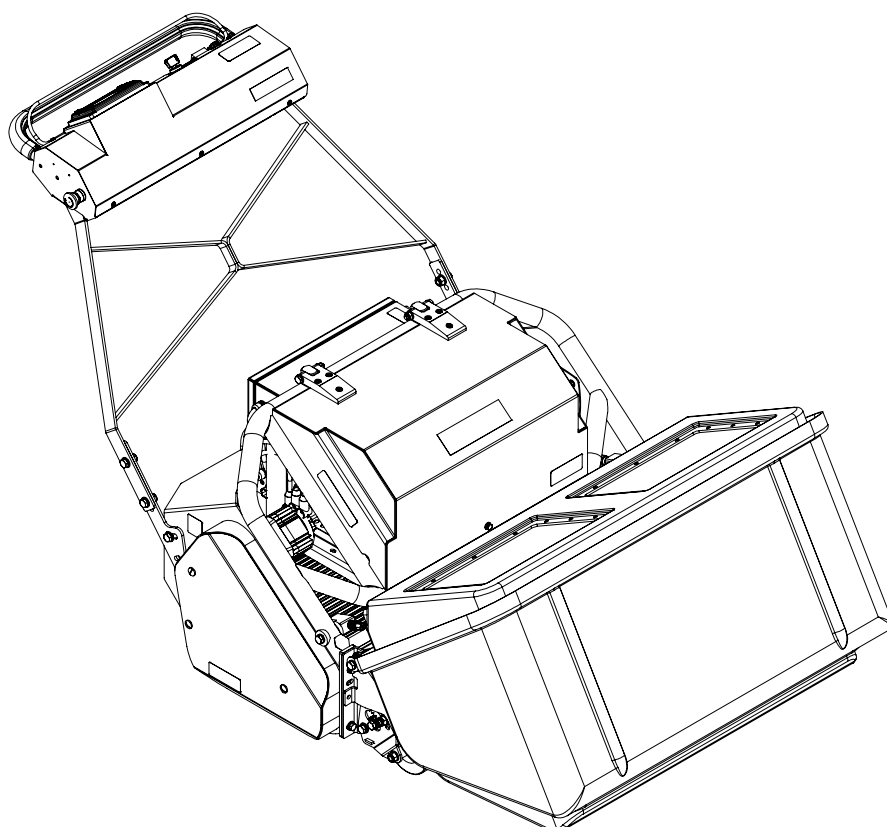




ES-36 & ES-30

ELECTRIC MOWER

INSTRUCTION MANUAL



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- Violations are punishable and subject to compensation of damages. DENNIS reserves the right to exercise any and all industrial property rights.

1. CERTIFICATE OF CONFORMITY

ES-36 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-36	914mm	InMotion 106 (Drive) InMotion 106 (Cylinder)	81dB Lwa	85dB 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

- Do not operate the machine when tired, ill, under the influence of drugs or alcohol.
- 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 grassbox 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-36 & ES-30 Electric Cylinder 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.

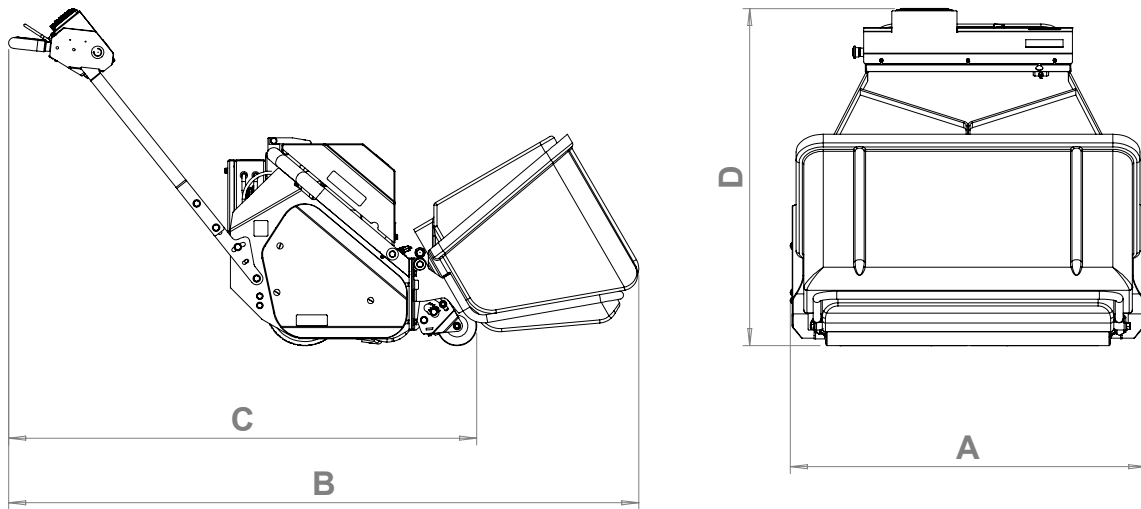
5. MACHINE DESCRIPTION

A cylinder cutting machine manufactured with 36" (91.4cm) or 30" (76.2cm) 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.

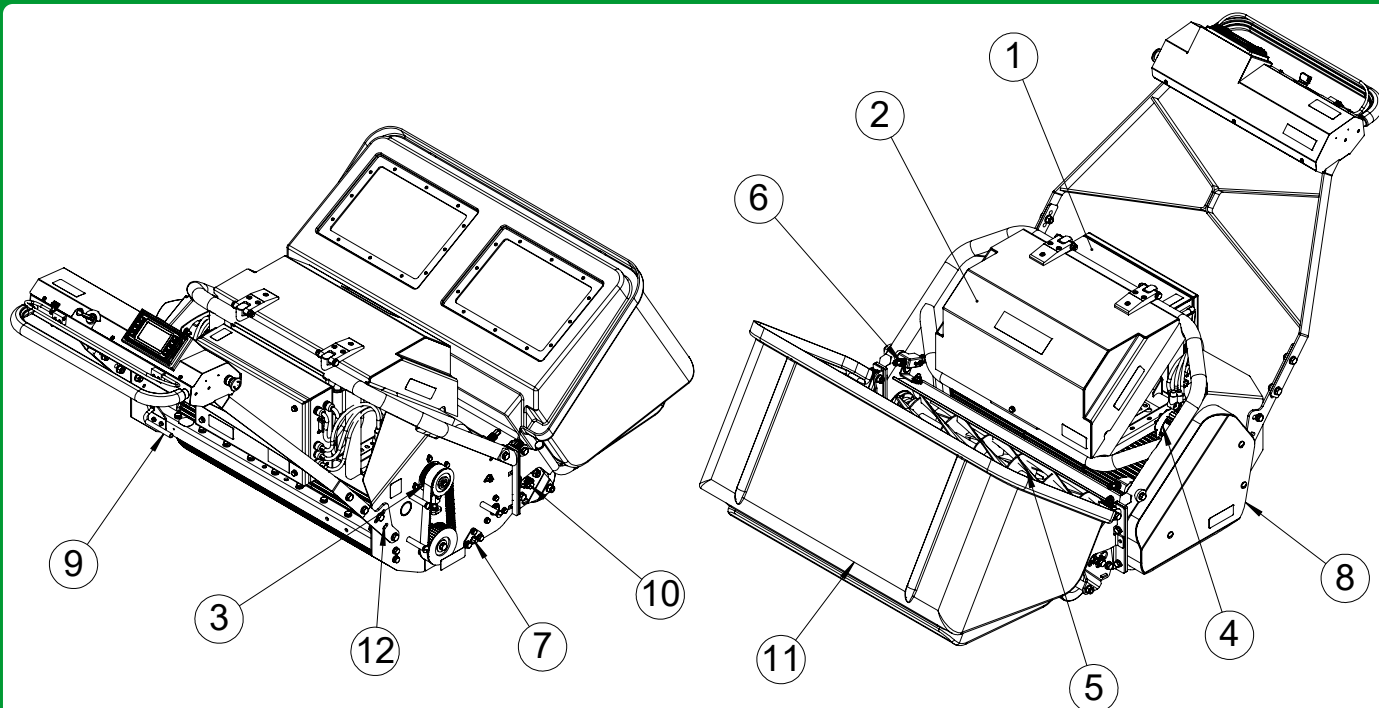
The rear roller and cutter are controlled independently via belt drives operated from the display screen on the upper handle bar. A mechanical parking brake is fitted for added safety when working around uneven ground, when applied this disengages drive to both motors for added safety.

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.

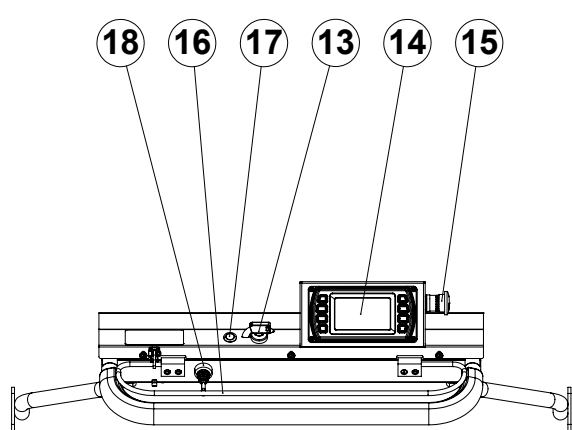
6. TECHNICAL DATA



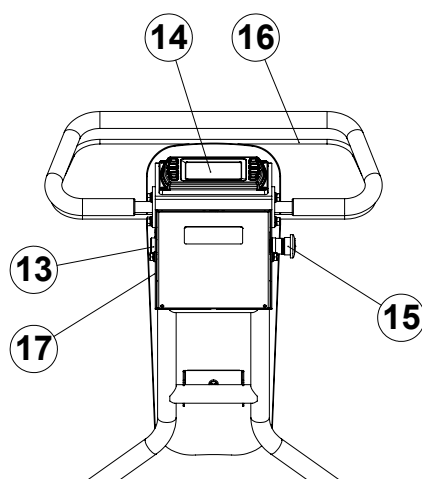
	ES-36	ES-30
DIMENSIONS		
A - WIDTH (mm)	1147	982
B - LENGTH with Grass Box (mm)	2031	2031
C - LENGTH without Grass Box (mm)	1512	1512
D - HEIGHT (mm)	1086	1086
WEIGHT (Kg)	350	300
Cutting Width	914.4mm / 36"	762mm / 30"
DRIVE SYSTEM		
Roller Motor (W)	1200	1200
Roller Drive System	Timing Belt	Timing Belt
Cylinder Motor (W)	1200	1200
Cylinder Drive System	Multi V belt	Multi V belt
ELECTRICAL SYSTEM		
Battery Type	Lithium Ion	Lithium Ion
System Voltage	48	48
Battery Capacity (Ah)	111	111
Self Discharge @ 25 °C	< 2% per month	< 2% per month



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



Or



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 9)

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

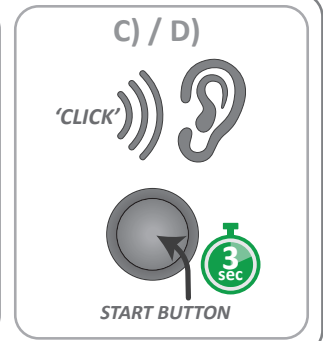
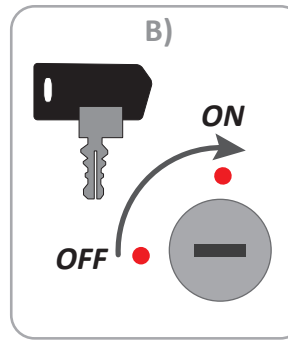
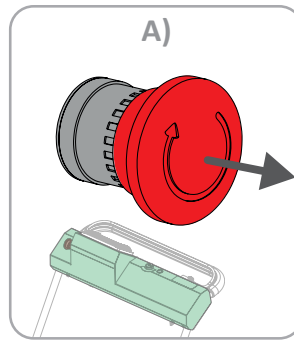
(return to HOME screen from menus)

8. BASIC SCREEN CONTROLS

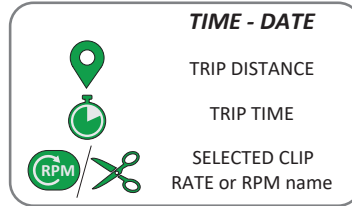
(Hand controls for machines manufactured after Summer 2022)

KEY START

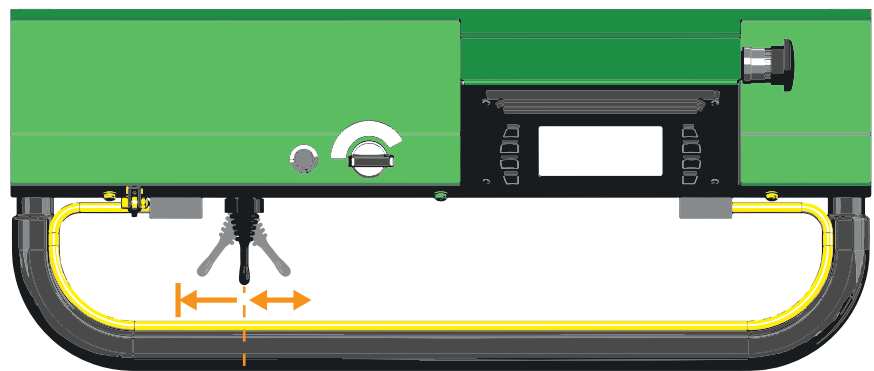
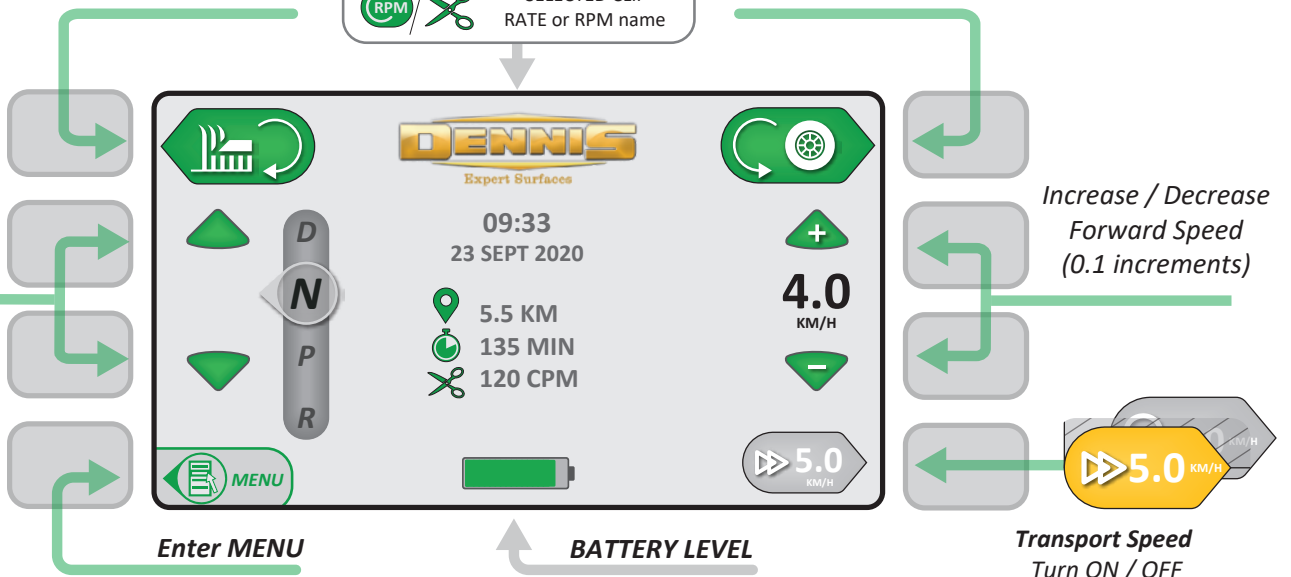
- Release **E-Stop**
- Key mower to 'ON' position on the barrel
- Push and Hold START button
- Listen for 'CLICK' from the electrical box
- Release button & wait for display screen to boot



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



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



LATCHING NUDGE

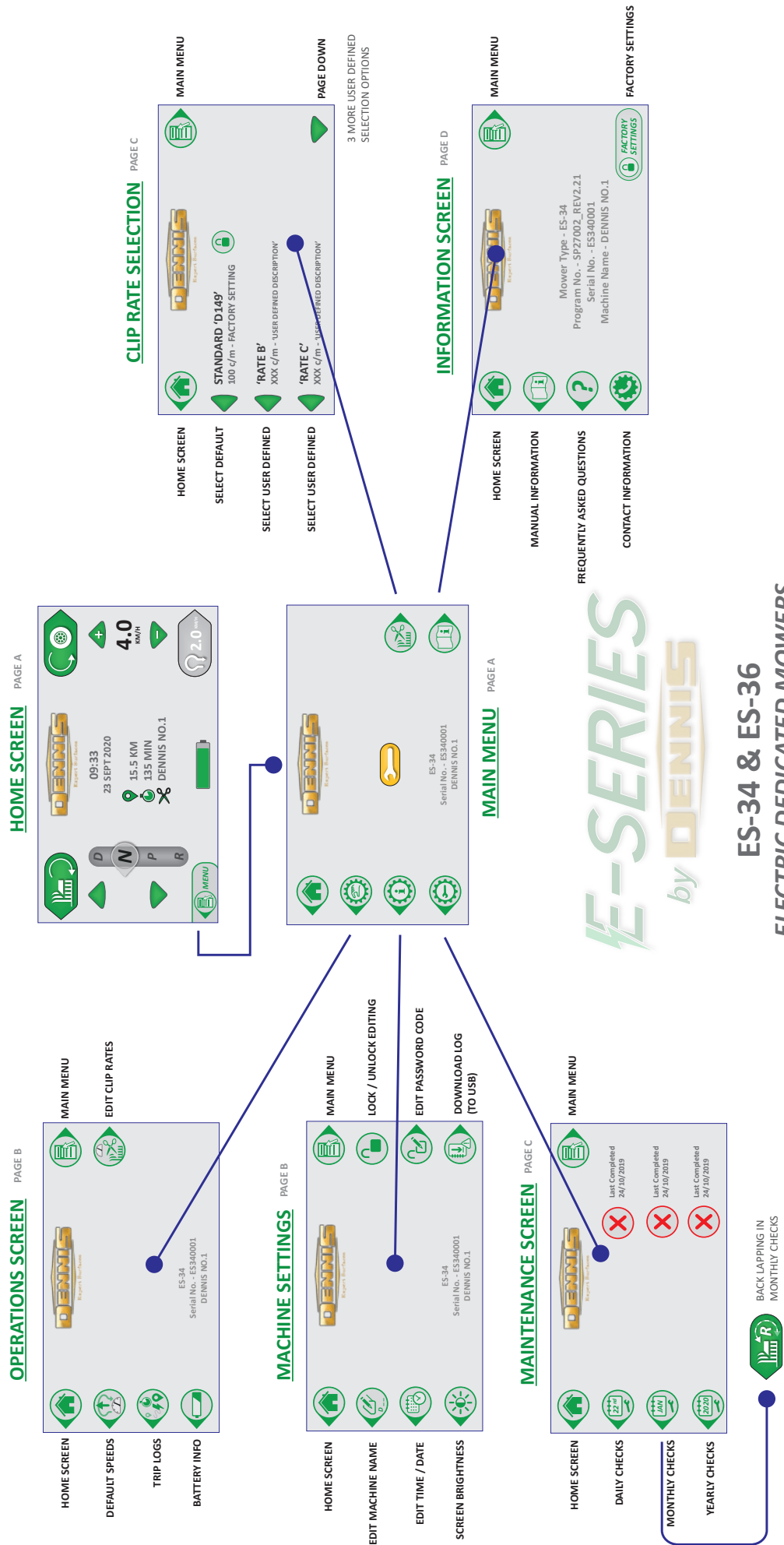
2-axis joystick. Direction 1 - sprung loaded, direction 2- latching to maintain roller drive. Joystick can be rotated through 90 or 180 degrees if required.

