



E-SERIES ES-510 & ES-610

INSTRUCTION MANUAL



sis

World class turf maintenance equipment

EU DECLARATION OF CONFORMITY

E-SERIES 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, Jan Olieslagerslaan 35, B-1800 Vilvoorde, Belgium

I the undersigned declare that this machine:-

Model	Cutting Width	Power (Honda)	Measured Sound Power Level	Guaranteed Sound Power Level	Serial Number
ES-510	20" 510mm	InMotion 103 (Drive) Inmotion 106 (Cylinder)	82dB Lwa	85dB Lwa	See product ID Range
ES-610	24" 610mm	InMotion 103 (Drive) Inmotion 106 (Cylinder)	82dB Lwa	85dB Lwa	See product ID Range

Tested at:-

- Howardson Works

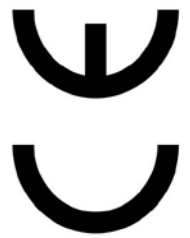
Complies with the applicable requirements of:-

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

Managing Director



Ian Howard



DENNIS **sisis**

Ashbourne Road, Kirk Langley, Derbyshire, DE6 4NJ, England
Tel: +44 (0) 1332 824 777

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SP28095_REV0

UK DECLARATION OF CONFORMITY

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- AnP Certification Ltd, NB8500, 2 Parkfield Street, Rusholme, Manchester, M14 4PN, UK

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Tested at:-

- Howardson Works

Complies with the applicable requirements of:-

- Supply of Machinery (Safety) Regulations 2008
- Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001

Managing Director



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SERIAL NUMBERS



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

CHASSIS
SERIAL NUMBER

BATTERY
SERIAL NUMBER

ROLLER MOTOR
SERIAL NUMBER

CYLINDER MOTOR
SERIAL NUMBER

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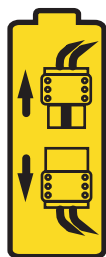
CAUTION:-

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.



48V



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.

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.

PREPERATION

- 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 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.

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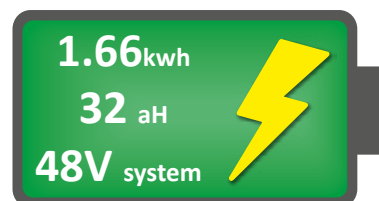
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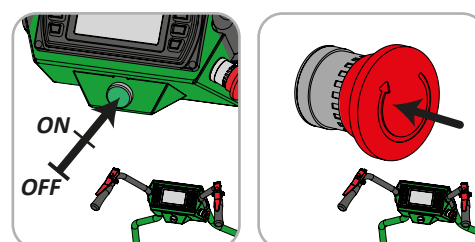
KEY INFORMATION – Lithium battery packs will self-discharge over extended periods of time without maintenance. Once lithium-ion cells discharge below a certain voltage they become unusable and must not be discharged further (*Deep Discharge state*). Regular monitoring and maintenance is essential for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



Recommendations to ensure maximum battery life:

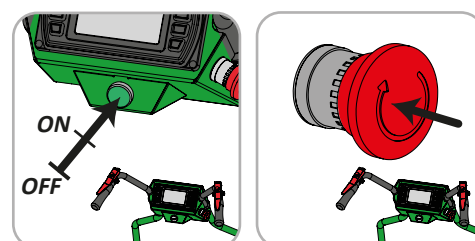
Leaving your mower for a few days

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



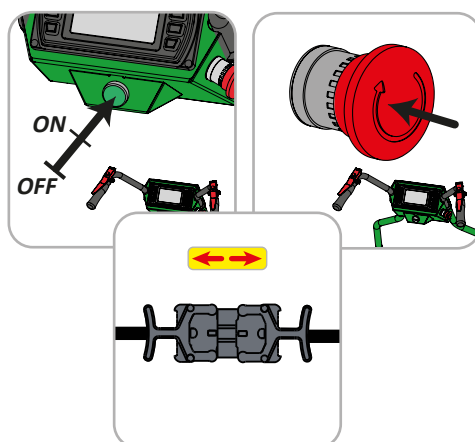
Leaving your mower stored for any extended period of time (>30 days)

- Never leave the battery unit with below 50% charge when stored
- Always turn the key off and press the E-Stop in
- Ideally disconnect the battery unit plug from the electrical box
- If left for more than 45 days, it is important that it is checked periodically and if necessary charged.

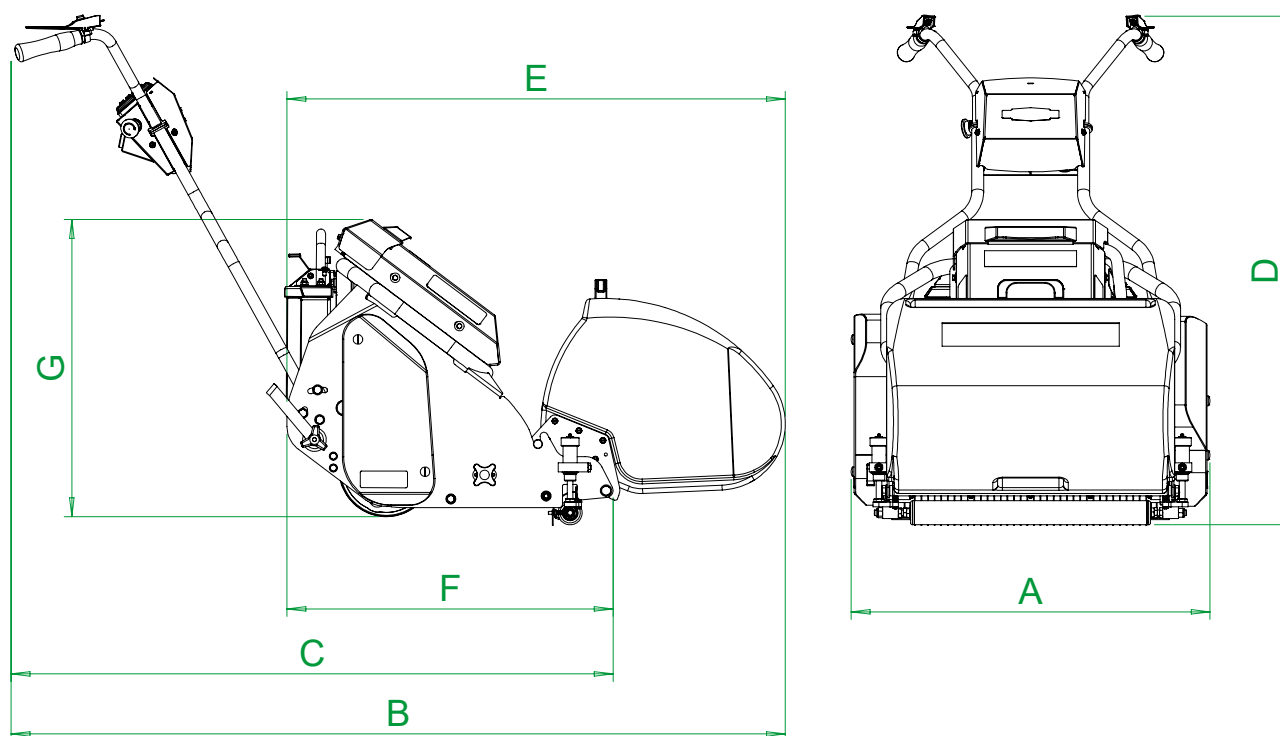


Transporting your mower

- Never ship the mower with below 25% charge
- Charge mower to approx. 70% SOC for transport
- Always turn the key off and press the E-Stop in
- Always disconnect the battery unit from the electrical box

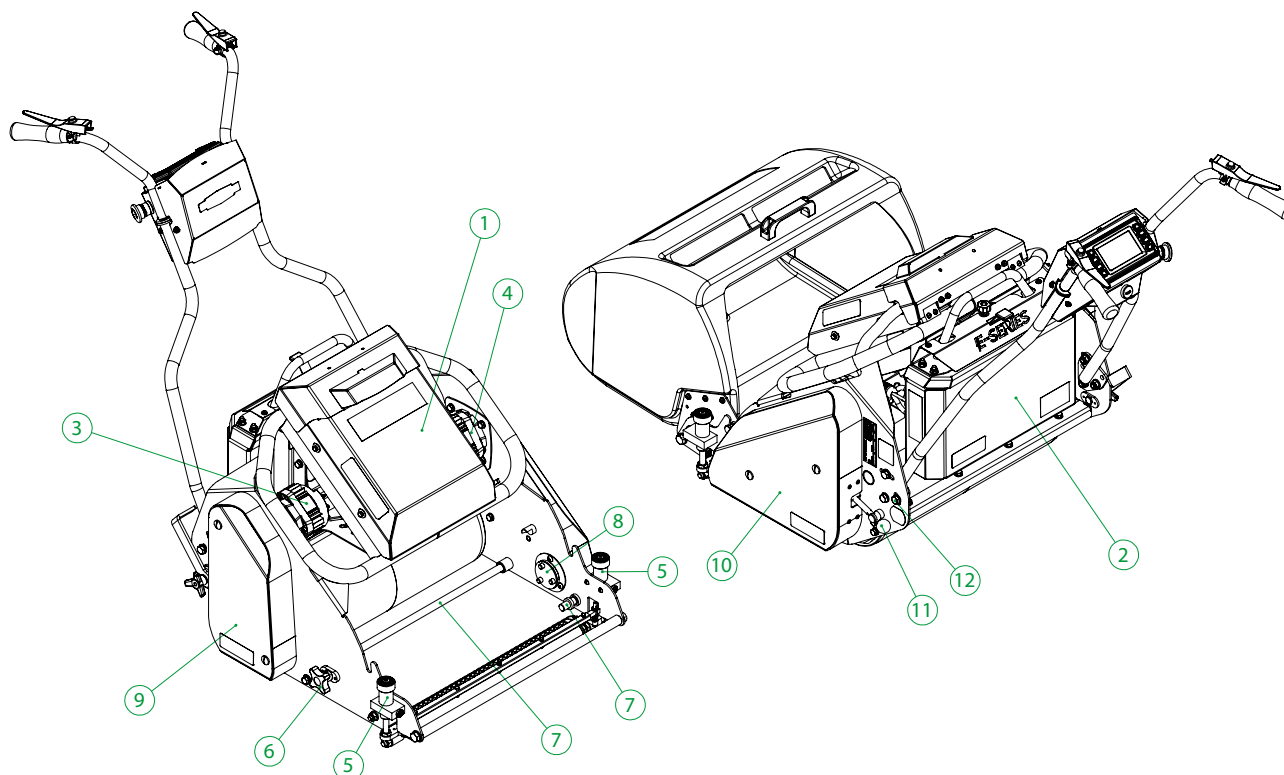


V150 CASSETTE MOWER TECHNICAL DATA

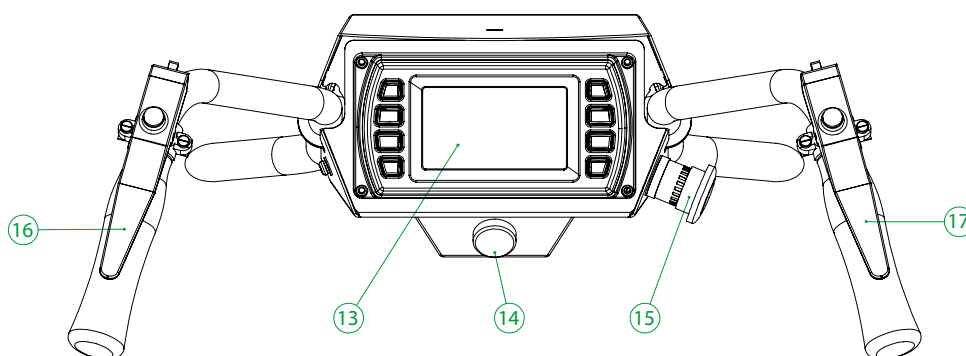


	ES-510	ES-610
DIMENSIONS		
Cutting Width (mm)	510	610
Machine Width (mm) A	760	860
Machine Length <small>Inc handles</small> (mm) B	1638	
Chassis Length <small>Inc handles</small> (mm) C	1274	
Machine Height <small>Inc Handles</small> (mm) D	1076	
Machine Length <small>Exc handles</small> (mm) E	1055	
Chassis Length <small>Exc Handles</small> (mm) F	690	
Machine Height <small>Exc Handles</small> (mm) G	629	
Weight <small>Exc Cassette</small> (kg)	106kg	111kg
DRIVE SYSTEM		
Roller Motor (W)	630	
Roller Drive System	Timing Belt	
Cylinder Motor (W)	1200	
Cylinder Drive System	Belt	
ELECTRICAL SYSTEM		
Battery Type	Lithium Ion	
System Voltage	48V	
Battery Capacity (Ah)	32	
Self Discharge @ 25 °C	< 2% per month	

V150 CASSETTE MOWER TECHNICAL DATA



No.	PART	No.	PART
1	Electrical Box	7	Tie Bars
2	Battery	8	Cassette Drive Coupling
3	Roller Motor	9	RH Belt Guard
4	Cylinder Motor	10	LH Belt Guard
5	Front Roller Height Adjuster	11	Parking Brake
6	Cassette Securing Bolt	12	Handlebar Adjuster



No.	PART	No.	PART
13	Display Screen	16	LH Handle - Deadmans Handle
14	Start Button	17	RH Handle - Throttle
15	Emergency Stop		

V150 MOWER BASIC CONTROLS

FOR THE LOCATION OF CONTROLS AND COMPONENTS REFER TO 'TECHNICAL DATA' PAGES. BE FAMILIAR WITH THE CONTROLS AND THE PROPER USE OF THE EQUIPMENT BEFORE STARTING.

SWITCHING THE MOWER ON/OFF

- Ensure the **EMERGENCY STOP** button is released before switching the mower on. It will not start otherwise.
- The **KEY SWITCH** controls power to the electrical components and can be used to switch the machine ON.
- To turn the mower OFF, turn the **KEY SWITCH** to the OFF position or hit the **EMERGENCY STOP** button.

MOVING OFF/STOPPING

- The **DEADMANS HANDLE** is an operator presence control. This must be depressed before the drive and motor will engage. Releasing the handle during operation will cut power to both motors.
- To drive, depress the **DEADMANS HANDLE** and then the **THROTTLE**. The machine will go into Drive automatically and move forward. When released, the machine will return to Neutral.
- To reverse, select reverse on the display and then depress the **DEADMANS HANDLE**, and then **THROTTLE**. In reverse, the machine will not return to Neutral.

CYLINDER OFF/ON

- The **DEADMANS HANDLE** is an operator presence control. This must be depressed before the drive cylinder motors will engage. Releasing the handle during operation will cut power to both motors.
- Press the **CYLINDER ON/OFF** button on the display to activate the cylinder.
- For Variable RPM modes, the cylinder will spin up to a nominal speed. It will adjust in line with the roller speed clip rate once the throttle is depressed.
- For Fixed RPM modes, the cylinder will spin up to the set speed immediately.
- When the **DEADMANS HANDLE** is released, the cylinder drive will disengage. It will not re-engage until the **CYLINDER ON/OFF** button is pressed again.
- The cylinder will not engage while the machine is in reverse or neutral.
- The machine can also be controlled using the integrated display screen buttons.

MECHANICAL PARKING BRAKE

- The machine has a mechanical parking brake located on the side guard to be used when the machine is not in use.
- 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.
- Latch the brake lever below the brake boss to engage and swing back above the brake boss to disengage (**TECHNICAL DATA, ITEM 11**).
- 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 is engaged. This must be disengaged to allow the mower display to be set to drive or reverse.



NOTE:-

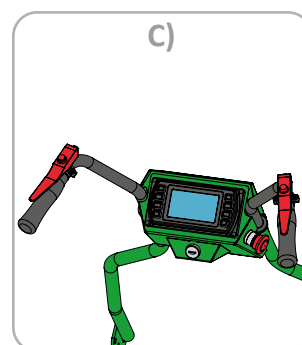
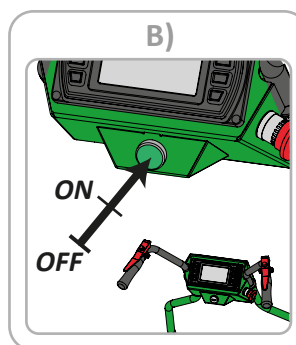
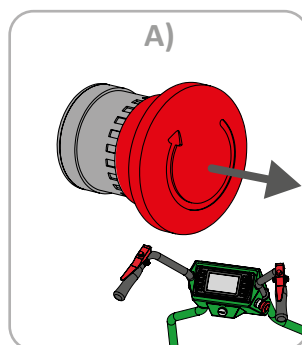
Pushing the mower, when not motor driven, should always be done in NEUTRAL to avoid damaging the internal motor brake.

V150 SERIES BASIC OPERATING DISPLAY

E-SERIES
by **DENNIS**

KEY START

- Release **E-Stop**
- Press Start Button into latched in ON position
- Wait for display screen to boot



Cylinder ON / OFF
When in **DRIVE** only



TIME - DATE

TRIP DISTANCE

TRIP TIME

SELECTED CLIP RATE or RPM

Roller ON / OFF
When in **DRIVE** or **REVERSE**
(Control from button or hand controls)



DENNIS
Expert Surfaces

09:33
23 SEPT 2021

5.5 KM
135 MIN
120 C/M

BATTERY LEVEL

3.5 KM/H

5.5 KM/H

MENU

DRIVE - Roller direction forwards

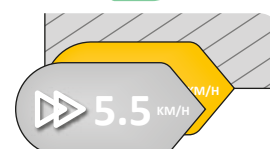
NEUTRAL - Free rolling

PARK - Mechanical parking brake is on

REVERSE - Roller direction backwards

Enter MENU

BATTERY LEVEL



Transport Speed
Turn ON / OFF

Increase / Decrease
Forward Speed
(0.1 increments)

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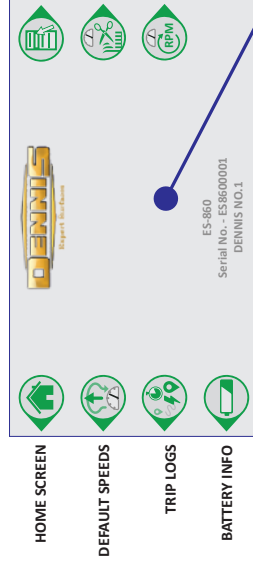
SP19068_REV1

V150 CASSETTE MOWER DISPLAY GUIDE

E-SERIES
by **DENNIS**

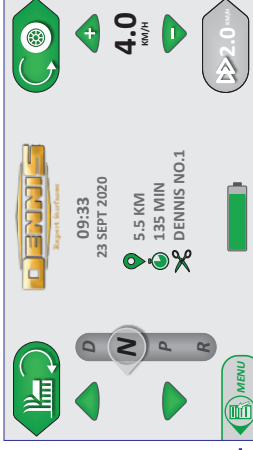
OPERATIONS SCREEN

PAGE B



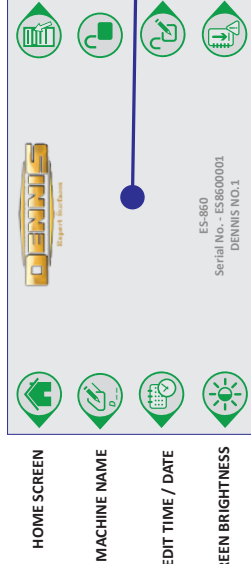
HOME SCREEN

PAGE A



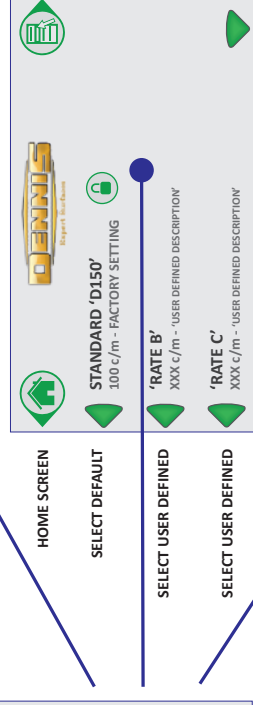
MACHINE SETTINGS

PAGE B



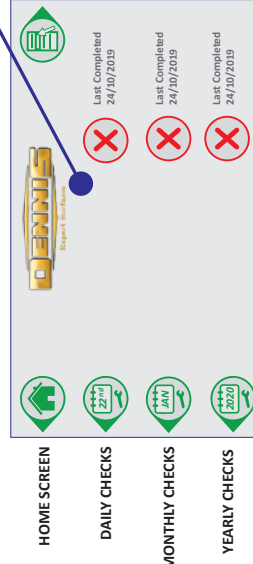
RATE SELECTION

PAGE C



MAINTENANCE SCREEN

PAGE C



BACK LAPPING IN
MONTHLY CHECKS

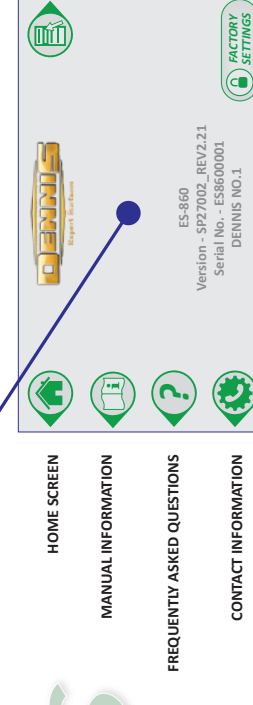
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INFORMATION SCREEN

