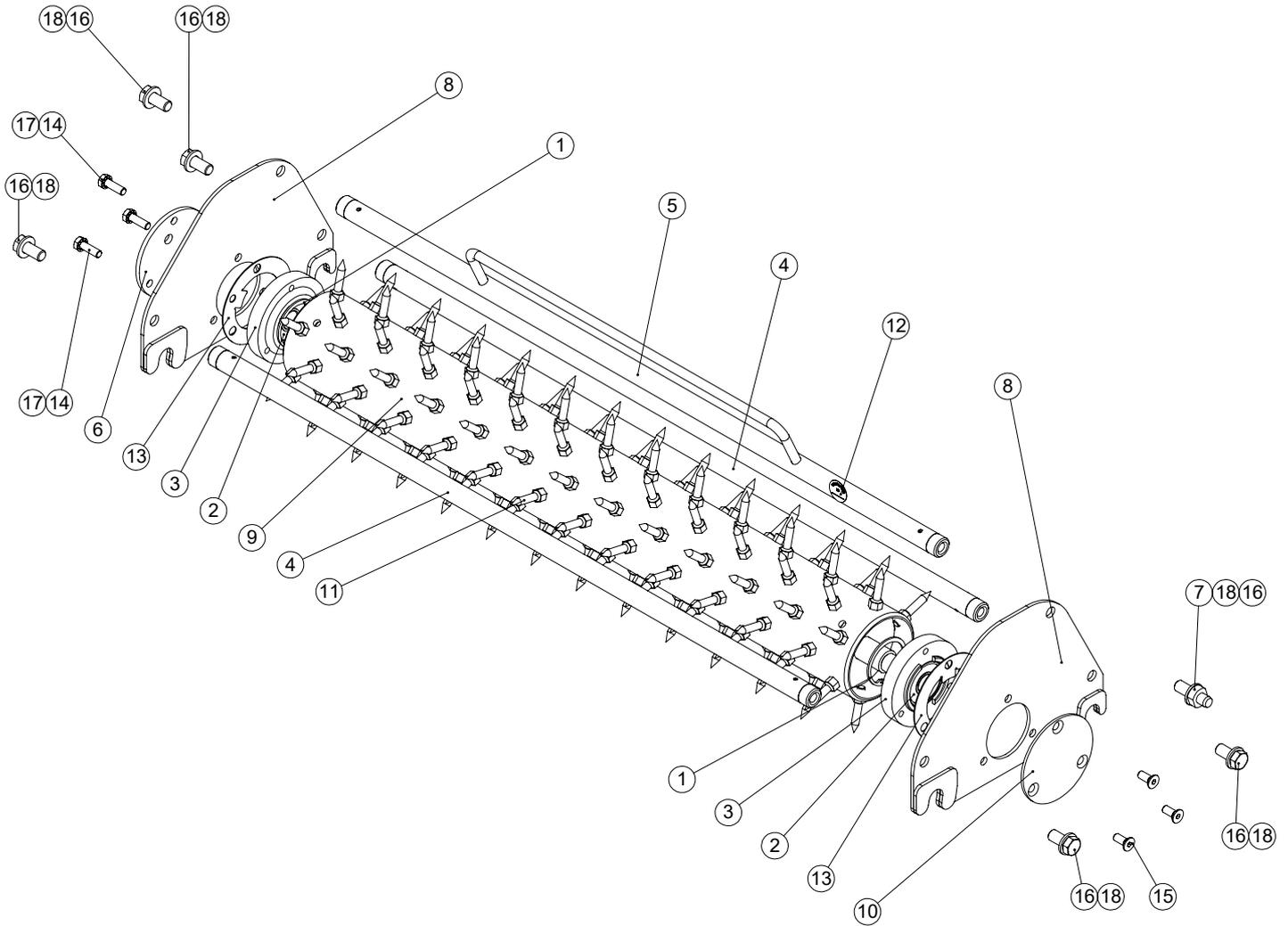


MODEL DIFFERENCES

ITEM No.	MODEL	PART NUMBER	DESCRIPTION	QTY
7	G660	229657	26" TIE BAR	2
7	G760 / ES-760	229295	30" TIE BAR	2
7	G860 / ES-860	229296	34" TIE BAR	2
8	G660	229658	26" HANDLE TIE BAR	1
8	G760 / ES-760	229297	30" HANDLE TIE BAR	1
8	G860 / ES-860	229298	34" HANDLE TIE BAR	1
11	G660	229660	26" NON CUTTER CASSETTE BAR	1
11	G760 / ES-760	229349	30" NON CUTTER CASSETTE BAR	1
11	G860 / ES-860	229350	34" NON CUTTER CASSETTE BAR	1
12	G660	229663	26" NON CUTTER DEFLECTOR W.A.	1
12	G760 / ES-760	229353	30" NON CUTTER DEFLECTOR W.A.	1
12	G860 / ES-860	229354	34" NON CUTTER DEFLECTOR W.A.	1
17	G660	800173	BRUSH SHAFT ASSY 26" SOFT	1
17	G760 / ES-760	800189	BRUSH SHAFT ASSY 30" SOFT	1
17	G860 / ES-860	800167	BRUSH SHAFT ASSY 34" SOFT	1
17	G660	800172	BRUSH SHAFT ASSY 26" HARD	1
17	G760 / ES-760	800183	BRUSH SHAFT ASSY 30" HARD	1
17	G860 / ES-860	800184	BRUSH SHAFT ASSY 34" HARD	1
17	G660	800192	BRUSH SHAFT ASSY 26" MULTI	1
17	G760 / ES-760	800190	BRUSH SHAFT ASSY 30" MULTI	1
17	G860 / ES-860	800191	BRUSH SHAFT ASSY 34" MULTI	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	062662_REV1	BEARING 6205-2RS 3	2