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



NOTE:-

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



E-SERIES
by **DENNIS**

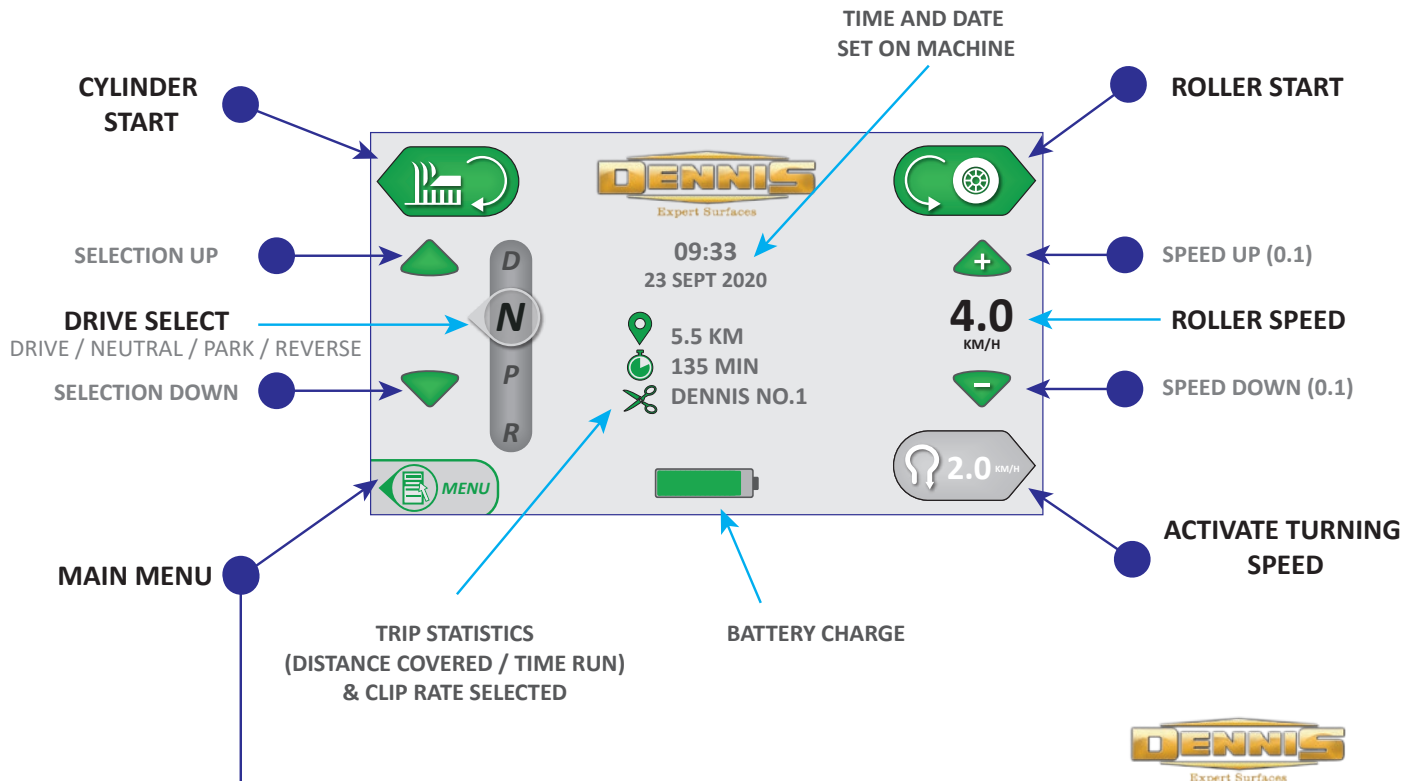
ES-34 & ES-36
ELECTRIC DEDICATED MOWERS

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).

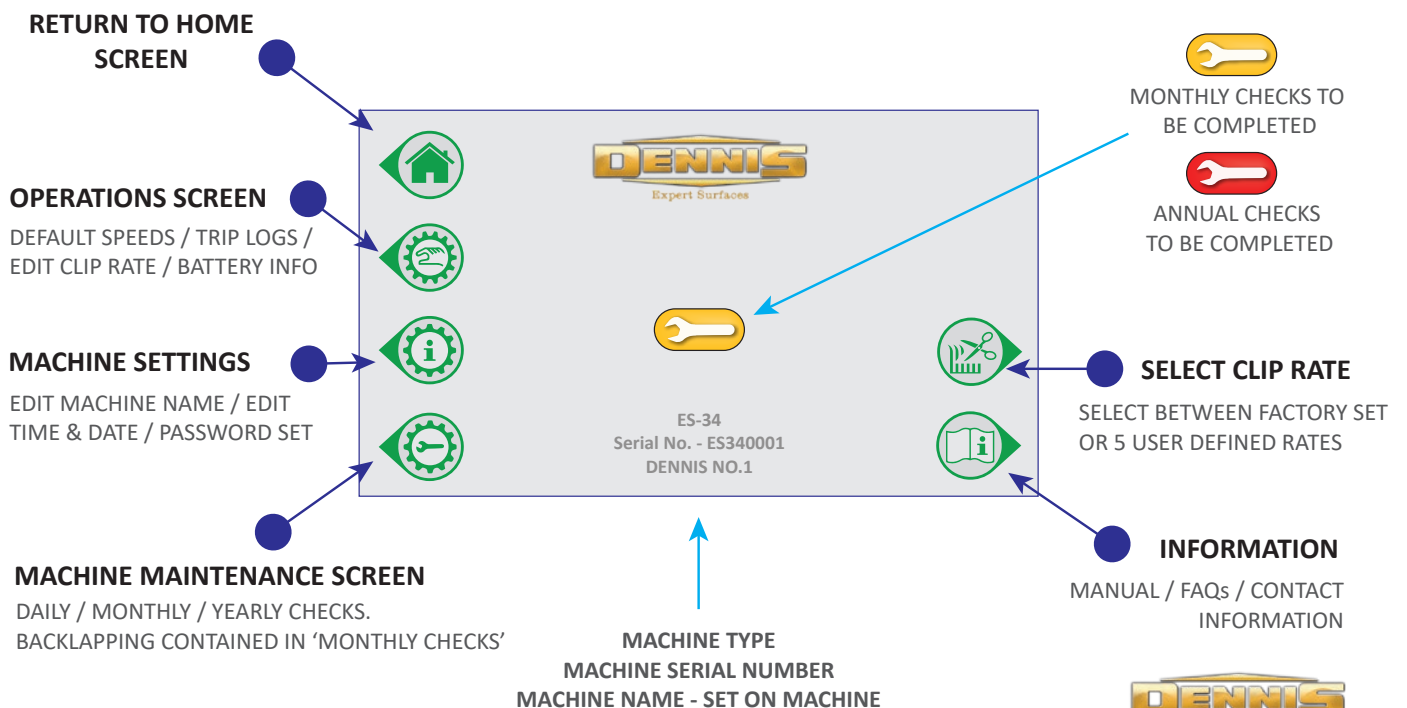


MAIN MENU





	BUTTON SELECTION
	SCREEN INFO

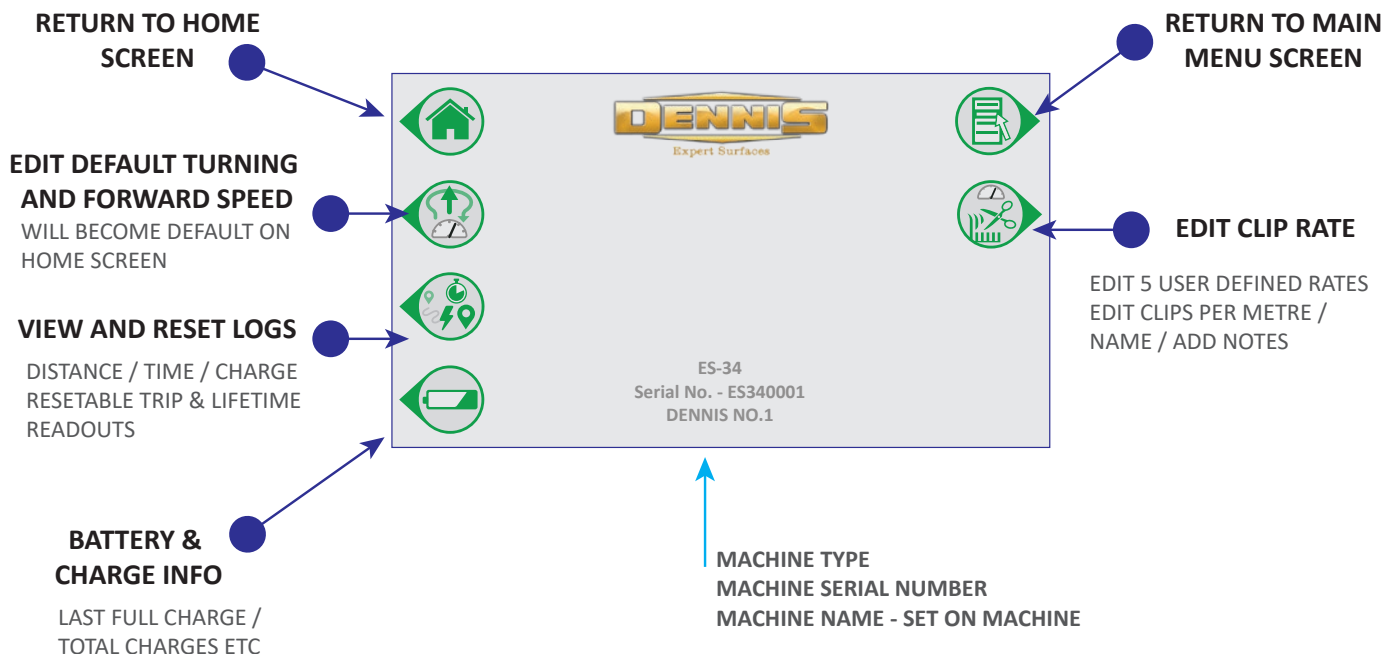
MAIN MENU SCREEN. ALWAYS AN OPTION ON OTHER SCREENS TO GET STRAIGHT BACK TO THIS SCREEN (TOP RIGHT ICON).



OPERATIONS SCREEN





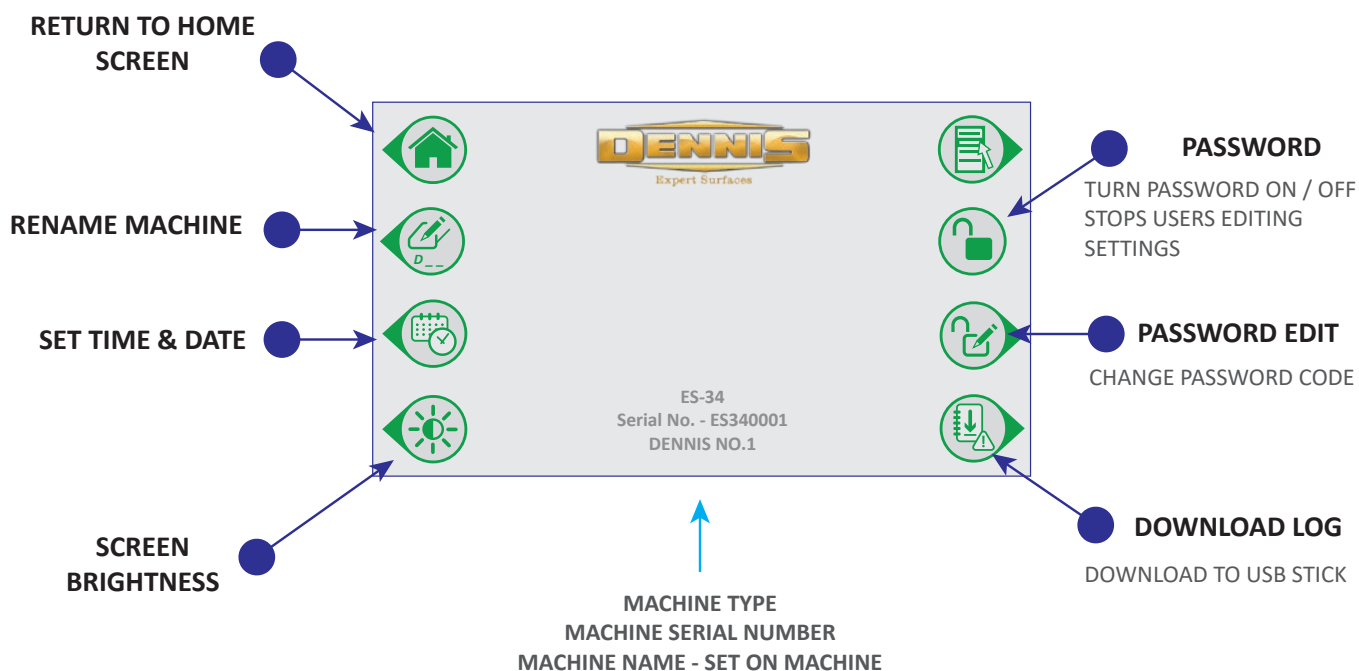
	BUTTON SELECTION
	SCREEN INFO



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.

RETURN TO HOME SCREEN

RETURN TO MAIN MENU SCREEN

DAILY CHECKS

GIVES LIST OF CHECKS. LOG AS COMPLETE ONCE DONE

MONTHLY CHECKS

GIVES LIST OF CHECKS. LOG AS COMPLETE ONCE DONE



ANNUAL CHECKS

GIVES LIST OF CHECKS. LOG AS COMPLETE ONCE DONE



CLIP RATE SELECTION



	BUTTON SELECTION
	SCREEN INFO

SELECT YOUR CLIP RATE, WHEN CHOSEN IT WILL RETURN YOU TO HOME SCREEN READY TO OPERATE. CLIP RATE MAINTAINED EVEN WHEN SPEED ALTERED