PAGE D



ES-510/ES-610 ELECTRIC CASSETTE MOWER

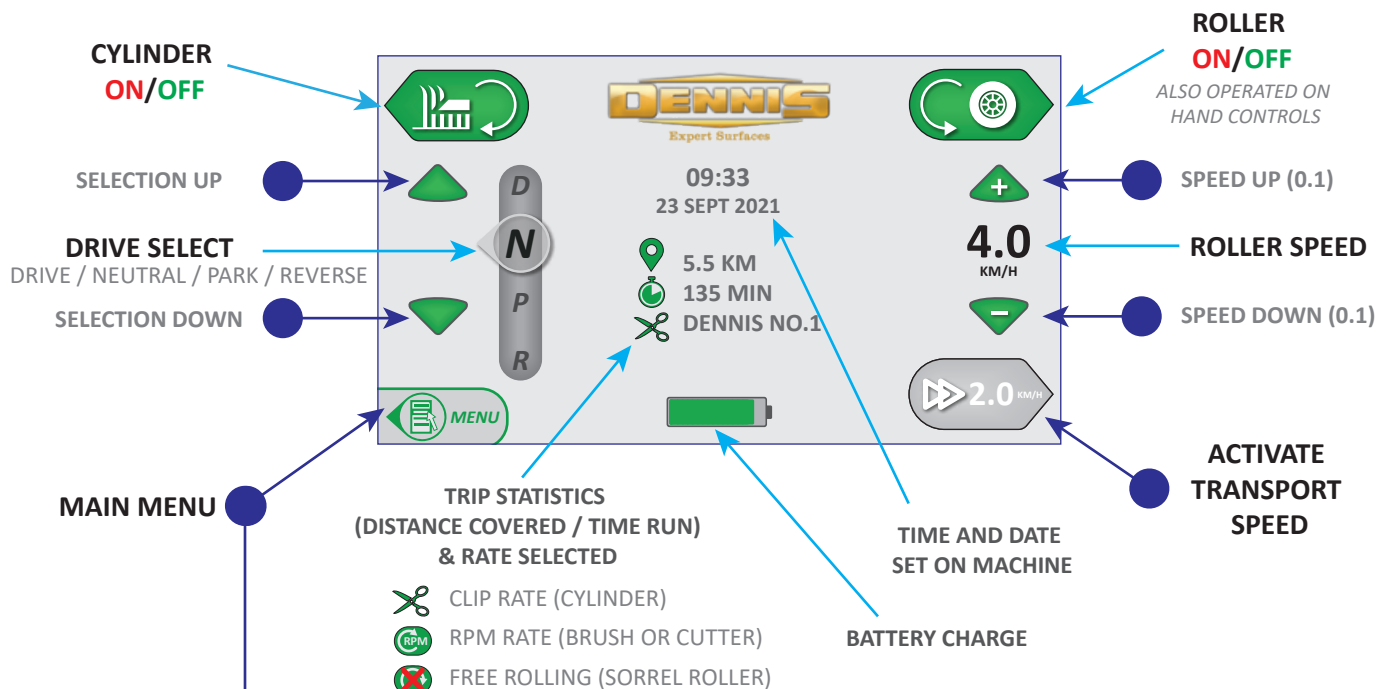
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HOME SCREEN



	BUTTON SELECTION
	SCREEN INFO

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

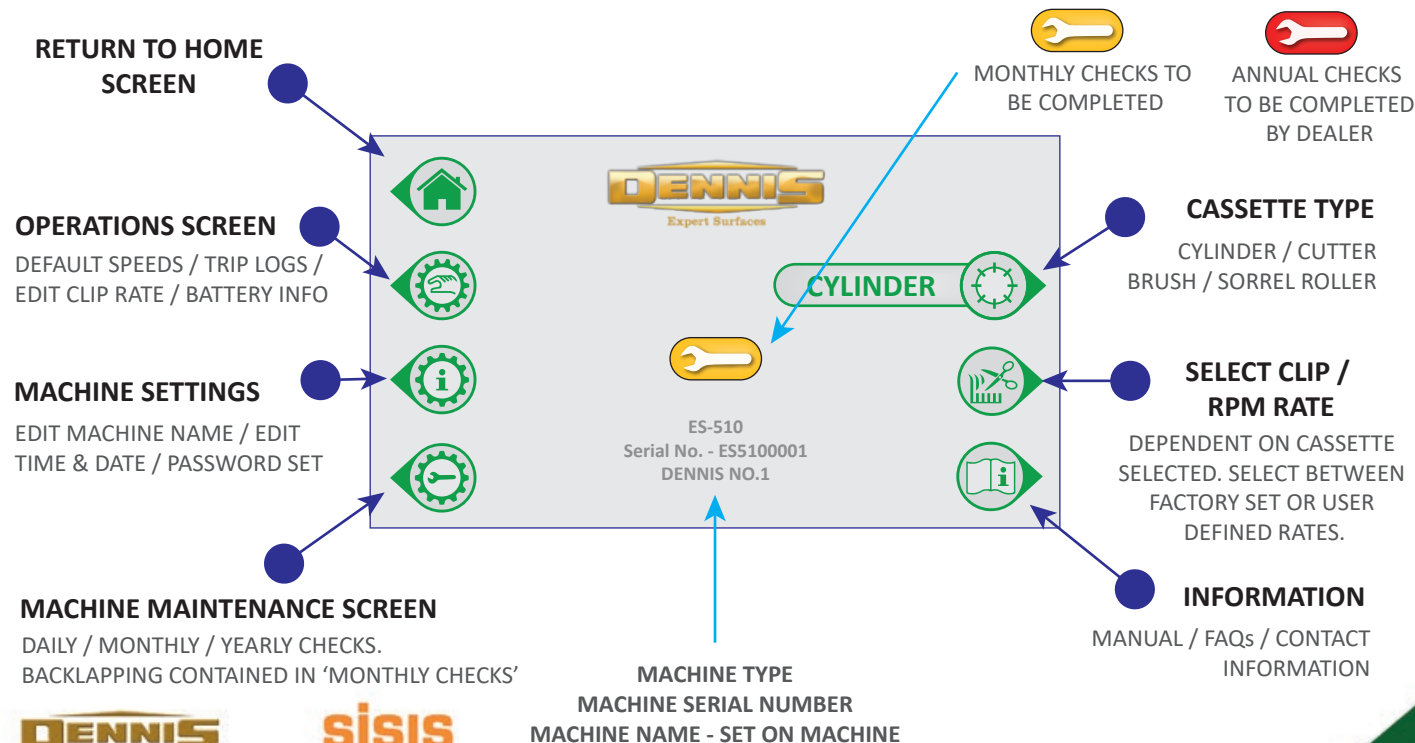


MAIN MENU



	BUTTON SELECTION
	SCREEN INFO

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



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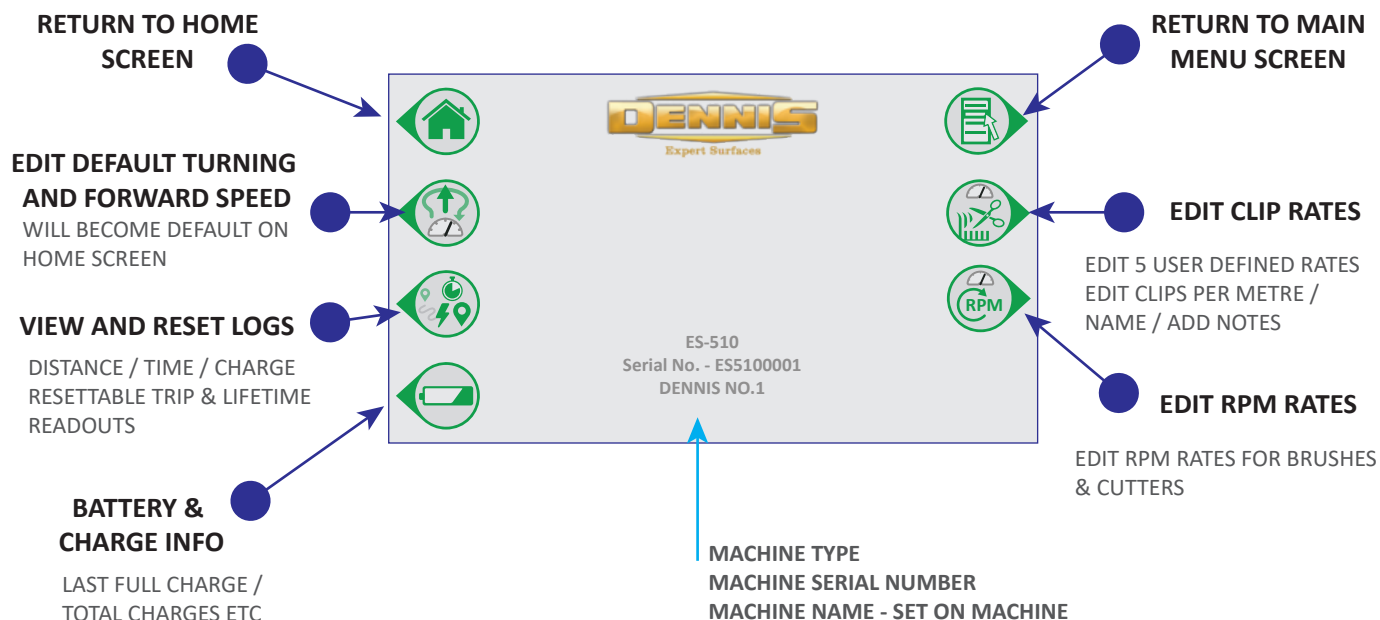
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OPERATIONS SCREEN



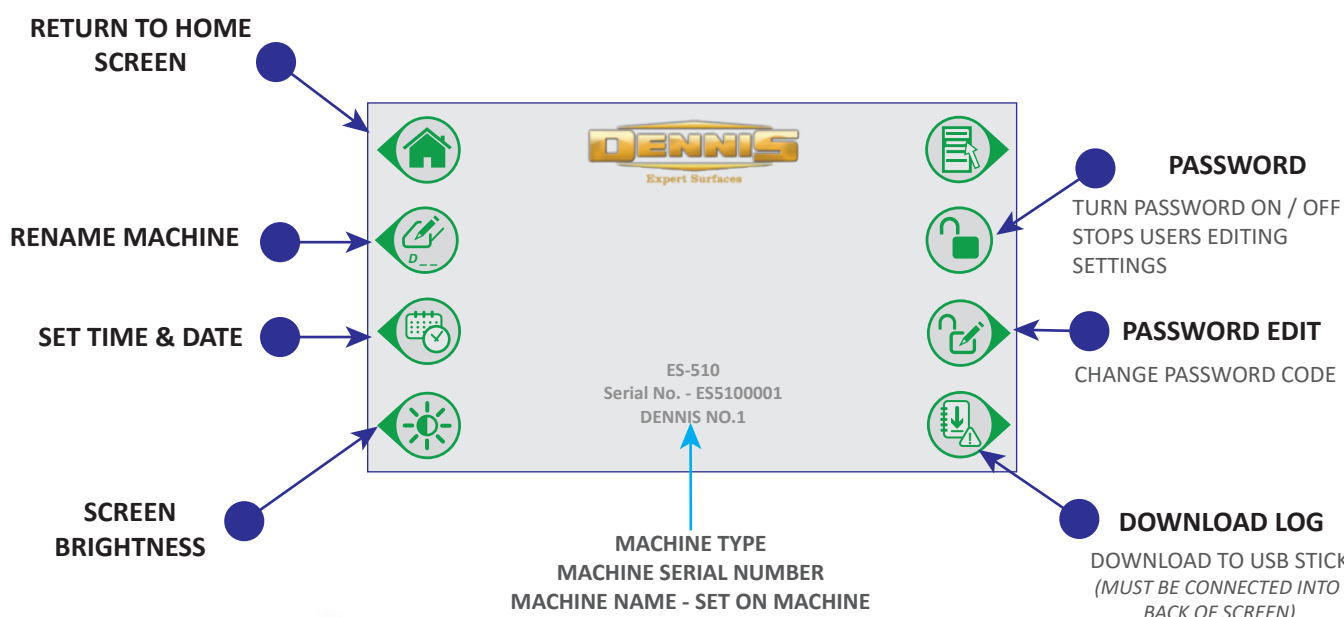
	BUTTON SELECTION
	SCREEN INFO



MACHINE SETTINGS



	BUTTON SELECTION
	SCREEN INFO



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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

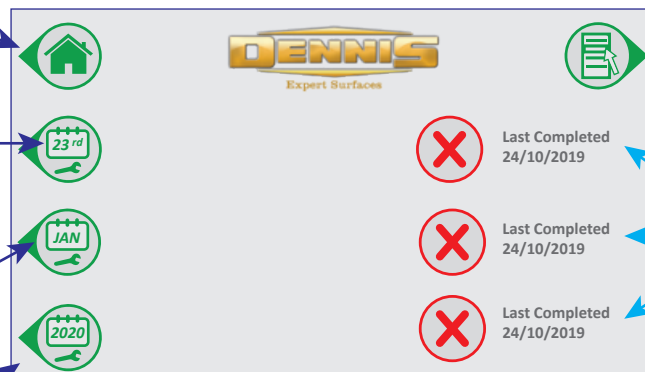
GIVES LIST OF CHECKS. LOG AS COMPLETE ONCE DONE

MONTHLY CHECKS

GIVES LIST OF CHECKS. LOG AS COMPLETE ONCE DONE

ANNUAL CHECKS

GIVES LIST OF CHECKS. LOG AS COMPLETE ONCE DONE



LAST DATE COMPLETED. ARE CHECKS UP TO DATE

CLICK ON BOTTOM THIS SIDE TO SEE EXPANDED LOG LIST

RATE SELECTION



	BUTTON SELECTION
	SCREEN INFO

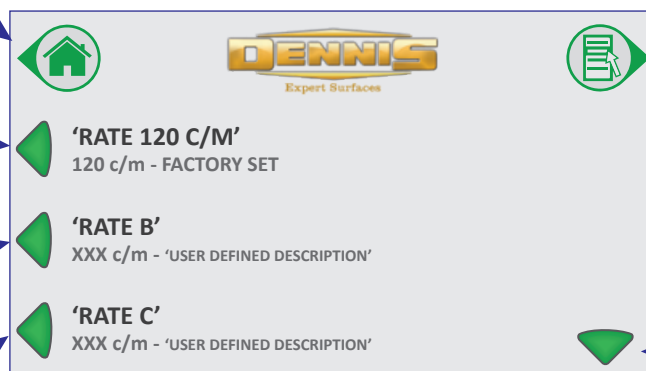
SELECT YOUR CLIP RATE OR RPM DEPENDENT ON THE CASSETTE TYPE YOU HAVE SELECTED. WHEN CHOSEN IT WILL RETURN YOU TO HOME SCREEN READY TO OPERATE. CLIP RATE MAINTAINED EVEN WHEN SPEED ALTERED. RPM WILL REMAIN CONSTANT.

RETURN TO HOME SCREEN

SELECT DEFAULT CLIP RATE

SELECT USER DEFINED CLIP RATE

SELECT USER DEFINED CLIP RATE



PAGE DOWN

NEXT 3 USER DEFINED SELECTIONS



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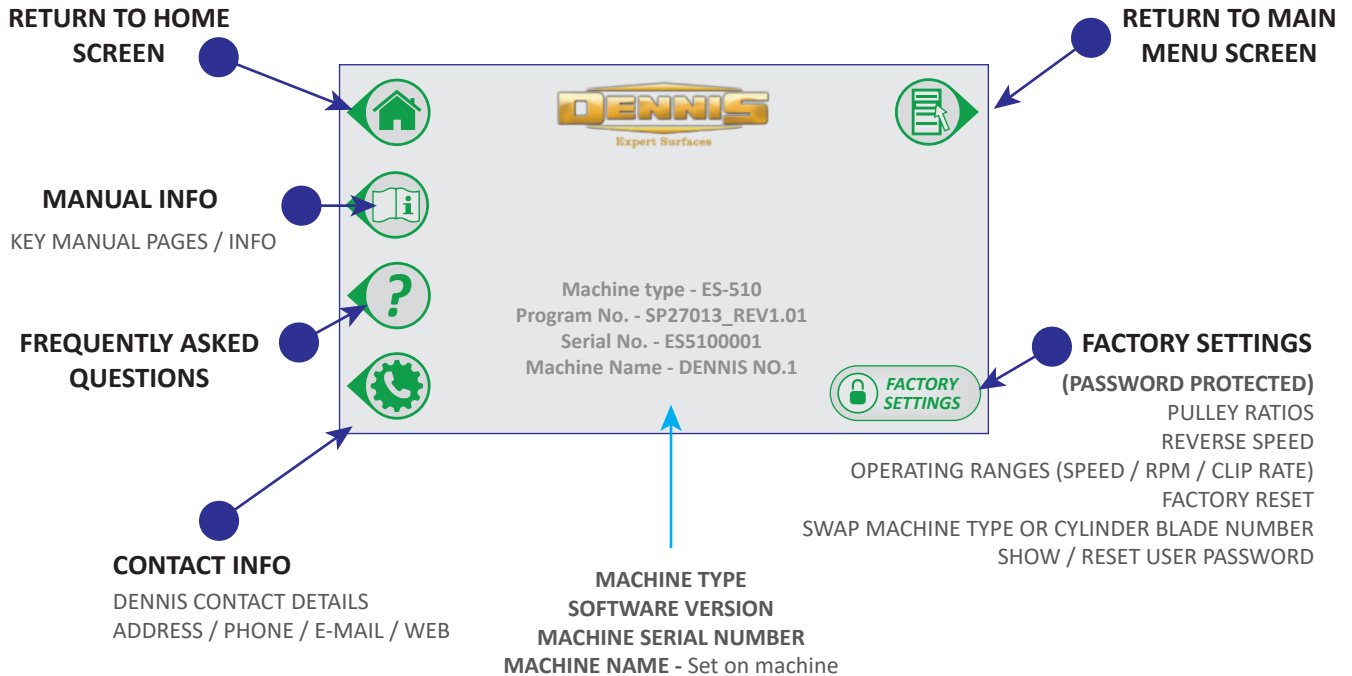
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INFORMATION SCREEN



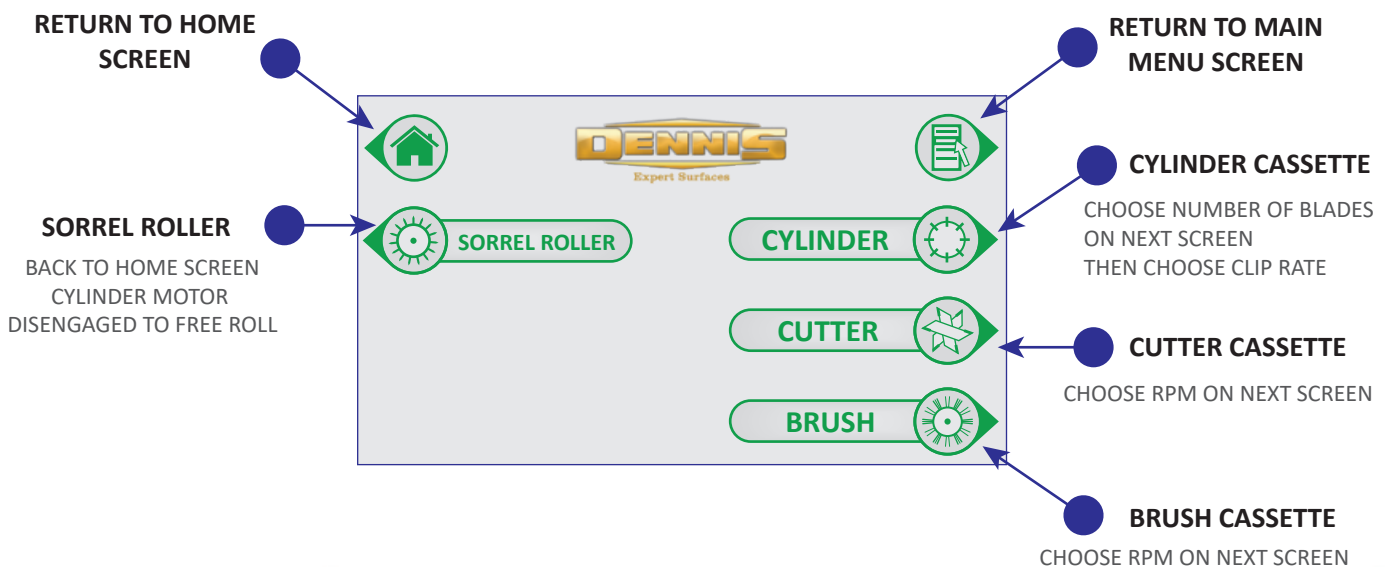
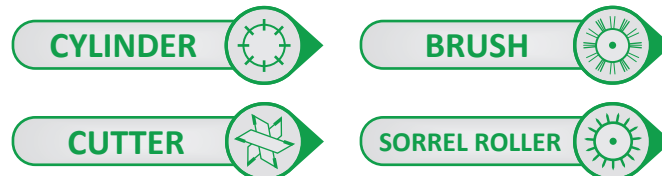
	BUTTON SELECTION
	SCREEN INFO

