



**JACOBSEN**<sup>®</sup>

A Textron Company

4187721-Rev D



# Parts & Maintenance Manual

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## Eclipse<sup>®</sup> 322 Riding Greens Mower with ROPS

62800 – Battery Power, 3WD

62801 – Battery Power, 2WD

62802 – Gas Hybrid Power, 3WD

62803 – Gas Hybrid Power, 2WD

62804 – Diesel Hybrid Power, 3WD

62805 – Diesel Hybrid Power, 2WD

62825 – Diesel Hybrid Power with Premium Seat, 2WD

62826 – Diesel Hybrid Power with Premium Seat, 3WD

 **WARNING**

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



**JACOBSEN**<sup>®</sup>  
A Textron Company

*When Performance Matters.™*

GB

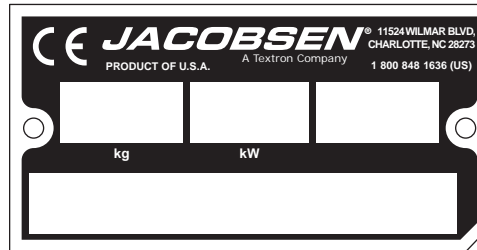
# FORWORD

This manual contains adjustment, maintenance, troubleshooting instructions, and parts list for your new Jacobsen machine. This manual should be stored with the equipment for reference during operation.

Before you operate your machine, you and each operator you employ should read the manual carefully in its entirety. By following the safety, operating, and maintenance instructions, you will prolong the life of your equipment and maintain its maximum efficiency.

If additional information is needed, contact your Jacobsen Dealer.

The serial plate is located on the rear frame rail. Jacobsen recommends you record these numbers below for easy reference.



## Suggested Stocking Guide

To Keep your Equipment fully operational and productive, Jacobsen suggests you maintain a stock of the more commonly used maintenance items. We have included part numbers for additional support materials and training aids.

To order any of the following material:

1. Write your full name and complete address on your order form.

2. Explain where and how to make shipment:

- UPS
- Regular Mail
- Overnight
- 2nd Day

3. Order by the quantity desired, the part number, and the description of the part.

4. Send or bring the order to your authorized Jacobsen Dealer.

## Service Parts

Qty.	Part No.	Description	Qty.	Part No.	Description
	5002644	Diesel Engine Oil Filter		5000440	Gas Engine Oil Filter
	4183591	Diesel Engine Fuel Filter		5000436	Gas Engine Fuel Filter
	5000913	Diesel Engine Air Filter		5000441	Gas Engine Air Filter
	5001951	Belt, Diesel Alternator - Water Pump			

## Service Support Material

Qty.	Part No.	Description
	4187720	Safety & Operation Manual
	4187721	Parts & Maintenance Manual

Qty.	Part No.	Description
	4222980	Kubota Z482 Engine Parts Manual
	4222983	Operator Training Video

These are the original instructions verified by Jacobsen, A Textron Company.

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**Proposition 65 Warning**

This product contains or emits chemicals known to State of California to cause cancer and birth defects or other reproductive harm.

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# 1 SAFETY

## 1.1 OPERATING SAFETY

### WARNING

#### **EQUIPMENT OPERATED IMPROPERLY OR BY UNTRAINED PERSONNEL CAN BE DANGEROUS.**

Familiarize yourself with the location and proper use of all controls. Inexperienced operators should receive instruction from someone familiar with the equipment before being allowed to operate the mower.

1. Safety is dependent upon the awareness, concern, and prudence of those who operate or service the equipment. Never allow minors to operate any equipment.
2. It is your responsibility to read this manual and all publications associated with this equipment (Parts and Maintenance Manual, Engine Manual, and attachments/accessories instruction sheets). If the operator can not read English it is the owner's responsibility to explain the material contained in this manual to them.
3. Learn the proper use of the mower, the location and purpose of all the controls before you operate the equipment. Working with unfamiliar equipment can lead to accidents.
4. Never allow anyone to operate or service the mower or its attachments without proper training and instructions; or while under the influence of alcohol or drugs.
5. Wear all the necessary protective clothing and personal safety devices to protect your head, eyes, ears, hands, and feet. Operate the mower only in daylight or in good artificial light.
6. Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by Jacobsen.
7. Stay alert for holes in the terrain and other hidden hazards.
8. Inspect the area where the equipment will be used. Pick up all the debris you can find before operating. Beware of overhead obstructions (low tree limbs, electrical wires, etc.) and also underground obstacles (sprinklers, pipes, tree roots, etc.) Enter a new area cautiously. Stay alert for hidden hazards.
9. Never direct discharge of material toward bystanders, nor allow anyone near the mower while in operation. The owner/operator can prevent and is responsible for injuries inflicted to themselves, to bystanders and damage to property.
10. Do not carry passengers. Keep bystanders and pets a safe distance away.
11. Never operate equipment that is not in perfect working order or is without decals, guards, shields, discharge deflectors or other protective devices securely fastened in place.
12. Never disconnect or bypass any switch.
13. Do not change the engine governor setting or overspeed the engine.
14. Carbon monoxide in the exhaust fumes can be fatal when inhaled. Never operate the engine without proper ventilation or in an enclosed area.
15. Fuel is highly flammable, handle with care.
16. Keep the engine clean. Allow the engine to cool before storing and always remove the ignition key.
17. Disengage all drives and verify parking brake is engaged before starting the engine (motor). Start the engine only when sitting in operator's seat, never while standing beside the unit.
18. Equipment must comply with the latest federal, state, and local requirements when driven or transported on public roads. Watch out for traffic when crossing or operating on or near roads.
19. Local regulations may restrict the age of the operator.
20. Operate the mower up and down the face of the slopes (vertically), not across the face (horizontally).
21. To prevent tipping or loss of control, do not start or stop suddenly on slopes. Reduce speed when making sharp turns. Use caution when changing directions.
22. Always use the seat belt when operating mowers equipped with a roll over protective structure (ROPS).
23. Keep legs, arms, and body inside the seating compartment while the vehicle is in motion.

***This mower is to be operated and maintained as specified in this manual and is intended for the professional maintenance of specialized turf grasses. It is not intended for use on rough terrain or long grasses.***

## 1.2 IMPORTANT SAFETY NOTES



This safety alert symbol is used to alert you to potential hazards.

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

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

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

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

*For pictorial clarity, some illustrations in this manual may show shields, guards or plates open or removed. Under no circumstances should this equipment be operated without these devices securely fastened in place.*



### WARNING

The Interlock System on this mower prevents the mower from energizing unless the operator is in the seat, mow switch is OFF, and traction pedal is in Neutral. The mow, traction, and steering system will be disabled if the operator leaves the seat.

NEVER operate mower unless the Interlock System is working.



### WARNING

1. Before leaving the operator's position for any reason:
  - a. Disengage mow switch.
  - b. Return traction pedal to Neutral and apply foot brake until unit comes to a complete stop. Automatic parking brake light on LDU should be on.
  - c. Lower all implements to the ground.
  - d. Shut down unit and remove the ignition key.
2. Keep hands, feet, and clothing away from moving parts. Wait for all movement to stop before you clean, adjust or service the mower.
3. Keep the area of operation clear of all bystanders and pets.
4. Never carry passengers, unless a seat is provided for them.
5. Never operate mowing equipment without the discharge deflector securely fastened in place.