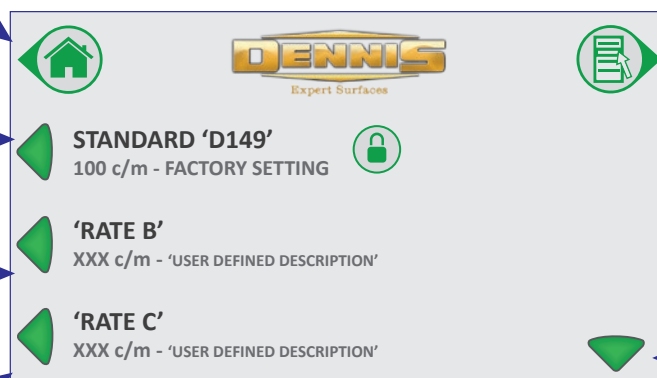
RETURN TO HOME SCREEN

SELECT DEFAULT CLIP RATE

LOCKED FOR EDITING

SELECT USER DEFINED CLIP RATE

SELECT USER DEFINED CLIP RATE







PAGE DOWN

NEXT 3 USER DEFINED SELECTIONS

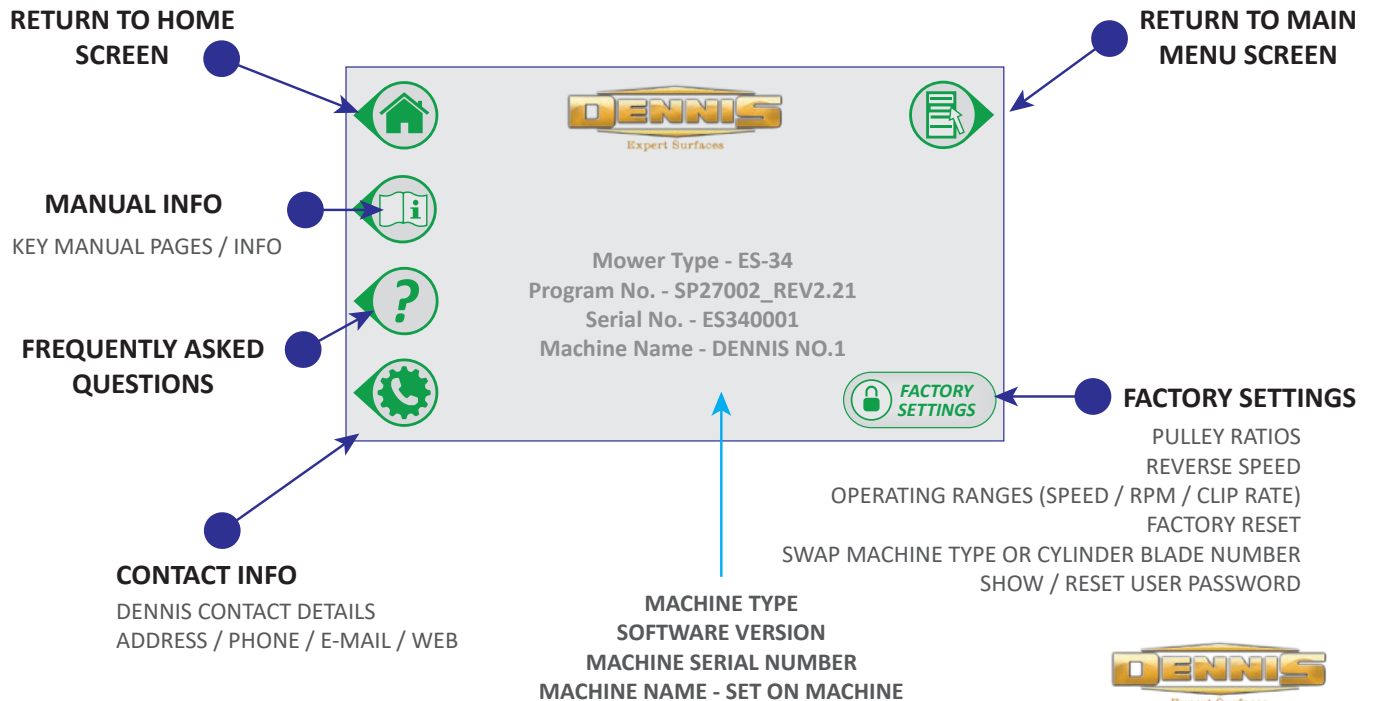


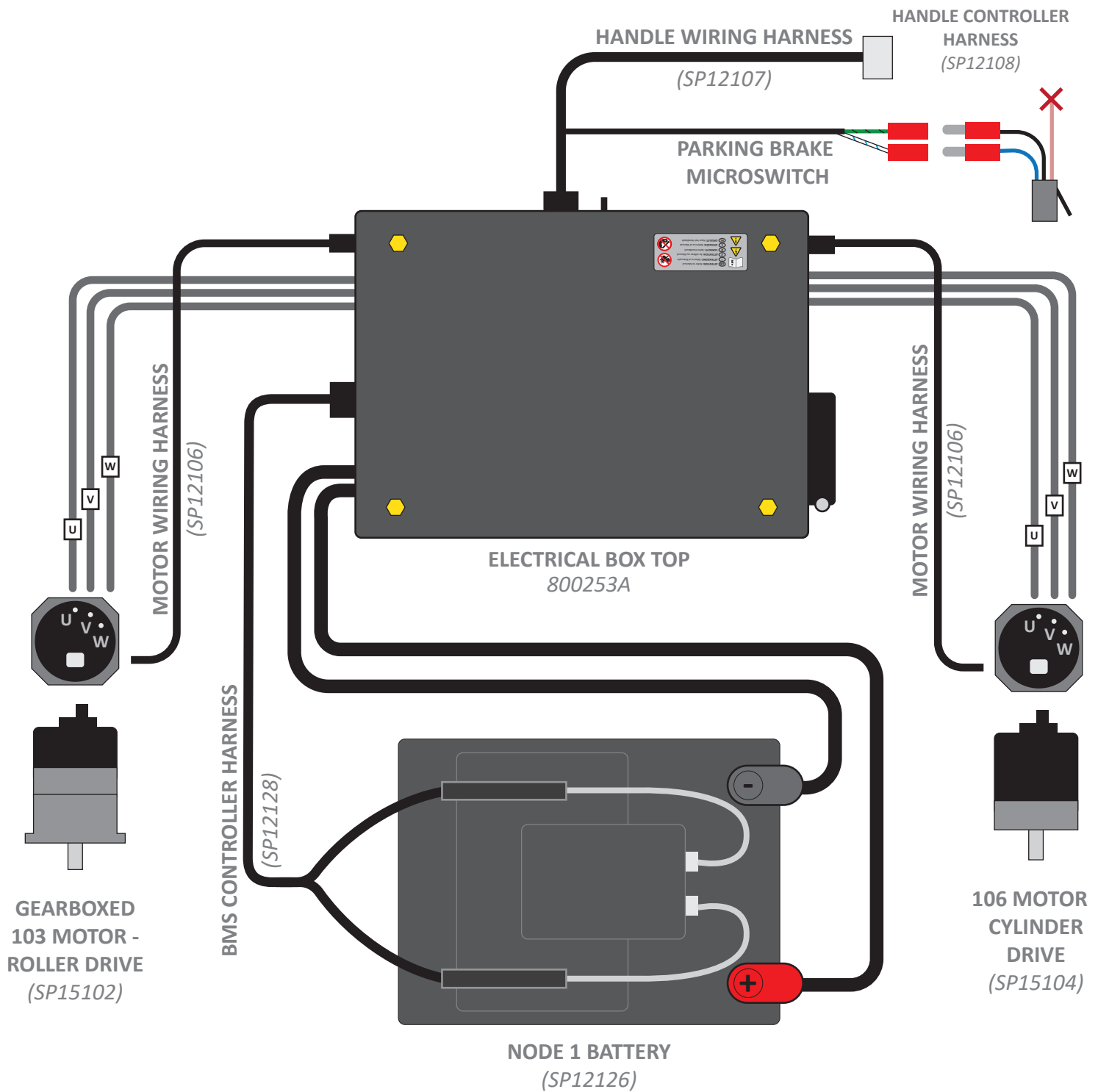
INFORMATION SCREEN



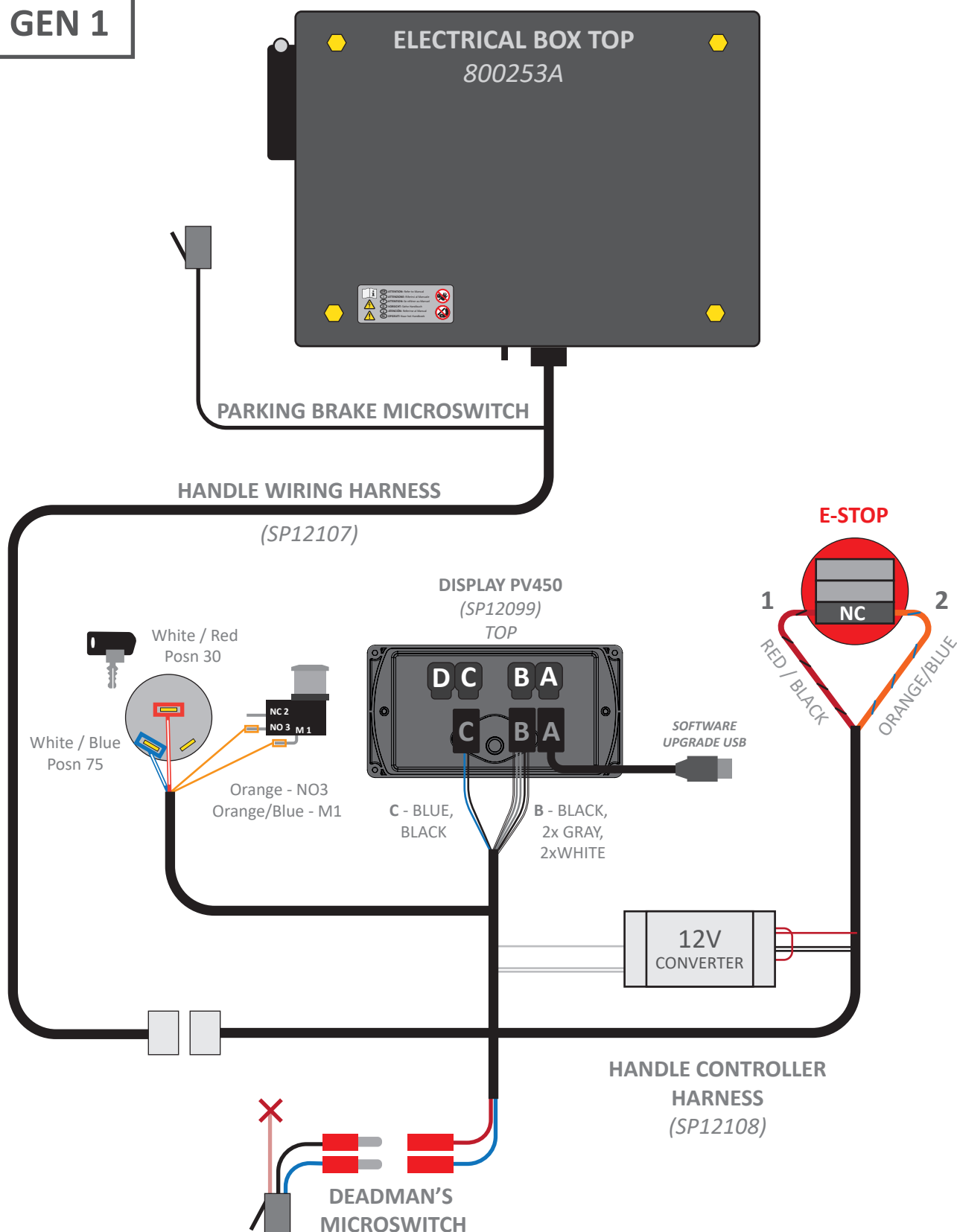
		BUTTON SELECTION
		SCREEN INFO

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



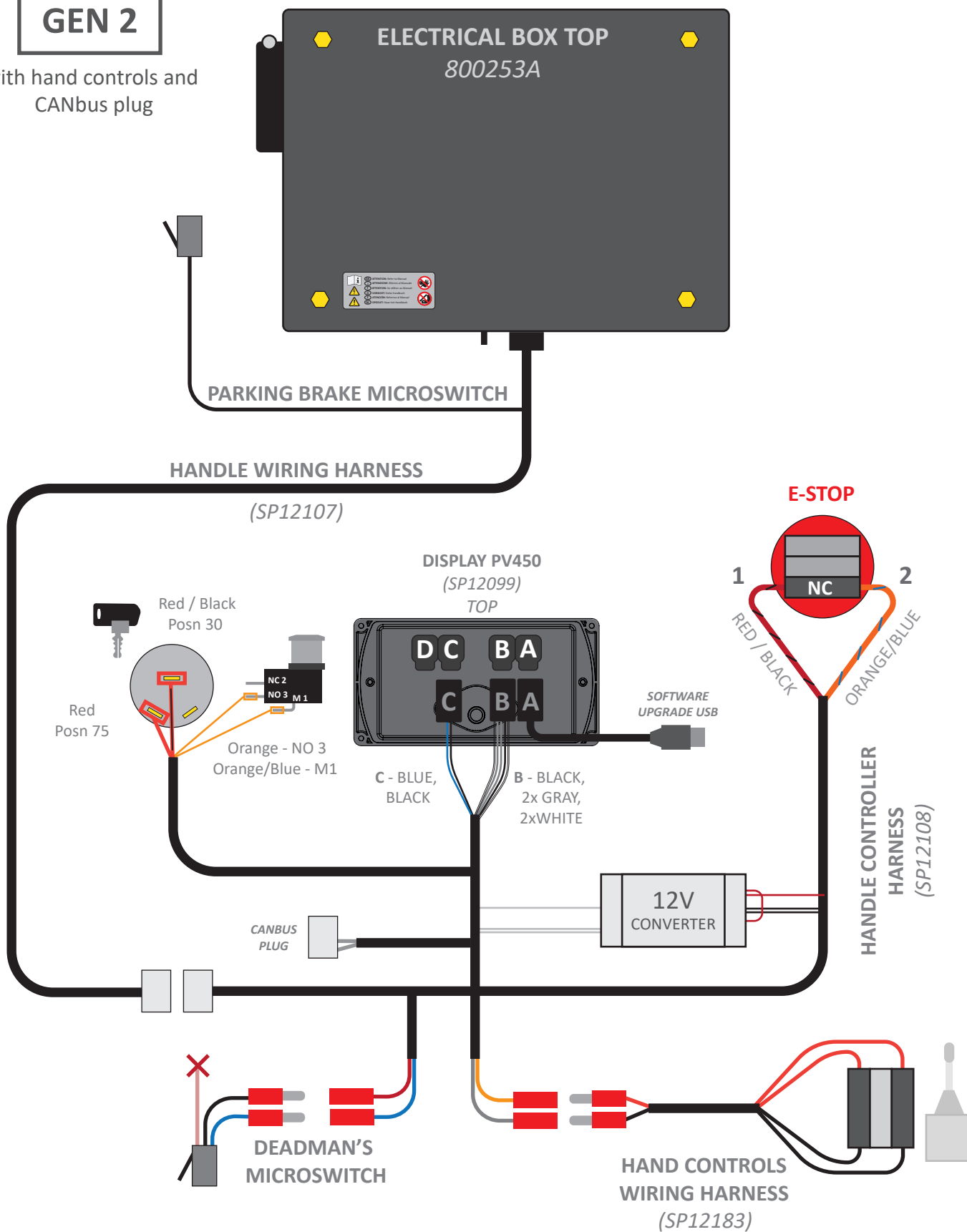


GEN 1

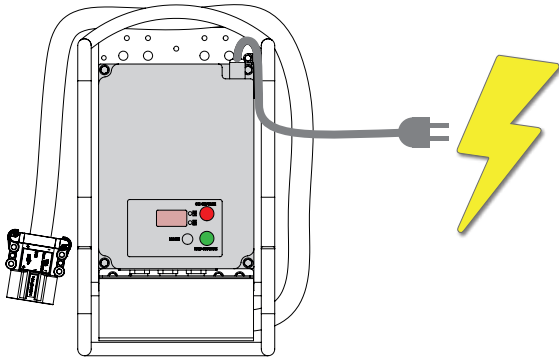


GEN 2

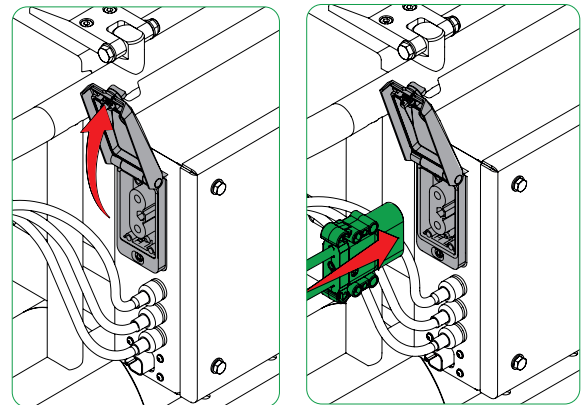
with hand controls and
CANbus plug



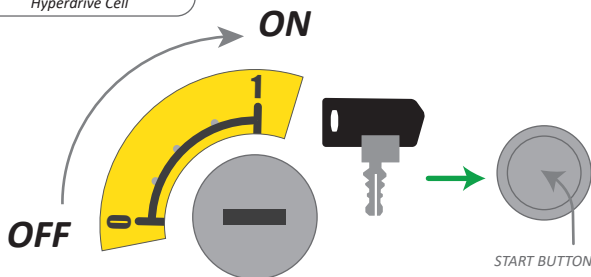
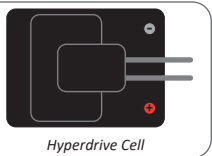
Follow charging instruction shown below -



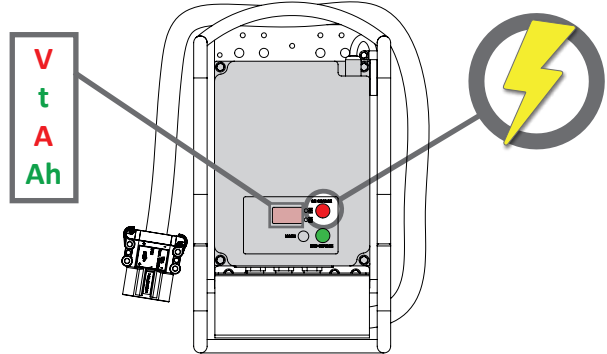
PLUG CHARGER (D153) INTO WALL/POWER SUPPLY. MAKE SURE DISPLAY/LIGHTS ARE ILLUMINATED TO BE SURE POWER IS LIVE TO CHARGER



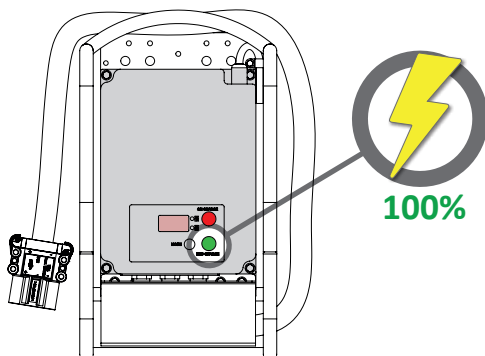
OPEN CHARGING COVER ON ELECTRICAL BOX AND CONNECT CHARGER INTO MOWER



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

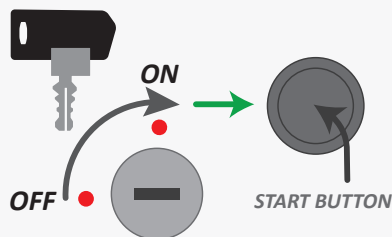


SOLID GREEN LIGHT WHEN FULLY CHARGED. CHARGER CAN BE REMOVED AND COVER CLOSED

(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?



Menu



Operations



Clip / RPM



Increase



Edit display name



Decrease



Edit notes



Save changes

How do I edit the default Forward & Turning speed?



Menu



Operations



Turning Speeds



Turning



Forward



Increase



Decrease



Save changes

How do I backlap my cylinder?



Menu



Maintenance



Monthly



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



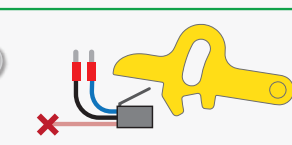
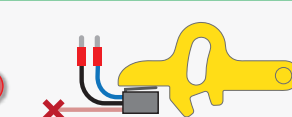
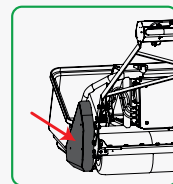
Password protecting your mower will stop unauthorised modification of values and setting while still allowing an operator to use the machines.

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.

13. CUT HEIGHT ADJUSTMENT

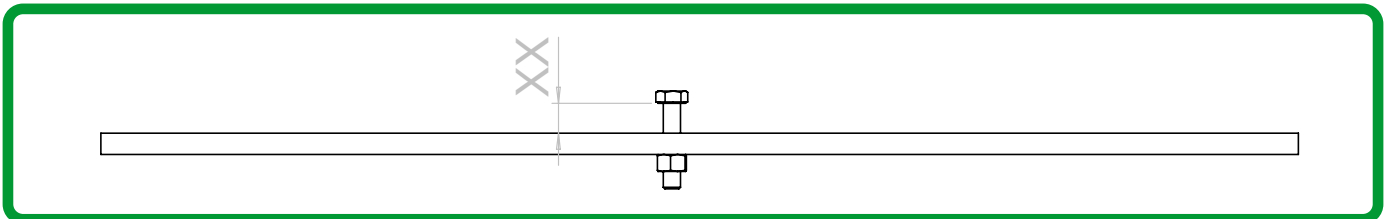
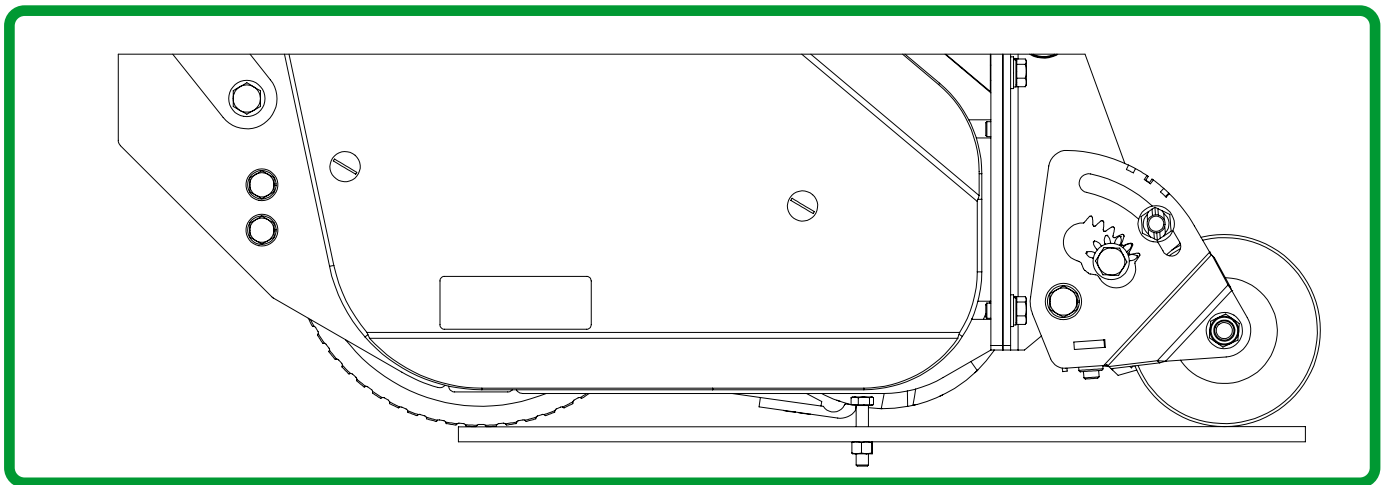
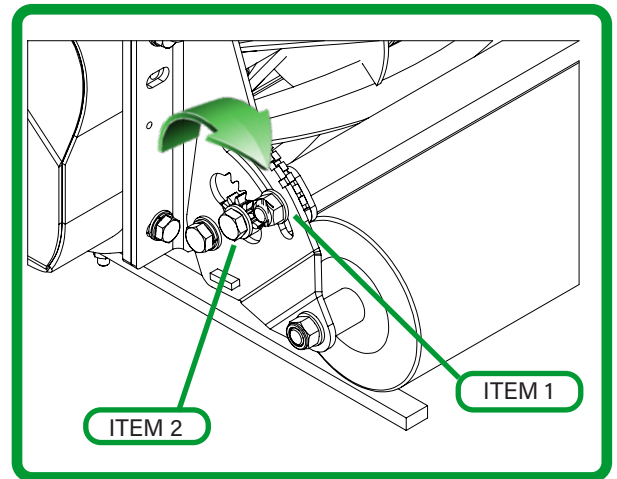
SETTING FOR HEIGHT OF CUT

Always turn the machine off 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 (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*



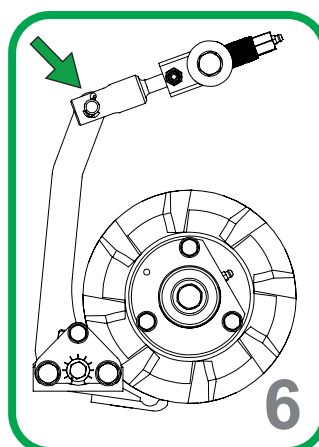
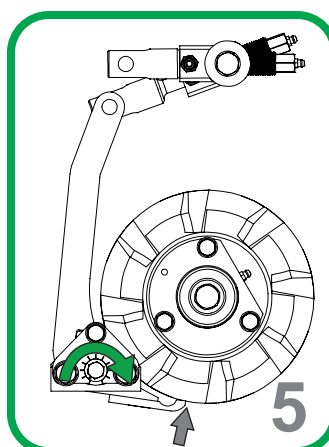
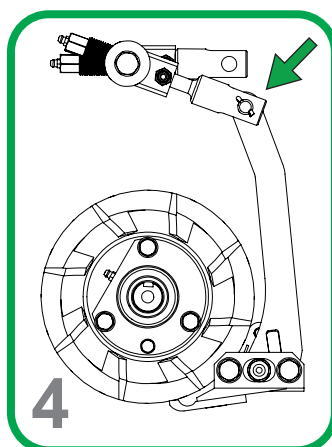
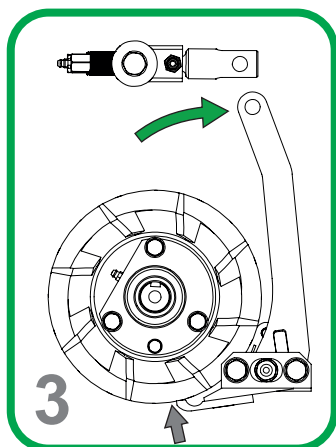
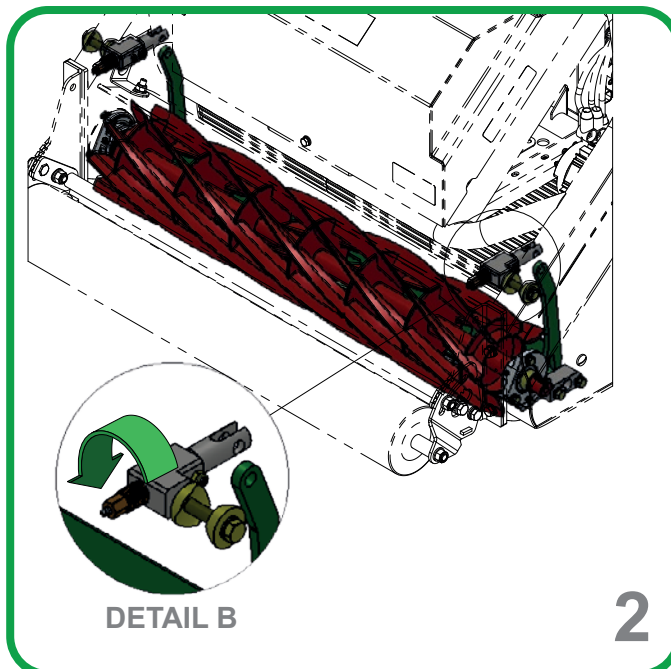
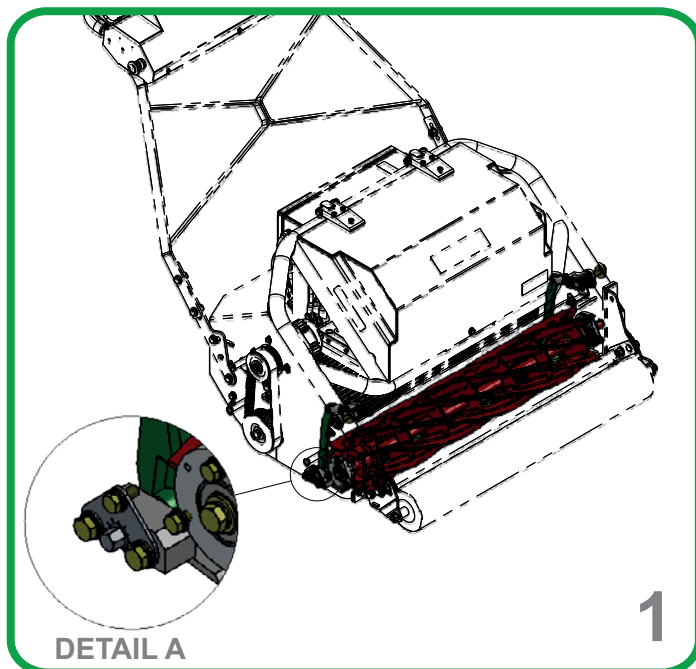
To check the height of cut and that the machine is level, the setting bar can be used (228090). Place the bar between the front and rear rollers, resting the underside of the bolt head on the lip of the shear blade.

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.

14. SHEAR BLADE CARRIER ADJUSTMENT



1: Remove side cover from left hand side of machine, as facing the machine from the front.

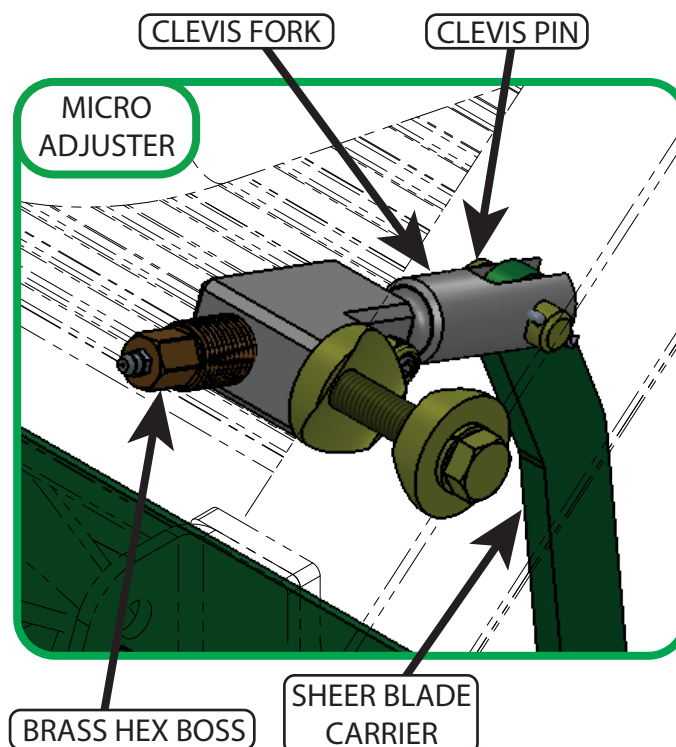
2: Wind brass hex bosses back as far as possible in both micro adjusters, anti-clockwise using a 15mm spanner.