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



CASSETTE SELECTION

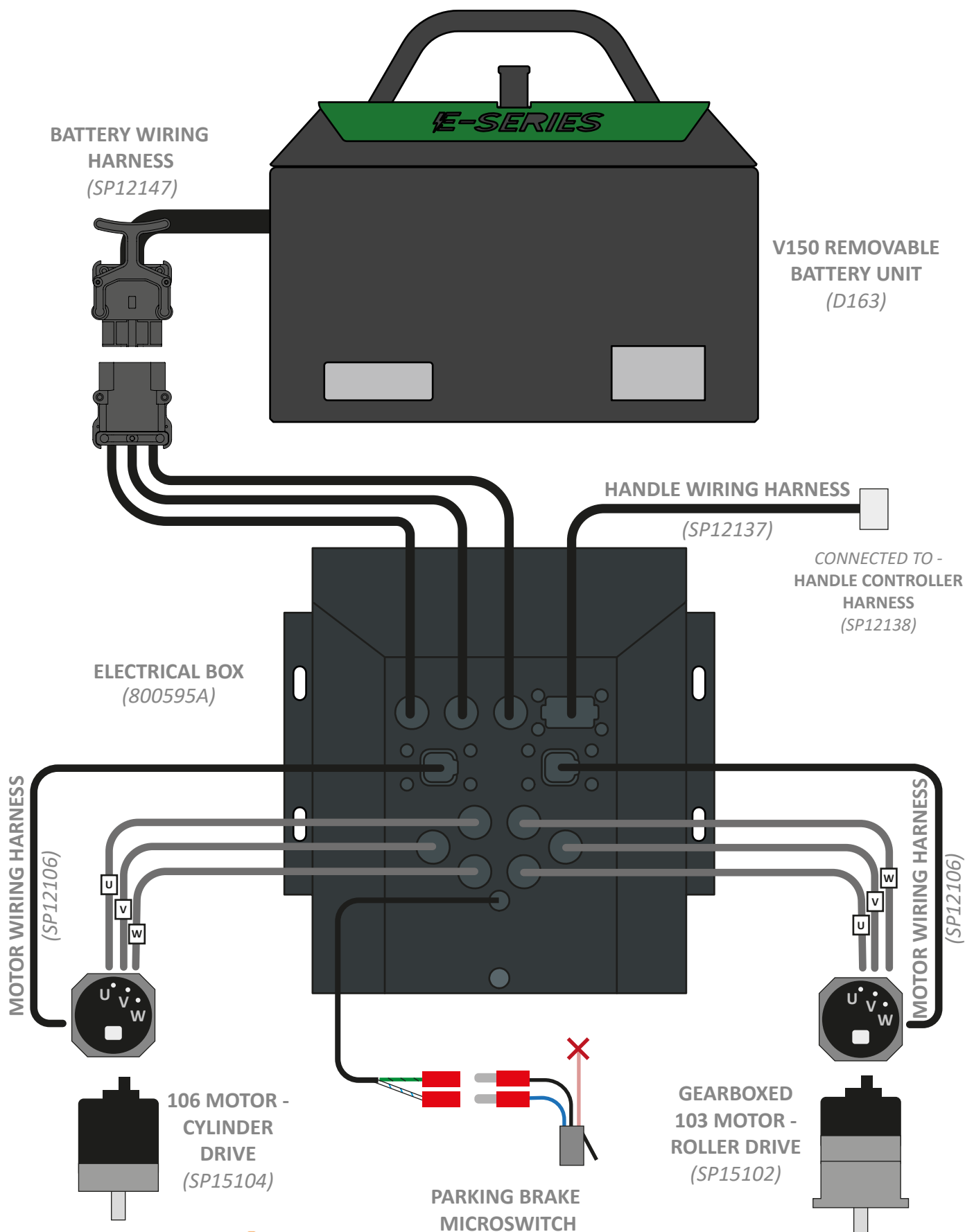
SELECT THE TYPE OF CASSETTE FITTED INTO THE MACHINE.



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E-SERIES V150 MACHINE WIRING



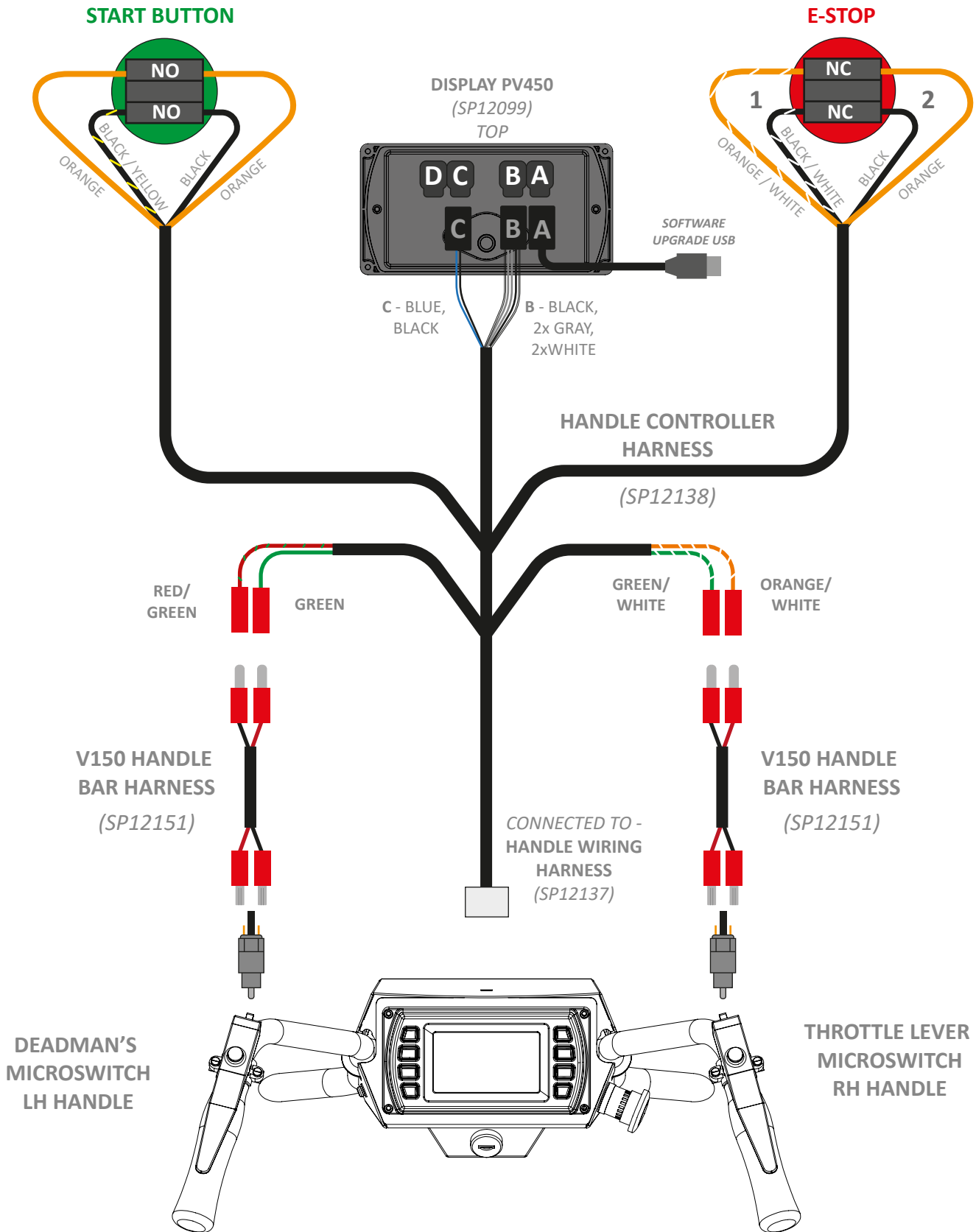
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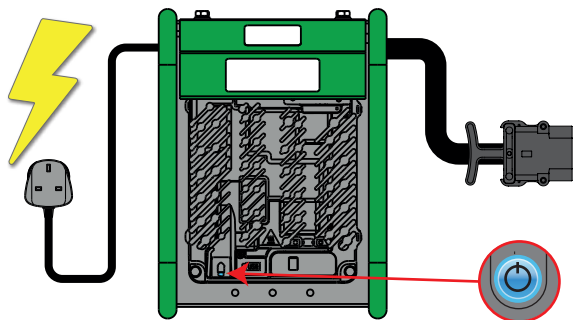
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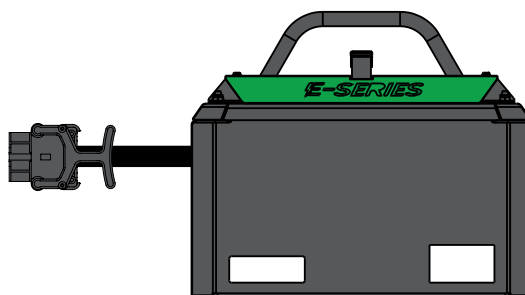
SP19053_REV1 - 06/07/2022

E-SERIES V150 MACHINE WIRING

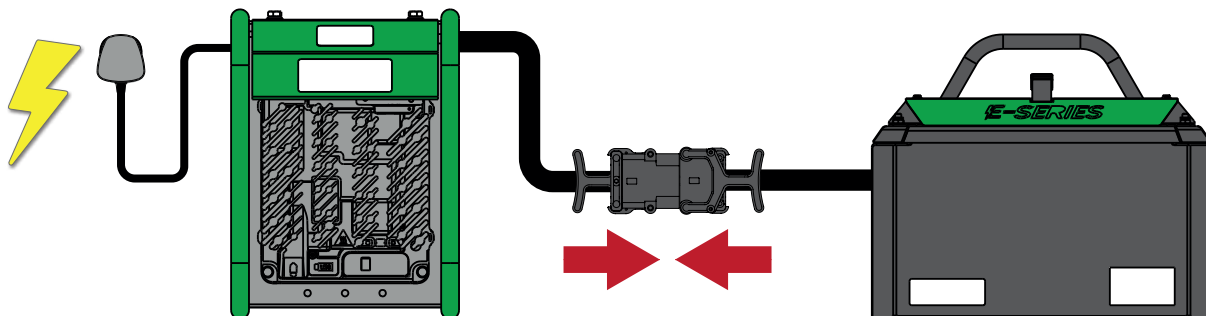




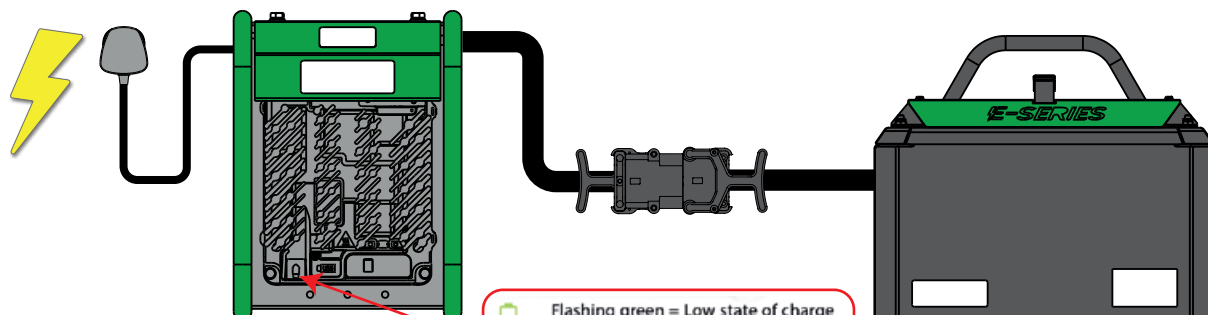
PLUG CHARGER (D164) INTO WALL/POWER SUPPLY. MAKE SURE BLUE DISPLAY LIGHTS IS ILLUMINATED TO BE SURE POWER IS LIVE TO CHARGER







DISCONNECT BATTERY (D163) FROM MOWER. BATTERY CAN REMAIN FITTED TO MOWER OR COMPLETELY REMOVED.



CONNECT BATTERY TO CHARGER USING SOCKET.

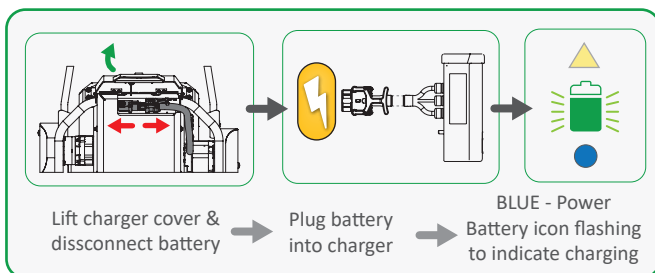


 Flashing green = Low state of charge
 Solid green = High state of charge
 Flashing green = High state of charge
 Solid green = Charge completed

SOLID GREEN LIGHT WHEN FULLY CHARGED. CHARGER CAN BE REMOVED AND RECONNECTED TO MACHINE.
(SAFE TO REMOVE CHARGER AT ANY TIME DURING CHARGE)

E-SERIES V150 FAQs

How do I charge my mower?



KEY ICONS - MAIN MENU SCREEN



Operations

Default speeds / Info / Edit Clip rates



Machine Settings

Password / Time & Date / Screen Brightness



Maintenance

Daily / Monthly / Annual



Cassette Select

Select cassette type fitted, ES-510, ES-610 only



Clip / RPM select

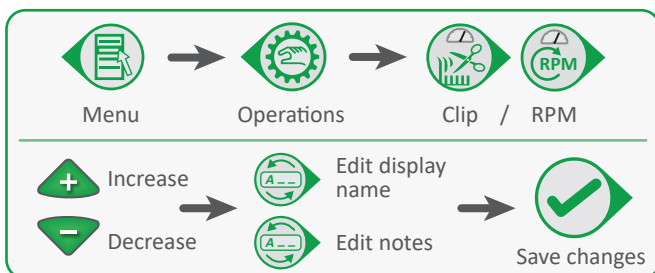
Select from default and user defined rates



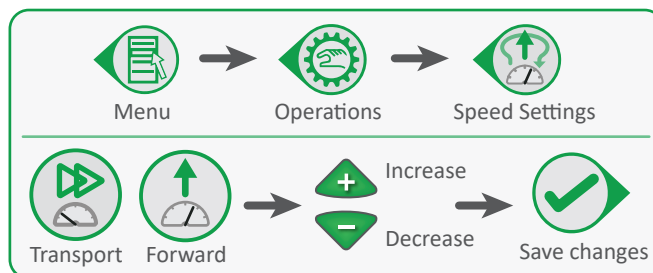
Information

Contact / Manual / FAQs

How do I edit RPM & Clip Rates?



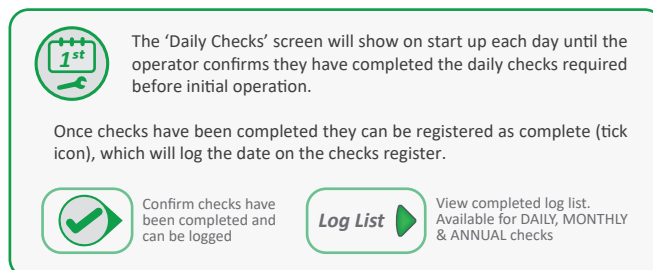
How do I edit the default Forward & Transport speed?



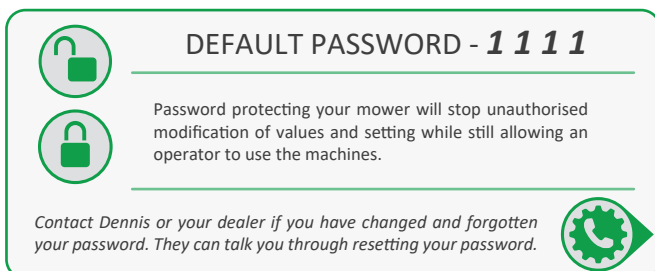
How do I backlap my cylinder?



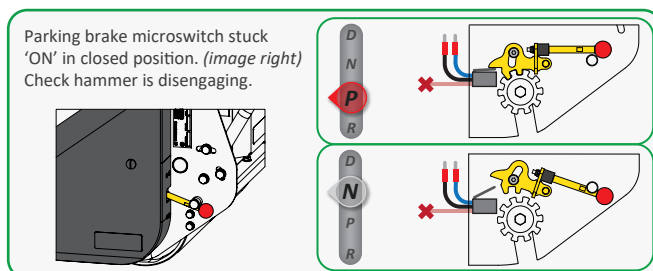
Why does 'Daily Checks' show on start up?



What is the default password?



The 'Parking Brake' icon won't disengage?



FAQ section also available within the 'Information' section



-> 'FAQ'



on the mower display screen.

ES-510/610 HEIGHT OF CUT ADJUSTMENT



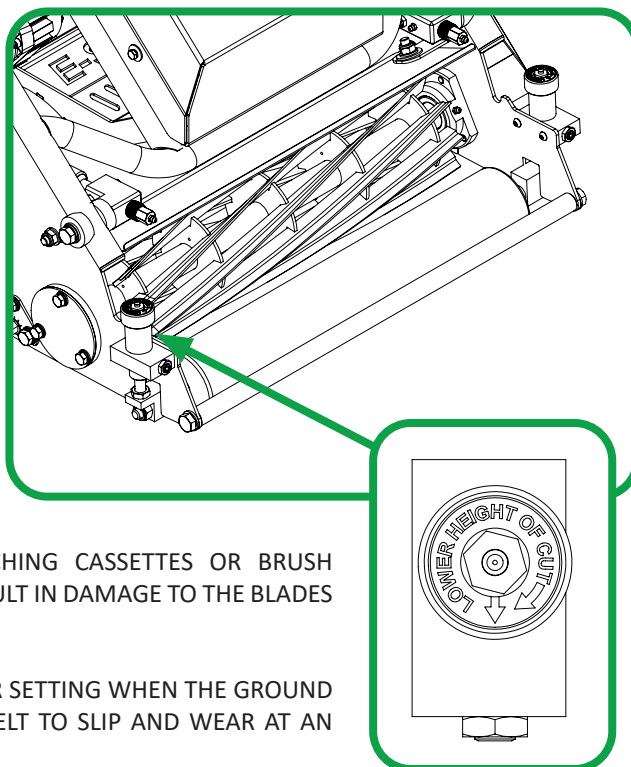
WARNING:- Always switch the machine off before adjusting the height of cut. Failure to do this may result in serious injury.

Setting for Height of Cut:

The length of grass after cutting and the depth of scarifying/brushing/dethatching, depends on the setting of the front roller in relation to the main frame of the machine.

To Adjust:

Turning the height of cut adjuster raises and lowers the front roller on the machine. It uses a click system to allow easy adjustment of the front roller position. Each click represents a change of 0.5mm (0.020"). The roller is set to be equal on leaving the factory so when the arrows point forward on both decals the roller is level.



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.