2	228042_REV0	CIRCLIP D1300 0520	2
3	228092_REV1	SHIM ID 25.8 X 1 THK	1
4	229220_REV2	L.H. NON-CUT CASSETTE S'PLATE W.A.	1
5	229221_REV2	R.H. NON-CUT CASSETTE S'PLATE W.A.	1
6	229289_REV1	BEARING HOUSING NON-CUTTER	2
7	229296_REV1	34" TIE BAR	2
8	229298_REV1	34" HANDLE TIE BAR	1
9	229299_REV1	DRIVEN / FEMALE COUPLING	1
10	229318_REV2	BEARING COVER	1
11	229350_REV1	34" NON CUTTER CASSETTE BAR	1
12	229354_REV1	34" NON CUTTER DEFLECTOR W.A.	1
13	229355_REV1	DEFLECTOR PLATE BRACKET	2
14	229385_REV2	STOP BOLT	1
15	229580_REV0	DECAL INSPECTION	1
16	230326_REV0	BEARING SPACER CASSETTE OUTER	2
17	800191_REV2	BRUSH SHAFT ASSEMBLY 34" MULTI	1
18	SP01016_REV0	BUTTON HEAD M6 X 12	2
19	SP01019_REV0	BUTTON HEAD M6 X 16	2
20	SP01045_REV0	HEX SET SCREW M8 X 25	3
21	SP01058_REV0	CSK CAP HEAD M8 X 20	3
22	SP01059_REV0	HEX SET SCREW M12 X 25	5
23	SP02004_REV0	NUT M6 NYLOC	4
24	SP02015_REV0	NUT 3/8" UNF	2
25	SP03004_REV0	WASHER M8 TOOTHED	3
26	SP03005_REV0	WASHER M10 TOOTHED	2
27	SP03007_REV0	WASHER M6 X 20	2
28	SP03011_REV0	WASHER M10 FORM A	2
29	SP03012_REV0	WASHER M12 FORM A	6