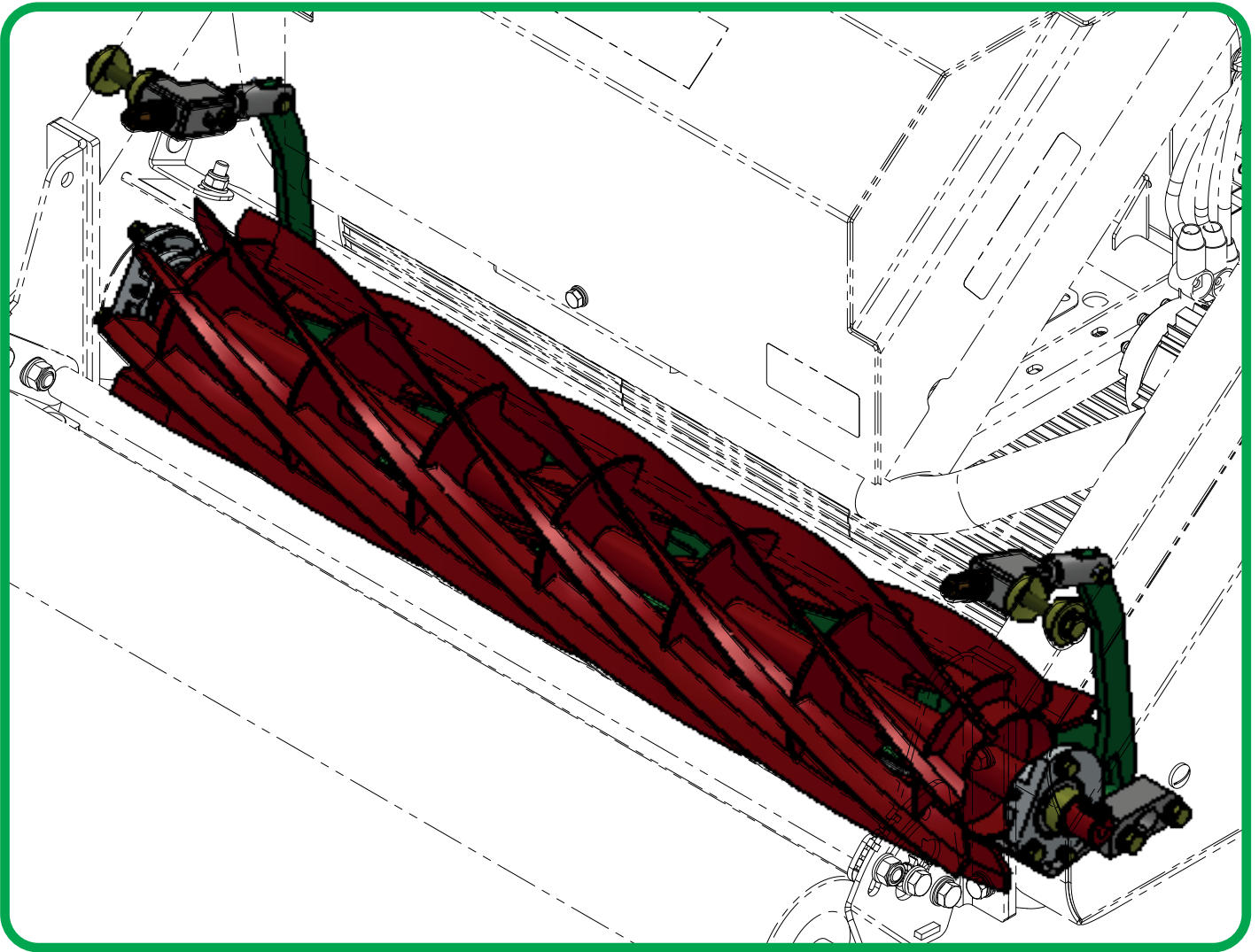
3: Push right hand pivot arm of shear blade carrier back, so that the shear blade touches the cylinder.

4: Wind clevis fork out until it can be fitted to the shear blade carrier, and then fit the clevis pin and secure with the split pin. Do not wind brass hex boss.

5: Turn Cam Bolt on the left of the machine (Detail A) so that the shear blade touches the cylinder.

6: Wind clevis fork out until it can be fitted to the shear blade carrier, and then fit the clevis pin and secure with the split pin. Do not wind brass hex boss.





Shear Blade position is adjusted using Micro Adjuster System. To adjust:

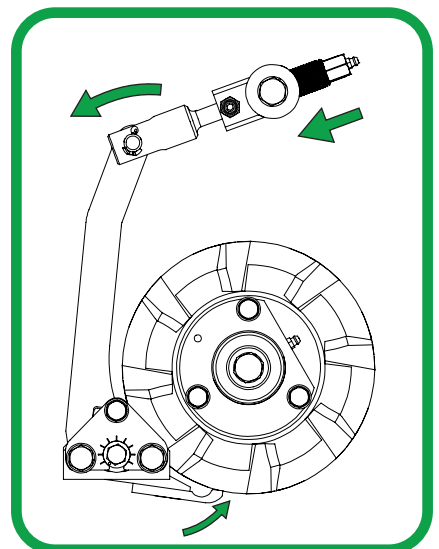
1: Rotate Brass Hex Bolt using a 15mm Spanner. Clockwise moves the sheer blade closer.

- Each click of the adjuster moves the sheer blade 0.003mm (3microns).
- 30 clicks (One full revolution) will move the sheer blade 0.09mm.
- 9 clicks will move the sheer blade 1 thousandth of an inch.

2: Check the setting using thin paper along the length of the cylinder.

3: Adjust until it cuts along the whole length.

4: Do not set the cylinder hard to the bottom blade. This will cause excessive wear of both components and increase fuel consumption.



ROLLER TIMING BELT

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

CUTTING TIMING 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 HARNESSES

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.



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



48V

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

BLADES



Worn or damaged blades can be dangerous resulting in serious injury or death of the operator or bystanders. Replace worn or damaged blades.

Blades must be inspected weekly for wear or damage. This can be observed as impact (dents), material cracking and excessive thinning.



Note: Using non-genuine parts could result in non-compliance with safety standards and may invalidate your warranty.

For details of blades and Torque settings Ref. Section P2 of this manual.

LUBRICATION

Rear Roller - Every 6 months

The rear roller is split into 3-sections incorporating a differential gear system running in an oil bath.

Change oil every 6-months.

Oil Type:-EP90 GEAR OIL Oil Qty:- 568ML

Grease points located:

Cylinder bearing housings

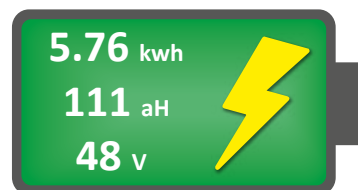
Sheer Blade Micro Adjusters

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.



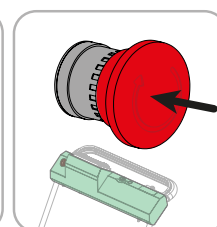
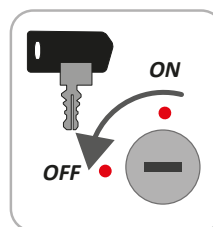
KEY INFORMATION – Lithium battery packs will self-discharge over extended periods of time without maintenance. Once lithium-ion cells discharge below a certain voltage they become unusable and must not be discharged further (*Deep Discharge state*). Regular monitoring and maintenance is essential for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



Recommendations to ensure maximum battery life:

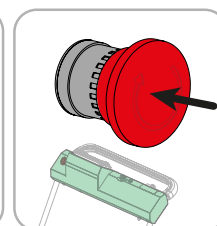
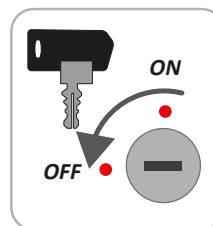
Leaving your mower for a few days

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



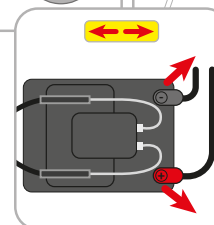
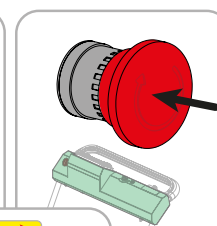
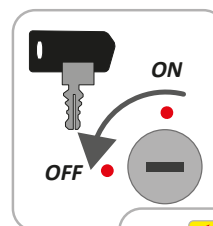
Leaving your mower stored for any extended period of time (>30 days)

- 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

17. 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.



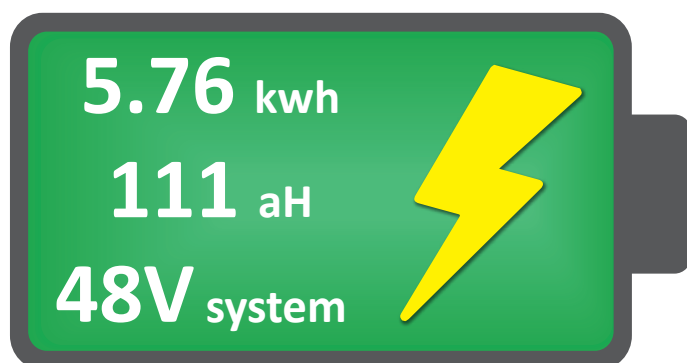
To avoid explosions or fire which can result in serious injury:

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

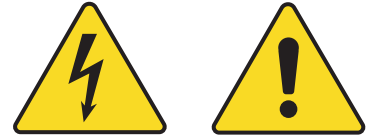
EMC	Designed to meet: EN61000-6-2:2005 and EN61000-6-3:2007 + A1:2011
TRANSPORT	UN38.3 rev6 including impact and vibration testing
OTHER	RoHS directive and WEEE directive



RoHS

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

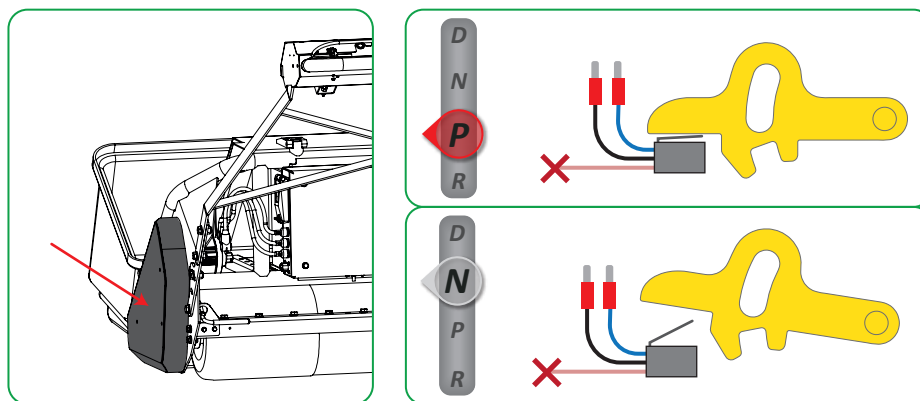
My screen powers on briefly then switches off

'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

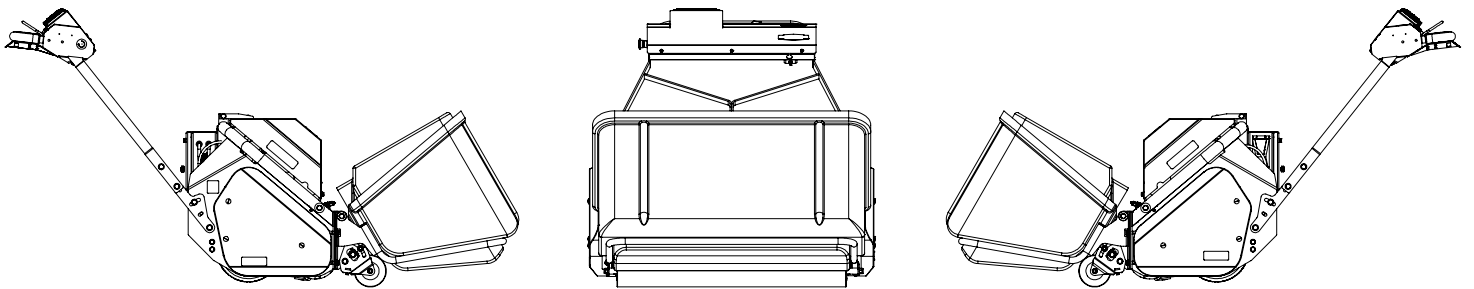
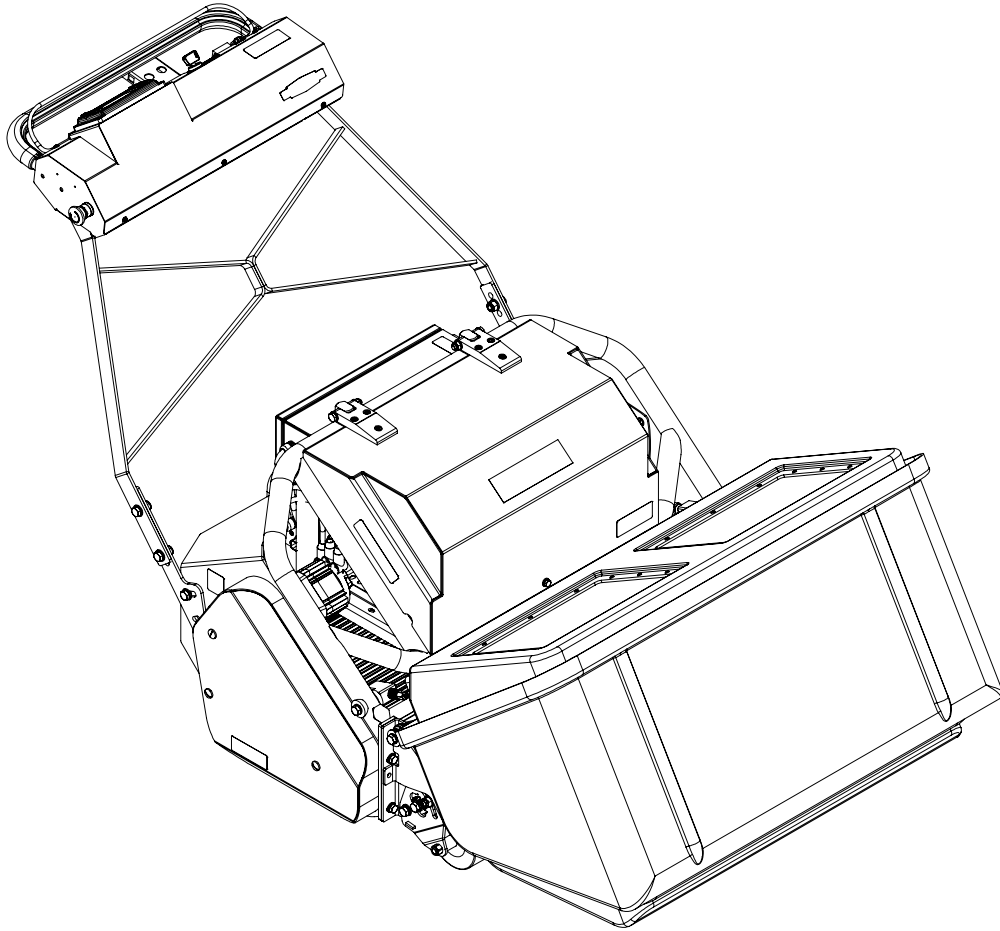
My mower battery won't show charge (always showing empty)

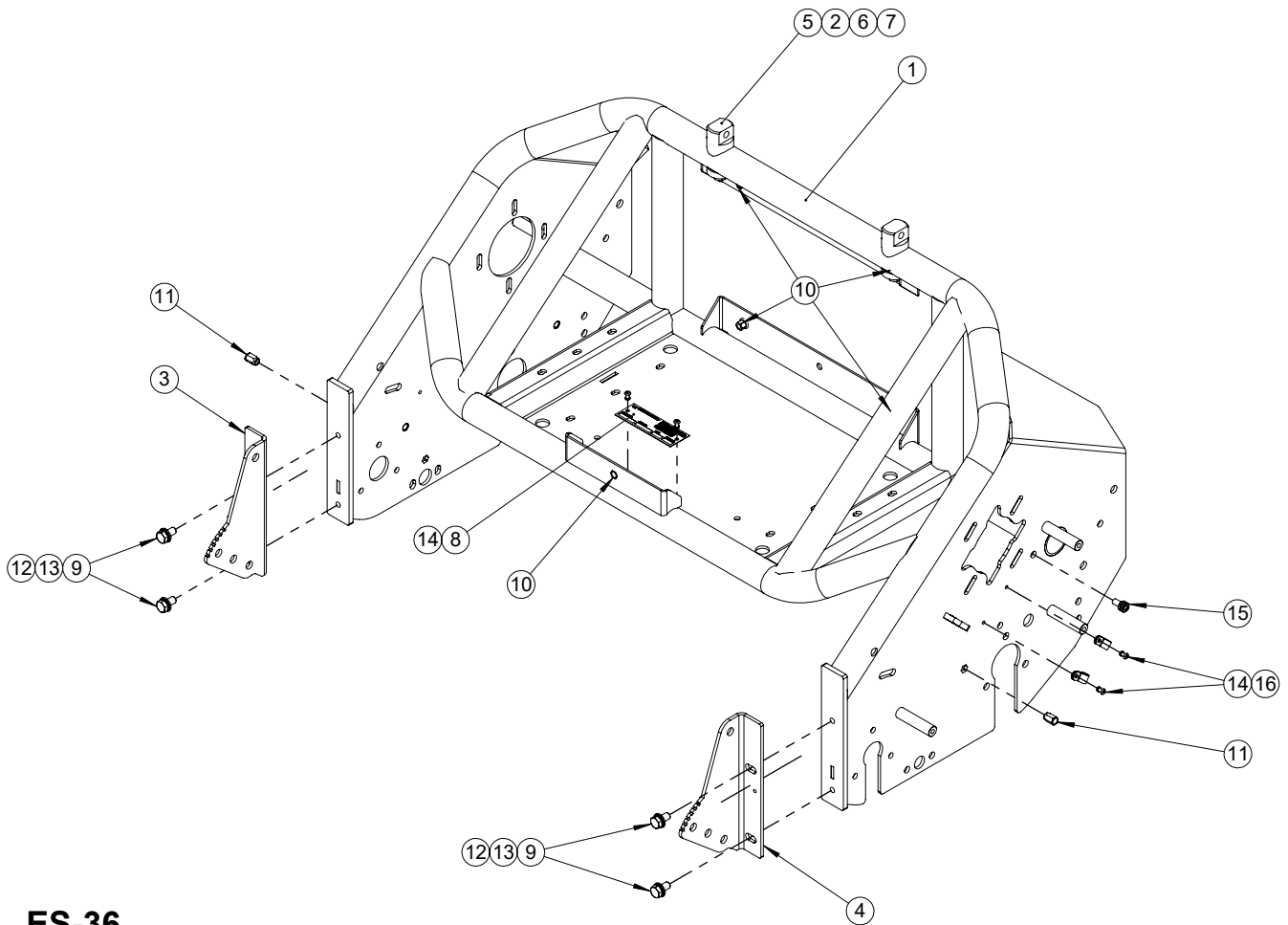
- Check Battery Management System (BMS) cable is connected correctly
- Unplug the (BMS) cable from the battery and check the condition of the internal pins. Bent internal pins in the cable mean a replacement cable will be required

'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.