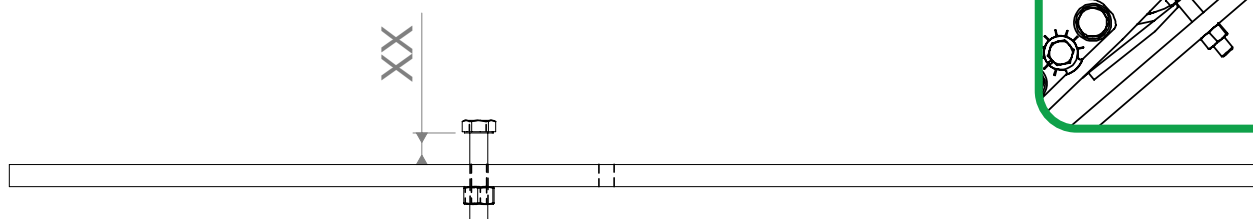
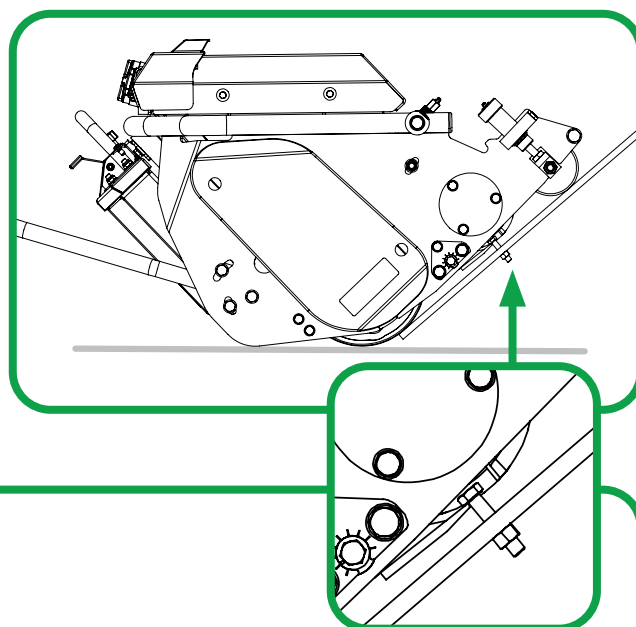
NOTE:- DO NOT ATTEMPT TO SCARIFY ON TOO LOWER SETTING WHEN THE GROUND CONDITIONS ARE DRY AS THIS COULD CAUSE THE BELT TO SLIP AND WEAR AT AN INCREASED RATE.

To accurately check the height of cut and that the machine is level on dedicated cylinder machines and cylinder cutting cassettes, 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 set screw. ('XX' in the image below)

Remember height of cut is affected by moisture of turf, weight of machine and the thatch density. Different models of machine cut at different heights when set to the same position with the setting bar. We suggest you set the machine slightly 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.



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

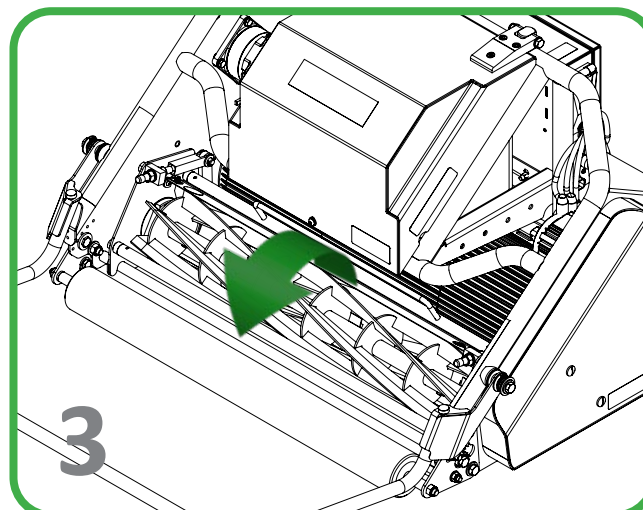
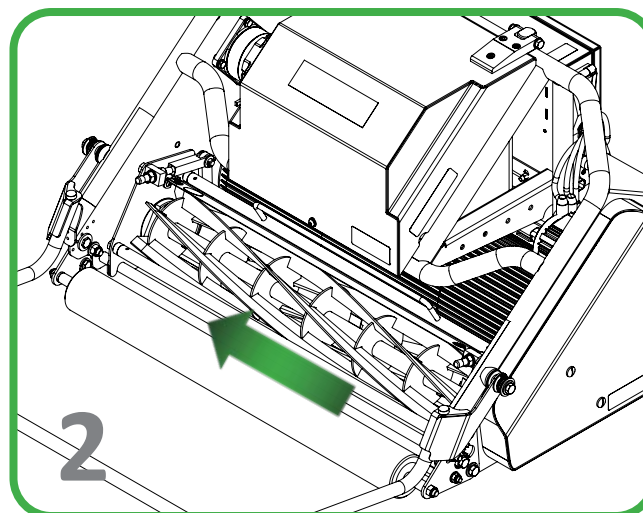
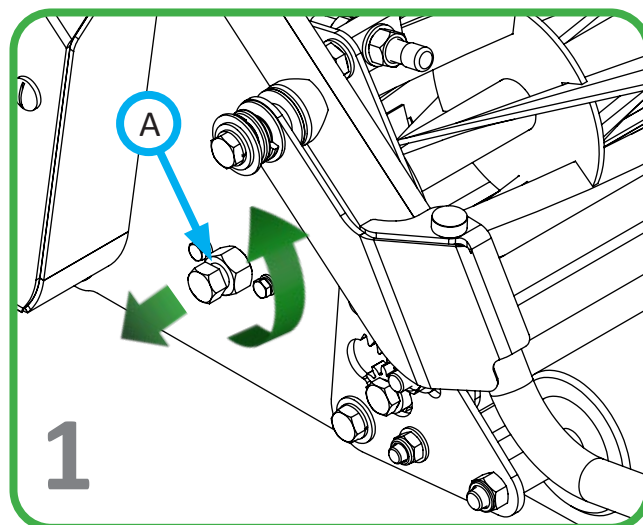
To remove the cassette unit:-

1. Unscrew **Item A** (ES-860 - 24mm Spanner for bolt) for about half an inch (13mm) until the pip end is inside the nut on the side frame. On ES-510/610 machines this will be a hand knob.
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.

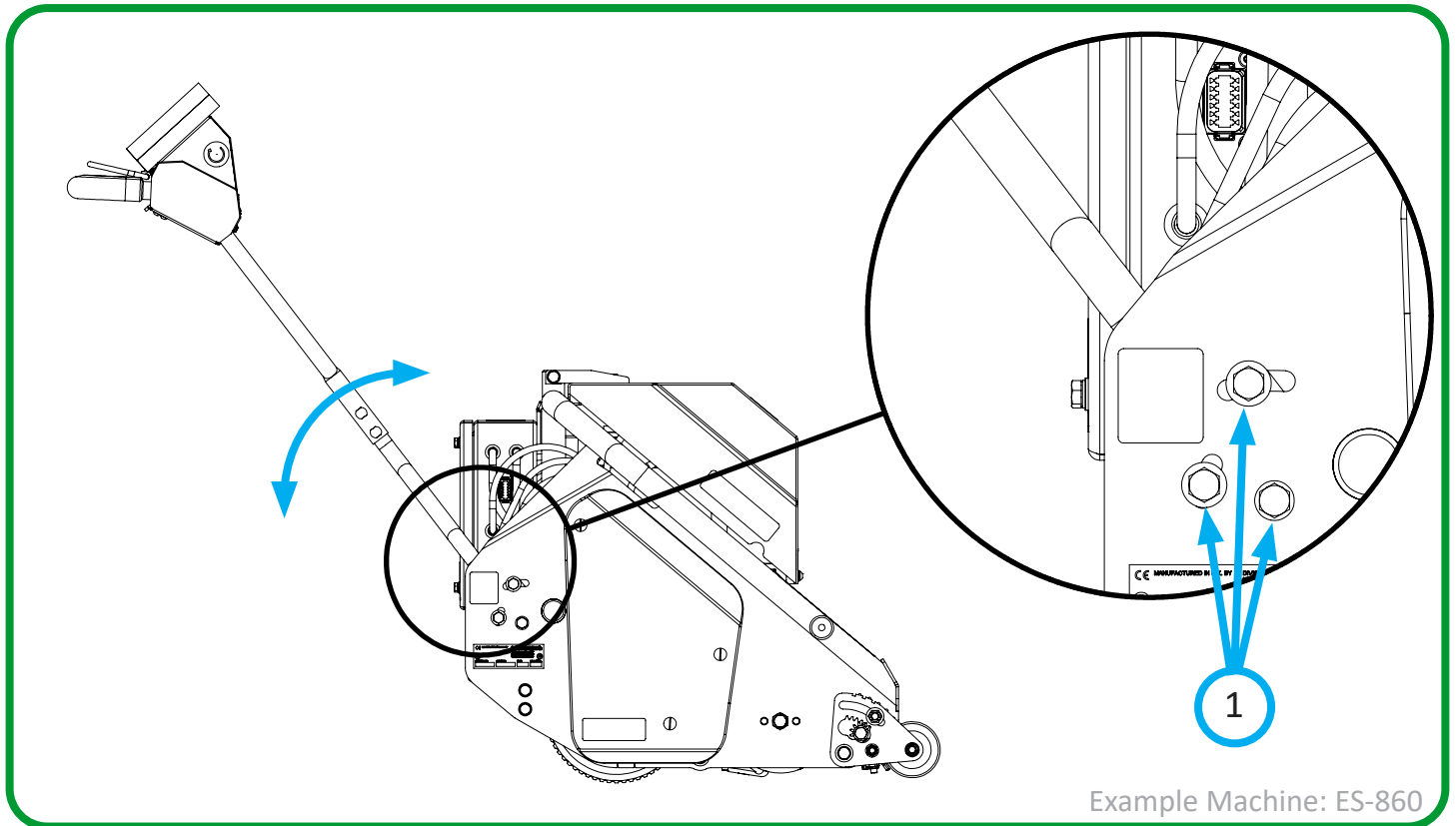
To replace the cassette unit:-

Reverse of above:

4. Place the front slots of the cassette unit frames on the two front retaining pins seen projecting from inside the frame.
5. Carefully lower the unit in a downward swinging motion until the rear slots of the cassette unit frame rest on the cross tie bar.
6. 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.
7. Tighten Item 1, engaging the pip into the hole in the side plate of the cassette. Do not over tighten.



ES-860 image shown



Example Machine: ES-860

HANDLEBAR ADJUSTMENT

The handlebar height adjustment is similar on all Dennis E-Series Mowers, G-Series Mowers and Rotary Mowers.

To set:

- Ensure machine is switched off.
- Slacken 6-off lock nuts (Item 1) [17mm spanner].
- Raise / lower the handle bar to the desired position.
- When set, tighten the nuts (Item 1).



Ensure all nuts are correctly tightened before use.

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.



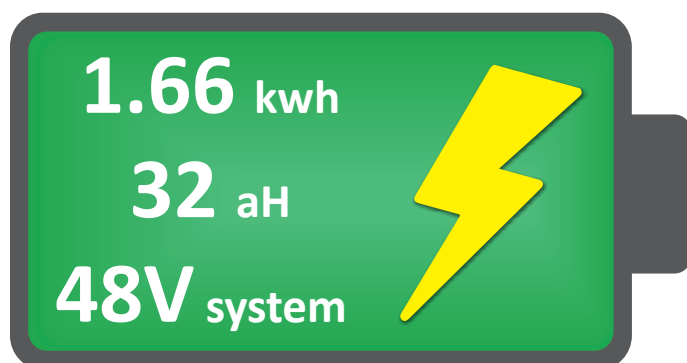
To avoid explosions or fire which can result in serious injury:

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 Inc CASE: D163

PART NUMBER Exc CASE: SP12130

BATTERY TYPE: VAR-EB-48

WEIGHT: 16 Kg

CHEMISTRY:

**MANGANESE LAMINATED LI-ION
(LMNC)**



OPERATING TEMP. RANGE:

CHARGE: 0°C TO +45°C

DISCHARGE: -20°C TO +55°C



STORAGE CONDITIONS:

-20°C TO +45°C (1 to 3 months)

-20°C TO +24°C (1 year)

HUMIDITY: BELOW 85%

E-SERIES V150 BATTERY CARE

LIMITED WARRANTY

>80% capacity for minimum 1200 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 Varta website for further details.

www.varta-ag.com/en/

STANDARDS

IEC

62133-2:2017

TRANSPORT

UN38.3 rev5 including impact and vibration testing

OTHER

RoHS directive and WEEE directive



RoHS

GENERAL INSPECTION

ROLLER TIMING BELT

Check timing belt condition for wear or damage. Also check the belt tension is correct.

CYLINDER 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 and any sign of damage on cables and plug. **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.



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!

BLADES

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

Replace worn or damaged blades.



NOTE:-

WORN OR DAMAGED BLADGES CAN BE DANGEROUS, RESULTING IN SERIOUS INJURY OR DEATH OF THE OPERATOR OR BYSTANDERS

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 refer to the **PARTS BOOK** of your machine.

LUBRICATION

PART	DETAIL	FREQUENCY
FRONT ROLLER ADJUSTERS	Apply a small quantity of copper gease or similar to the adjuster studs to prevent corrosion and ease adjustment.	2 Months

CLEANING

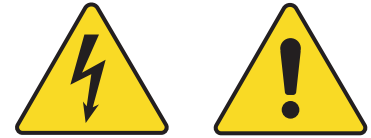
Tilt the machine backwards. Using a low pressure hose, wash all the grass from around the cassette and in the roller.



NOTE:-

DO NOT USE POWER PRESSURE WASHERS TO CLEAN THE MOWER.

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 the battery will have been disconnected and the E-Stop pressed for shipping.

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

1. Check your battery unit is connected and plugged into the mower correctly
 2. Check the E-Stop has been released on the side of the handle bars
 3. Make sure the key has been fully inserted and turns freely into the 'ON' position
 4. Check the handle harness plug connection into the electrical box (behind the battery)
 5. Make sure there is no visible signs of damage on any of the battery cables. NEVER TOUCH ANY EXPOSED WIRES!
 6. 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 'SP19053')
- Check the connection between the Handle Wiring Harness & Console Wiring Harness (large white 12 pin plug). Also check all pins in both halves of the plug are in good condition and all sit at the same level in the plug
 - Check connections to E-Stop (wired into NC (Normally Closed) contact block)
 - Check connections to Key Switch (Position 30 & Position 75)
 - Check screen connections – plug positions B & C fitted the correct way around
7. Check the battery has not been fully drained. Plug the battery unit into the charger and make sure the charger shows charge is being put into the battery.
 8. If the battery doesn't seem to be charging, at this stage, check that the physical battery is 'awake'. Remove the handle and top of the battery box and hold down (3-5 seconds) the power button on the top of the battery unit until it flashes green.

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.

- Check the state of charge of the battery unit. Place the battery unit on charge

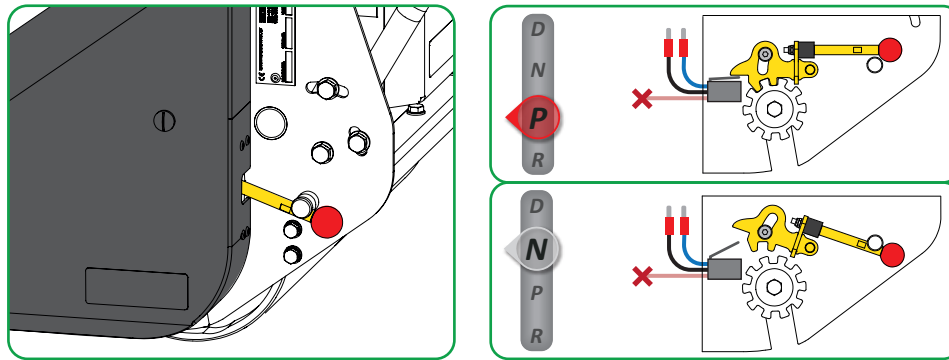
My mower won't operate and displays a 'PLEASE HOLD DEADMAN HANDLE' message

OR

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

- Check the bail bar handle is being held or fully released when attempting to operate
- Check the switch in the handle assembly is fully screwed into the housing
- Check microswitch bullet connectors are attached under the handle bar console cover and the spade connectors are attached to the back of the handle
- Check the continuity across the micro switch with a multimeter

Check the same connections on the opposite handle if you are having trouble with the mower roller drive operation



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

The 'P' (Park) 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). The brake bar should be retained below the stop
- Check the parking brake microswitch is being disengaged from the brake hammer under the left-hand side guard. Remove the side guard to see
- Check the continuity across the micro switch with a multimeter

There are no lights on my charger

See documentation SP19069 for more information about charging the battery units.

No BLUE power light illuminating on the charger indicates that the charger is not receiving power. Check the charger has been plugged in to a working power socket and check the condition of the fuse in the plug





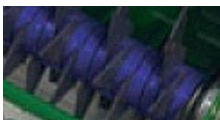



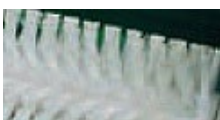



The battery light will be illuminated green when a connected battery is charging.

'Motor Comms' or 'Cylinder Comms' error displayed on screen

One of the motors is not communicating with the system as expected.

- Check motor cable connections going from electrical box into the motors on both sides
- Check all three power cables to each motor are connected and the letters on the wires match those on the motor (U, V and W)
- Check the Handle Wiring Harness is correctly connected into the electrical box
- Check the connection between the Handle Wiring Harness & Console Wiring Harness (large white 12 pin plug). Also check all pins in both halves of the plug are in good condition and all sit at the same level in the plug

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

		FT430	FT510 ES-510	FT610 ES-610
	5 BLADE CYLINDER	High quality British steel blades in a single spiral format. Incorporating easy to set cutter adjustment.		
		D091	D066	D106
	10 BLADE CYLINDER	High quality British steel blades in a single spiral format. Incorporating easy to set cutter adjustment.		
		D092	D067	D107
	1mm SCARIFIER	1mm thick replaceable, wear resistant blades. 12mm spacing for thatch removal throughout the season and autumn/spring renovation work.		
		D093	D068	D108
	2mm SCARIFIER	2mm thick replaceable, wear resistant blades. 12mm spacing for thatch removal throughout the season and autumn/spring renovation work.		
		D094	D069	D109
	2mm SCARIFIER TUNGSTEN TIPPED	The ultimate scarifier with tungsten tipped blades for heavy duty thatch removal throughout season and autumn/spring renovation work.		
		D094TT	D069TT	D109TT
	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.		
		D095	D070	D110
	VERTICUTTER TUNGSTEN TIPPED	Gives extra durability for heavy usage.		
		D095TT	D070TT	D110TT
	BRUSH	For moss and debris removal and use as a light scarifier for final pre cut preparations.		
		D096	D071	D111
	BRUSH MULTI DENSE	For moss and debris removal and use as a light scarifier for final pre cut preparations.		
		D096/M	D071/M	D111/M
	SORREL ROLLER	Replaceable spikes relieves surface tension and allows penetration of air, water and fertilizer to the root zone.		
		D098	D074	D114
	SLITTER	Helps relieve surface tension and prevents thatch.		
		D099	D075	D115
	SPRING TINE RAKE	Ideal for lifting lateral growth, helping to stand grasses up, removing dead matter or broken leaves following a match. Also helps to break up algae crust or help remove the glutinous slime that can sometimes appear on fine turf.		
		N/A	D076	D116

5 BLADE CYLINDER

- For general purpose cutting.
- Comb active or passive.

10 BLADE CYLINDER

- For cutting fine turf areas.
- Three bottom blade options.
- Comb active or passive.

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

NOTE - NOT FOR CUTTING SOIL, ONLY THATCH

- 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 around +3mm.
- **Result:** Speed improvement on greens, reduced end of season maintenance. Promotes healthy plant growth, promotes strong roots, and maximizes 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. Maximizes fertilizer penetration and promotes strong healthy plant growth and strong roots.

BRUSH

- Used for light scarifying, brushing, removing debris, cigarette ends, pine needles, moss and 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. Allows air, water and fertilizer into the root zone.
- Good for overseeding and preparing damaged areas for repair.
- Reduces surface tension.