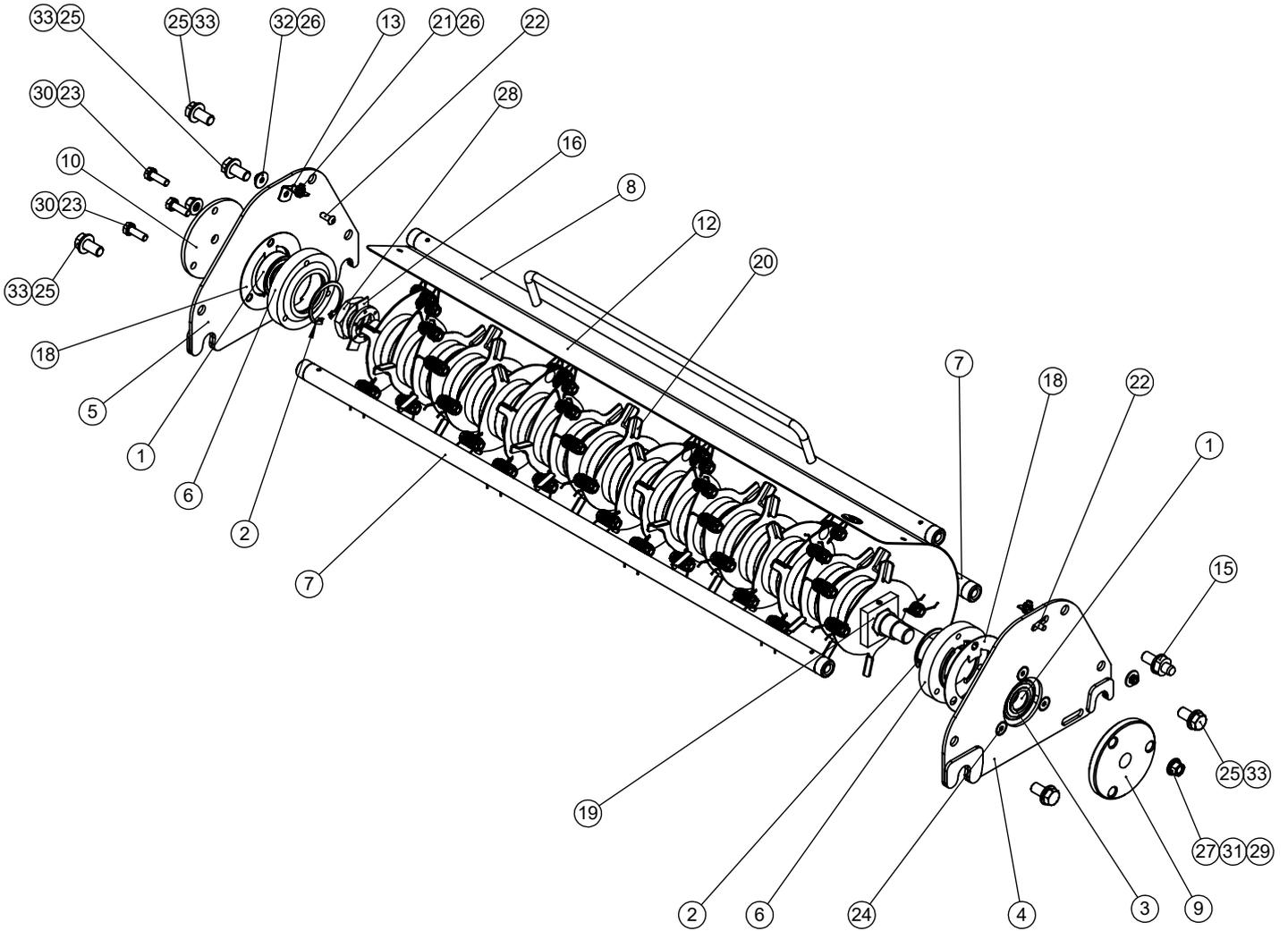
41. SORREL ROLLER CASSETTE



MODEL DIFFERENCES				
ITEM No.	MODEL	PART NUMBER	DESCRIPTION	QTY
4	G660	229657	26" TIE BAR	2
4	G760 / ES-760	229295	30" TIE BAR	2
4	G860 / ES-860	229296	34" TIE BAR	2
5	G660	229658	26" HANDLE TIE BAR	1
5	G760 / ES-760	229297	30" HANDLE TIE BAR	1
5	G860 / ES-860	229298	34" HANDLE TIE BAR	1
9	G660	229669	SORREL ROLLER 26"	1
9	G760 / ES-760	229503	SORREL ROLLER 30"	1
9	G860 / ES-860	229504	SORREL ROLLER 34"	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	228042_REV0	CIRCLIP D1300 0520	2
2	228079_REV1	BEARING 6304 2RS	2
3	229289_REV1	BEARING HOUSING NON-CUTTER	2
4	229296_REV1	34" TIE BAR	2
5	229298_REV1	34" HANDLE TIE BAR	1
6	229317_REV1	BEARING COVER SORREL R.H.	1
7	229385_REV2	STOP BOLT	1
8	229502_REV1	SORREL SIDE PLATE W.A.	2
9	229504_REV1	SORREL ROLLER 34"	1
10	229539_REV1	BEARING COVER SORREL	1
11	229560_REV1	8MM SORREL SPIKE	150
12	229580_REV0	DECAL INSPECTION	1
13	230326_REV0	BEARING SPACER CASSETTE OUTER	2
14	SP01045_REV0	HEX SET SCREW M8 X 25	3
15	SP01058_REV0	CSK CAP HEAD M8 X 20	3
16	SP01059_REV0	HEX SET SCREW M12 X 25	5
17	SP03004_REV0	WASHER M8 TOOTHED	3
18	SP03012_REV0	WASHER M12 FORM A	6