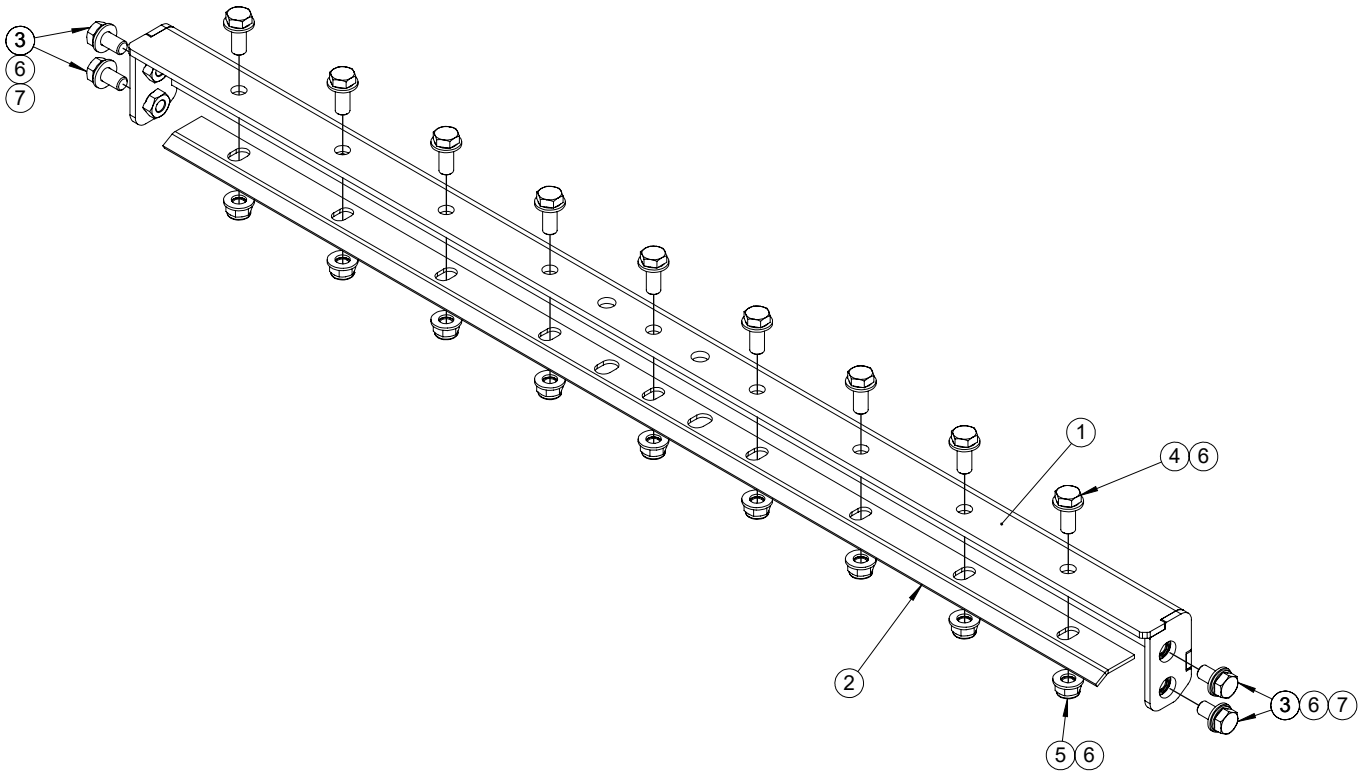
**ES-36**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	380020_REV1	CHASSIS 36" PREM ELECTRIC W.A.	1
2	380073_REV0	SADDLE WASHER	2
3	380080_REV0	ROLLER MOUNT R.H. PREM	1
4	380081_REV0	ROLLER MOUNT L.H. PREM	1
5	380156_REV0	HINGE PIVOT PREM	2
6	E1-1065_REV0	WASHER M12 SPRING LOCK	2
7	E1-1161_REV0	HEX SET SCREW M12 X 60	2
8	J20297_REV2	SERIAL NO PLATE (DENNIS)	1
9	SP01034_REV0	HEX SET SCREW M10 X 20	4
10	SP02044_REV0	RIVNUT HEX M8 (0.5-3.0) [NO HEAD]	5
11	SP02045_REV0	RIVNUT HEX M8 (4.0-6.0) [NO HEAD]	2
12	SP03011_REV0	WASHER M10 FORM A	4
13	SP03034_REV0	WASHER M10 SPRING LOCK	4
14	SP05018_REV0	RIVET 4.8 X 18	4
15	SP12092_REV0	GROMMET EXTENDED 6MM	1
16	SP14019_REV0	P CLIP 10MM NYLON	2

ES-30

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	380320_REV0	CHASSIS 30" PREM ELECTRIC W.A.	1

8 LOCATED ON SIDE OF CHASSIS

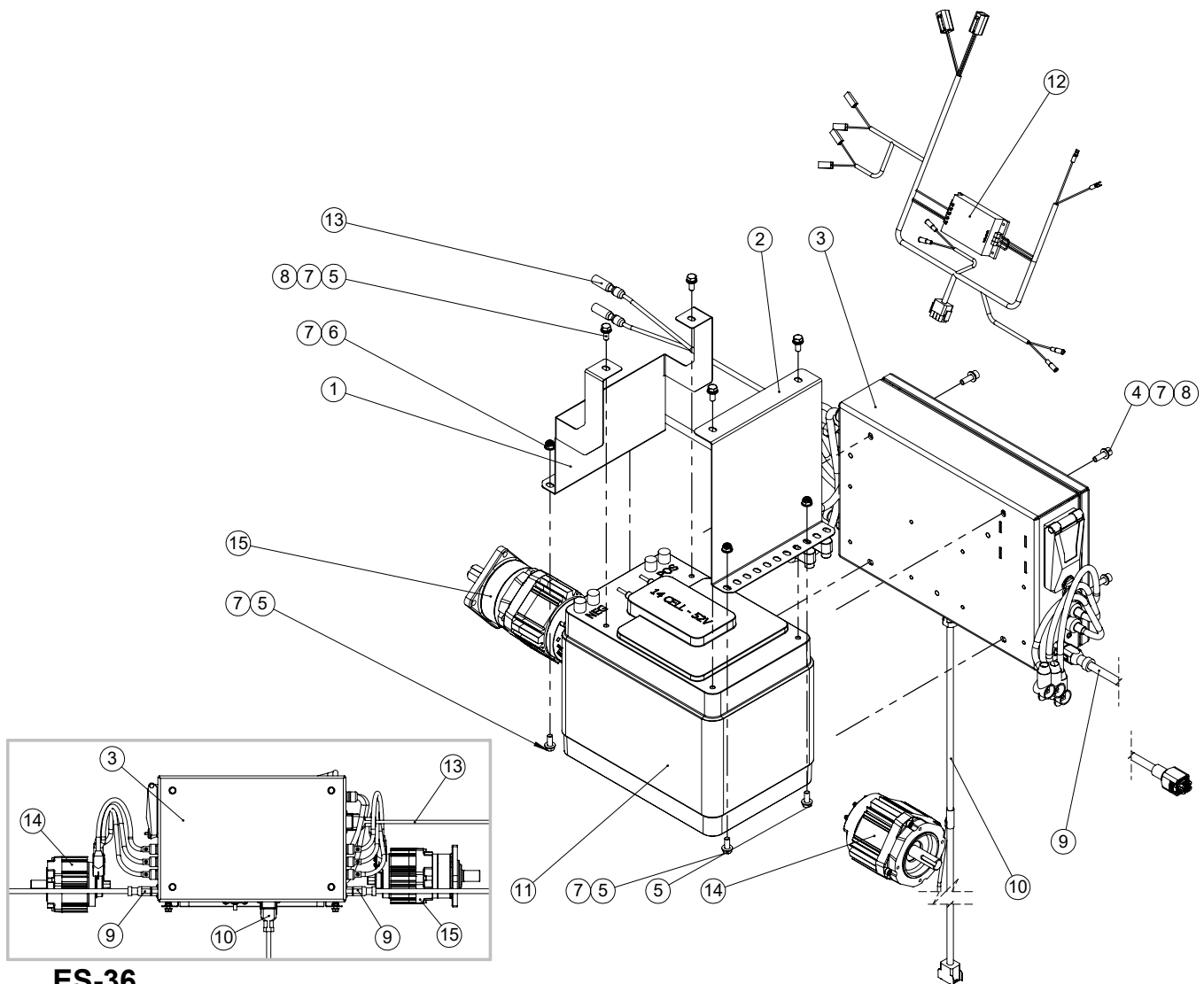


ES-36

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	380095_REV1	SCRAPER BAR ES36 W.A.	1
2	380097_REV0	SCRAPER	1
3	SP01034_REV0	HEX SET SCREW M10 X 20	4
4	SP01035_REV0	HEX SET SCREW M10 X 25	9
5	SP02008_REV0	NUT M10 NYLOC (T)	9
6	SP03011_REV0	WASHER M10 FORM A	22
7	SP03034_REV0	WASHER M10 SPRING LOCK	4

ES-30

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	380395_REV0	SCRAPER BAR ES30 W.A.	1
2	380397_REV0	SCRAPER (30")	1
4	SP01035_REV0	HEX SET SCREW M10 X 25	7
5	SP02008_REV0	NUT M10 NYLOC (T)	7
6	SP03011_REV0	WASHER M10 FORM A	18

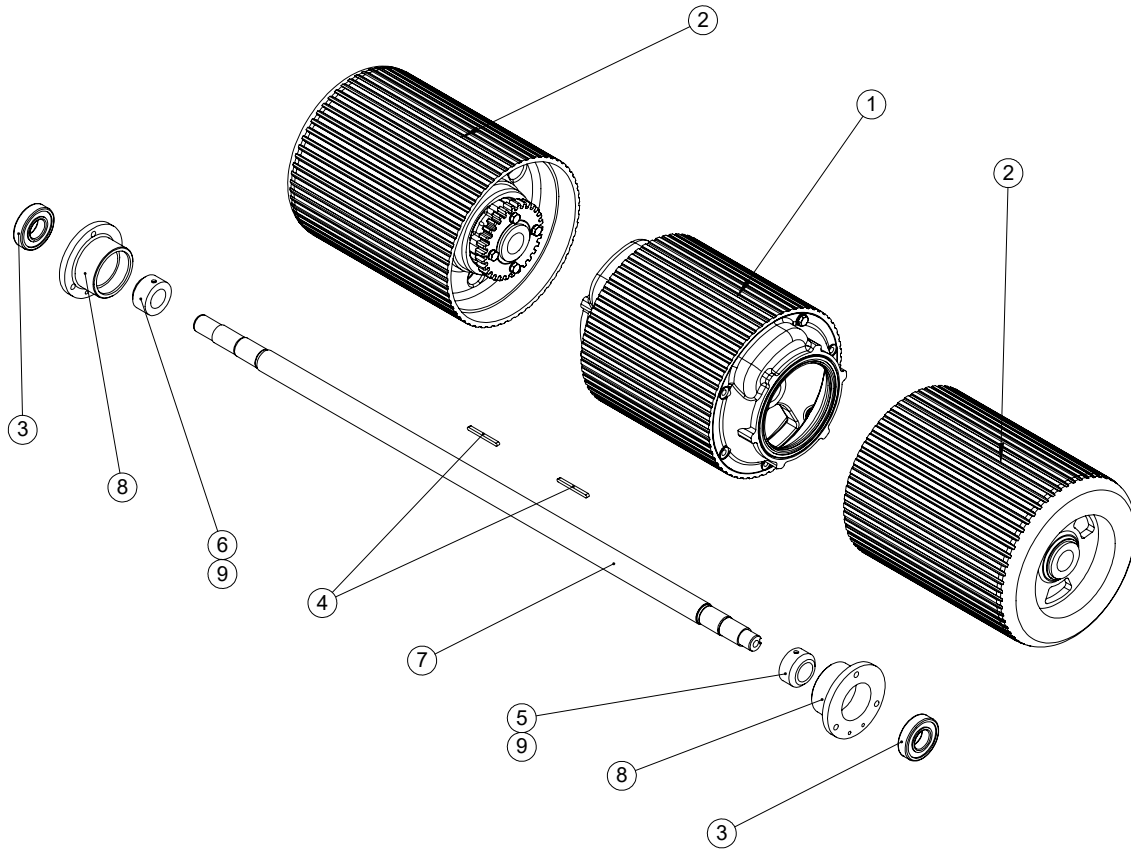


ES-36

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	380043_REV0	BATTERY BRACE R.H.	1
2	380044_REV0	BATTERY BRACE L.H.	1
3	800253_REV5	ES-34 CONFIGURATION	1
4	F20384_REV1	CAP HEAD M8 X 25	4
5	SP01009_REV0	HEX SET SCREW M8 X 20	8
6	SP02006_REV0	NUT M8 NYLOC (T)	4
7	SP03008_REV0	WASHER M8 FORM A	16
8	SP03029_REV0	WASHER M8 SPRING LOCK	8
9	SP12106_REV0	MOTOR WIRING HARNESS (F42066)	2
10	SP12107_REV2	HANDLE WIRING HARNESS - HYP (F42214)	1
11	SP12126_REV0	HYPERDRIVE CELL - HYP-00-2890	1
12	SP12127_REV2	HYP HANDLE CONTROLLER HARNESS (F42216)	1
13	SP12128_REV0	HYP BMS CONTROLLER HARNESS (F42213)	1
14	SP15104_REV0	ASM106 48V MOTOR	1
15	SP15105_REV0	106 MOTOR AND GEARBOX	1

ES-30 - Battery rotated through 90°

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1 & 2	380344_REV0	BATTERY BRACE	2

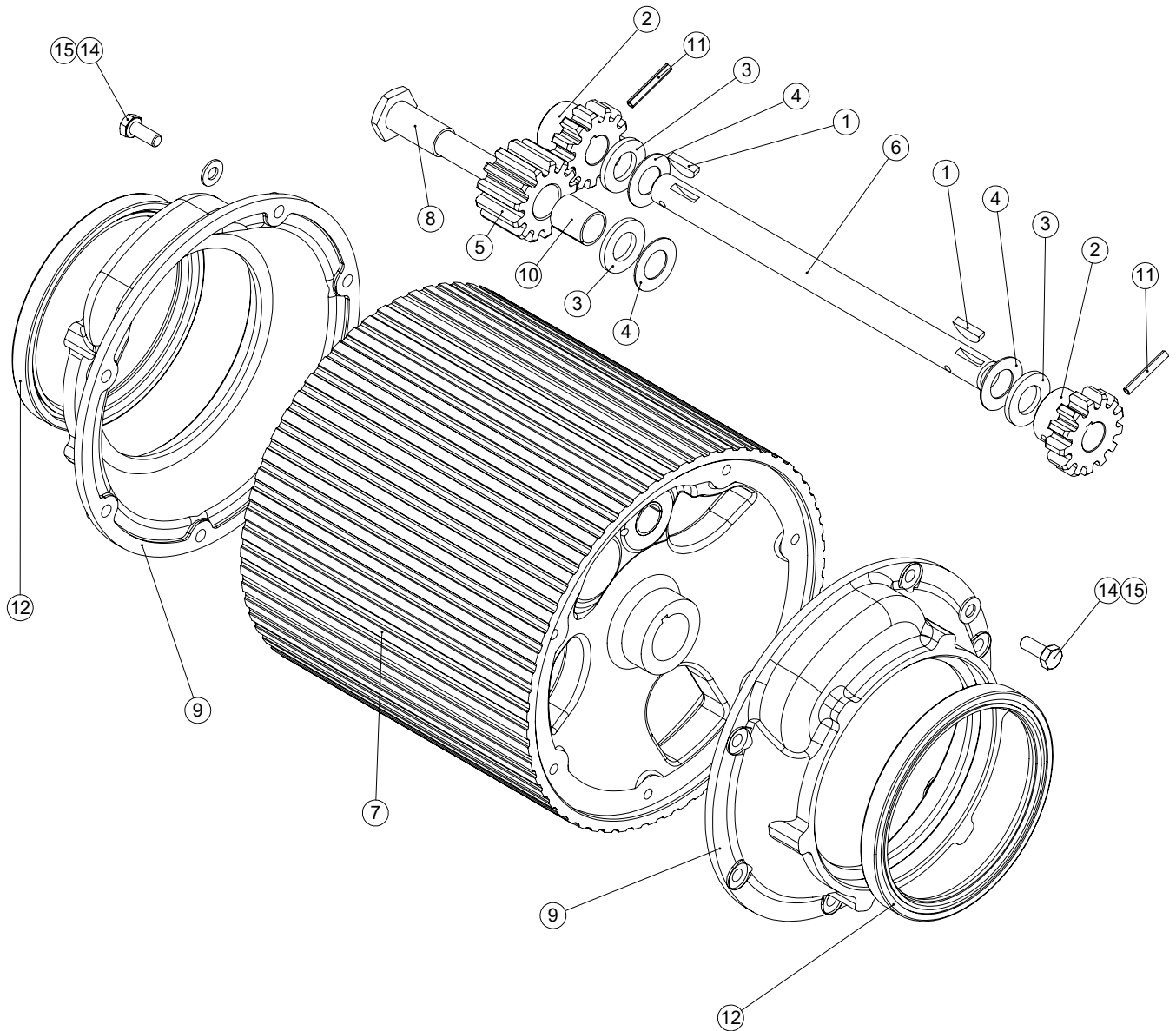
**ES-36**

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	800100_REV1	PREM CENTRE ROLLER ASSY	1
2	800156_REV1	PREM 36" REAR ROLLER OUTER	2
3	065824_REV0	BEARING RLS9-2RS	2
4	089575_REV0	KEY 3/16" X 3/16" X 2 1/4" RD END	2
5	185660_REV1	LOCKING COLLAR (SMALL)	1
6	185662_REV1	LOCKING COLLAR	1
7	380035_REV0	36" ROLLER SHAFT ELECTRIC	1
8	380036_REV1	BRG HOUSING REAR ROLLER	2
9	J20467_REV0	GRUB SCREW M8 X 8	2

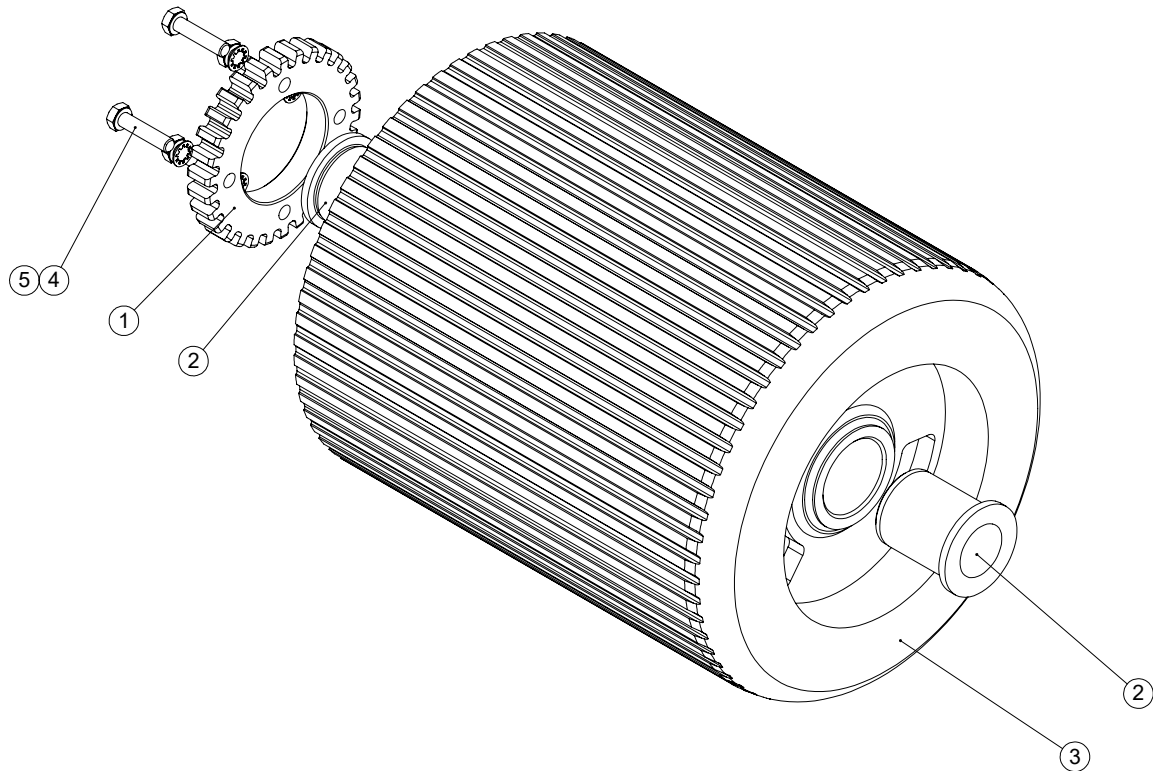
ES-30

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
2	800731_REVA	PREM 30" REAR ROLLER OUTER	2
7	380335_REV0	30" ROLLER SHAFT ELECTRIC	1

24. REAR ROLLER - INNER



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	016386_REV0	KEY WOODRUFF 3/16" X 7/8"	2
2	052602_REV1	GEAR DIFFERENTIAL PINION	2
3	158356_REV1	THRUST WASHER SOFT	3
4	158357_REV1	WASHER THRUST HARD	3
5	158372_REV1	GEAR DIFF DOUBLE PINION	1
6	158373_REV1	SHAFT DIFFERENTIAL PINION	1
7	185664_REV1	PREMIER CENTRE ROLLER	1
8	185665_REV1	PIVOT DIFFERENTIAL PINION	1
9	185666_REV1	OIL SEAL HOUSING	2
10	601620_REV1	BUSH 12DU16	1
11	603174_REV1	PIN SPIROL M5 X 35	2
12	604249_REV1	SEAL REAR ROLLER (PREM)	2
13	604730_REV1	NUT 5/8" UNF PHIL	1
14	SP01009_REV0	HEX SET SCREW M8 X 20	2
15	SP03008_REV0	WASHER M8 FORM A	2