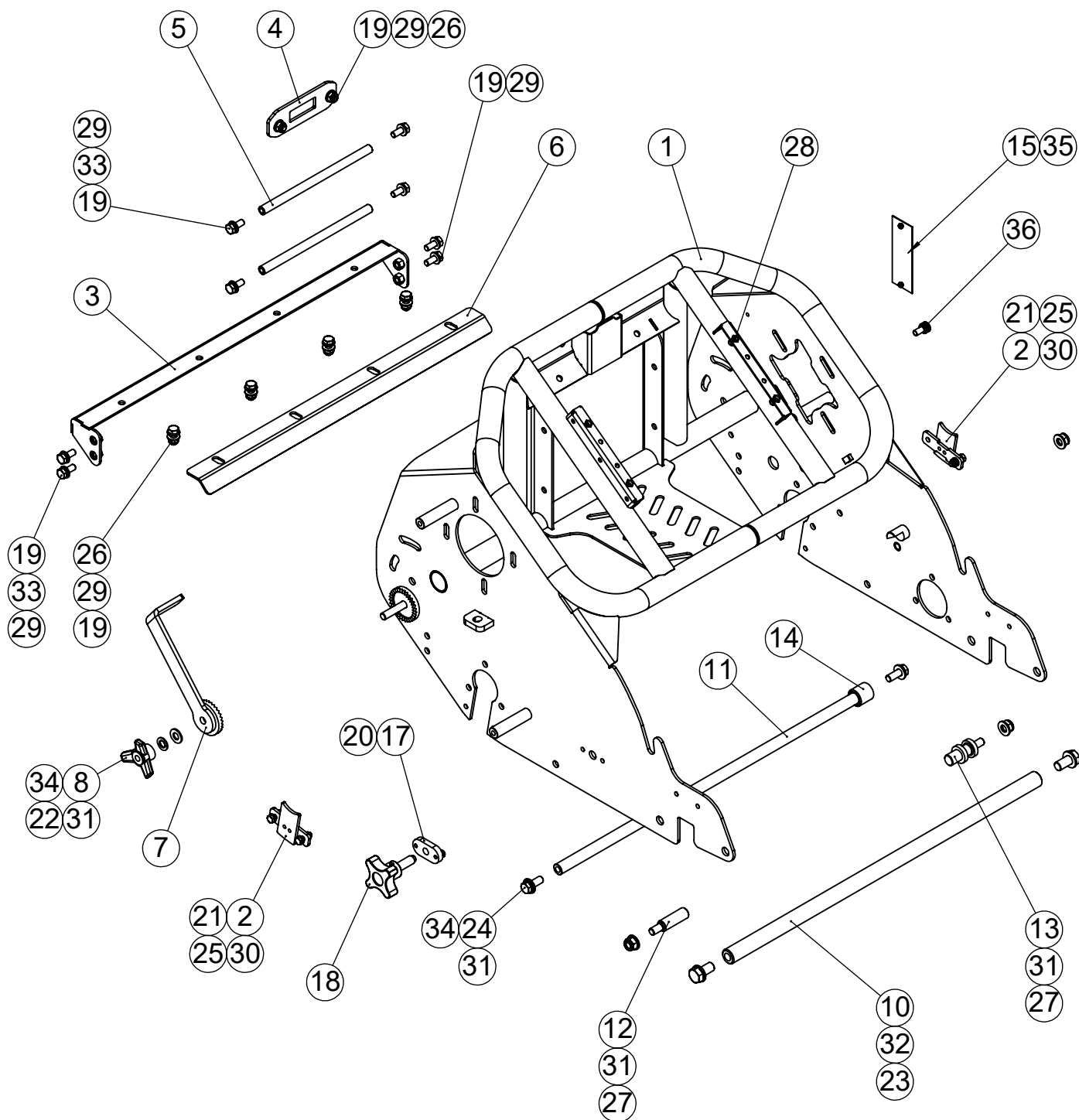
No.	Bowls	Cricket	Golf
Verticutter	Monthly	Fortnightly	Monthly
Scarifier	1-2 Months	1-2 Months	1-2 Months
Brush	As Required	As Required	As Required
Sorrel Roller	1-2 Weeks	Monthly (As required for repair)	Monthly (As required for repair)

PARTS LIST

ES-510 CHASSIS	30
ES-610 CHASSIS	32
REAR ROLLER ASSEMBLY	34
ROLLER DRIVE ASSEMBLY	37
MOTOR COVER	38
BRAKE ASSEMBLY	39
FRONT ROLLER	40
FRONT ROLLER	41
CYLINDER DRIVE ASSEMBLY	42
HANDLEBAR ASSEMBLY	43
ELECTRICAL	46
GUARDS	47
DECALS	49
BATTERY	50
GRASSBOX	52



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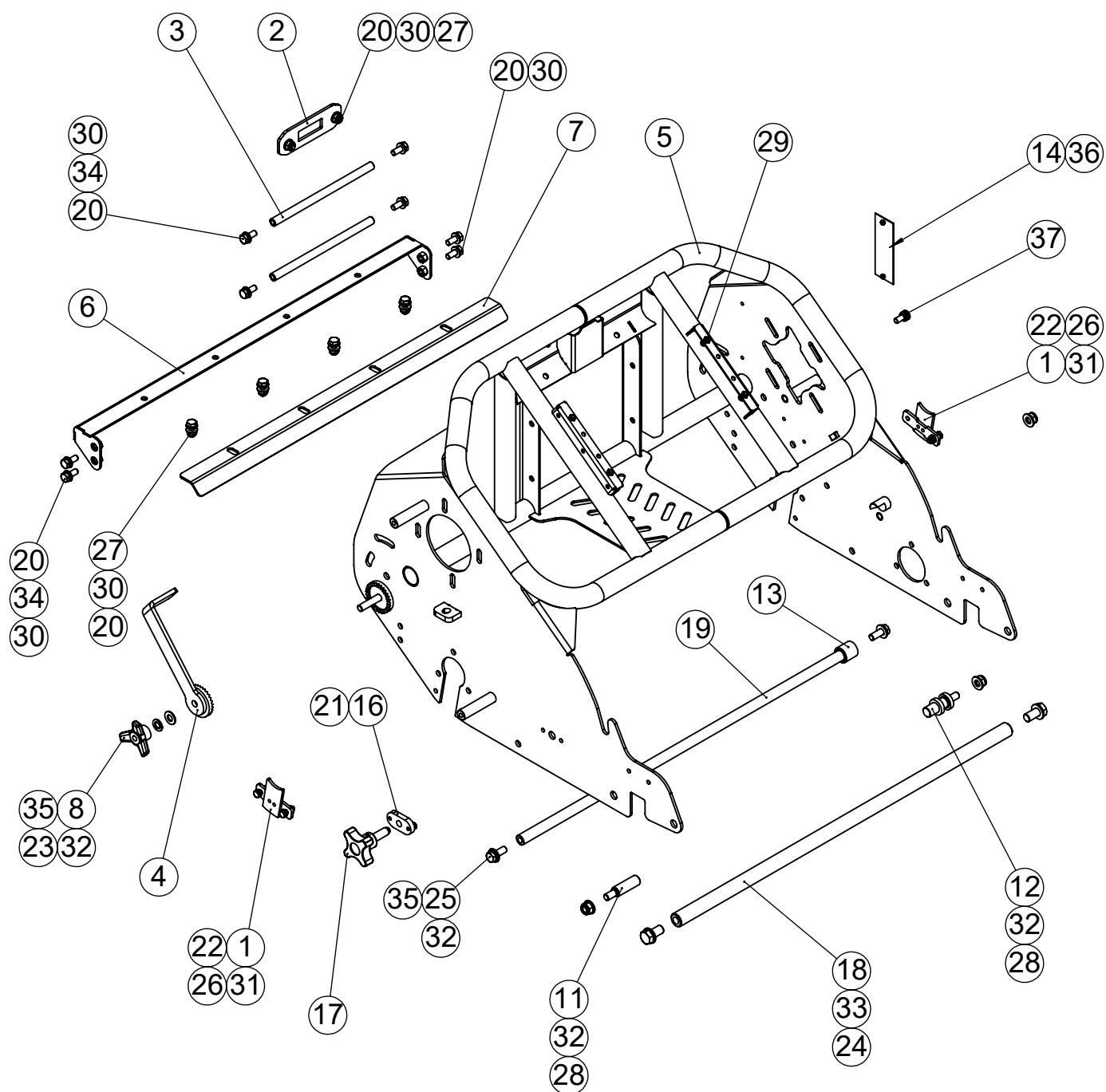
ES-510 - CASSETTE MOWER

ES-510 - CASSETTE MOWER

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	390001_REV0	ES-510 CHASSIS W.A.	1
2	390020_REV0	CHASSIS COVER W/A	2
3	390025_REV0	SCRAPER BAR W.A. 20"	1
4	390071_REV0	LATCH PLATE	1
5	390072_REV0	MOUNTING BAR	2
6	390075_REV0	20" SCRAPER BAR	1
7	390160_REV0	FT STAND W/A	1
8	F21063_REV1	LOCK KNOB	1
9	J20234_REV1	UNIT RETAINING SCREW	1
10	J20235_REV1	20" FRONT CROSS BAR	1
11	J20236_REV1	20" LOWER UNIT TIE BAR	1
12	J20237_REV2	UNIT BEARING STUD	1
13	J20238_REV1	SHOULDED BEARING STUD	1
14	J20263_REV1	FRONT STUD SPACER	1
15	J20297_REV2	SERIAL NO PLATE (DENNIS)	1
16	J20404_REV1	PIN SPIROL M5 X 24	1
17	J209078_REV1	RETAINING SCREW PLATE	1
18	J209112_REV1	KNOB PLASTIC	1
19	SP01009_REV0	HEX SET SCREW M8 X 20	14
20	SP01016_REV0	BUTTON HEAD M6 X 12	2
21	SP01028_REV0	HEX SET SCREW M6 X 20	3
22	SP01031_REV0	HEX SET SCREW M10 X 50	1
23	SP01053_REV0	HEX SET SCREW 1/2" UNF X 1"	2
24	SP01095_REV0	HEX SET SCREW 3/8" UNF X 1"	2
25	SP02004_REV0	NUT M6 NYLOC	3
26	SP02006_REV0	NUT M8 NYLOC (T)	6
27	SP02008_REV0	NUT M10 NYLOC (T)	3
28	SP02042_REV0	RIVNUT HEX M6 (0.5-3.0) [NO HEAD]	4
29	SP03008_REV0	WASHER M8 FORM A	20
30	SP03010_REV0	WASHER M6 FORM A	6
31	SP03011_REV0	WASHER M10 FORM A	6
32	SP03012_REV0	WASHER M12 FORM A	2
33	SP03029_REV0	WASHER M8 SPRING LOCK	8
34	SP03034_REV0	WASHER M10 SPRING LOCK	3
35	SP05001_REV0	RIVET 4.8 X 10	2
36	SP12092_REV0	GROMMET EXTENDED 6MM	1
37	J20216_REV2	UNIT LIMITING STUD	1



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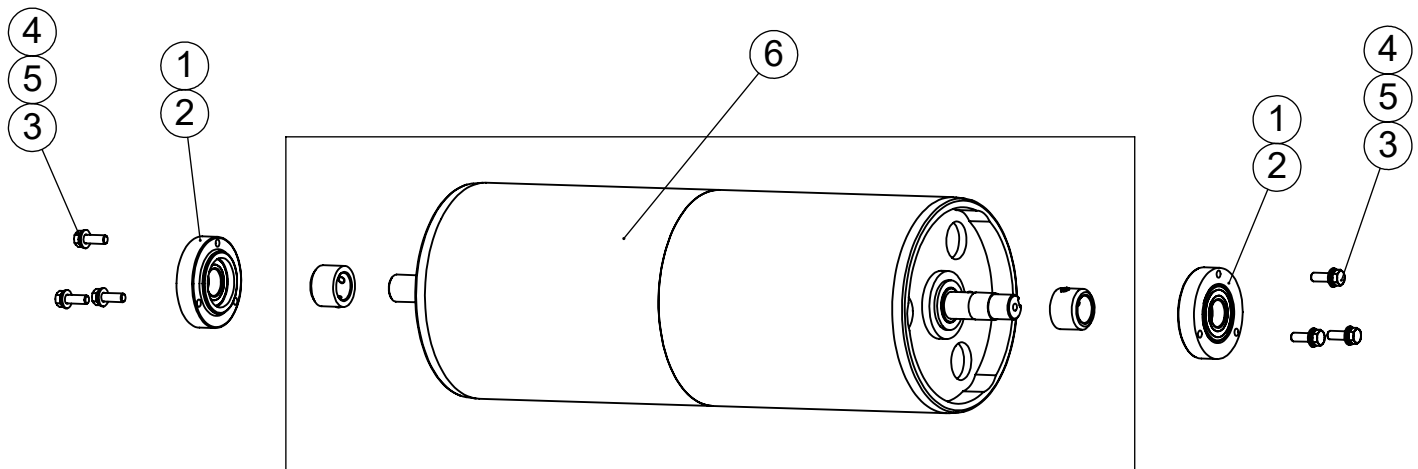
ES-610 - CASSETTE MOWER

ES-610 - CASSETTE MOWER

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	390020_REV0	CHASSIS COVER W/A	2
2	390071_REV0	LATCH PLATE	1
3	390072_REV0	MOUNTING BAR	2
4	390160_REV0	FT STAND W/A	1
5	390401_REV0	ES-610 CHASSIS W.A.	1
6	390410_REV0	SCRAPER BAR W.A. 24"	1
7	390422_REV0	24" SCRAPER BAR	1
8	F21063_REV1	LOCK KNOB	1
9	J20216_REV2	UNIT LIMITING STUD	1
10	J20234_REV1	UNIT RETAINING SCREW	1
11	J20237_REV2	UNIT BEARING STUD	1
12	J20238_REV1	SHOULDED BEARING STUD	1
13	J20263_REV1	FRONT STUD SPACER	1
14	J20297_REV2	SERIAL NO PLATE (DENNIS)	1
15	J20404_REV1	PIN SPIROL M5 X 24	1
16	J209078_REV1	RETAINING SCREW PLATE	1
17	J209112_REV1	KNOB PLASTIC	1
18	J24235_REV1	24" FRONT CROSS BAR	1
19	J24236_REV1	24" LOWER UNIT TIE BAR	1
20	SP01009_REV0	HEX SET SCREW M8 X 20	14
21	SP01016_REV0	BUTTON HEAD M6 X 12	2
22	SP01028_REV0	HEX SET SCREW M6 X 20	3
23	SP01031_REV0	HEX SET SCREW M10 X 50	1
24	SP01053_REV0	HEX SET SCREW 1/2" UNF X 1"	2
25	SP01095_REV0	HEX SET SCREW 3/8" UNF X 1"	2
26	SP02004_REV0	NUT M6 NYLOC	3
27	SP02006_REV0	NUT M8 NYLOC (T)	6
28	SP02008_REV0	NUT M10 NYLOC (T)	3
29	SP02042_REV0	RIVNUT HEX M6 (0.5-3.0) [NO HEAD]	4
30	SP03008_REV0	WASHER M8 FORM A	20
31	SP03010_REV0	WASHER M6 FORM A	6
32	SP03011_REV0	WASHER M10 FORM A	6
33	SP03012_REV0	WASHER M12 FORM A	2
34	SP03029_REV0	WASHER M8 SPRING LOCK	8
35	SP03034_REV0	WASHER M10 SPRING LOCK	3
36	SP05001_REV0	RIVET 4.8 X 10	2
37	SP12092_REV0	GROMMET EXTENDED 6MM	1



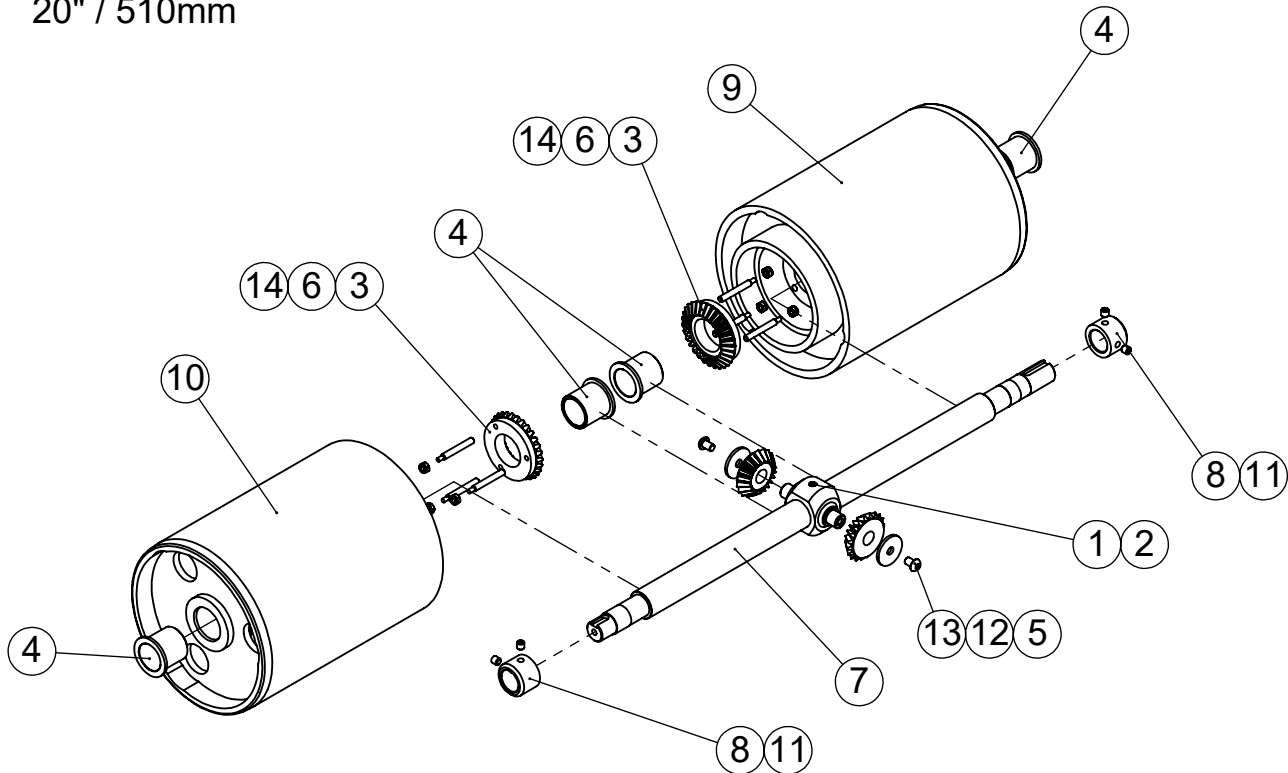
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	062662_REV1	BEARING 6205-2RS 3	2
2	229104_REV1	LANDROLL BEARING HOUSING	2
3	SP01045_REV0	HEX SET SCREW M8 X 25	6
4	SP03008_REV0	WASHER M8 FORM A	6
5	SP03029_REV0	WASHER M8 SPRING LOCK	6

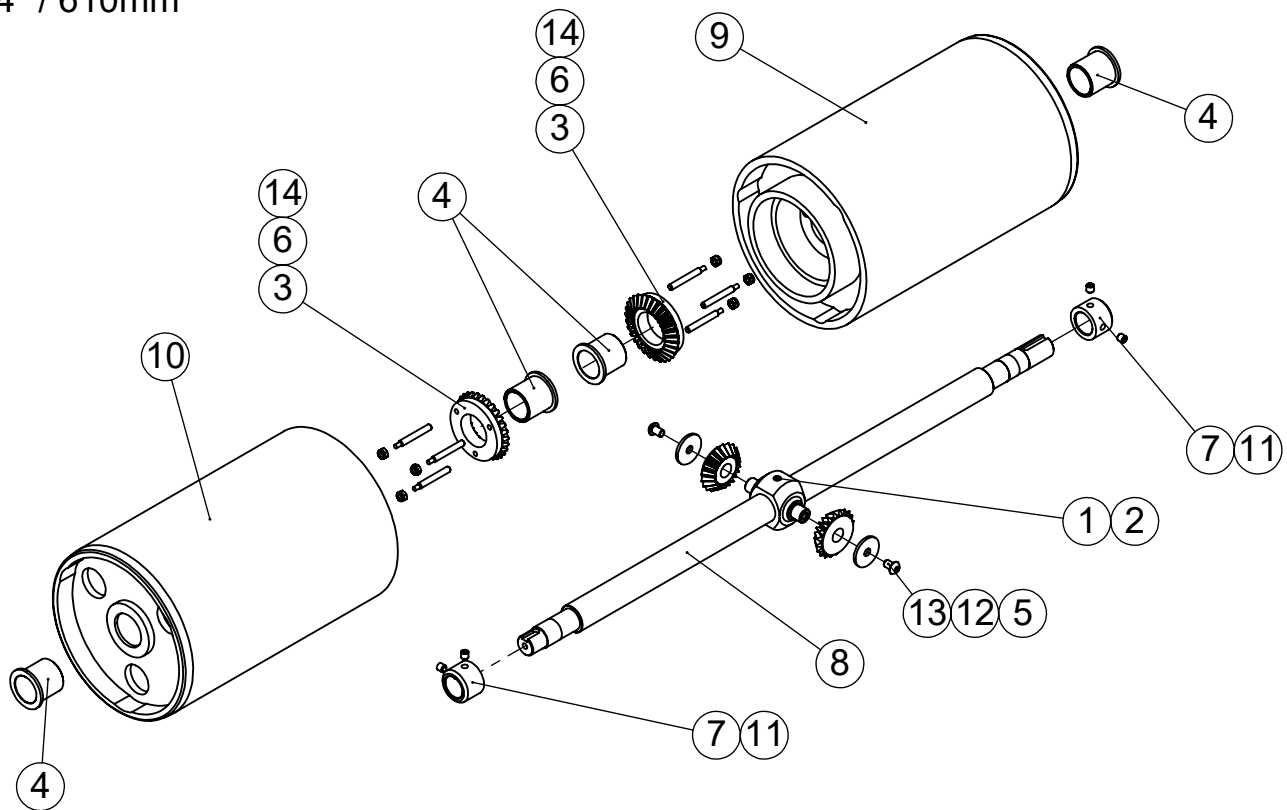
ITEM NO.	MACHINE	PART NUMBER	DESCRIPTION	QTY.
6	ES-510 / ES-20 / ES-VTT20	800600_REV0	REAR ROLLER ASSY 20"	1
6	ES-22 / ES-22U	800640_REV0	REAR ROLLER ASSY 22"	1
6	ES-610 / ES-24	800645_REV0	REAR ROLLER ASSY 24"	1
6	ES-26	800652_REV0	REAR ROLLER ASSY 26"	1