By following all instructions in this manual, you will prolong the life of your mower and maintain its maximum efficiency. Adjustments and maintenance should always be performed by a qualified technician.

If additional information or service is needed, contact your Authorized Jacobsen Dealer who is kept informed of the latest methods to service this equipment and can provide prompt and efficient service.

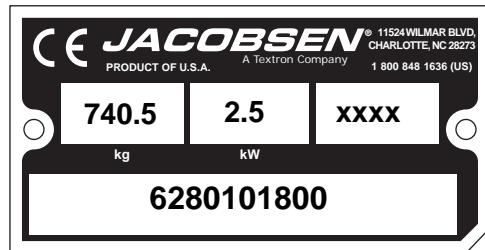
## 2 SPECIFICATIONS

### 2.1 PRODUCT IDENTIFICATION

62800.....	Eclipse® 322, 3WD, 48 volt battery power module, power steering. Without batteries or mowers.
62801.....	Eclipse® 322, 2WD, 48 volt battery power module, power steering. Without batteries or mowers.
62802.....	Eclipse® 322, 3WD, 14 hp gas engine power module, power steering. Without mowers.
62803.....	Eclipse® 322, 2WD, 14 hp gas engine power module, power steering. Without mowers.
62804.....	Eclipse® 322, 3WD, 13.3 hp diesel engine power module, power steering. Without mowers.
62805.....	Eclipse® 322, 2WD, 13.3 hp diesel engine power module, power steering. Without mowers.
62825.....	Eclipse® 322, 2WD, 13.3 hp diesel engine power module, power steering, and premium seat. Without mowers.
62826.....	Eclipse® 322, 3WD, 13.3 hp diesel engine power module, power steering, and premium seat. Without mowers.

Serial Number ..... An identification plate, like the one shown, listing the serial number, is attached to the rear frame of the mower near the steering yoke.

Always provide the serial number of the unit when ordering replacement parts or requesting service information.



Product	EEC Sound Power	Sound Pressure Level Operator Ear	Vibration M/S <sup>2</sup>	
			Arms	Body
62800	95 dBa	80 dBa	2.54	0.10
62801	97 dBa	80 dBa	1.96	0.09
62802	101 dBa	85 dBa	2.70	0.17
62803	103 dBa	85 dBa	3.1	0.17
62804	98.5 dBa	87 dBa	4.3	0.44
62805	102 dBa	87 dBa	4.3	0.33
62825	102 dBa	87 dBa	4.3	0.64
62826	98.5 dBa	87 dBa	4.3	.44

### 2.2 HYBRID ENGINES

#### 62803 Gasoline Engine

Make .....	Briggs & Stratton
Model .....	Vanguard V-Twin OHV
Horsepower.....	13 hp (9.69 kW) @3600 rpm
Displacement .....	29.3 cu. In. (480 cc)
Torque .....	26 ft. lbs. (35 Nm) @ 2600 rpm
Fuel:	
Type .....	Unleaded Gasoline
Rating .....	Min. 85 Octane
Capacity .....	5.3 U.S. Gal. (20 liters)
Governor .....	Flyweight Mechanical
Lubrication:	
Capacity .....	3.5 pints (1.4 liters)
Type .....	SAE 30W
API Classification .....	SF, SG, SH
Air Filter .....	Replaceable Dual Element.
Cooling System.....	Air Cooled
Generator:	
Nominal Voltage.....	48 Vdc
Max Continuous Power Output .....	7.8 hp (5.8 kW)
Max Intermittent Power Output .....	10.7 hp (8.0 kW)
Max Current Output ..	150 A

#### 62805 Diesel Engine

Make .....	Kubota
Model .....	Z482-E3B
Horsepower .....	13.3 hp (9.3 kW) @3600 rpm
Displacement.....	29.3 cu. In. (479 cc)
Torque.....	21 ft. lbs. (28 Nm) @ 2600 rpm
Fuel:	
Type .....	No. 2 Diesel
Rating .....	Min. Cetane rating 45
Capacity.....	5.3 U.S. Gal. (20 liters)
Lubrication:	
Capacity.....	3.4 quarts (3.2 liter) with filter
Type.....	SAE 20W, SAE 30W
API Classification .....	CD, CE
Air Filter .....	Dry type with evacuator valve and service indicator.
Alternator.....	40 amp
Cooling System .....	Liquid Cooled
Capacity.....	3qt. (2.8 l) 50/50 water ethylene glycol mix
Generator:	
Nominal Voltage .....	48 Vdc
Max Continuous Power Output.....	7.8 hp (5.8 kW)
Max Intermittent Power Output.....	10.7 hp (8.0 kW)
Max Current Output.....	150 A

## 2.3 HYBRID BATTERIES

### Buffer Battery

Full River is the Jacobsen recommended battery for use in Buffer Battery Set for the Eclipse 322 mower. Early mowers used the Genesis G16 EP battery.

Battery Brand				Battery Part Number		
Full River				HC-20		
Length in. (mm)	Width in. (mm)	Height in. (mm)	Weight lbs. (kg)	Rating Amp-Hr	Volts	Qty Req'd
7-1/8 (181)	3 (76 mm)	6-9/16 (167)	13.5 (6.1)	20	12	4

### Engine Battery

Interstate is the Jacobsen recommended battery for use in 12 Vdc Engine Battery for the Eclipse 322 mower.

Battery Brand				Battery Part Number		
Interstate				SP-40		
Length in. (mm)	Width in. (mm)	Height in. (mm)	Weight lbs. (kg)	Cranking Amps (CCA)	Volts	BCI Group Size
7-1/2 (191)	5-1/8 (130)	7-3/16 (183)	18.5 (8.4)	425 (340)	12	U1

## 2.4 BATTERY POWER MODULE

To ensure the longest battery life possible, the batteries are not shipped with the power module and must be ordered separately. For optimum range and performance use batteries that equal or exceed the Amp-hour rating listed.

System Voltage ..... 48 Volt DC  
 Batteries ..... (6) 8 volt lead acid batteries.  
 Charger ..... 18 Amp, 48 Volt DC, input voltage 85-265 Volt AC, 45-65 Hz. Three charging algorithms  
 Battery Filling System ... Single connection used for adding water to all 24 battery cells simultaneously.

### Recommended Battery:

Trojan T-890 battery is the Jacobsen recommended battery for use in the Eclipse 322 mower.

Battery Brand				Battery Part Number		
Trojan				T-890		
Length in. (mm)	Width in. (mm)	Height in. (mm)	Weight lbs. (kg)	5 Hr. Rate Amp-Hr	Volts	Qty Req'd
10-3/8 (264)	7-1/8 (181)	10-7/8 (276)	69 (31)	155	8	6

Trojan T-890 batteries can be ordered from your Jacobsen Dealer, or from any local battery dealer.

## 2.5 CUTTING UNITS:

Reel..... 3 Reels, 22 in. (559 mm) wide.  
 Reel Diameter ..... 5 in. (127 mm)  
 Blade Options ..... 7, 9, 11, or 15 blades

Cutting Width ..... 62 in. (1575 mm)  
 Cutting Frequency ..... Variable, **See Section 3.2**  
 Height of Cut Range ..... 1/16 to 7/16 in. (1.6 to 11.1 mm)

## 2.6 MOWER

Tires ..... 18 x 10.5 - 8 tubeless  
 Pressure:  
     Front..... 16 psi (1.1 BAR)  
     Rear ..... 20 psi (1.3 BAR)  
 Parking Brake..... Automatic, mounted on drive motor  
 Drive Axle:  
     Differential Type ..... Open  
     Ratio..... 19.626:1  
     Lubrication ..... 23 oz. (680 ml) Mobilfluid 424 or SAE 30 wt.