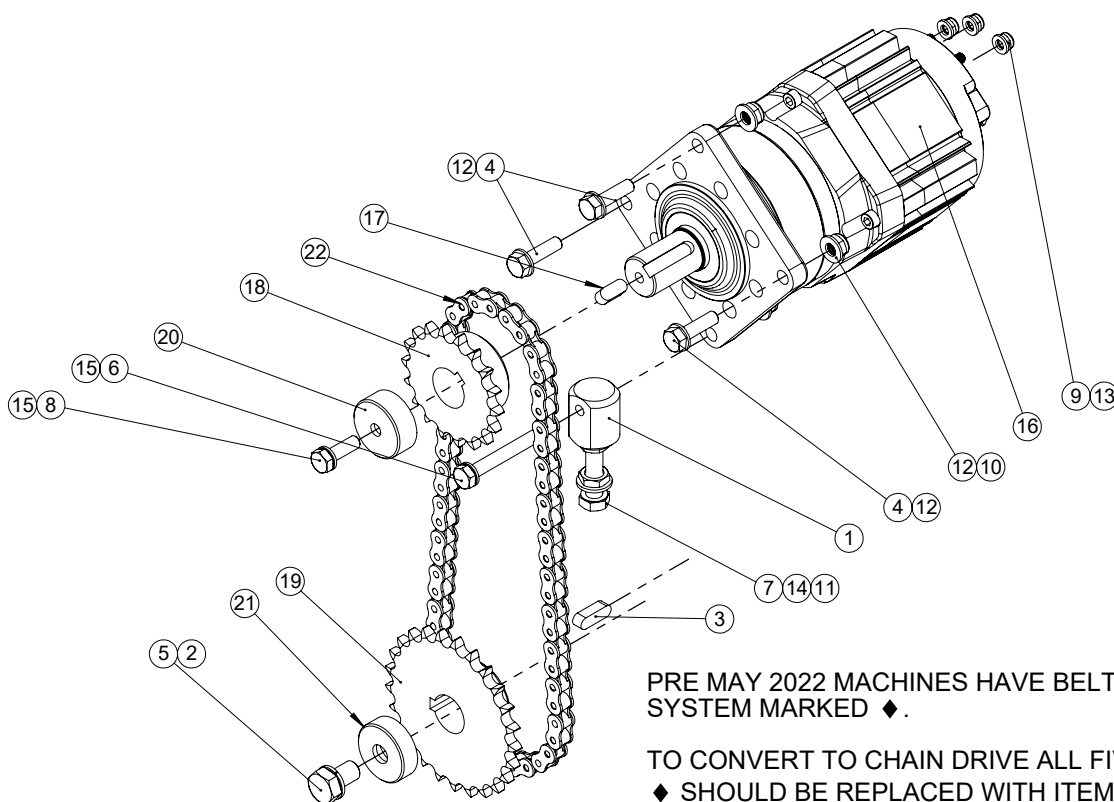


ES-36

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	052601_REV1	GEAR DIFFERENTIAL WHEEL	1
2	158374_REV2	REAR ROLLER BUSH	2
3	171661_REV1	OUTER ROLLER (PREM)	1
4	SP01036_REV0	HEX SET SCREW M8 X 35	4
5	SP03004_REV0	WASHER M8 TOOTHED	4

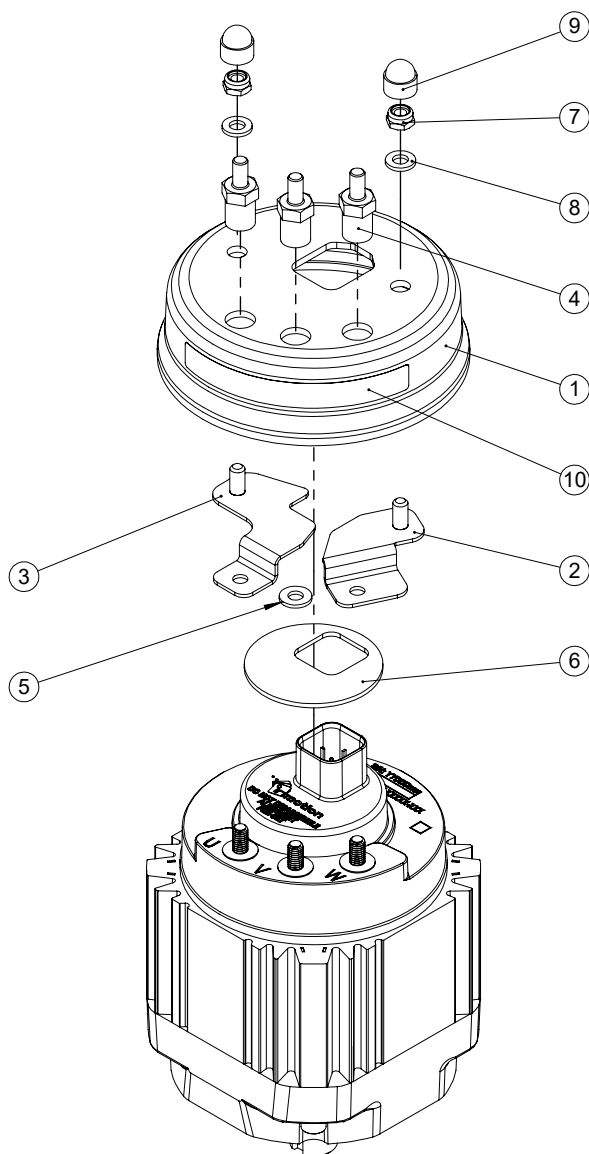
ES-30

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
3	380400_REVA	OUTER ROLLER 30" MACHINED	1



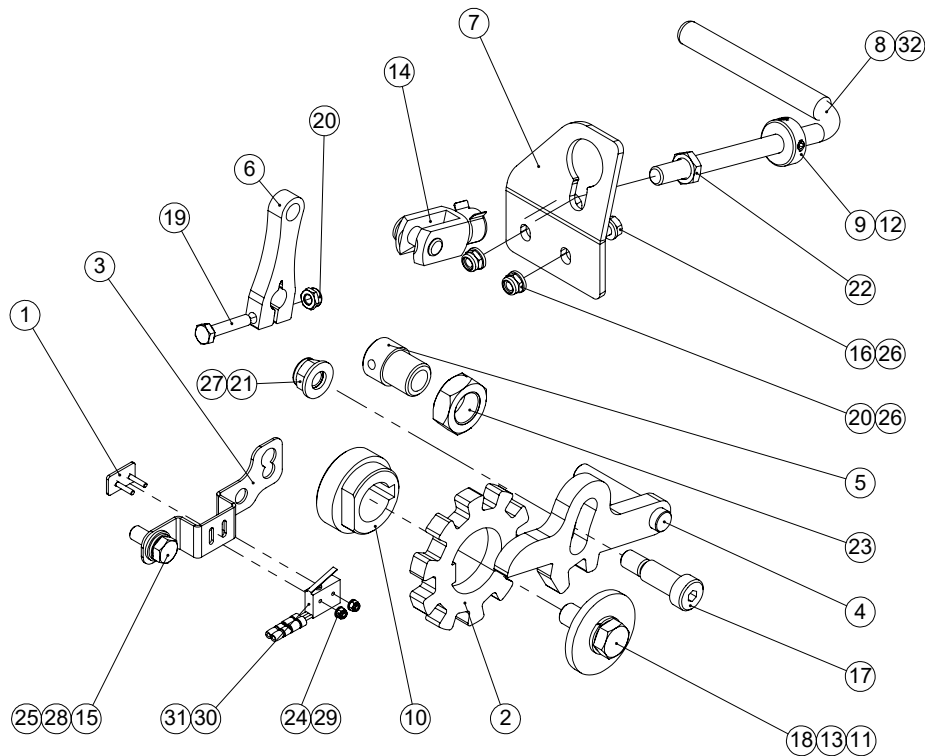
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	370096_REV0	TENSIONER BLOCK	1
2	E1-1065_REV0	WASHER M12 SPRING LOCK	1
3	F20684_REV0	KEY PARALLEL 8 X 7 X 25	1
4	SP01005_REV0	HEX SET SCREW M8 X 30	3
5	SP01021_REV0	HEX SET SCREW M12 X 20	1
6	SP01023_REV0	HEX SET SCREW M8 X 60	1
7	SP01031_REV0	HEX SET SCREW M10 X 50	1
8	SP01045_REV0	HEX SET SCREW M8 X 25	1
9	SP02004_REV0	NUT M6 NYLOC	3
10	SP02006_REV0	NUT M8 NYLOC (T)	4
11	SP02013_REV0	NUT M10 LOCK (THIN)	2
12	SP03008_REV0	WASHER M8 FORM A	7
13	SP03010_REV0	WASHER M6 FORM A	3
14	SP03011_REV0	WASHER M10 FORM A	1
15	SP03029_REV0	WASHER M8 SPRING LOCK	2
16	SP15105_REV0	106 MOTOR AND GEARBOX	1
17	SP10001_REV2	KEY 8 X 7 X 20 RD END	1
18	SP11128_REV0	SPROCKET 08B-18T (1/2") MACHINED	1 ●
19	SP11130_REV0	SPROCKET 08B-25T (1/2") MACHINED	1 ●
20	380195_REV0	UPPER PULLEY RETAINER	1 ●
21	380196_REV0	LOWER PULLEY RETAINER	1 ●
22	SP11148_REV0	CHAIN 08B (1/2" PITCH)	1 ●

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
18	SP11115_REV0	32-8M-30 6F MACHINED 26DIA	1 ♦
19	SP11117_REV0	44-8M-30 6F MACHINED DIA 25	1 ♦
20	340037_REV0	PULLEY RETAINER	1 ♦
21	SP03040_REV0	WASHER M12 REPAIR	1 ♦
22	SP11118_REV0	BELT OMEGA HP 760-8M-30	1 ♦

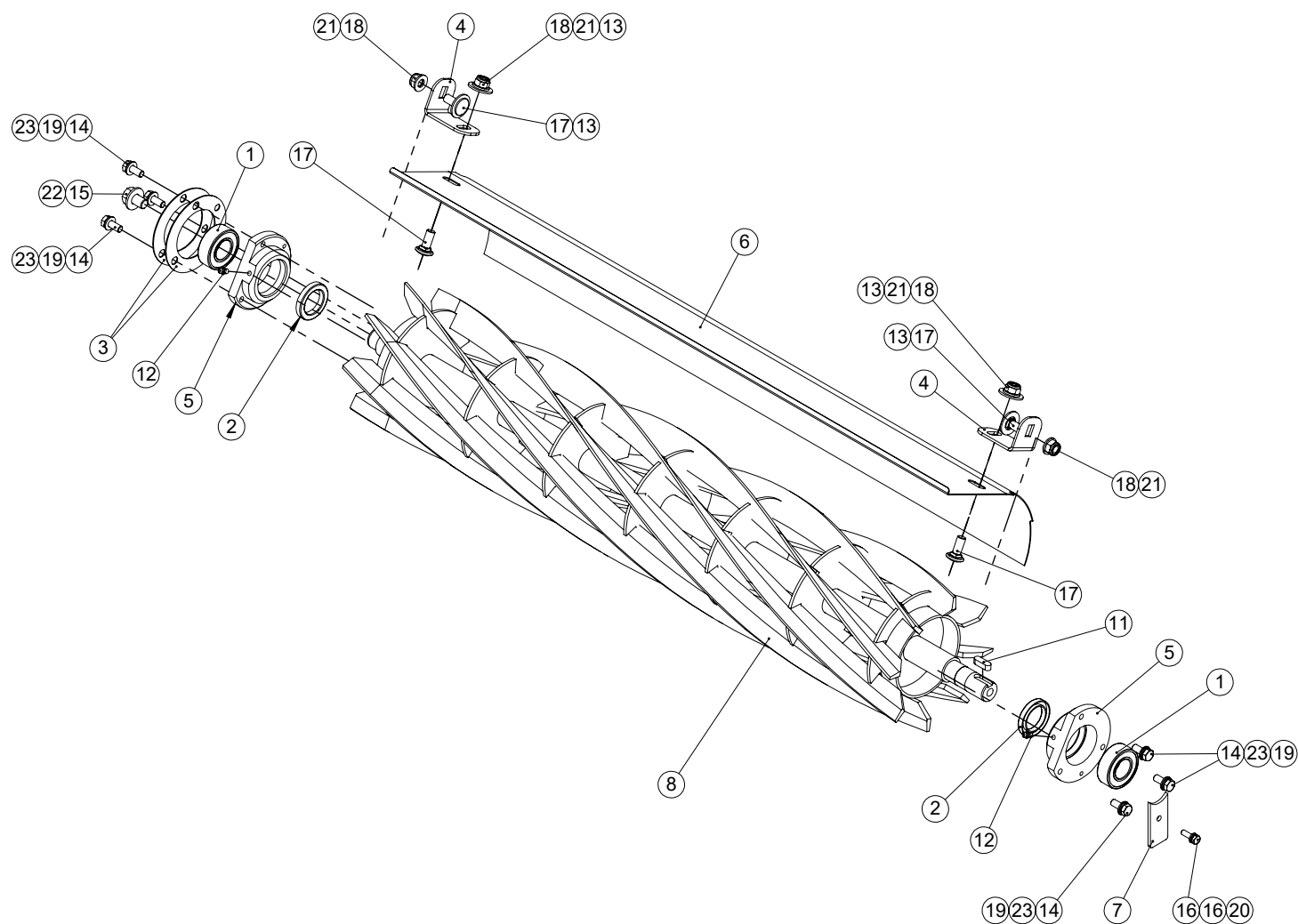


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	370400_REV0	ASM MOTOR BACK SHELL	1
2	370401_REV0	ASM MOTOR CLIP - A	1
3	370402_REV0	ASM MOTOR CLIP - B	1
4	370407_REV0	MOTOR STUD	3
5	370408_REV0	MOTOR STUD SPACER	1
6	370409_REV0	MOTOR COMPRESSION PAD	1
7	SP02004_REV0	NUT M6 NYLOC	2
8	SP03010_REV0	WASHER M6 FORM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

28. 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	SP01142_REV0	HEX SET SCREW M6 X 30	1
20	SP02004_REV0	NUT M6 NYLOC	3
21	SP02008_REV0	NUT M10 NYLOC (T)	1
22	SP02013_REV0	NUT M10 LOCK (THIN)	1
23	SP02034_REV0	NUT 3/4" UNF STD	1
24	SP02059_REV0	NUT M2.5 NYLOC (P)	2
25	SP03008_REV0	WASHER M8 FORM A	1
26	SP03010_REV0	WASHER M6 FORM A	4
27	SP03011_REV0	WASHER M10 FORM A	1
28	SP03029_REV0	WASHER M8 SPRING LOCK	1
29	SP03039_REV0	WASHER M2.5 FORM A	2
30	SP12007_REV0	MICRO SWITCH DC1C-C3LB	1
31	SP12014_REV0	ELECTRICAL CONNECTOR MALE BULLET (RED)	2
32	SP14050_REV0	HANDLE GRIP (S&R - DG187) RED	1

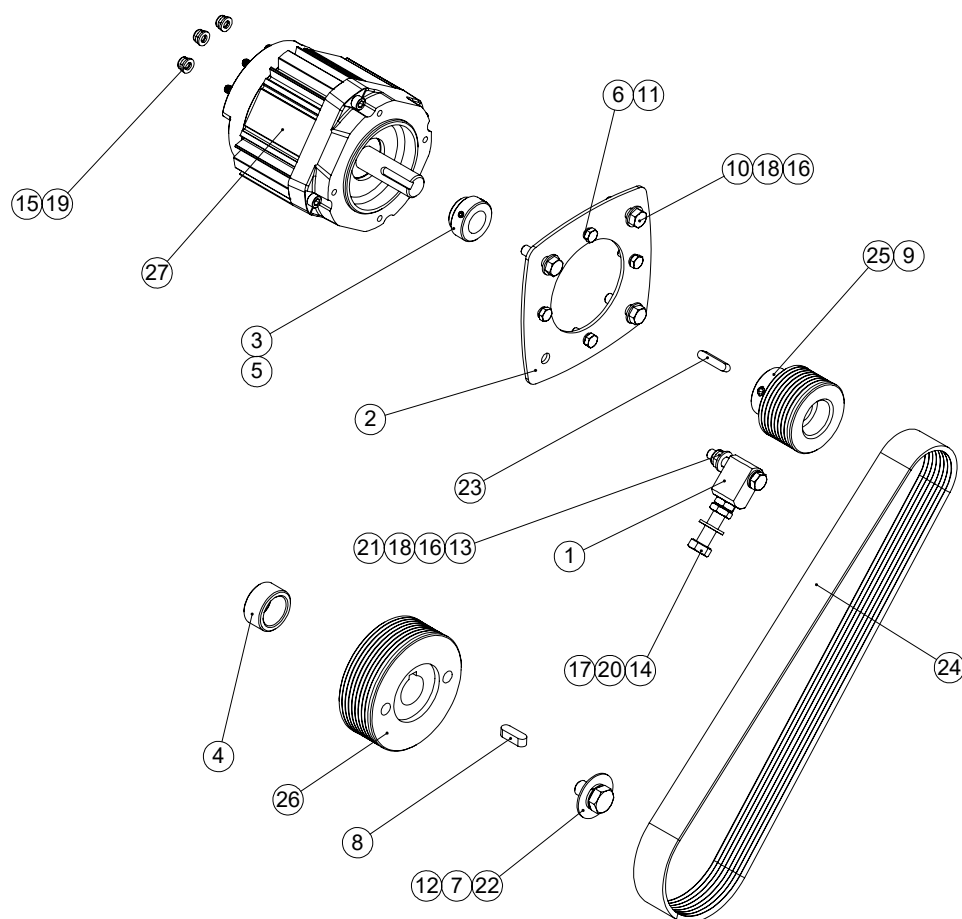


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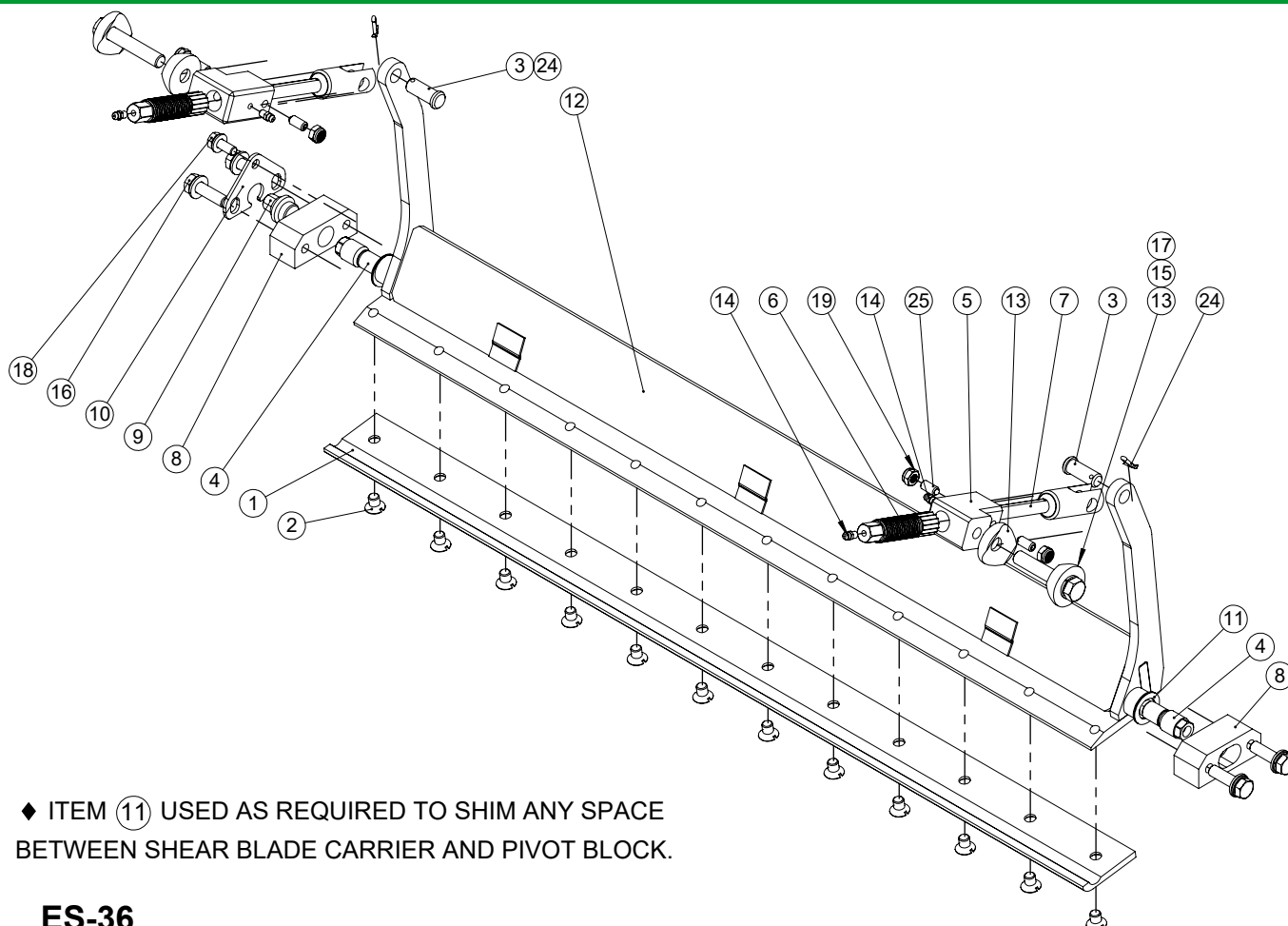
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	228029_REV1	BEARING 2205 2RS	2
2	229701_REV1	OIL SEAL 32 X 47 X 7	2
3	340032_REV0	BEARING SPACER	2
4	340051_REV0	DEFLECTOR BRACKET	2
5	340104_REV0	BEARING HOUSING CYLINDER	2
6	380050_REV0	36" DEFLECTOR (178)	1
7	380057_REV1	CHASSIS INFILL	1
8	380100_REV0	CYLINDER 8 BLADE 36"	1
9	E1-1061_REV0	WASHER M6 SPRING	1
10	E1-1065_REV0	WASHER M12 SPRING LOCK	1
11	F20684_REV0	KEY PARALLEL 8 X 7 X 25	1
12	J20064_REV0	GREASE NIPPLE 1/4" UNF	2
13	J209012_REV0	WASHER M16 FORM B	4
14	SP01009_REV0	HEX SET SCREW M8 X 20	6
15	SP01021_REV0	HEX SET SCREW M12 X 20	1
16	SP01028_REV0	HEX SET SCREW M6 X 20	1
17	SP01044_REV0	COACH BOLT M10 X 25	4
18	SP02008_REV0	NUT M10 NYLOC (T)	4
19	SP03008_REV0	WASHER M8 FORM A	6
20	SP03010_REV0	WASHER M6 FORM A	1
21	SP03011_REV0	WASHER M10 FORM A	4
22	SP03017_REV0	WASHER M12 FORM C	1
23	SP03029_REV0	WASHER M8 SPRING LOCK	6