20" / 510mm

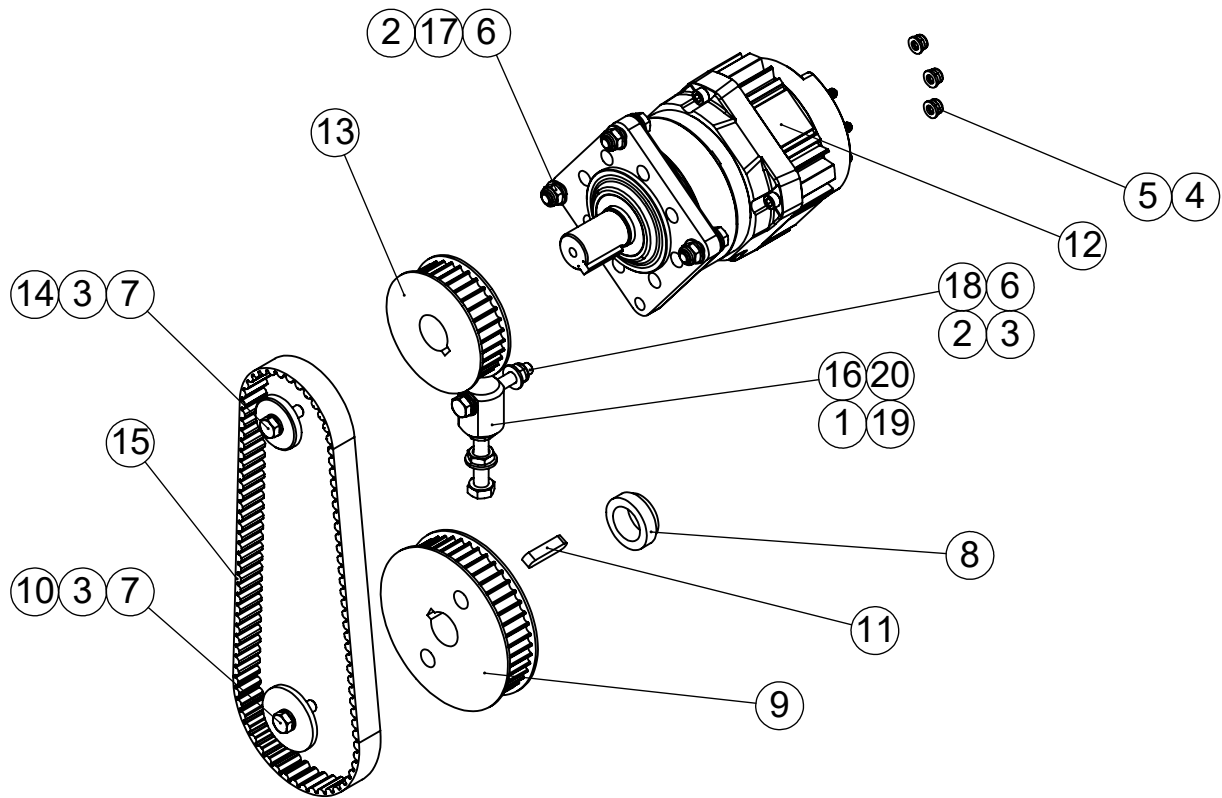


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	228054_REV0	SPIROL PIN (M8 X 50)	1
2	229020_REV1	TRUNNION	1
3	229022_REV1	30 TOOTH BEVEL GEAR	2
4	229023_REV1	BUSH AJ2024 - 1 1/2"	4
5	229025_REV2	BEVEL GEAR 20T	2
6	229118_REV3	GEAR STUD	6
7	390042_REV0	REAR ROLLER SHAFT 20"	1
8	390043_REV0	ROLLER LOCK SPACER	2
9	403790_REV1	ROLLER 20" SMOOTH R.H.	1
10	403791_REV1	ROLLER 20" SMOOTH L.H.	1
11	J20467_REV0	GRUB SCREW M8 X 8	4
12	J209249_REV0	WASHER 9 X 35 X 3	2
13	SP01012_REV0	BUTTON HEAD M8 X 12	2
14	SP02039_REV0	NUT 1/4" NYLOC (P)	6

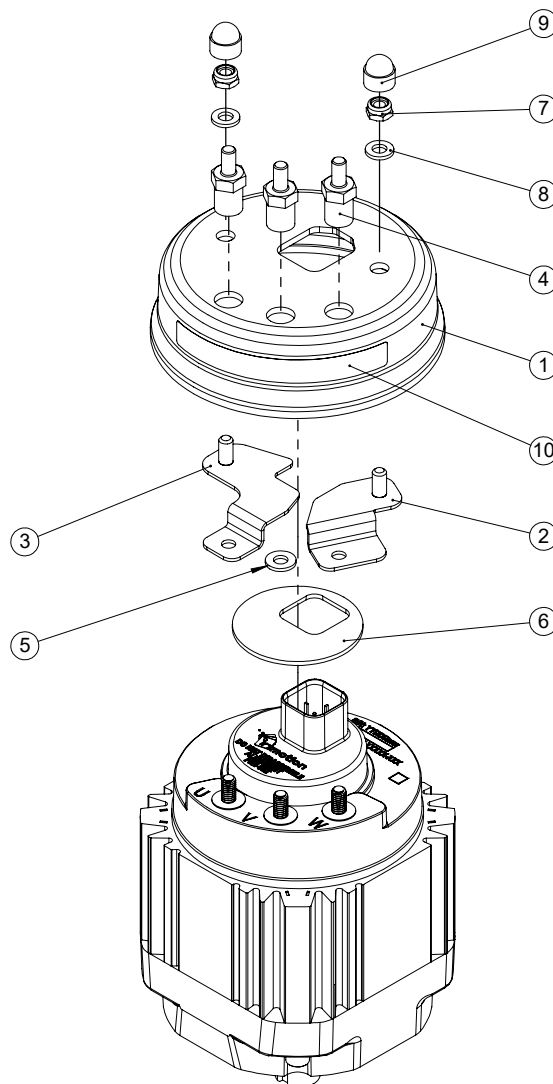
24" / 610mm



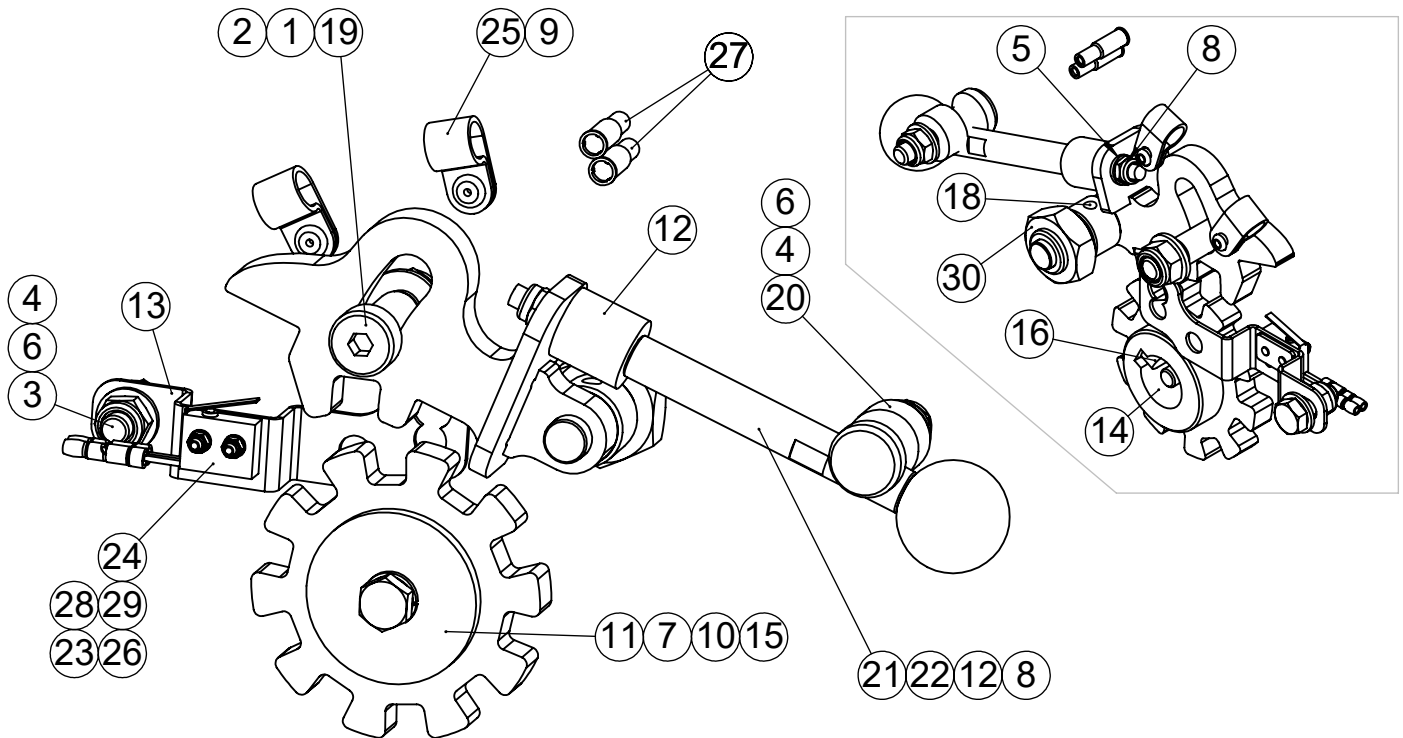
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	228054_REV0	SPIROL PIN (M8 X 50)	1
2	229020_REV1	TRUNNION	1
3	229022_REV1	30 TOOTH BEVEL GEAR	2
4	229023_REV1	BUSH AJ2024 - 1 1/2"	4
5	229025_REV2	BEVEL GEAR 20T	2
6	229118_REV3	GEAR STUD	6
7	390043_REV0	ROLLER LOCK SPACER	2
8	390420_REV0	REAR ROLLER SHAFT 24"	1
9	403792_REV1	ROLLER 24" SMOOTH R.H.	1
10	403793_REV1	ROLLER 24" SMOOTH L.H.	1
11	J20467_REV0	GRUB SCREW M8 X 8	4
12	J209249_REV0	WASHER 9 X 35 X 3	2
13	SP01012_REV0	BUTTON HEAD M8 X 12	2
14	SP02039_REV0	NUT 1/4" NYLOC (P)	6



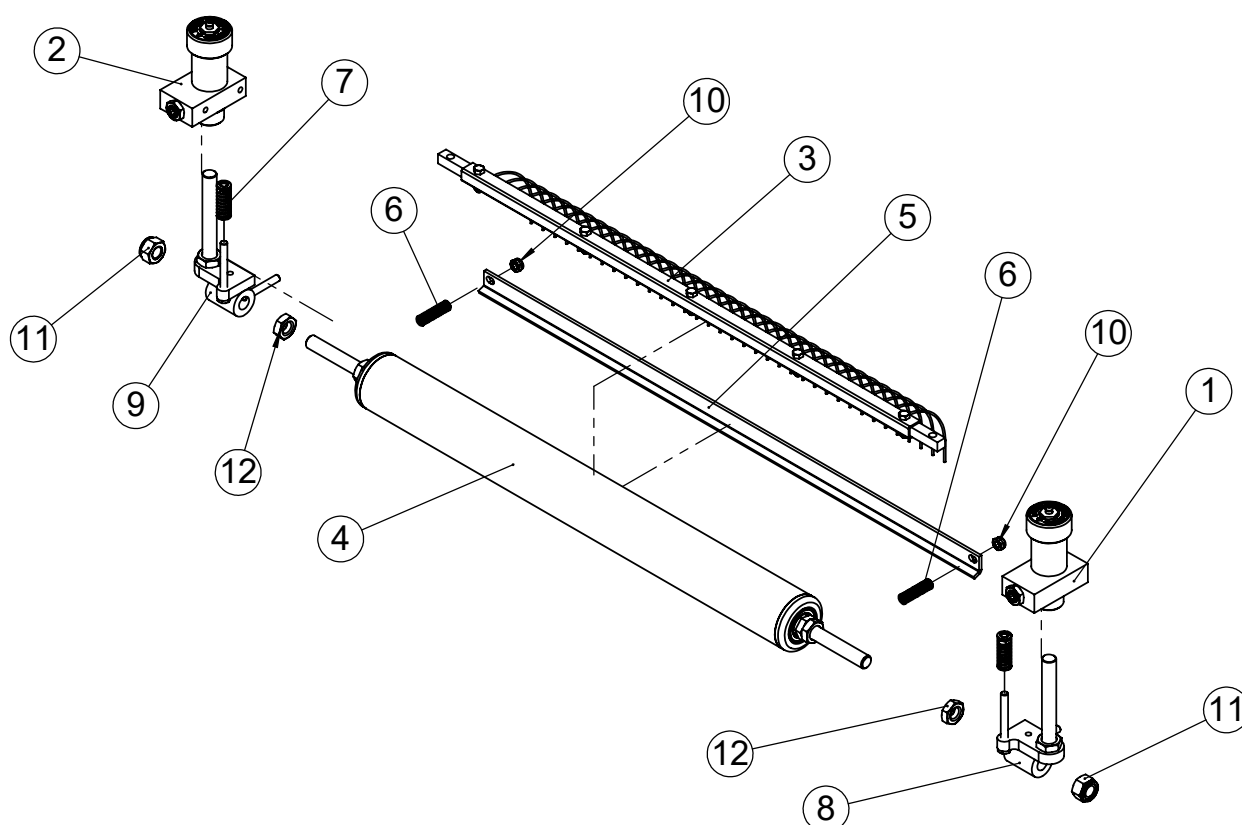
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	SP03011_REV0	WASHER M10 FORM A	1
2	SP03008_REV0	WASHER M8 FORM A	8
3	SP03029_REV0	WASHER M8 SPRING LOCK	3
4	SP03010_REV0	WASHER M6 FORM A	3
5	SP02004_REV0	NUT M6 NYLOC	3
6	SP02006_REV0	NUT M8 NYLOC (T)	4
7	SP01045_REV0	HEX SET SCREW M8 X 25	2
8	340034_REV0	ROLLER END SPACER	1
9	240020_REV1	PULLEY 44-8M-20 6F FINISHED	1
10	390046_REV0	BRAKE WASHER	1
11	F21884_REV0	KEY 8 X 7 X 35	1
12	SP15102_REV0	ASM103A 48V MOTOR & GEARBOX	1
13	SP11096_REV0	32-8M-20 6F MACHINED 26DIA	1
14	340037_REV0	PULLEY RETAINER	1
15	SP11097_REV0	BELT OMEGA 760-8M-20	1
16	370096_REV0	TENSIONER BLOCK	1
17	SP01005_REV0	HEX SET SCREW M8 X 30	3
18	SP01023_REV0	HEX SET SCREW M8 X 60	1
19	SP01047_REV0	HEX SET SCREW M10 X 60	1
20	SP02013_REV0	NUT M10 LOCK (THIN)	2



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



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	SP03011_REV0	WASHER M10 FORM A	1
2	SP02008_REV0	NUT M10 NYLOC (T)	1
3	SP01009_REV0	HEX SET SCREW M8 X 20	1
4	SP03008_REV0	WASHER M8 FORM A	3
5	SP03010_REV0	WASHER M6 FORM A	1
6	SP02006_REV0	NUT M8 NYLOC (T)	2
7	SP03029_REV0	WASHER M8 SPRING LOCK	1
8	SP02004_REV0	NUT M6 NYLOC	1
9	SP05001_REV0	RIVET 4.8 X 10	2
10	SP01045_REV0	HEX SET SCREW M8 X 25	1
11	390046_REV0	BRAKE WASHER	1
12	SP14053_REV0	AV BUSH	1
13	340189_REV1	BRAKE SENSOR BRACKET	1
14	370175_REV0	BRAKE BOSS	1
15	340185_REV1	BRAKE DISC	1
16	SP10001_REV2	KEY 8 X 7 X 20 RD END	1
17	390110_REV0	BRAKE HAMMER W.A.	1
18	340197_REV0	BRAKE BUSH	1
19	SP01029_REV0	SHOULDER BOLT 12 X 25 M10	1
20	240183_REV0	BRAKE RETAINER	1
21	390115_REV0	BRAKE BAR	1
22	J20017_REV1	KNOB - RED	1
23	340135_REV0	MICROSWITCH MOUNT PLATE	1
24	SP12007_REV0	MICRO SWITCH DC1C-C3LB	1
25	SP14019_REV0	P CLIP 10MM NYLON	2
26	SP12014_REV0	ELECTRICAL CONNECTOR MALE BULLET (RED)	2
27	SP12015_REV0	ELECTRICAL CONNECTOR FEMALE BULLET (RED)	2
28	SP03039_REV0	WASHER M2.5 FORM A	2
29	SP02059_REV0	NUT M2.5 NYLOC (P)	2
30	SP02034_REV0	NUT 3/4" UNF STD	1

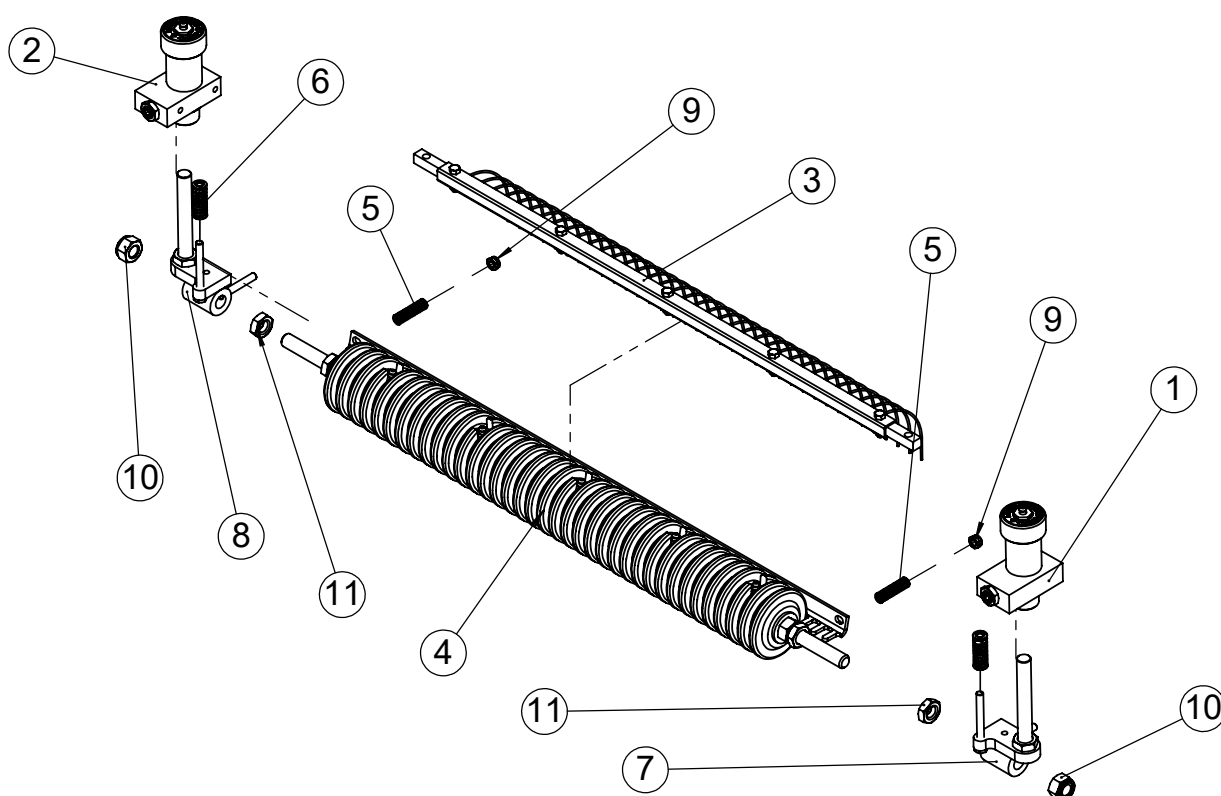


ES-510

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	800148_REV1	CLICK HEIGHT ADJUSTER L.H.	1
2	800149_REV1	CLICK HEIGHT ADJUSTER R.H.	1
3	800180_REV0	COMB BAR SUB ASSY 20"	1
4	800502_REV0	FINE TURF ROLLER 20"	1
5	J20250_REV1	FRONT ROLLER SCRAPER BAR 20"	1
6	J20505_REV1	SPRING SCRAPER	2
7	J20510_REV1	SPRING COMB BAR	2
8	J20521_REV1	END BLOCK LH	1
9	J20522_REV1	END BLOCK RH	1
10	SP02004_REV0	NUT M6 NYLOC	4
11	SP02010_REV0	NUT M12 NYLOC (T)	2
12	SP02014_REV0	NUT M12 LOCK (THIN)	2