Drive Motor ..... 48 Volt AC  
 Steering:  
     Type ..... Electric Power Steering  
     Motor..... 48 Volt AC Chain Drive  
 Speed:  
     Mow ..... 1 - 5 mph (1.6 - 8.0 kph)  
     Transport ..... 1 - 9 mph (1.6-14.5 kph)  
     Reverse..... 1 - 4.0 mph (6.4 kph)

# 2 SPECIFICATIONS

## 2.7 DECLARATION OF CONFORMITY


**DECLARATION OF CONFORMITY • ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ • PROHLÁŠENÍ O SHODĚ •  
 OVERENSSTEMMELSESERKLÆRING • CONFORMITEITSVERKLARING • VASTAVUSDEKLARATSIOON •  
 VAATIMUSTENMUKAISUUSVAKUUTUS • DECLARATION DE CONFORMITE • KONFORMITÄT SERKLÄRUNG •  
 ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ • MEGFELELŐSÉGI NYILATKOZAT • DICHIARAZIONE DI CONFORMITÀ • ATBILSTĪBAS  
 DEKLARĀCIJA • ATITIKTIES DEKLARACIJA • DIKJARAZZJONI TAL-KONFORMITÀ • DEKLARACJA ZGODNOŚCI •  
 DECLARAÇÃO DE CONFORMIDADE • DECLARAȚIE DE CONFORMITATE • VYHLÁSENIE O ZHODE • IZJAVA O  
 SKLADNOSTI • DECLARACIÓN DE CONFORMIDAD • DEKLARATION OM ÖVERENSSTÄMMELSE**

Business name and full address of the manufacturer • Търговско име и пълен адрес на производителя • Obchodní jméno a plná adresa výrobce • Producentens firmanavn og fulde adresse • Bedrijfsnaam en volledig adres van de fabrikant • Tootja ärinimi ja täielik address • Valmistajan toiminimi ja täydellinen osoite • Nom commercial et adresse complète du fabricant • Firmenname und vollständige Adresse des Herstellers • Επιωνυμία και ταχυδρομική διεύθυνση κατασκευαστή • A gyártó üzleti neve és teljes címe • Ragione sociale e indirizzo completo del fabbricante • Uzņēmuma nosaukums un pilna ražotāja adrese • Verslo pavadinimas ir pilnas gamintojo adresas • Isem kummerčjali u indirizz sñiħ tal-fabbrikant • Nazwa firmy i pełny adres producenta • Nome da empresa e endereço completo do fabricante • Denumirea comercială și adresa completă a producătorului • Obchodný názov a úplná adresa výrobcu • Naziv podjetja in polni naslov proizvajalca • Nombre de la empresa y dirección completa del fabricante • Tillverkarrens företagsnamn och kompletta adress	Jacobsen, A Textron Company 11524 Wilmar Blvd. Charlotte, NC 28273, USA
Product Code • Код на продукта • Kód výrobku • Produktkode • Productcode • Toote kood • Tuotekoodi • Code produit • Produktcode • Κωδικός προϊόντος • Termékkód • Codice prodotto • Produkta kods • Produkto kodas • Kodiči tal-Prodott • Kod produktu • Código do Produto • Cod produs • Kód výrobku • Oznaka proizvoda • Código de producto • Produktkod	62800 62801 62802 62803 62804 62805 62825 62826
Machine Name • Наименование на машината • Název stroje • Maskinnavn • Machinenaam • Masina nimi • Laitteen nimi • Nom de la machine • Maschinenbezeichnung • Ονομασία μηχανήματος • Gégnév • Denominazione della macchina • Iekārtas nosaukums • Mašinos pavadinimas • Isem tal- Magna • Nazwa urządzenia • Nome da Máquina • Numele echipamentului • Název stroja • Naziv stroja • Nombre de la máquina • Maskinens namn	Eclipse® 322 Battery, 3WD Eclipse® 322 Battery, 2WD Eclipse® 322 Gas Hybrid, 3WD Eclipse® 322 Gas Hybrid, 2WD Eclipse® 322 Diesel Hybrid, 3WD Eclipse® 322 Diesel Hybrid, 2WD Eclipse® 322 Diesel Hybrid, 2WD Eclipse® 322 Diesel Hybrid, 3WD
Designation • Предназначение • Označení • Betegnelse • Benaming • Nimetus • Tyypimerkintä • Pažymėjimas • Bezeichnung • Χαρακτηρισμός • Megnevezés • Funzione • Apzīmējums • Lithuanian • Denominazzjoni • Oznaczenie • Designação • Specificație • Označenie • Namen stroja • Descripción • Beteckning	Lawnmower, Article 12, tem 32
Serial Number • Серийн номер • Sériové číslo • Seriennummer • Seriennummer • Seerianumber • Valmistusnumero • Numéro de série • Seriennummer • Σειριακός αριθμός • Sorozatszám • Numero di serie • Sērijas numurs • Serijos numeris • Numru Serjali • Numer seryjny • Número de Série • Număr de serie • Sériové číslo • Serijska številka • Número de serie • Seriennummer	6280001601-6280002500 6280102500-6280103500 6280201601-6280202500 6280302500-6280303500 6280401601-6280402500 6280502500-6280503500 6282502500-6282503500 6282601601-6282602500
Engine • Двигател • Motor • Motor • Motor • Mootor • Moottori • Moteur • Motor • Μηχανή • Modulnėv • Motore • Dzinējs • Variklis • Saħna Netta Installata • Silnik • Motor • Motor • Motor • Motor • Motor • Motor	62800: Iskra Three Phase AC Motor 62801: Iskra Three Phase AC Motor 62802: Briggs & Stratton Vanguard 62803: Briggs & Stratton Vanguard 62804: Kubota Z482-E3B Diesel 62805: Kubota Z482-E3B Diesel 62825: Kubota Z482-E3B Diesel 62826: Kubota Z482-E3B Diesel
Net Installed Power • Нетна инсталирана мощност • Čistý inštalovaný výkon • Installeret nettoeffekt • Netto geïnstalleerd vermogen • Installeeritud netovõimsus • Asennettu nettoteho • Puissance nominale nette • Installierte Nettoleistung • Καθαρή εγκαταστημένη ισχύς • Nettó beépített teljes tmény • Potenza netta installata • Paredzētā tīkla jauda • Grynoji galia • Wisa' tal-Qtugh • Moc zainstalowana netto • Potência instalada • Puterea instalată netă • Čistý inštalovaný výkon • Neto vgrajena moč • Potencia instalada neta • Nettoeffekt	62800: 2,1 kW @ 4650 RPM 62801: 2,1 kW @ 4650 RPM 62802: 9,69 kW @ 3600 RPM 62803: 9,69 kW @ 3600 RPM 62804: 9,3 kW @ 3300 RPM 62805: 9,3 kW @ 3300 RPM 62825: 9,3 kW @ 3300 RPM 62826: 9,3 kW @ 3300 RPM
Cutting Width • Широчина на рязане • Šírka řezu • Skærebredde • Maaibreedte • Lõikelaius • Leikkuleveys • Largeur de coupe • Schnittbreite • Μηκος μισιλέζας • Vágási szélesség • Larghezza di taglio • Griešanas platums • Pjovimo plotis • Tikkonforma mad-Direttivi • Szerokość ciężca • Largura de Corte • Lāģīmea de tāiere • Širka záberu • Širina reza • Anchura de corte • Klippbredd	157,5 cm
Conforms to Directives • В съответствие с директивите • Splňuje podmínky směrníc • Er i overensstemmelse med direktiver • Voldoet aan de richtlijnen • Vastab direktiividele • Direktiivien mukainen • Conforme aux directives • Entspricht Richtlinien • Ακολουθήστε πιστά τις Οδηγίες • Megfelel az irányelveknek • Conforme alle Direttive • Atbilst direktīvām • Atitinka direktyvų reikalavimus • Valutazzjoni tal-Konformità • Dyrektywy związane • Cumpre as Directivas • Respectă Directivle • Je v súlade so smernicami • Skladnost z direktivami • Cuple con las Directivas • Uppfyller direktiv	2004/108/EC 98/37/EC, 2006/42/EC 2000/14/EC, 2005/88/EC 2006/66/EC, 2006/95/EC
Conformity Assessment • Оценка за съответствие • Hodnocení plnění podmínek • Overensstemmelsesvurdering • Conformiteitsbeoordeling • Vastavushindamine • Vaatimustenmukaisuuden arviointi • Evaluation de conformité • Konformitätsbeurteilung • Διαπίστωση Συμμόρφωσης • Megfelelőség-értékelés • Valutazione della conformità • Atbilstības novērtējums • Atitikties įvertinimas • Livell tal-Qawwa tal-Foss Imkejjel • Ocena zgodności • Avaliação de Conformidade • Evaluarea conformității • Vyhodnotenie zhodnosti • Ocena skladnosti • Evaluación de conformidad • Bedömning av överensstämmelse	2006/42/EC Annex VIII
Measured Sound Power Level • Измерено ниво на звукова мощност • Naměřený akustický výkon • Målte lydstyrkeniveau • Gemeten geluidsniveau • Mõõdetud helivõimsuse tase • Mitattu äänitehotaso • Niveau de puissance sonore mesuré • Gemessener Schalldruckpegel • Σταθμισμένο επίπεδο ηχητικής ισχύος • Měřt hangteljesítményszint • Livello di potenza sonora misurato • Izmērītais skaņas jaudas līmenis • Išmatuotas garso stiprumo lygis • Livell tal-Qawwa tal-Foss Iggarranti • Moc akustyczna mierzona • Nivel sonoro medido • Nivelul măsurat al puterii acustice • Nameraná hladina akustického výkonu • Izmerjena raven zvočne moči • Nivel de potencia sonora medido • Uppmätt ljudeffektsnivå	95 dB(A) LWA 96 dB(A) LWA 101 dB(A) LWA 103 dB(A) LWA 98 dB(A) LWA 100 dB(A) LWA 100 dB(A) LWA 98 dB(A) LWA