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
6	380350_REV0	30" DEFLECTOR (178)	1
8	380300_REV0	CYLINDER 8 BLADE 30"	1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	370096_REV0	TENSIONER BLOCK	1
2	370135_REV0	MOTOR PLATE	1
3	370185_REV0	CYLINDER MOTOR SPACER	1
4	380105_REV0	PULLEY SPACER (CYL)	1
5	D8068_REV0	GRUB SCREW M6 X 6	2
6	E1-1061_REV0	WASHER M6 SPRING	4
7	E1-1065_REV0	WASHER M12 SPRING LOCK	1
8	F20684_REV0	KEY PARALLEL 8 X 7 X 25	1
9	J20467_REV0	GRUB SCREW M8 X 8	2
10	SP01005_REV0	HEX SET SCREW M8 X 30	3
11	SP01008_REV0	HEX SET SCREW M6 X 16	4
12	SP01021_REV0	HEX SET SCREW M12 X 20	1
13	SP01022_REV0	HEX SET SCREW M8 X 50	1
14	SP01031_REV0	HEX SET SCREW M10 X 50	1
15	SP02004_REV0	NUT M6 NYLOC	3
16	SP02006_REV0	NUT M8 NYLOC (T)	4
17	SP02013_REV0	NUT M10 LOCK (THIN)	2
18	SP03008_REV0	WASHER M8 FORM A	7
19	SP03010_REV0	WASHER M6 FORM A	3
20	SP03011_REV0	WASHER M10 FORM A	1
21	SP03029_REV0	WASHER M8 SPRING LOCK	1
22	SP03040_REV0	WASHER M12 REPAIR	1
23	SP10005_REV0	KEY 6 X 6 X 30 RD END	1
24	SP11086_REV0	BELT V-RIBBED 8 PK 940	1
25	SP11088_REV0	PULLEY DIA 60 PK 8 RIB	1
26	SP11119_REV0	CYLINDER DRIVE PULLEY	1
27	SP15104_REV0	ASM106 48V MOTOR	1



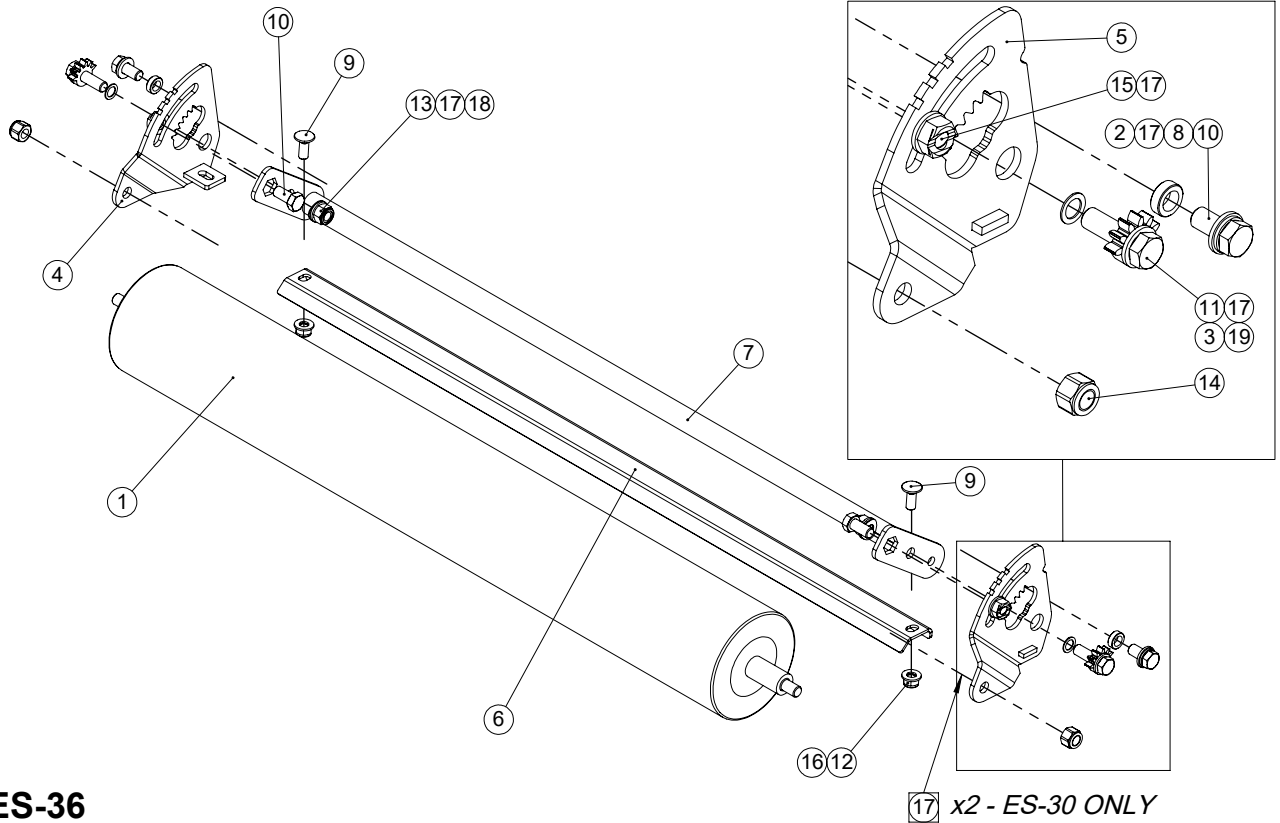
◆ ITEM (11) USED AS REQUIRED TO SHIM ANY SPACE BETWEEN SHEAR BLADE CARRIER AND PIVOT BLOCK.

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	086792_REV2	SHEAR BLADE 36" LIPPED	1
2	185378_REV1	SCREW 3/8" X 1/2" UNF	12
3	228022_REV4	CLEVIS PIN	2
4	230699_REV1	PIVOT BOLT	2
5	230725_REV0	ADJUSTER PIVOT	2
6	230726_REV0	ADJUSTER FEMALE	2
7	230727_REV0	ADJUSTER MALE	2
8	340075_REV1	PIVOT BLOCK	2
9	340076_REV1	PIVOT CAM	1
10	340077_REV0	RETAINING PLATE	1
11	340078_REV0	PIVOT SHIM	4
12	380060_REV0	36" SHEAR BLADE CARRIER	1
13	380073_REV0	SADDLE WASHER	4
14	D1947_REV1	GREASE NIPPLE M6	4
15	E1-1065_REV0	WASHER M12 SPRING LOCK	2
16	E1-1119_REV0	HEX SET SCREW M10 X 35	4
17	E1-1162_REV0	HEX BOLT M12 X 65	2
18	SP01009_REV0	HEX SET SCREW M8 X 20	1
19	SP02006_REV0	NUT M8 NYLOC (T)	4
20	SP03008_REV0	WASHER M8 FORM A	1
21	SP03011_REV0	WASHER M10 FORM A	4
22	SP03029_REV0	WASHER M8 SPRING LOCK	1
23	SP03034_REV0	WASHER M10 SPRING LOCK	4
24	SP05010_REV0	SPLIT PIN 1/8" X 1"	2
25	SP14046_REV0	SPRING DETENT M8 SS	4

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	067171_REV3	SHEAR BLADE 30" LIPPED	1
2	185378_REV1	SCREW 3/8" X 1/2" UNF	10
12	380360_REV0	30" SHEAR BLADE CARRIER	1

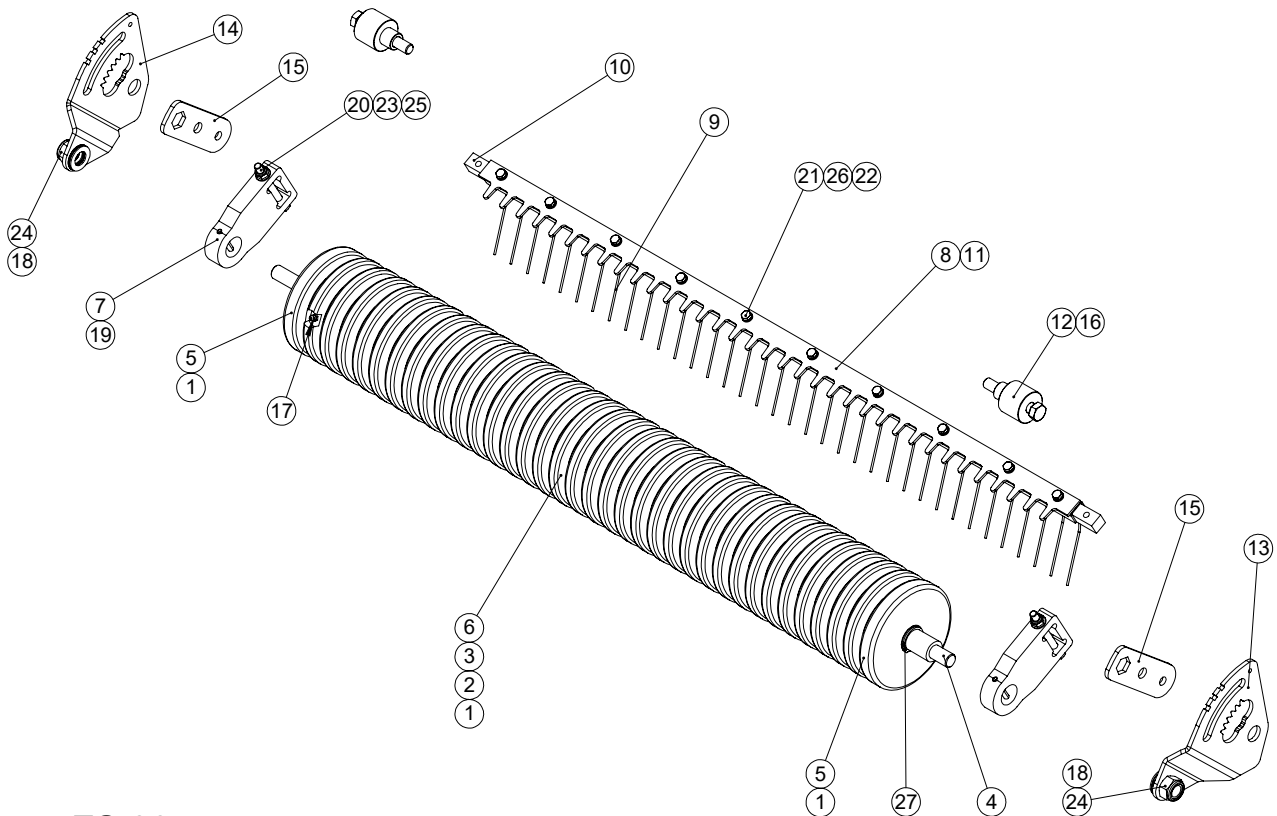


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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	185883_REV1	PREMIER FRONT ROLLER 36"	1
2	229310_REV1	QUADRANT SPACER	2
3	230741_REV0	QUADRANT GEAR	2
4	380084_REV0	ROLLER QUADRANT R.H. ASSY	1
5	380085_REV0	ROLLER QUADRANT L.H. ASSY	1
6	380087_REV0	SCRAPER FRONT ROLLER ES-36	1
7	380090_REV0	TIE BAR ASSY PREM	1
8	E1-1065_REV0	WASHER M12 SPRING LOCK	2
9	SP01044_REV0	COACH BOLT M10 X 25	2
10	SP01059_REV0	HEX SET SCREW M12 X 25	4
11	SP01078_REV0	HEX SET SCREW M12 X 40	2
12	SP02008_REV0	NUT M10 NYLOC (T)	2
13	SP02010_REV0	NUT M12 NYLOC (T)	2
14	SP02036_REV0	NUT 1/2" UNF NYLOC (P)	2
15	SP02054_REV0	NUT M12 BINK	2
16	SP03011_REV0	WASHER M10 FORM A	2
17	SP03012_REV0	WASHER M12 FORM A	8
18	SP03019_REV0	WASHER M12 WAVE	2
19	SP03020_REV0	SHIM 12 X 18 X 1	2

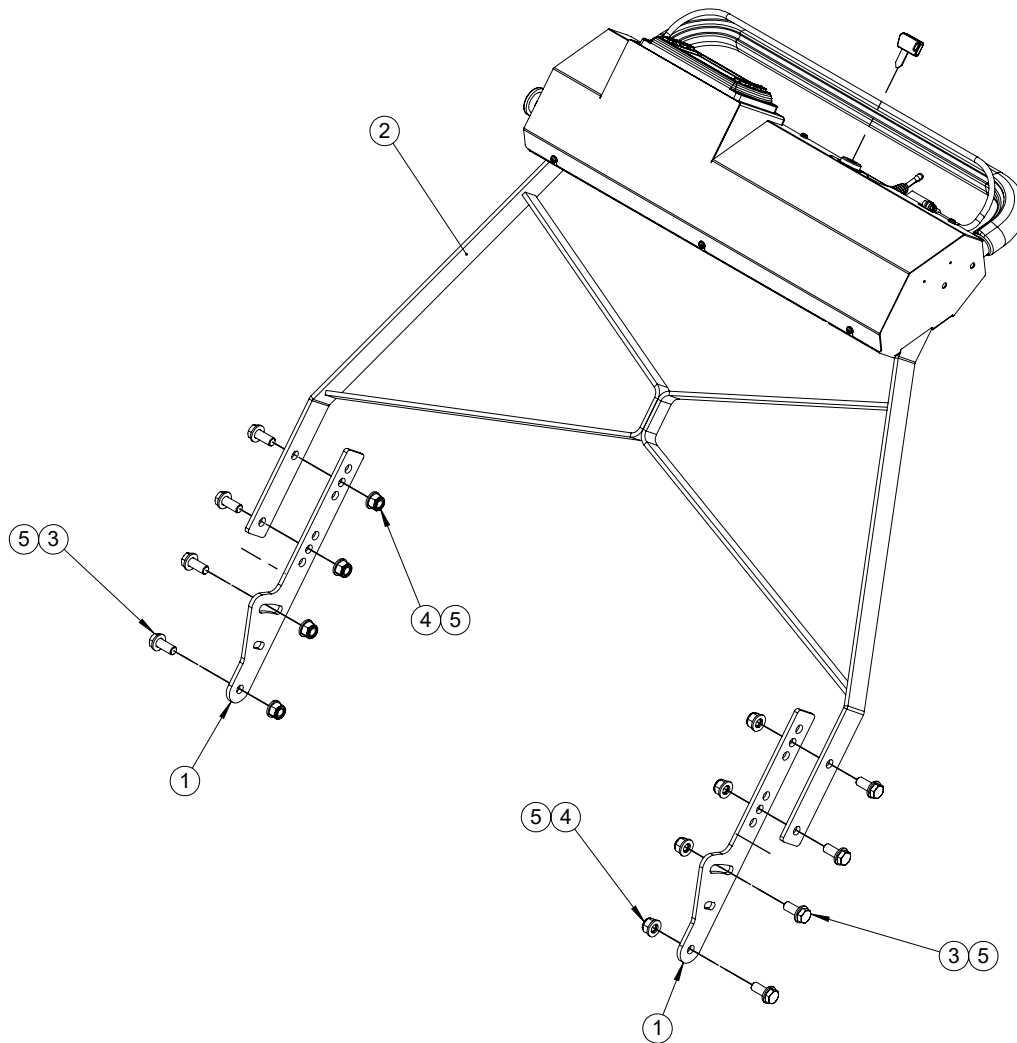
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	185880_REV1	PREMIER FRONT ROLLER 30"	1
6	380387_REV0	SCRAPER FRONT ROLLER ES-30	1
7	380390_REV0	TIE BAR ASSY PREM (30)	1



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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	229636_REV0	BUSH AM2530 - 25	18
2	229766_REV1	SHIM 1MM	8
3	229767_REV1	SHIM 0.5MM	8
4	300040_REV1	FRONT ROLLER SHAFT WIELE 36"	1
5	300041_REV1	WIELE ROLLER END (PREM)	2
6	300042_REV1	WIELE ROLLER SECTION (PREM)	7
7	300043_REV2	END PLATE	2
8	300045_REV1	WIELE SCRAPER BAR 36"	1
9	300046_REV1	COMB TINE PREM	18
10	300047_REV1	WIELE COMB BAR 36"	1
11	300048_REV1	COMB BAR CLAMP 36"	1
12	380132_REV0	GRASSBOX ARM PIVOT	2
13	380135_REV0	ROLLER ADJUSTER L.H. PREM	1
14	380136_REV0	ROLLER ADJUSTER R.H. PREM	1
15	380137_REV0	ROLLER ADJ PLATE	2
16	E1-1166_REV0	HEX BOLT M12 X 75	2
17	J20064_REV0	GREASE NIPPLE 1/4" UNF	9
18	J209012_REV0	WASHER M16 FORM B	6
19	J209104_REV0	PIN SPIROL M6 X 50	2
20	SP01024_REV0	HEX SET SCREW M8 X 80	2
21	SP01054_REV0	HEX SET SCREW M6 X 35	10
22	SP02004_REV0	NUT M6 NYLOC	10
23	SP02006_REV0	NUT M8 NYLOC (T)	2
24	SP02028_REV0	NUT M16 NYLOC (T)	2
25	SP03008_REV0	WASHER M8 FORM A	4
26	SP03010_REV0	WASHER M6 FORM A	20
27	SP07007_REV0	CIRCLIP D1460-25	2

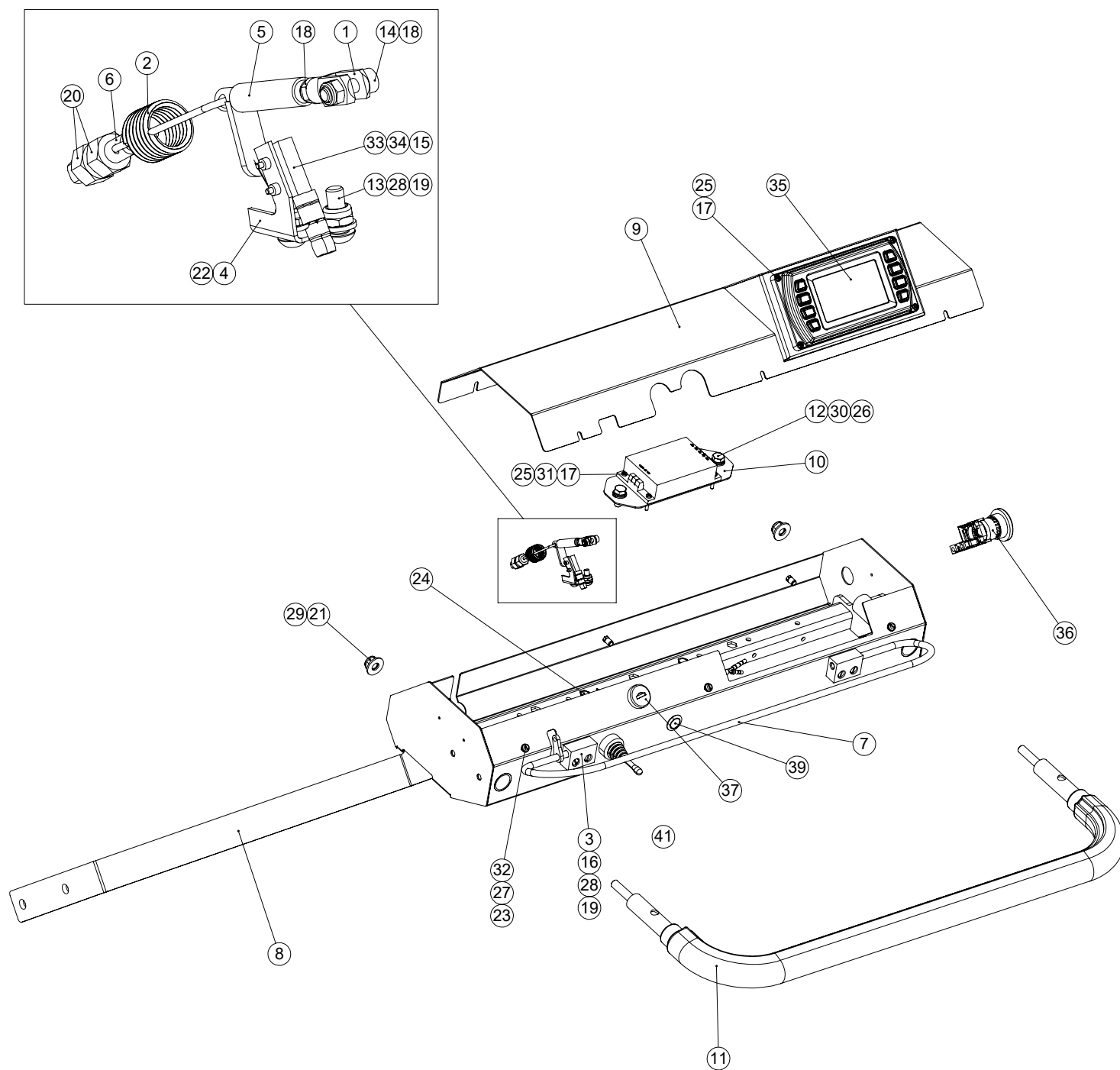


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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	380114_REV0	HANDLE PLATE	2
2	800610_REV0	ES-36 HANDLE ASSY	1
3	SP01065_REV0	HEX SET SCREW M12 X 30	8
4	SP02010_REV0	NUT M12 NYLOC (T)	8
5	SP03012_REV0	WASHER M12 FORM A	16