ES-610

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
3	800181_REV0	COMB BAR SUB ASSY 24"	1
4	800503_REV0	FINE TURF ROLLER 24"	1
5	J24250_REV1	FRONT ROLLER SCRAPER BAR 24"	1

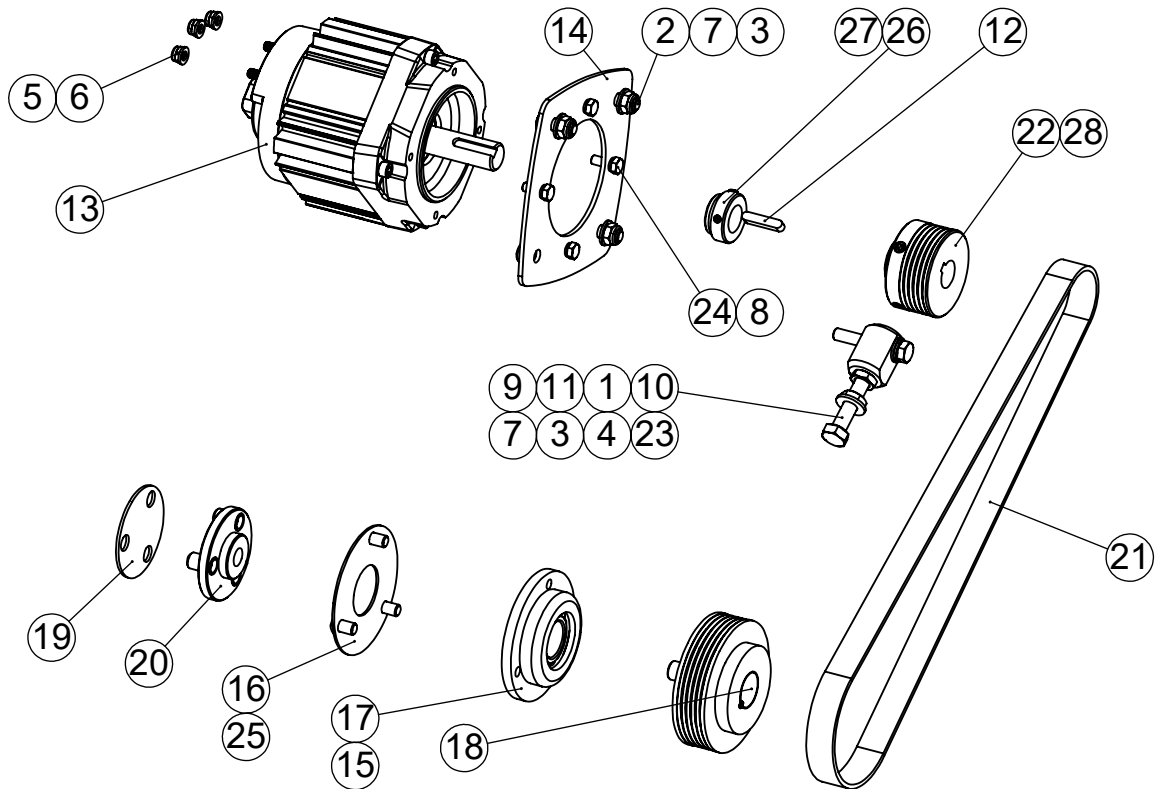


ES-510

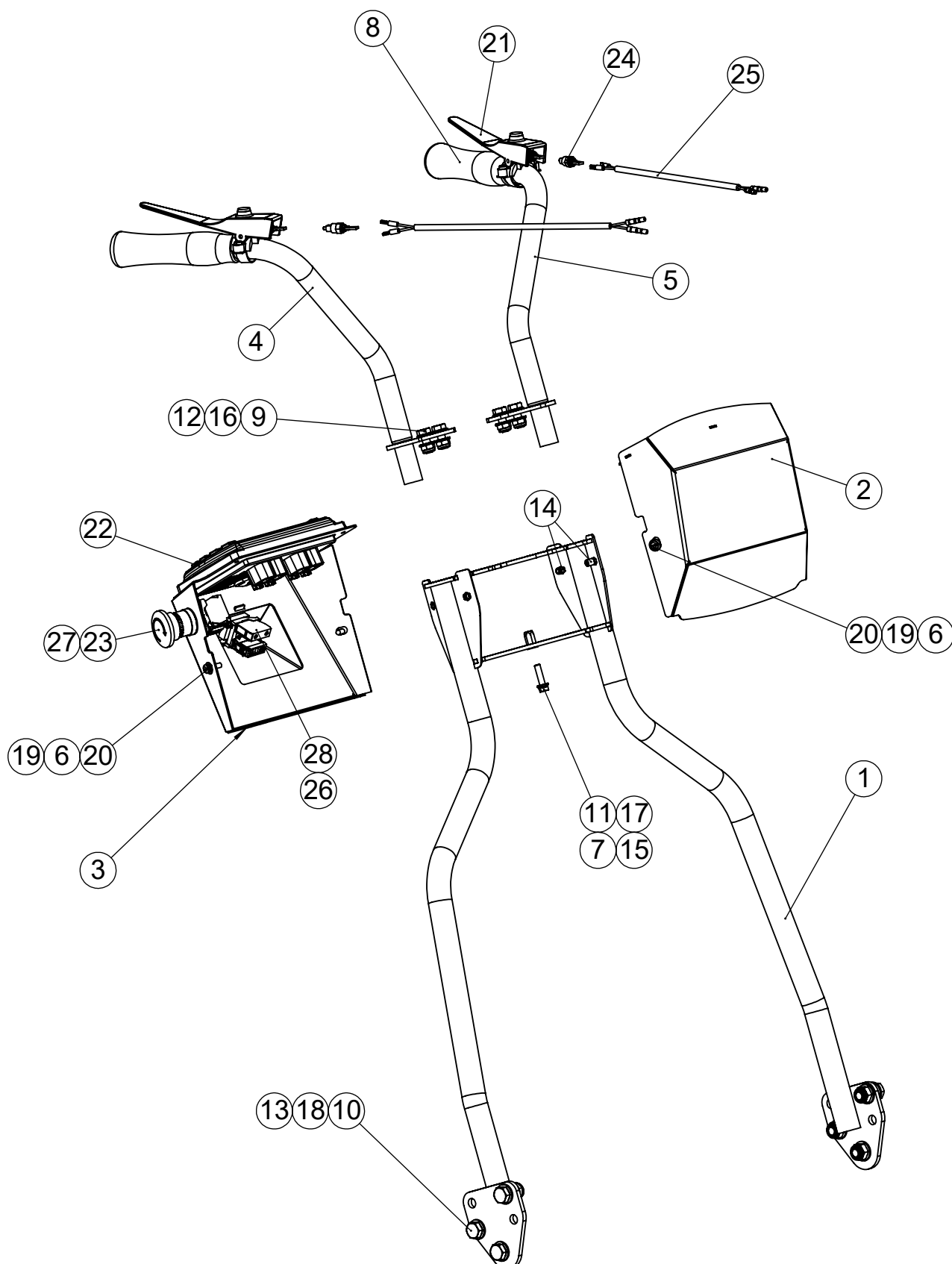
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	800148_REV1	CLICK HEIGHT ADJUSTER L.H.	1
2	800149_REV1	CLICK HEIGHT ADJUSTER R.H.	1
3	800180_REV0	COMB BAR SUB ASSY 20"	1
4	D060WR_REV0	FT510 WEILE ROLLER	1
5	J20505_REV1	SPRING SCRAPER	2
6	J20510_REV1	SPRING COMB BAR	2
7	J20521_REV1	END BLOCK LH	1
8	J20522_REV1	END BLOCK RH	1
9	SP02004_REV0	NUT M6 NYLOC	4
10	SP02010_REV0	NUT M12 NYLOC (T)	2
11	SP02014_REV0	NUT M12 LOCK (THIN)	2

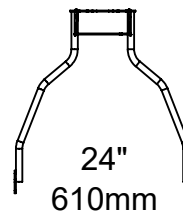
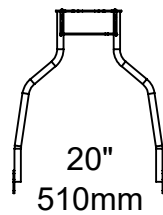
ES-610

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
3	800181_REV0	COMB BAR SUB ASSY 24"	1
4	D100WR_REV0	FT610 WEILE ROLLER	1



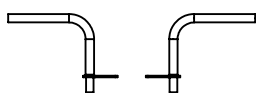
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	SP03011_REV0	WASHER M10 FORM A	1
2	SP01009_REV0	HEX SET SCREW M8 X 20	3
3	SP03008_REV0	WASHER M8 FORM A	8
4	SP03029_REV0	WASHER M8 SPRING LOCK	1
5	SP03010_REV0	WASHER M6 FORM A	3
6	SP02004_REV0	NUT M6 NYLOC	3
7	SP02006_REV0	NUT M8 NYLOC (T)	4
8	E1-1061_REV0	WASHER M6 SPRING	4
9	370096_REV0	TENSIONER BLOCK	1
10	SP01047_REV0	HEX SET SCREW M10 X 60	1
11	SP02013_REV0	NUT M10 LOCK (THIN)	2
12	SP10005_REV0	KEY 6 X 6 X 30 RD END	1
13	SP15104_REV0	ASM106 48V MOTOR	1
14	370135_REV0	MOTOR PLATE	1
15	J20255_REV0	BEARING 5205 - 3205 2RS	1
16	J20008_REV1	BACK PLATE WITH HOLE	1
17	J209206_REV1	CASSETTE DRIVE BEARING HOUSING	1
18	J209203_REV1	CASSETTE DRIVEN PULLEY / SHAFT	1
19	J20222_REV1	CORK BUFFER	1
20	J20221_REV2	MALE COUPLING	1
21	J209005_REV1	BELT RIBBED 5PK 915	1
22	SP11067_REV1	PULLEY DIA 60 PK 5 RIB	1
23	SP01022_REV0	HEX SET SCREW M8 X 50	1
24	SP01008_REV0	HEX SET SCREW M6 X 16	4
25	SP01012_REV0	BUTTON HEAD M8 X 12	3
26	390045_REV0	V150 MOTOR SPACER	1
27	D8068_REV0	GRUB SCREW M6 X 6	2
28	D8154_REV1	GRUB SCREW M8 X 16	2





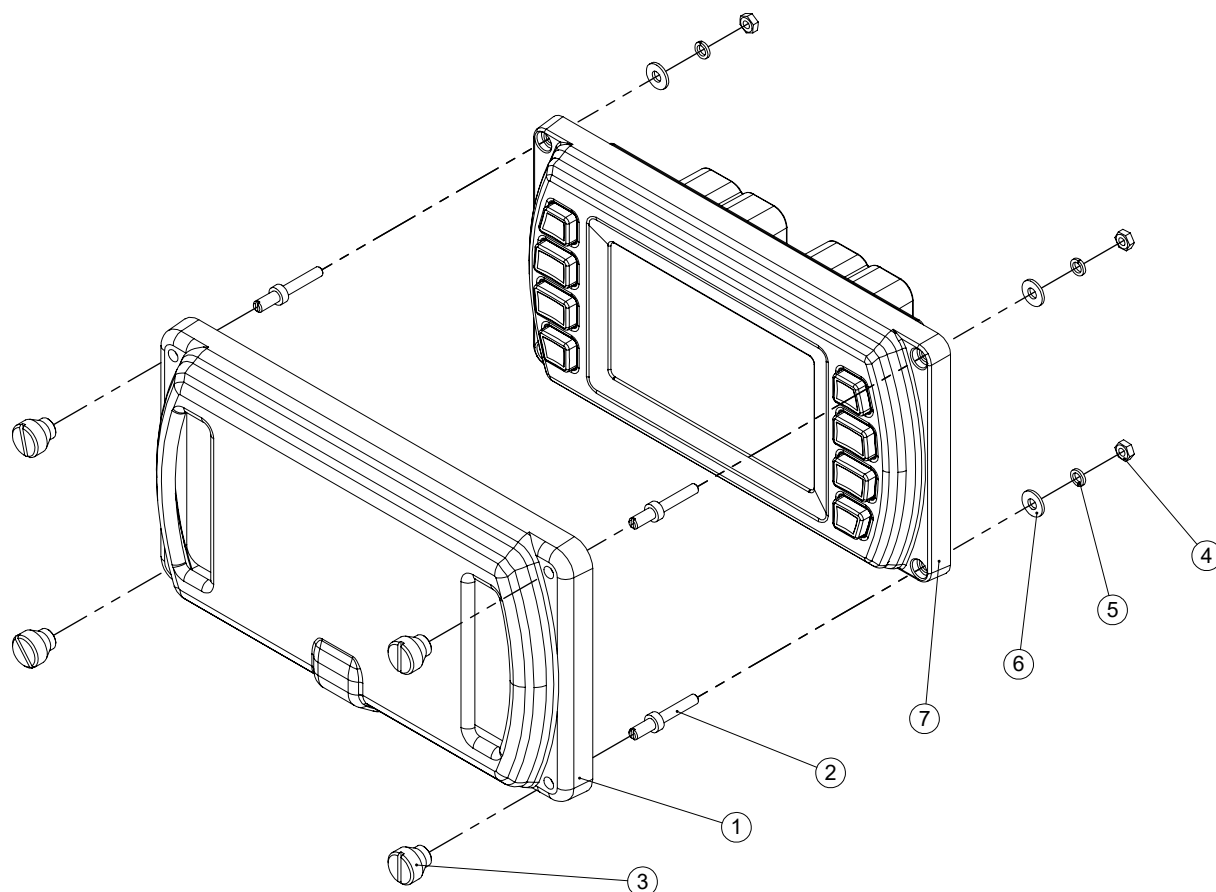
ITEM NO.	MACHINE	PART NUMBER	DESCRIPTION	QTY.
1	ES-510	390080_REV0	20" LOWER HANDLES W/A	1
1	ES-610	390415_REV0	24" LOWER HANDLES W/A	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
2	390086_REV0	TOP CONSOLE W/A	1
3	390090_REV1	BOTTOM CONSOLE W/A	1
4	390105_REV0	RH BARROW HANDLE W/A	1
5	390106_REV0	LH BARROW HANDLE W/A	1
6	E1-1060_REV0	M5 SPRING WASHER	4
7	E1-1061_REV0	WASHER M6 SPRING	1
8	J20107_REV0	HANDLE GRIP RUBBER	2
9	SP01009_REV0	HEX SET SCREW M8 X 20	4
10	SP01035_REV0	HEX SET SCREW M10 X 25	6
11	SP01101_REV0	SCREW M6 X 25 SLOTTED	1
12	SP02006_REV0	NUT M8 NYLOC (T)	4
13	SP02008_REV0	NUT M10 NYLOC (T)	6
14	SP02041_REV0	RIVNUT HEX M5 (0.5-3.0) [NO HEAD]	4
15	SP02043_REV0	RIVNUT HEX M6 (4.0-6.0) [NO HEAD]	1
16	SP03008_REV0	WASHER M8 FORM A	8
17	SP03010_REV0	WASHER M6 FORM A	1
18	SP03011_REV0	WASHER M10 FORM A	12
19	SP03013_REV0	WASHER M5 FORM C	4
20	SP04001_REV0	SCREW M5 X 16 SLOTTED	4
21	SP12010_REV0	DEADMAN LEVER	2
22	SP12099_REV0	DISPLAY PV450	1
23	SP12101_REV0	E-STOP	1
24	SP12142_REV0	DEADMAN SWITCH (0028555)	2
25	SP12151_REV0	V150 HANDLE BAR HARNESS CABLE	2
26	SP12186_REV0	ROUND GREEN PUSH BUTTON HEAD	1
27	SP12187_REV0	XB4 SERIES, SINGLE CONTACT BLOCK, 1 NC	1
28	SP12189_REV0	XB4 CONTACT BLOCK - 2NO - ZD4PA103	1