<p>Guaranteed Sound Power Level • Гарантирано ниво на звукова мощност • Garantovaný akustický výkon • Garanteret lydstyrkeniveau • Gegarandeerd geluidsniveau • Garantieertid helivõimsuse tase • Taattu äänitehotaso • Niveau de puissance sonore garanti • Garantierter Schalldruckpegel • Εγγυημένο επίπεδο ηχητικής ισχύος • Szavatolt hangteljesítményszint • Livello di potenza sonora garantito • Garantētais skaņas jaudas līmenis • Garantuotas garso stiprumo lygis • Livell tal-Qawwa tal-Foss Iggaranit • Moc akustyczna gwarantowana • Nivel sonoro farantido • Nivelul garantat al puterii acustice • Garantovaná hladina akustického výkonu • Zajamčena raven zvočne moči • Nivel de potencia sonora garantizado • Garanterad ljudeffektsnivå</p>	<p>95 dB(A) LWA 97 dB(A) LWA 101 dB(A) LWA 103 dB(A) LWA 99 dB(A) LWA 101 dB(A) LWA 101 dB(A) LWA 99 dB(A) LWA</p>
<p>Conformity Assessment Procedure (Noise) • Оценка за съответствие на процедурата (Шум) • Postup hodnocení plnění podmínek (hluk) • Procedure for overensstemmelsesvurdering (Støj) • Procedure van de conformiteitsbeoordeling (geluid) • Vastavushindamisemenetlus (müra) • Vaatimustenmukaisuuden arviointimenettely (Melu) • Procédure d'évaluation de conformité (bruit) • Konformitätsbeurteilungsverfahren (Geräusch) • Διαδικασία Αξιολόγησης Συμμόρφωσης (Θόρυβος) • Megfelelősség-értékelési eljárás (Zaj) • Procedura di valutazione della conformità (rumore) • Atbilstības novērtējuma procedūra (troksnis) • Atitikties įvertinimo procedūra (garsas) • Procedura tal-Valutazzjoni tal-Konformità (Foss) • Procedura oceny zgodności (poziom hałas) • Processo de avaliação de conformidade (nivel sonoro) • Procedura de evaluare a conformității (zgomot) • Postup vyhodnocovania zhodnosti (hluk) • Postopek za ugotavljanje skladnosti (hrup) • Procedimiento de evaluación de conformidad (ruido) • Procedur för bedömning av överensstämmelse (buller)</p>	<p>2000/14/EC Annex VI, Part 1</p>
<p>UK Notified Body for 2000/14/EC • Нотифициран орган в Обединеното кралство за 2000/14/EO • Úřad certifikovaný podle směrnice č. 2000/14/EC • Det britiske bemyndigede organ for 2001/14/EF • Engels adviesorgaan voor 2000/14/EG • Ühendkuningriigi teavitatud asutus direktiivi 2000/14/EÜ mõistes • Direktiivin 2000/14/EY mukainen ilmoitettu tarkastuslaitos Isonsa-Britanniassa • Organisme notifié concernant la directive 2000/14/CE • Britische benannte Stelle für 2000/14/EG • Κοινοποιημένος Οργανισμός Ηνωμένου Βασιλείου για 2000/14/EK • 2000/14/EK – egyesült királyságbeli bejelentett szervezet • Organismo Notificato in GB per 2000/14/CE • 2000/14/EK AK registrētā organizācija • JK notifikatosios īstais 2000/14/EC • Korp Notifikat tar-Renju Unit għal 2000/14/KE • Dopuszczona jednostka badawcza w Wielkiej Brytanii wg 2000/14/WE • Entidade notificada no Reino Unido para 2000/14/CE • Organism notificat în Marea Britanie pentru 2000/14/CE • Notifikovaný orgán Spojeného královstva pre smernicu 2000/14/ES • Britanski priglašeni organ za 2000/14/ES • Cuerpo notificado en el Reino Unido para 2000/14/CE • Anmält organ för 2000/14/EG i Storbritannien</p>	<p>Number: 1088 Sound Research Laboratories Limited Holbrook House, Little Waldingfield Sudbury, Suffolk CO10 0TH</p>
<p>Operator Ear Noise Level • Оператор на нивото на доловим от ухото шум • Hladina hluku v oblasti uší operátora • Støjniveau i førers ørehøjde • Geluidsniveau oor bestuurder • Műratase operatiori kõrvas • Melutaso käyttöajan korvan kohdalla • Niveau de bruit à hauteur des oreilles de l'opérateur • Schallpegel am Bedienerohr • Επίπεδο θορύβου σε λειτουργία • A kezelő fülénél mért zajszint • Livello di potenza sonora all'orecchio dell'operatore • Trokšņa līmenis pie operatora auss • Dirbančiojo su mašina patiriamas triukšmo lygis • Livell tal-Foss fil-Widna tal-Operatur • Dopuszczalny poziom hałasu dla operatora • Nivel sonoro nos ouvidos do operador • Nivelul zgomotului la urechea operatorului • Hladina hluku pôsobiacia na sluch operátora • Raven hrupa pri ušesu upravljavca • Nivel sonoro en el oído del operador • Ljudnivå vid förarens öra</p>	<p>80 dB(a) Leq (2006/42/EC) 80 dB(a) Leq (2006/42/EC) 85 dB(a) Leq (2006/42/EC) 85 dB(a) Leq (2006/42/EC) 87 dB(a) Leq (2006/42/EC) 87 dB(a) Leq (2006/42/EC) 87 dB(a) Leq (2006/42/EC) 87 dB(a) Leq (2006/42/EC)</p>
<p>Harmonised standards used • Използвани хармонизирани стандарти • Použité harmonizované normy • Brugte harmoniserede standarder • Gebruikte geharmoniseerde standaards • Kasutatud ühtlustatud standardid • Käytetyt yhdenmukaistetut standardit • Normes harmonisées utilisées • Angewandte harmonisierte Normen • Εναρμονισμένα πρότυπα που χρησιμοποιήθηκαν • Harmonizált szabványok • Standard armonizzati applicati • Izmantotie saskaņotie standarti • Panaudoti suderinti standartai • Standards armonizzati uzati • Normy spójne powiązane • Normas harmonizadas usadas • Standardele armonizate utilizate • Použité harmonizované normy • Uporabljeni usklajeni standardi • Estándares armonizados utilizados • Harmoniserade standarder som används</p>	<p>BS EN ISO 20643 BS EN ISO 5349-1 BS EN ISO 5349-2 BS EN 836</p>
<p>Technical standards and specifications used • Използвани технически стандарти и спецификации • Použité technické normy a specifikace • Brugte tekniske standarder og specifikationer • Gebruikte technische standaards en specificaties • Kasutatud tehnilised standardid ja spetsifikatsioonid • Käytetyt tekniset standardit ja eritelmät • Spécifications et normes techniques utilisées • Angewandte technische Normen und Spezifikationen • Τεχνικά πρότυπα και προδιαγραφές που χρησιμοποιήθηκαν • Műszaki szabványok és specifikációk • Standard tecnici e specifiche applicati • Izmantotie tehniskie standarti un specifikācijas • Panaudoti techniniai standartai ir techninė informacija • Standards u specifikacijonijiet tehnici uzati • Normy i specyfikacje techniczne powiązane • Normas técnicas e especificações usadas • Standardele tehnice și specificațiile utilizate • Použité technické normy a špecifikácie • Uporabljeni tehnični standardi in specifikacije • Estándares y especificaciones técnicas utilizadas • Tekniska standarder och specifikationer som används</p>	<p>B71.4 ISO 2631-1 ISO 21299</p>
<p>The place and date of the declaration • Място и дата на декларацията • Misto a datum prohlášení • Sted og dato for erklæringen • Plaats en datum van de verklaring • Deklaratsiooni väljastamise koht ja kuupäev • Vakuutuksen paikka ja päivämäärä • Lieu et date de la déclaration • Ort und Datum der Erklärung • Τόπος και ημερομηνία δήλωσης • A nyilatkozat kelte (hely és idő) • Luogo e data della dichiarazione • Deklarācijas vieta un datums • Deklarācijas vieta ir data • I-post u d-data tad-dikjarazzjoni • Miejsce i data wystawienia deklaracji • Local e data da declaração • Locul și data declarației • Miesto a dátum vyhlásenia • Kraj in datum izjave • Lugar y fecha de la declaración • Plats och datum för deklarationen</p>	<p>Jacobsen, A Textron Company 11524 Wilmar Blvd. Charlotte, NC 28273, USA January 2, 2012</p>