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
2	800613_REV0	ES-30 HANDLE ASSY	1

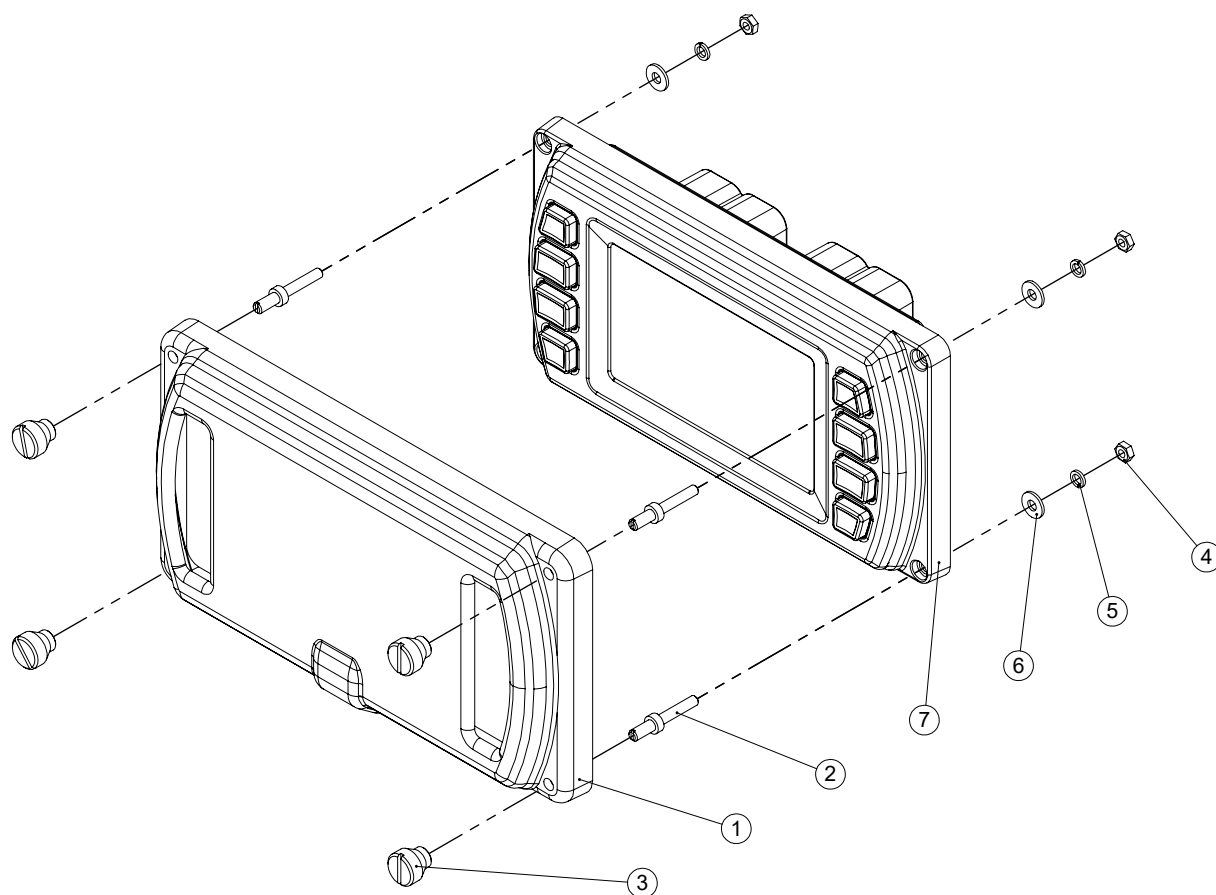


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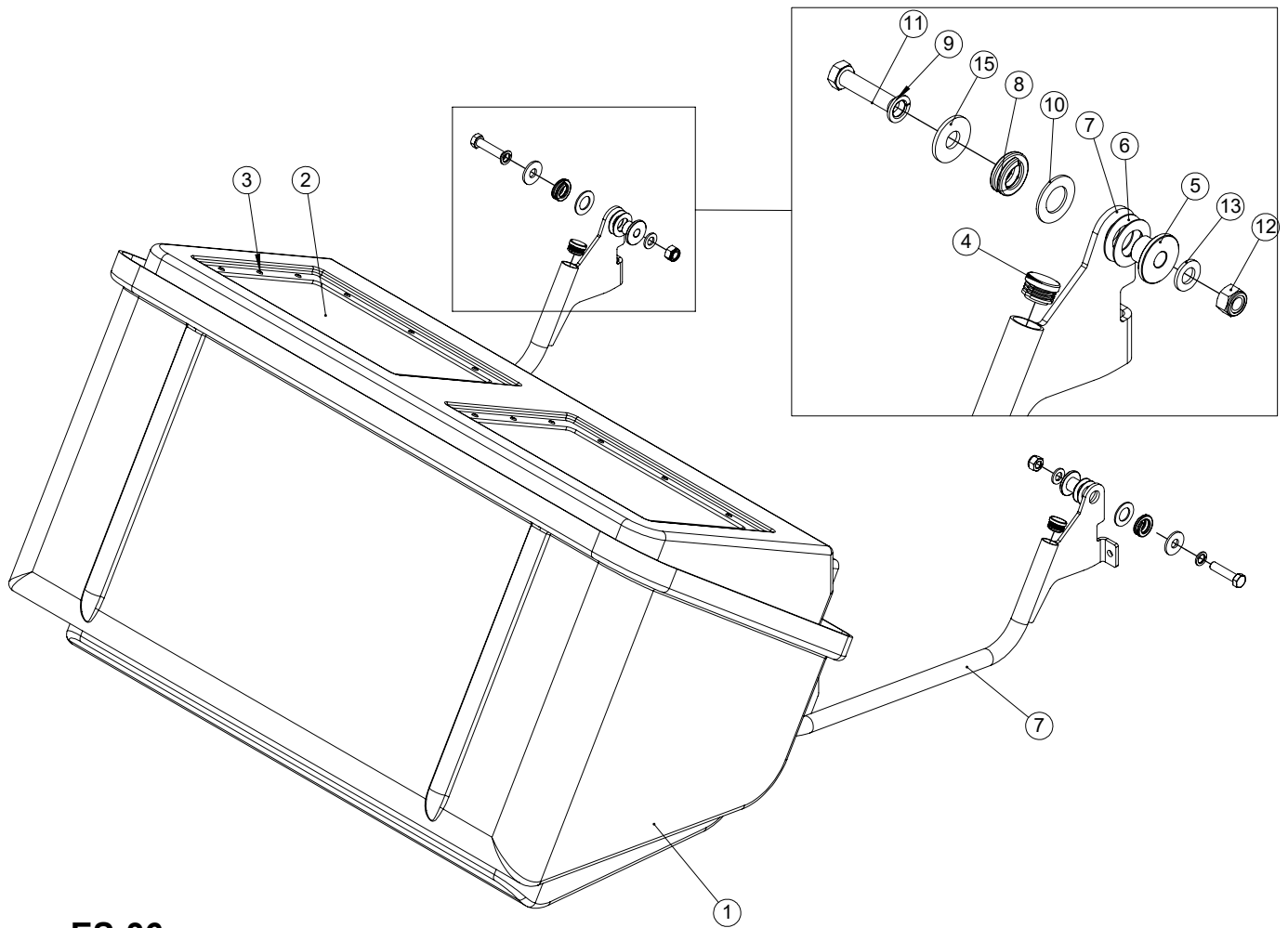
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	228020_REV1	CLEVIS GM5 (5MM)	1
2	229167_REV1	CLUTCH SPRING	1
3	229585_REV1	PIVOT BLOCK	2
4	229590_REV1	SAFETY SWITCH BRACKET	1
5	229595_REV2	SAFETY LEVER PLUNGER W.A.	1
6	229620_REV2	BOLT FOR SPRING	1
7	230180_REV0	SAFETY BAR W.A.	1
8	380106_REV2	ES-36 HANDLE W.A.	1
9	380110_REV0	CONSOLE COVER W.A.	1
10	380117_REV0	DC-DC PLATE	1
11	403596_REV0	HANDLE BAR ASSY	1
12	SP01009_REV0	HEX SET SCREW M8 X 20	2
13	SP01019_REV0	BUTTON HEAD M6 X 16	2
14	SP01043_REV0	CAP HEAD M5 X 16	1
15	SP01070_REV0	CAP HEAD M2 X 12	2
16	SP01101_REV0	SCREW M6 X 25 SLOTTED	4
17	SP01178_REV0	M3.5 x 20 CHEESE HEAD	8
18	SP02002_REV0	NUT M5 NYLOC (T)	2
19	SP02004_REV0	NUT M6 NYLOC	6
20	SP02005_REV0	NUT M8 STD	2
21	SP02008_REV0	NUT M10 NYLOC (T)	2
22	SP02038_REV0	NUT M2 (BUSH)	2
23	SP02041_REV0	RIVNUT HEX M5 (0.5-3.0) [NO HEAD]	6
24	SP02044_REV0	RIVNUT HEX M8 (0.5-3.0) [NO HEAD]	2
25	SP02073_REV0	M3.5 NUT STD	8
26	SP03008_REV0	WASHER M8 FORM A	2
27	SP03009_REV0	WASHER M5 FORM A	6
28	SP03010_REV0	WASHER M6 FORM A	6
29	SP03016_REV0	WASHER M10 FORM C	2
30	SP03029_REV0	WASHER M8 SPRING LOCK	2
31	SP03047_REV0	WASHER M3.5 FORM A	8
32	SP04001_REV0	SCREW M5 X 16 SLOTTED	6
33	SP12007_REV0	MICRO SWITCH DC1C-C3LB	1
34	SP12014_REV0	ELECTRICAL CONNECTOR MALE BULLET (RED)	2
35	SP12099_REV0	DISPLAY PV450	1
36	SP12101_REV0	E-STOP	1
37	SP12102_REV1	KEY SWITCH (ON/OFF - 2 POS)	1
38	SP12127_REV2	HYP HANDLE CONTROLLER HARNESS (F42216)	1
39	SP12132_REV1	MOMENTARY PUSH SWITCH	1
40	SP12182_REV0	2 AXIS LATCHING JOYSTICK	1
41	SP12183_REV0	E-SERIES HAND CONTROLS WIRING HARNESS	1

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
8	380306_REV0	ES-30 HANDLE W.A.	1



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

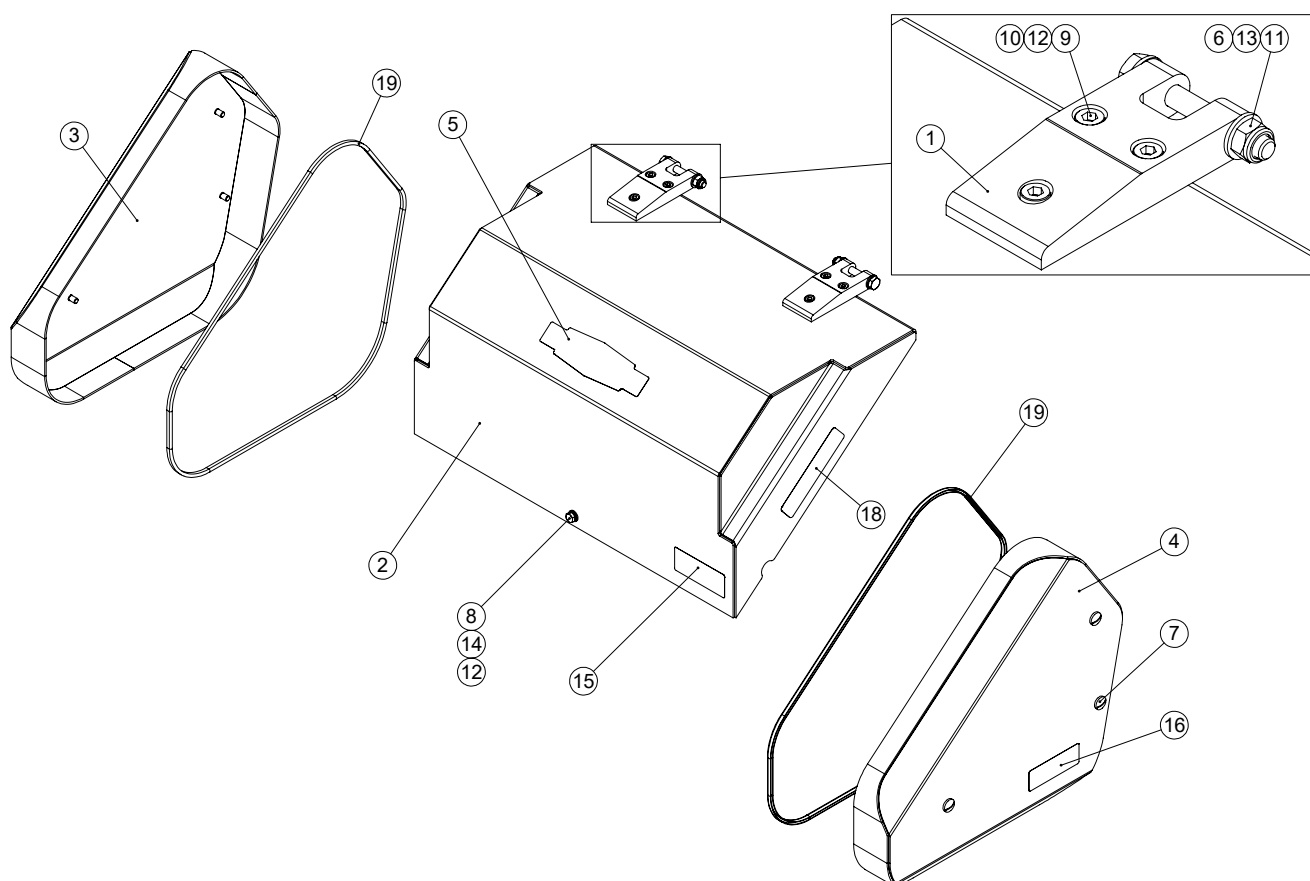


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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	380130_REV0	GRASSBOX ES-36	1
2	380131_REV0	ES-36 GRASSBOX MESH	1
3	SP05018_REV0	RIVET 4.8 X 18	24
4	228024_REV1	1" TUBE BUNG	2
5	370180_REV0	GRASSBOX ARM PIVOT	2
6	370181_REV0	1MM ID21 SHIM	4
7	380120_REV0	E-36 CRADLE W.A.	1
8	604761_REV1	THACKERY WASHER	2
9	E1-1065_REV0	WASHER M12 SPRING LOCK	2
10	E1-1081_REV0	WASHER M20 FORM B	2
11	SP01082_REV0	HEX SET SCREW M12 X 50	2
12	SP02010_REV0	NUT M12 NYLOC (T)	2
13	SP03012_REV0	WASHER M12 FORM A	2
14	SP03032_REV0	WASHER M5 REPAIR	24
15	SP03048_REV0	WASHER M12 FORM G	2

ES-30 - OPEN BOX

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1-3	229242_REV1	GRASS BOX 760	1
7	380340_REV0	ES-30 CRADLE W.A.	1

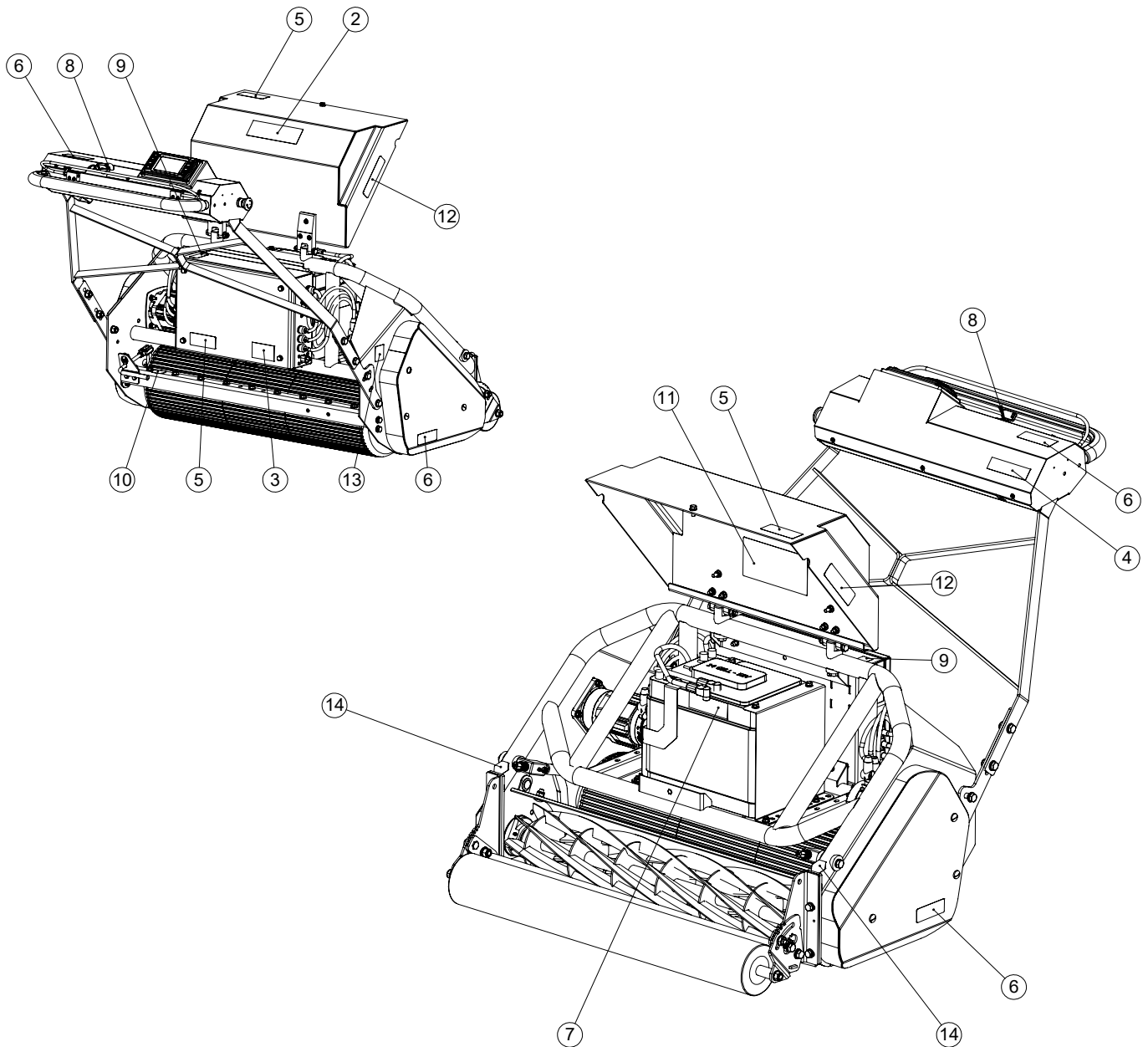


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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	340155_REV0	BATTERY COVER HINGE	2
2	380150_REV0	BATTERY COVER PREM W.A.	1
3	380160_REV0	GUARD R.H. PREM	1
4	380161_REV0	GUARD L.H. PREM	1
5	B32902_REV2	DECAL DENNIS 200 X 50 (LARGE)	1
6	E1-1133_REV0	HEX BOLT M10 X 75	2
7	J209074_REV1	BRAKE BAND COVER SCREW	6
8	SP01009_REV0	HEX SET SCREW M8 X 20	1
9	SP01025_REV0	CAP HEAD M8 X 30	6
10	SP02006_REV0	NUT M8 NYLOC (T)	6
11	SP02008_REV0	NUT M10 NYLOC (T)	2
12	SP03008_REV0	WASHER M8 FORM A	7
13	SP03011_REV0	WASHER M10 FORM A	4
14	SP03029_REV0	WASHER M8 SPRING LOCK	1
15	SP18026-2_REV0	WARNING DECAL	1
16	SP18026-3_REV0	E-SERIES DECAL	2
17	SP18026_REV0	E-SERIES DECAL SET	1
18	SP18029_REV0	ES-36 DECAL	2
19	228031-1455_REV0	CHAIN CASE SEAL - 145.5cm	2

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
2	340150_REV0	BATTERY COVER W.A.	1
18	SP18048_REV0	ES-30 DECAL	2



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	800610_REV0	ES-36 HANDLE ASSY	1
2	B32902_REV2	DECAL DENNIS 200 X 50 (LARGE)	1
3	B32903_REV0	DECAL UNION JACK	1
4	J20362_REV0	DECAL DENNIS 200 X 50	1
5	SP18026-2_REV0	WARNING DECAL	2
6	SP18026-3_REV0	E-SERIES DECAL	3
7	SP18026-4_REV0	BATTERY DISCONNECT DECAL	1
8	SP18026-5_REV0	IGNITION DECAL	1
9	SP18026-6_REV0	DECAL	1
10	SP18026-7_REV0	PARKING BRAKE DECAL	1
11	SP18026_REV0	E-SERIES DECAL SET	1
12	SP18029_REV0	ES-36 DECAL	2
13	SP18032_REV0	91 Db DECAL	1
14	SP18034_REV0	ES-36 CUT ADJUSTMENT DECAL	2



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