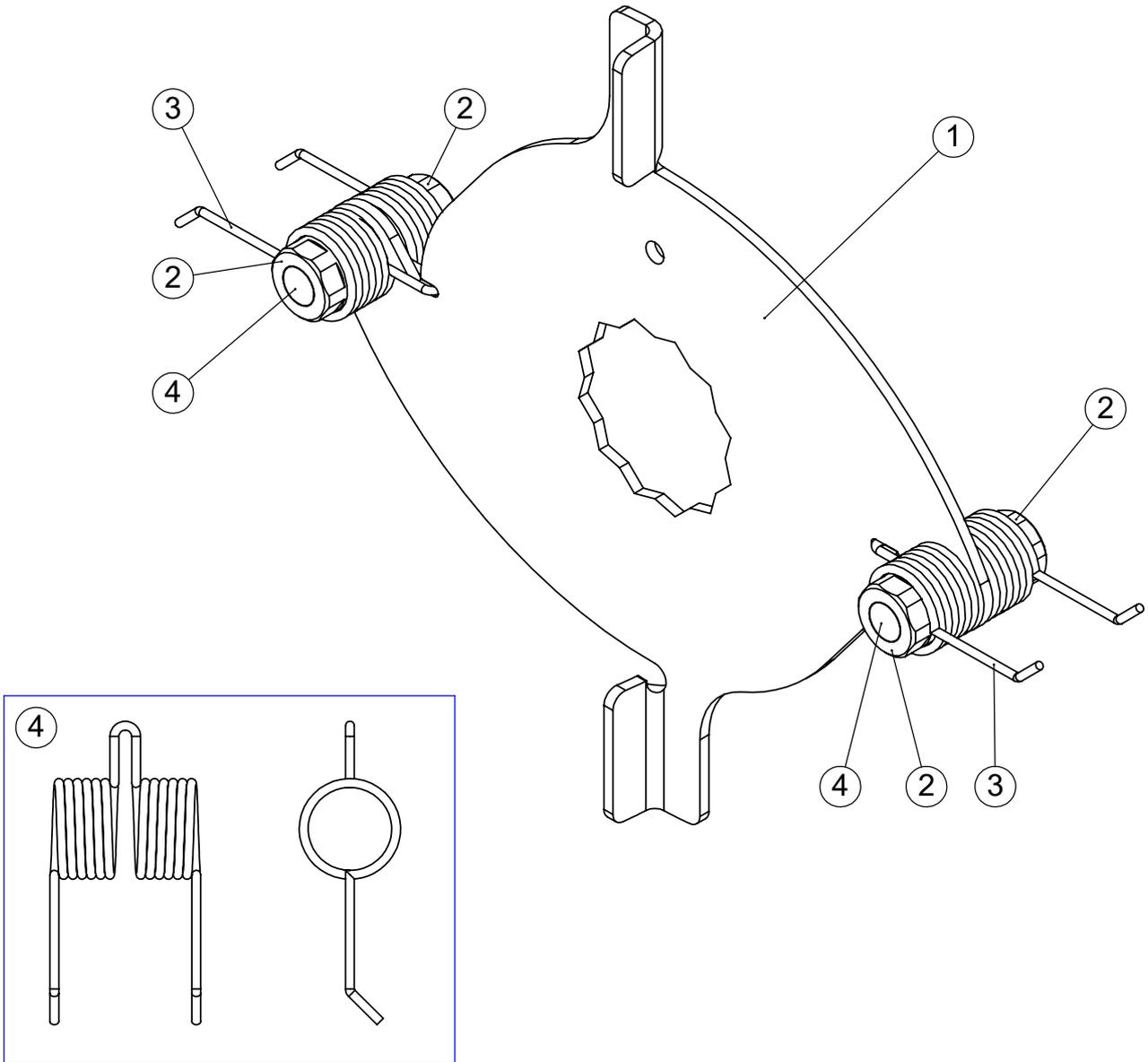
42. SPRING TINE CASSETTE



MODEL DIFFERENCES

ITEM No.	MODEL	PART NUMBER	DESCRIPTION	QTY
7	G660	229657	26" TIE BAR	2
7	G760 / ES-760	229295	30" TIE BAR	2
7	G860 / ES-860	229296	34" TIE BAR	2
8	G660	229658	26" HANDLE TIE BAR	1
8	G760 / ES-760	229297	30" HANDLE TIE BAR	1
8	G860 / ES-860	229298	34" HANDLE TIE BAR	1
11	G660	229660	26" NON CUTTER CASSETTE BAR	1
11	G760 / ES-760	229349	30" NON CUTTER CASSETTE BAR	1
11	G860 / ES-860	229350	34" NON CUTTER CASSETTE BAR	1
12	G660	229663	26" NON CUTTER DEFLECTOR W.A.	1
12	G760 / ES-760	229353	30" NON CUTTER DEFLECTOR W.A.	1
12	G860 / ES-860	229354	34" NON CUTTER DEFLECTOR W.A.	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	062662_REV1	BEARING 6205-2RS 3	2
2	228042_REV0	CIRCLIP D1300 0520	2
3	228092_REV1	SHIM ID 25.8 X 1 THK	1
4	229220_REV2	L.H. NON-CUT CASSETTE S'PLATE W.A.	1
5	229221_REV2	R.H. NON-CUT CASSETTE S'PLATE W.A.	1
6	229289_REV1	BEARING HOUSING NON-CUTTER	2
7	229296_REV1	34" TIE BAR	2
8	229298_REV1	34" HANDLE TIE BAR	1
9	229299_REV1	DRIVEN / FEMALE COUPLING	1
10	229318_REV2	BEARING COVER	1
11	229350_REV1	34" NON CUTTER CASSETTE BAR	1
12	229354_REV1	34" NON CUTTER DEFLECTOR W.A.	1
13	229355_REV1	DEFLECTOR PLATE BRACKET	2
14	229357_REV1	BLADE SPACER	63
15	229385_REV2	STOP BOLT	1
16	229483_REV1	WASHER TAB 30MM	1
17	229580_REV0	DECAL INSPECTION	1
18	230326_REV0	BEARING SPACER CASSETTE OUTER	2