# 2 SPECIFICATIONS

<p>Signature of the person empowered to draw up the declaration on behalf of the manufacturer, holds the technical documentation and is authorised to compile the technical file, and who is established in the Community.          Подпис на човека, упълномощен да състави декларацията от името на производителя, който поддържа техническата документация и е оторизиран да изготви техническия файл и е регистриран в общността.          Podpis osoby oprávněné sestavit prohlášení jménem výrobce, držet technickou dokumentaci a osoby oprávněné sestavit technické soubory a založené v rámci Evropského společenství.          Underskrift af personen, der har fuldmagt til at udarbejde erklæringen på vegne af producenten, der er indehaver af dokumentationen og er bemyndiget til at udarbejde den tekniske journal, og som er baseret i nærområdet.          Handtekening van de persoon die bevoegd is de verklaring namens de fabrikant te tekenen, de technische documentatie bewaart en bevoegd is om het technische bestand samen te stellen, en die is gevestigd in het Woongebied.          Ühenduse registreeritud kantud isiku allkirj, kes on volitatud tootja nimel deklaratsiooni koostama, kes omab tehnilist dokumentatsiooni ja kellel on õigus koostada tehniline toimik.          Sen henkilön allekirjoitus, jolla on valmistajan valtuutus vakuutuksen laadintaan, jolla on hallussaan tekniset asiakirjat, joka on valtuutettu laatimaan tekniset asiakirjat ja joka on sijoittautunut yhteisöön.          Signature de la personne habilitée à rédiger la déclaration au nom du fabricant, à détenir la documentation technique, à compiler les fichiers techniques et qui est implantée dans la Communauté.          Unterschrift der Person, die berechtigt ist, die Erklärung im Namen des Herstellers abzugeben, die die technischen Unterlagen aufbewahrt und berechtigt ist, die technischen Unterlagen zusammenzustellen, und die in der Gemeinschaft niedergelassen ist.          Υπογραφή ατόμου εξουσιοδοτημένου για την σύνταξη της δήλωσης εκ μέρους του κατασκευαστή, ο οποίος κατέχει την τεχνική έκθεση και έχει την εξουσιοδότηση να ταξινόμησει τον τεχνικό φάκελο και ο οποίος είναι διορισμένος στην Κοινότητα.          A gyártó nevében meghatalmazott személy, akinek jogában áll módosítania a nyilatkozatot, a műszaki dokumentációt őrzi, engedéllyel rendelkezik a műszaki fájl összeállításához, és aki a közösségben letelepedett személy.          Firma della persona autorizzata a redigere la dichiarazione a nome del fabbricante, in possesso Della documentazione tecnica ed autorizzata a costituire il fascicolo tecnico, che deve essere stabilita nella Comunità.          Tās personas paraksts, kura ir pilnvarota deklarācijas sastādīšanai ražotāja vārdā, kurai ir tehniskā dokumentācija, kura ir pilnvarota sagatavot tehnisko reģistru un kura ir apstiprināta Kopienā.          Asmuo, kuris yra gana žinomas, kuriam gamintojas suteikė įgaliojimus sudaryti šią deklaraciją, ir kuris ją pasirašė, turi visą techninę informaciją ir yra įgaliotas sudaryti techninės informacijos dokumentą.          Il-firma tal-persuna awtorizzata li tfassal id-dikjarazzjoni f'isem il-fabbrikant, għandha d-dokumentazzjoni teknika u hija awtorizzata li tikkompila l-fajl tekniku u li hija stabbilita fil-Komunità.          Podpis osoby upoważnionej do sporządzenia deklaracji w imieniu producenta, przechowującej dokumentację techniczną, upoważniona do stworzenia dokumentacji technicznej oraz wyznaczonej ds. wspólnotowych.          Assinatura da pessoa com poderes para emitir a declaração em nome do fabricante, que possui a documentação técnica, que está autorizada a compilar o processo técnico e que está estabelecida na Comunidade.          Semnătura persoanei împuternicite să elaboreze declarația în numele producătorului, care deține documentația tehnică, este autorizată să compileze dosarul tehnic și este stabilită în Comunitate.          Podpis osoby poverenej vystavenim vyhlásenia v mene výrobcu, ktorá má technickú dokumentáciu a je oprávnená spracovať technické podklady a ktorá je umiestnená v Spoločenstve.          Podpis osebe, pooblaščene za izdelavo izjave v imenu proizvajalca, ki ima tehnično dokumentacijo in lahko sestavlja spis tehnične dokumentacije, ter ima sedež v Skupnosti.          Firma de la persona responsable de la declaración en nombre del fabricante, que posee la documentación técnica y está autorizada para recopilar el archivo técnico y que está establecido en la Comunidad.          