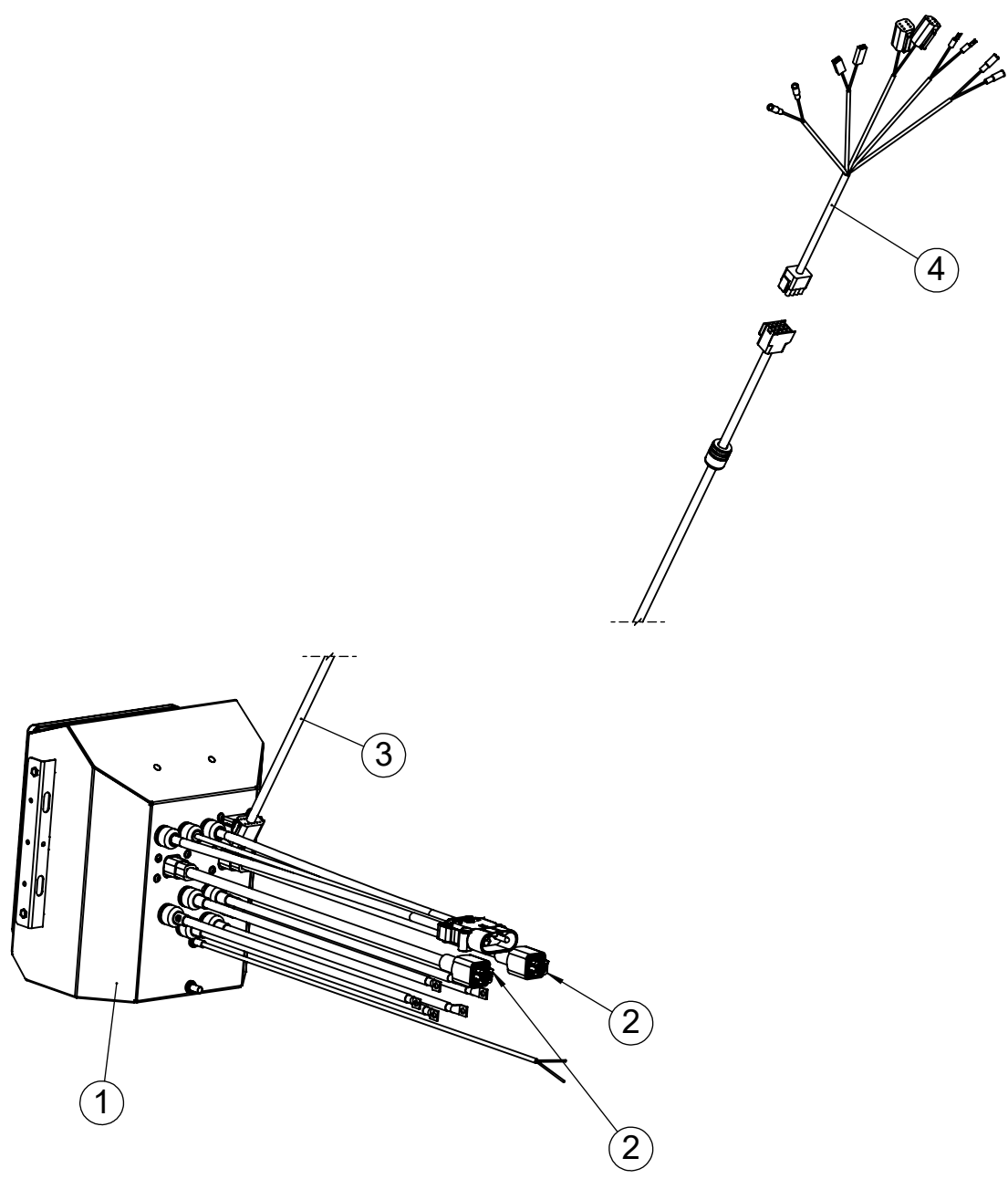


T-HANDLES OPTION

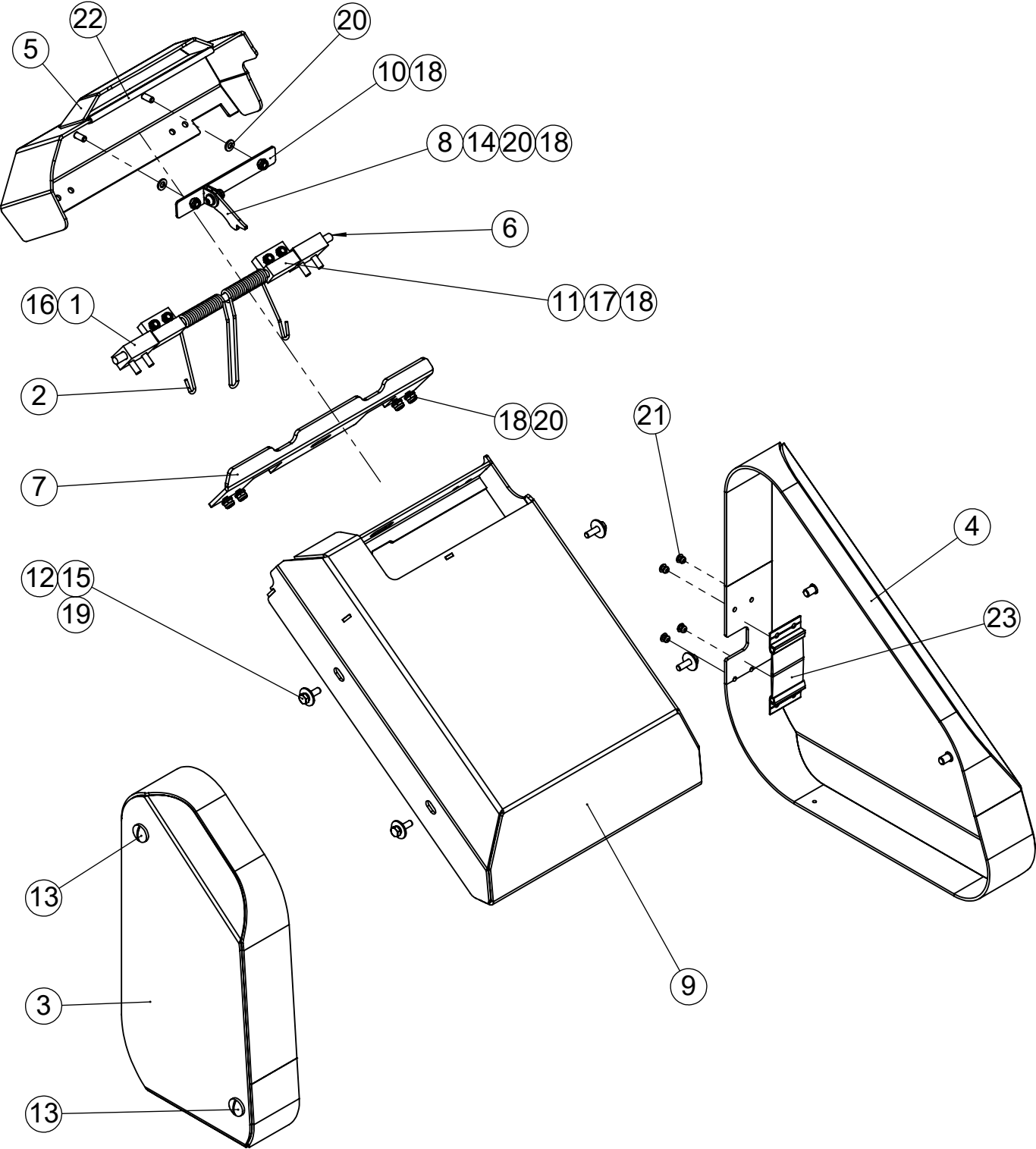
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
REPLACES 4 & 5	390100_REV0	T HANDLE W/A	2



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



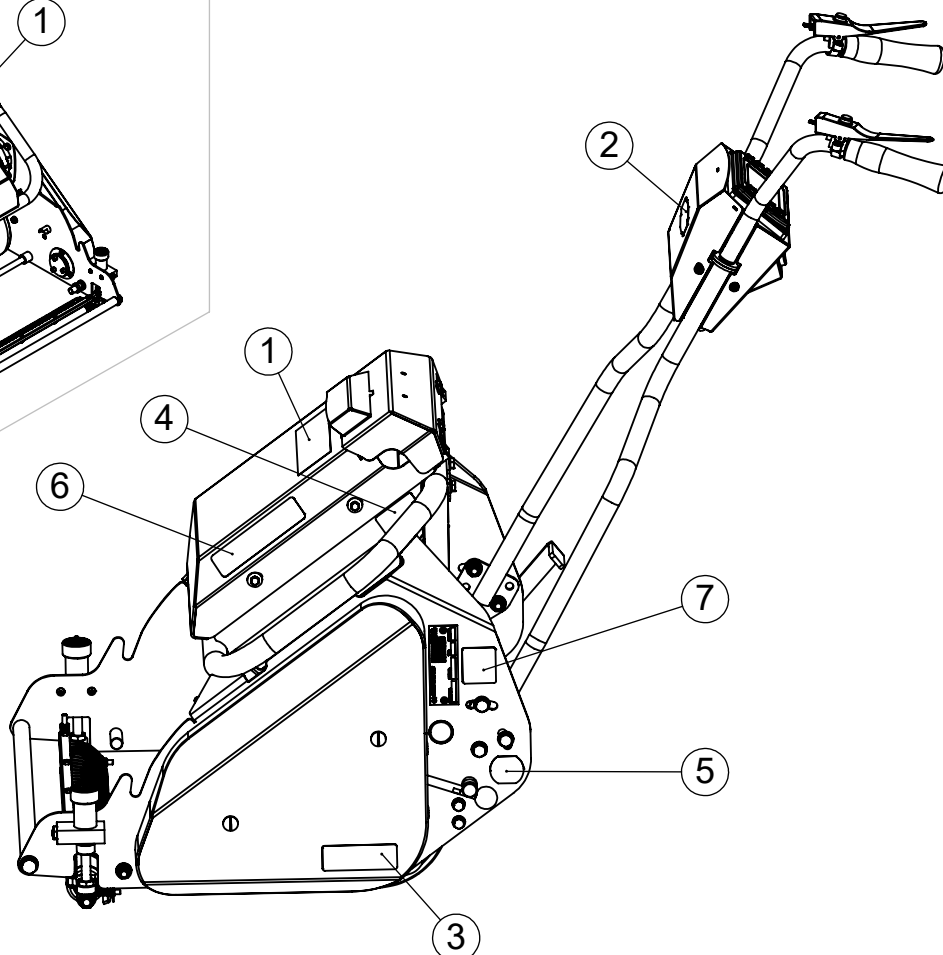
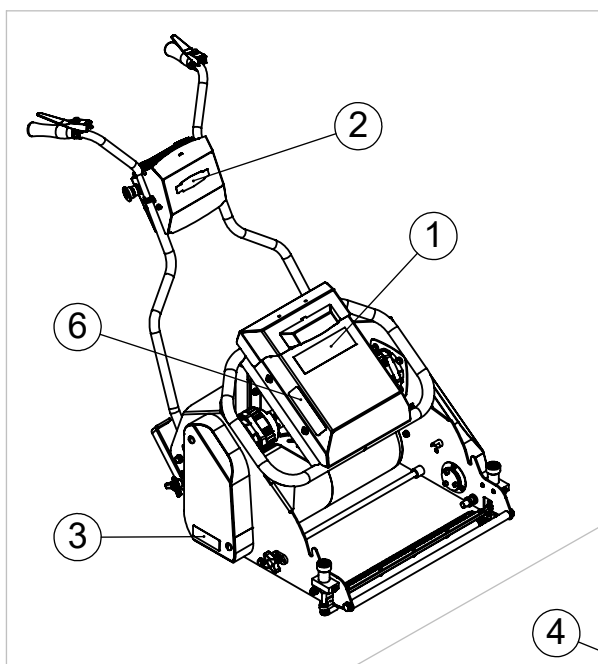
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	800595A_REV0	V150 ELECTRICAL BOX (EFZ48143A)	1
2	SP12136_REV0	V150 MOTOR WIRING HARNESS (F42293)	2
3	SP12137_REV0	V150 HANDLE WIRING HARNESS (F4222)	1
4	SP12138_REV0	V150 HANDLE CONTROL HARNESS (F42263)	1



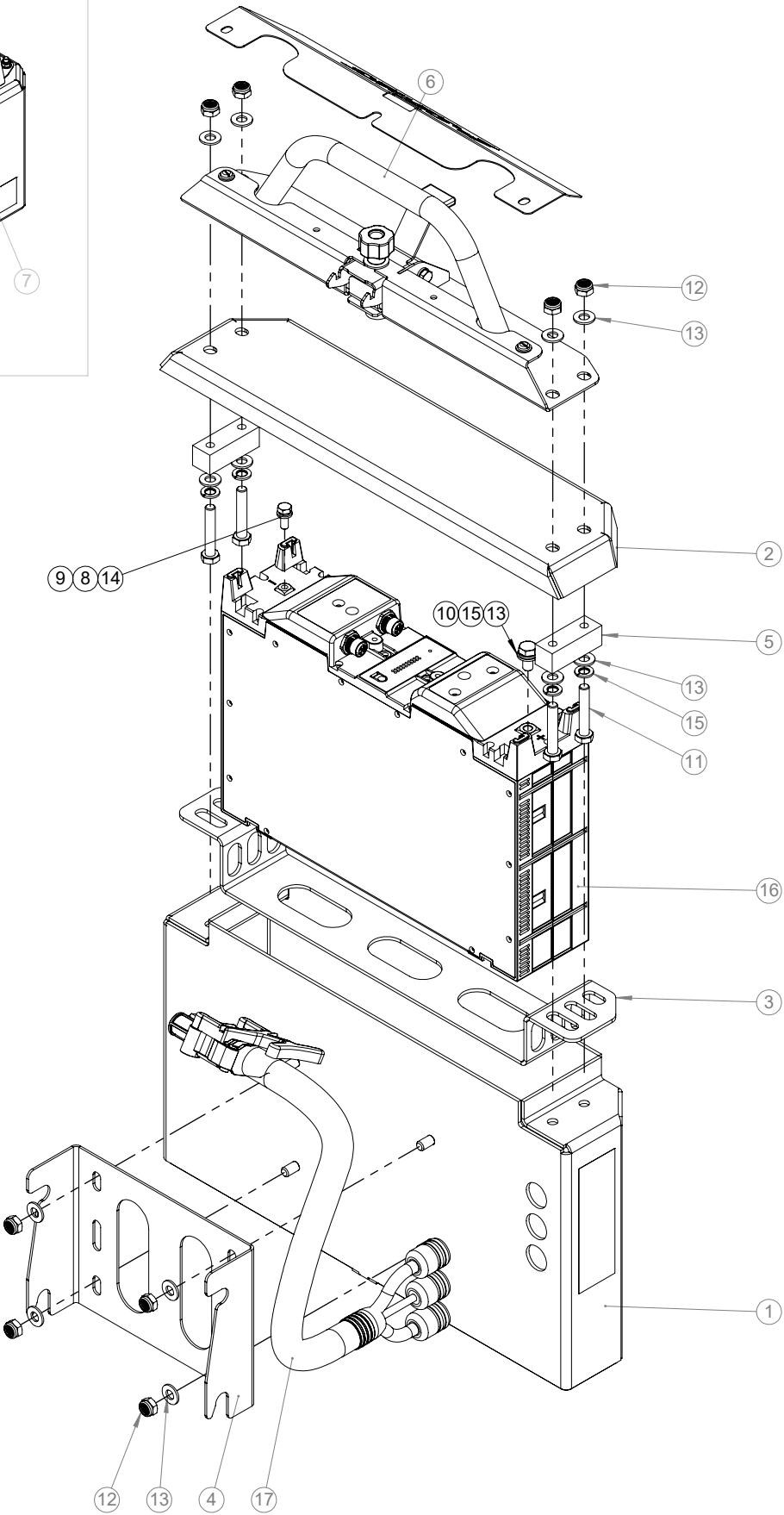
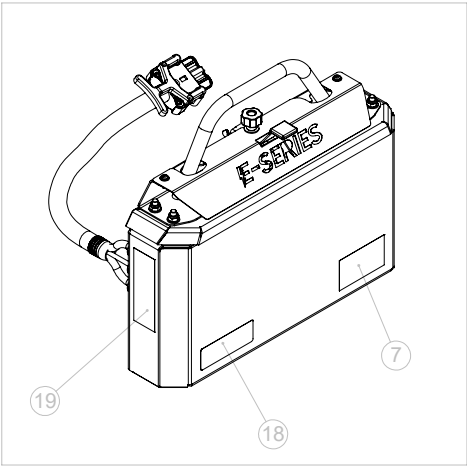
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	229585_REV1	PIVOT BLOCK	2
2	320176_REV1	GRASSBAG SPRING	1
3	390031_REV0	RH SIDE GUARD (DRIVE)	1
4	390032_REV0	FT SIDE GUARD LH (CYLINDER)	1
5	390120_REV0	UPPER COVER W/A	1
6	390125_REV0	LID PIVOT	1
7	390139_REV0	HINGE BRACKET	1
8	390141_REV0	LATCH PLATE	1
9	390145_REV0	LOWER COVER W/A	1
10	390150_REV0	SPRING CLAMP PLATE W/A	1
11	390155_REV0	PIVOT BLOCK	2
12	E1-1061_REV0	WASHER M6 SPRING	4
13	J209074_REV1	BRAKE BAND COVER SCREW	4
14	SP01019_REV0	BUTTON HEAD M6 X 16	1
15	SP01028_REV0	HEX SET SCREW M6 X 20	4
16	SP01101_REV0	SCREW M6 X 25 SLOTTED	4
17	SP01184_REV0	SCREW M6 X 20 SLOTTED	4
18	SP02004_REV0	NUT M6 NYLOC	11
19	SP03007_REV0	WASHER M6 X 20	4
20	SP03010_REV0	WASHER M6 FORM A	12
21	SP05001_REV0	RIVET 4.8 X 10	4
22	SP14054-175_REV0	PVC BLACK EDGE STRIP (175mm)	1
23	SP14055_REV0	BRUSH STRIP & EXTRUSION	2

ES-510 / ES-610



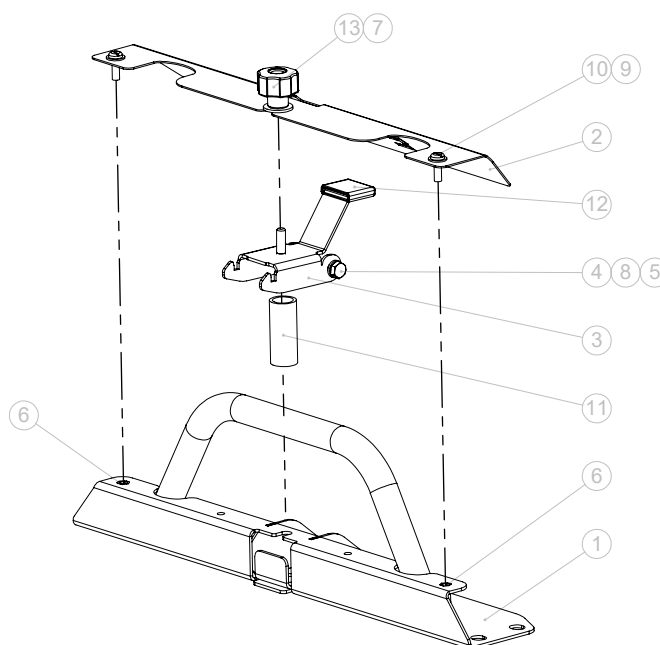
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B32902_REV2	DECAL DENNIS 200 X 50 (LARGE)	1
2	J20362_REV2	DECAL DENNIS 120 X 30 (SMALL)	1
3	SP18026-3_REV0	E-SERIES DECAL	2
4	SP18026-6_REV0	BATTERY DECAL	1
5	SP18026-7_REV0	PARKING BRAKE DECAL	1
6	SP18031_REV0	ES-510 DECAL	2
7	SP18036_REV0	LWA 85 dB DECAL	1



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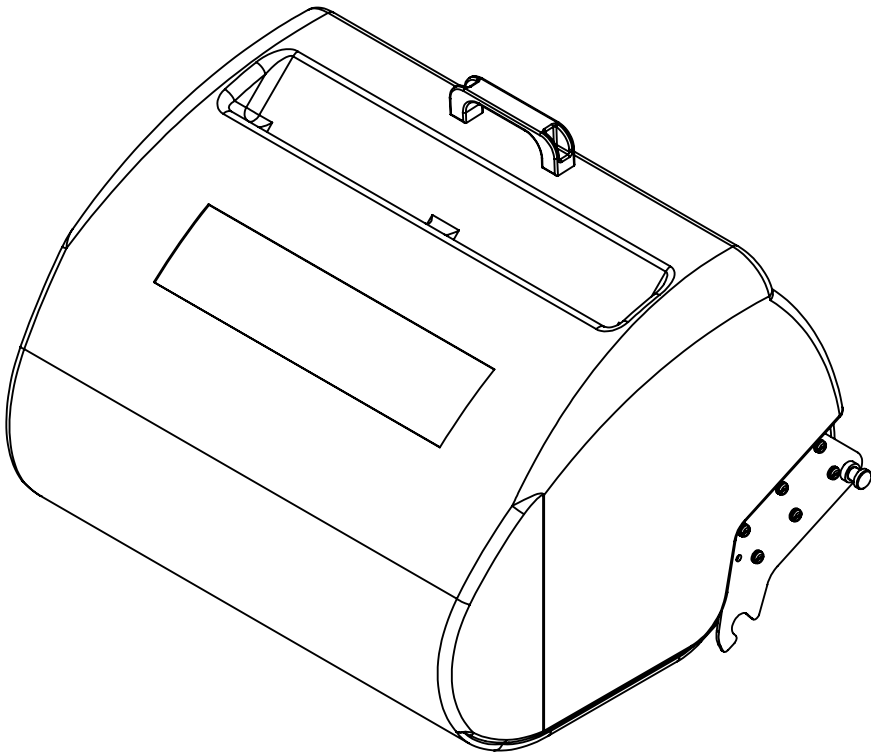
SP16021_REV0

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	390049_REV0	VARTA BATTERY BOX W/A	1
2	390051_REV0	VARTA BATTERY LID	1
3	390052_REV0	VARTA BATTERY BRACKET	1
4	390053_REV0	BATTERY MOUNT PLATE	1
5	390065_REV0	FIXING BLOCK	2
6	800603_REV0	BATTERY HANDLE ASM	1
7	B32903_REV0	DECAL UNION JACK	1
8	E1-1061_REV0	WASHER M6 SPRING	1
9	SP01008_REV0	HEX SET SCREW M6 X 16	1
10	SP01076_REV0	HEX SET SCREW M8 X 16	1
11	SP01113_REV0	HEX SET SCREW M8 X 45	4
12	SP02006_REV0	NUT M8 NYLOC (T)	8
13	SP03008_REV0	WASHER M8 FORM A	13
14	SP03010_REV0	WASHER M6 FORM A	1
15	SP03029_REV0	WASHER M8 SPRING LOCK	5
16	SP12130_REV0	VARTA CELL	1
17	SP12147_REV0	VARTA BATTERY HARNESS	1
18	SP18026-3_REV0	E-SERIES DECAL	1
19	SP18026-4_REV0	BATTERY DISCONNECT DECAL	1



SP16021_REV0

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	390055_REV0	HANDLE W/A	1
2	390064_REV0	HANDLE COVER	1
3	390068_REV0	LATCH ASSEMBLY	1
4	F22110_REV1	HEX SET SCREW M6 X 60	1
5	SP02004_REV0	NUT M6 NYLOC	1
6	SP02041_REV0	RIVNUT HEX M5 (0.5-3.0) [NO HEAD]	2
7	SP03007_REV0	WASHER M6 X 20	1
8	SP03010_REV0	WASHER M6 FORM A	2
9	SP03013_REV0	WASHER M5 FORM C	2
10	SP04001_REV0	SCREW M5 X 16 SLOTTED	2
11	SP13003_REV0	SPRING LC-080J-5	1
12	SP14052_REV0	FLAT SLEEVE PVC (ID25x3-L25) BLACK	1
13	SP14056_REV0	M6 MULTI LOBE CLAMPING KNOB	1



MACHINE	PART NUMBER	DESCRIPTION	QTY.
ES-510	800017_REV1	20" GRASSBOX ASSEMBLY	1
ES-610	800042_REV1	24" GRASSBOX ASSEMBLY	1



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E-SERIES by **DENNIS**

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