19	800165_REV1	34" HEX SHAFT ASSY	1
20	800250_REV0	SPRING BLADE ASSY	22
21	SP01016_REV0	BUTTON HEAD M6 X 12	2
22	SP01019_REV0	BUTTON HEAD M6 X 16	2
23	SP01045_REV0	HEX SET SCREW M8 X 25	3
24	SP01058_REV0	CSK CAP HEAD M8 X 20	3
25	SP01059_REV0	HEX SET SCREW M12 X 25	5
26	SP02004_REV0	NUT M6 NYLOC	4
27	SP02015_REV0	NUT 3/8" UNF	2
28	SP02027_REV0	NUT M30 LOCK (THIN)	1
29	SP03002_REV0	WASHER 3/8"	2
30	SP03004_REV0	WASHER M8 TOOTHED	3
31	SP03005_REV0	WASHER M10 TOOTHED	2
32	SP03007_REV0	WASHER M6 X 20	2
33	SP03012_REV0	WASHER M12 FORM A	6



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	230654_REVO	BLADE SPRING TINE	1
2	230659_REVO	SPRING NUT	4
3	SP13008_REV1	SPRING TORSION 1.4	2
4	SP01164_REVO	GRUB SCREW M8 X 30 SS	2


The logo features the word "E-SERIES" in a large, bold, green, italicized sans-serif font. A green lightning bolt graphic is integrated into the left side of the letter "E". Below this, the word "by" is written in a smaller, green, italicized font. To the right of "by" is the word "DENNIS" in a bold, gold, blocky sans-serif font with a slight 3D effect and a horizontal line above and below it. The entire logo is enclosed in a thin black rounded rectangular border.

E-SERIES

by **DENNIS**

DENNIS, Ashbourne Road, Kirk Langley, Derbyshire, DE6 4NJ, England

Tel: +44 (0) 1332 824 777

Fax: +44 (0) 1332 824 525

Email: sales@dennisuk.com

Email: spares@dennisuk.com

www.dennisuk.com