Undertecknas av den som bemyndigad att upprätta deklarationen å tillverkarens vägnar, innehar den tekniska dokumentationen och är bemyndigad att sammanställa den tekniska informationen och som är etablerad i gemenskapen.</p>	<p>2006/42/EC Annex II 1 A.2</p> <p>Tim Lansdell          Technical Director          Ransomes Jacobsen Limited          West Road, Ransomes Europark,          Ipswich, IP3 9TT, England</p> <p>2006/42/EC Annex II 1 A.10</p>  <p>Vasant Godhalekar          VP of Engineering          Jacobsen, A Textron Company          11524 Wilmar Blvd,          Charlotte, NC 28273, USA</p>
<p>Certificate Number • Номер на сертификат • Číslo osvědčení • Certifikatnummer • Certificaatnummer • Sertifikaadi number • Hyväksyntänumero • Numéro de certificat • Bescheinigungsnummer • Αριθμός Πιστοποιητικού • Hitelesítési szám • Numero del certificato • Sertifikāta numurs • Sertifikato numeris • Numru tač-Certifikat • Numer certyfikatu • Número do Certificado • Număr certificat • Číslo osvedčenia • Številka certifikata • Número de certificado • Certifikatsnummer</p>	<p>4187721 Rev C</p>



## 2.8 WEIGHTS AND DIMENSIONS

<b>Dimensions:</b>	<b>Inches</b>	<b>(mm)</b>	<b>Weights:</b>	<b>Lbs.</b>	<b>(kg)</b>
Length - Grass Catchers On .....	101	(2565)	Working Weight Less Operator		
Height - Top of ROPS.....	79.3	(2014)	62800 .....	1697	(770)
Wheel Base.....	52	(1321)	62801 .....	1661	(753)
Width - Mowing Position.....	67.7	(1720)	62802 .....	1577	(715)
Width - Wheel .....	59	(1500)	62803 .....	1541	(699)
Turning Radius .....	18	(457)	62804 .....	1665	(755)
			62805 .....	1629	(739)
			62825 .....	1629	(739)
			62826 .....	1665	(755)

## 2.9 ACCESSORIES & SUPPORT LITERATURE

Contact your area Jacobsen Dealer for a complete listing of accessories and attachments.



Use of other than Jacobsen authorized parts and accessories may cause personal injury or damage to the equipment.

### Accessories

Traction Pedal Test Connector .....	4225240
Field Test Kit .....	4222802
Orange Touch-up Paint (12 oz. spray) .....	554598
Grass Catcher .....	4214180
Fine Bristle Brush.....	68536
Rear Roller Cleaner Brush.....	62818
Quick Roll™ (Set of 3) (Requires 4211921).....	68664
Spiker (Set of 3) (Requires 4211921) .....	68665
Quick Roll™ or Spiker Mounting Kit.....	4211921
Traction Tire Kit .....	62817
Turf Groomer 1/4" Spacing.....	67966
Turf Groomer 1/2" Spacing.....	67968
Vertical Mower (Set of 3).....	67138
Dew Whip Holder .....	62809
Tow Bar .....	62811
Premium Seat .....	62813
Clipping Deflector.....	62814
ROPS Mounted LED Light Kit.....	4214980
Discharger (Battery Units).....	892857

### Reels

TrueSet™ 7 Blade Reel .....	62830
TrueSet™ 9 Blade Reel .....	62831
TrueSet™ 11 Blade Reel .....	62832
TrueSet™ 15 Blade Reel .....	62833
Reel Conversion Kit .....	4218680

### Rollers

Grooved Front Roller .....	68527
Solid Roller .....	68530
Grooved Front Roller (Steel).....	68613
Grooved Front Roller (Aluminum) .....	68614
High Cut Roller 15/16 in.....	68634
Solid Tube Steel Roller with Scraper .....	68641
Grooved Segmented Roller .....	68673
Rear Roller Scraper.....	338735
Solid Tube Rear Roller.....	1004990

### MagSystem™

Super Tournament MagSystem Kit.....	4188500
Tournament MagSystem Kit .....	4158083

### Support Literature

Safety & Operation Manual.....	4187720
Parts & Maintenance Manual.....	4187721
Diesel Engine Parts Catalog.....	4222980
Operator Training Video.....	4222982
Service & Repair Manual.....	4222983

## 3 LCD DISPLAY

### 3.1 LCD DISPLAY UNIT (LDU)

The LDU displays current functional values for the operation of the Eclipse mower, has indicator lights, and sounds audible warning alerts. The LDU operates in one of two modes, Operator Mode (Default) and Maintenance Mode. Use of Maintenance Mode requires a four digit pin number.

Press either of the orange buttons (**AM** or **AN**) to change screen display or change values. Push the right orange button (**AN**) to go forward in the display list or increase setting value, and push the left orange button (**AM**) to go back in the display list or decrease setting value. The black button (**AL**) is used to select, reset or change values.

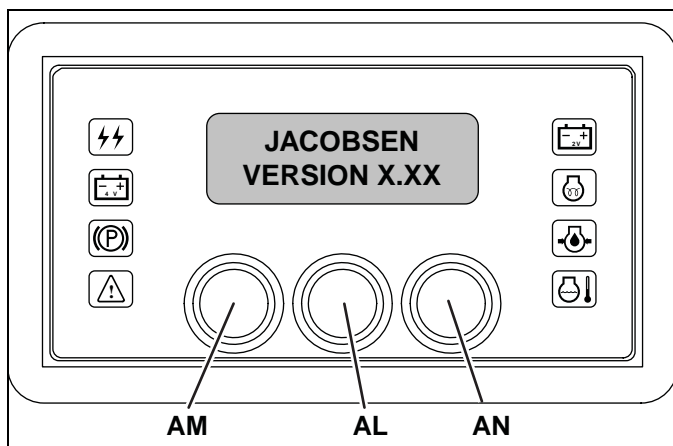


Figure 3A

#### 3.1.1 Indicator Lights

The LDU has eight indicator lights to indicate system functions.



**Power On Light:** Green Power On light located on left side of the LDU indicates the controller system has power. A flashing Power On Light indicates controller systems has not been energized (started). A solid light indicates the unit is energized and in normal operation mode.



**48V Light:** Red 48V light located on left side of the LDU indicates system voltage is below 42 VDC or flashes when system voltage is above 59 VDC. Charge batteries or check generator output. LCD display will show corresponding message.



**Parking Brake Light:** Red parking brake light located on left side of the LDU indicates the automatic parking brake system is engaged or brake pedal is fully pressed.



**Fault Light:** Yellow fault light located on left side of the LDU indicates the controller system has detected a fault. See fault message displayed on LCD.



**12V Light:** (Hybrid Power Modules Only) Red 12V light located on right side of the LDU indicates the engine alternator is not producing proper voltage. Return unit to service area as soon as possible. Inspect 12V battery and battery charging system. 12V light has no function on battery power module units.



**Glow Plug Light:** (Diesel Hybrid Power Modules Only) Yellow glow plug light located on right side of the LDU indicates the diesel engine glow plugs are energized. Glow plug light has no function on battery or gas engine power module units.



**Engine Oil Pressure Light:** (Hybrid Power Modules Only) Red engine oil pressure light located on right side of the LDU indicates low engine oil pressure. Shut down unit immediately. Inspect oil level in engine. If oil light remains on with oil at proper level, shut off engine and tow or trailer mower back to a service area. **NEVER** operate engine with oil light on, severe damage to the engine can occur. Engine oil pressure light has no function on battery power module units.



**Coolant Temperature Light:** (Diesel Hybrid Power Modules Only) Red water temperature light located on right side of the LDU indicates an engine overheat condition. Shut down unit immediately. Remove debris such as leaves and grass clippings that may be restricting air flow through front screen and radiator. If engine continues to run hot, return mower to a service area. Coolant temperature light has no function on battery or gas engine power

module units.



### CAUTION

Diesel engine coolant is under pressure. Turn engine off and allow fluid to cool before checking fluid level or adding coolant to radiator.

### 3.1.2 Display Operating Hours \_\_\_\_\_

To check operating hours when system power switch is in the OFF position, press the center (Black) button. Operating hours will be displayed for 1 minute.

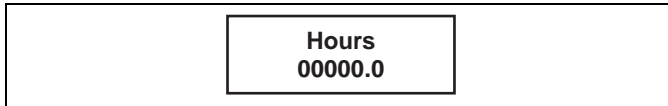


Figure 3B

### 3.1.3 Start Up Screen \_\_\_\_\_

The Jacobsen start up screen will display for 5 seconds when the system power switch is turned from the OFF to the RUN position. The software version of the controllers is displayed under Jacobsen.



Figure 3C

### 3.1.4 Alarm Codes \_\_\_\_\_

Refer to **Section 3.3** for a complete list of Eclipse error codes.

### 3.1.5 Mower Attachment Modes \_\_\_\_\_

The Eclipse mower, when in Operator Mode, has six mower attachment sub-modes for operation.

The values listed below for each mode are the defaults, but they can be changed if desired in the Maintenance

Mode. Any changes made, will replace the defaults saved for each mode, until a factory reset is selected.

The six modes are:

**Mode 1 - 11 Blade Reel:** Use this mode when 11 blade reels are installed. Reel motor operation is enabled, number of reel blades are set to 11, reel speed is set to 2200 rpm, and FOC is set to 0.16 in. (4.064 mm).

**Mode 2 - 9 Blade Reel:** Use this mode when 9 blade reels are installed. Reel motor operation is enabled, number of reel blades are set to 9, reel speed is set to 2200 rpm, and FOC is set to 0.196 in. (4.967 mm).

**Mode 3 - Roller:** This mode is used when the reels are removed and the optional Quick Roll™ greens rollers are installed. Reel motor operation is disabled.

**Mode 4 - Verticut:** This mode is used when optional verticut mowers are installed. Reel motor operation is enabled, 1800 rpm reel speed, and FOC is set to 0.

**Mode 5 - Spiker:** This mode is used when the reels are removed and optional spiker attachments are installed. Reel motor operation is disabled.

**Mode 6 - Other:** This mode is used when 7 blade reels, or an attachment other than those listed above are installed. Reel motor operation is enabled, reel speed is set to 2200 rpm, and FOC is set to 0. Number of reel blades, and FOC must be set manually.

Setting	Mode 1 Reel	Mode 2 Reel	Mode 3 Roller	Mode 4 Verticut	Mode 5 Spiker	Mode 6 Other
Reel Speed	2200 rpm	2200 rpm	0	1800 rpm	0	2200 rpm
Number of reel blades	11	9	0	0	0	0
FOC Setting	0.160 in. (4.064 mm)	0.196 in. (4.967 mm)	0	0	0	0
Reels Disabled ▲	No	No	Yes	No	Yes	No
Reel Motor Direction	CCW	CCW	CCW	CCW	CCW	CCW
Maximum Mow Speed	4 mph (6.4 kph)	4 mph (6.4 kph)	4 mph (6.4 kph)	4 mph (6.4 kph)	4 mph (6.4 kph)	4 mph (6.4 kph)
Maximum Transport Speed	9 mph (14.5 kph)	9 mph (14.5 kph)	9 mph (14.5 kph)	9 mph (14.5 kph)	9 mph (14.5 kph)	9 mph (14.5 kph)
Display Units	English	English	English	English	English	English

▲ This setting can not be changed in the maintenance mode. Another mower attachment mode must be selected to enable or disable reel motors. See Maintenance mode for changing mower attachment mode.

# 3 LCD DISPLAY

## 3.1.6 Operator Mode

Operator mode is used by the operator to view attachment mode, system voltage information, travel speed, reel motor current, reel motor speed, switch status, operation hours, and stored alarms. Press the orange buttons (**AM and AN**) on the LDU to toggle between the different displays.

**Mower Attachment Mode:** Displays current mower attachment mode.

**Reel Motor On/Off:** Allows reel motor operation to be disabled for training purposes or practice cutting. Mow and lift system will function normally, with the exception of the reel motors operating. Press black button (**AL**) to toggle between reel on and off. LDU screen will be locked on **REEL MOTORS OFF** screen until reel motors are turned back on. Reel motors will also be enabled by cycling the system power switch.

**NOTE:** Enabling reel motors on this screen will not enable reel motors in Mode 3 Roller or Mode 5 Spiker.

**System Volts:** Displays the system voltage. Normal operating voltage is between 43 and 60.5 volts, depending on the power module installed. High or low voltage faults may occur if system voltage goes above 60.5 volts for 5 seconds or drops below 43 volts for ten seconds. Some machine functions may be disabled in cases of high or low system voltage.

**Travel Speed:** Displays speed mower is traveling. Travel speed may be limited due to Maximum Mow Speed and Travel Speed values set in Maintenance Mode, or to meet current FOC setting.

**Reel Motor Current:** The reel motor current screen is provided for the operator and mechanic to help identify problems before damage to the reel motor occurs. Notify maintenance personnel if one reel motor is drawing a higher current load than the other two motors. The screen displays the reel motor current for all three reels. The number in the upper left corner of the screen is for the left reel motor, the number in the upper right corner of the screen is for the right reel motor, and the number on the second row of the screen is for the center reel motor. A fault will occur if reel motor current is over 35 amps for 30 seconds.

**Reel Motor Screen:** The reel motor speed screen displays the reel motor speed for all three reels. The number in the upper left corner of the screen is for the left reel motor, the number in the upper right corner of the screen is for the right reel motor, and the number on the second row of the screen is for the center reel motor. All three reel motors should be operating within 50 rpm of each other.

**Enter Pin? Screen:** Used to enter Maintenance Mode. Enter the four digit pin number to access Maintenance Mode.

**Alarms Screens:** Used to view alarms stored in system memory. Alarm message will appear on the screen as they occur for a few seconds, and a beep may sound, depending on the fault encountered. The alarm is then stored in system memory until key switch is turned to off position.

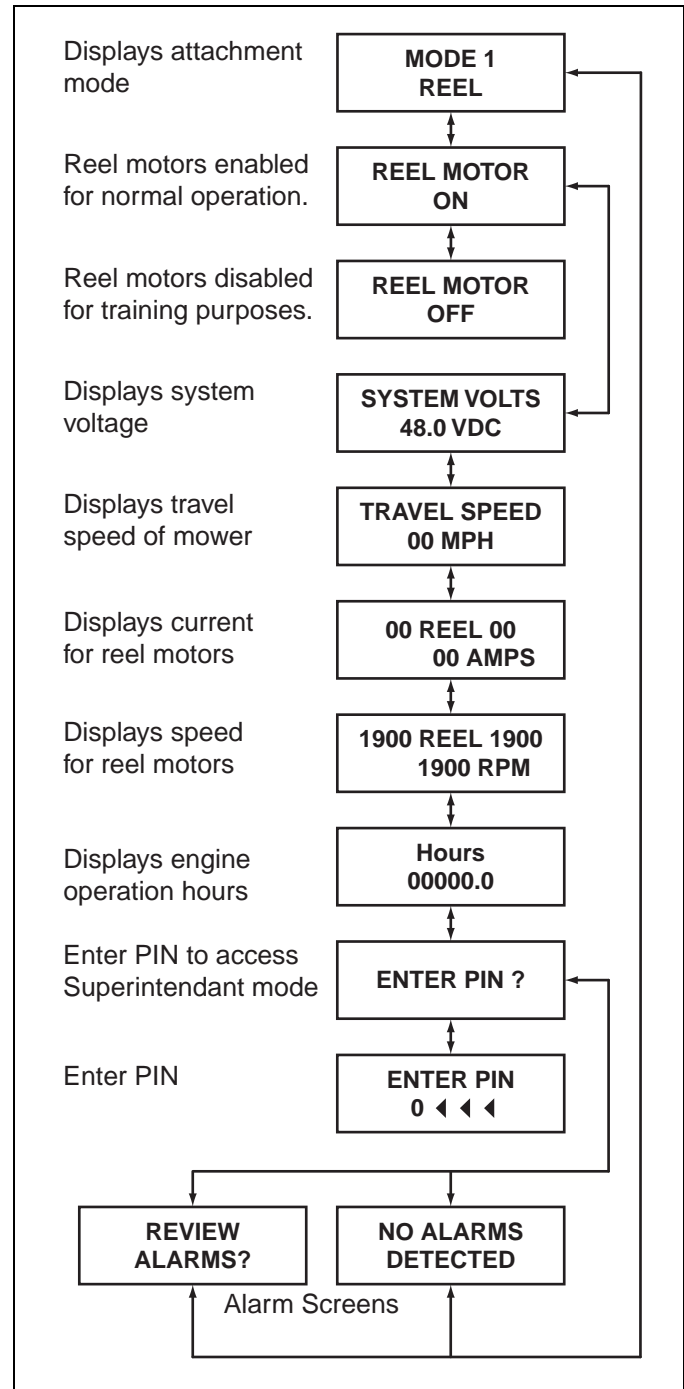


Figure 3D

## 3.1.7 Maintenance Mode

Maintenance Mode is used by the superintendent to set and adjust all functional values for the Eclipse Mower. LCD displays available in Maintenance Mode are, mower attachment mode, system voltage, travel speed, reel motor current, reel motor speed, total hours on machine, actuator motor current, reel motor temperature, TCU/traction motor temperature, traction motor current, select display units, calibrate actuators, configure reel motor direction, software code revision levels, CAN status, switch status, maximum mow and travel speed, number of blades, fixed FOC, backlap, factory reset and alarm screens.

<b>NOTICE</b>
<p>Any changes made to settings in the Maintenance Mode will not be active until the mower is powered off and restarted.</p> <p>Changes made will also save settings in current mower attachment mode, unless factory reset is selected.</p>

To enter Maintenance Mode, press either orange buttons (**AM or AN**) until **ENTER PIN?** screen is on the display and press the black button. Use the orange buttons (**AM or AN**) to select and the black button (**AL**) to enter the digits for the Maintenance Mode PIN.

**NOTE:** *The PIN for Maintenance Mode is 0000.*

**NOTE:** *The Maintenance Mode PIN can be customized to a setting of your choice. Please contact your Jacobsen Dealer or Jacobsen Technical Support (1800-848-1636 Option 2) for complete instructions.*

System voltage, travel speed, reel motor current draw and reel motor speed screens are the same as for Operator Mode. See **Section 3.1.6**.

For actuator calibration screens, see **Section 7.3**.

For backlap screens, see **Section 7.4**.

**Fixed Reel Speed:** To set the fixed reel speed, the FOC setting must be set to 0, then press either of the orange buttons (**AM or AN**) on the LDU until the **SET REEL SPEED** screen is on the LCD display. Press the black button (**AL**) to enter set mode. Use the orange buttons to raise (**AN**) or lower (**AM**) the reel speed to the desired setting.

Fixed reel speed must be set between 1000 and 2200 rpm.

**Actuator Motor Current:** Displays the current draw for each actuator motor. The first number is for the left actuator motor, the second number is for the center actuator mower, and the third number is for the right actuator motor.

**Reel Temperature:** Displays the temperature for each reel motor. The number in the upper left corner of the screen is for the left reel motor, the number in the upper right corner of the screen is for the right reel motor, and the number on the second row of the screen is for the center reel motor.

**TCU/Traction Motor Temperature:** Displays the temperature of the TCU case and traction motor.

**Traction Motor Current:** Displays the traction motor current draw.

**Maintenance Hours:** To display maintenance hours, press either of the orange buttons (**AM or AN**) on the LDU until the maintenance hours screen is on the LCD display. To reset maintenance hours, press the black button (**AL**).

**Select Units:** To set the display units, press either of the orange buttons (**AM or AN**) on the LDU until the **SELECT UNITS?** screen is on the LCD display. Press the black button (**AL**) to enter set mode. Use the orange buttons to select the desired setting.

Units must be set to either English or metric.

**CFG Reel Direction:** To set reel rotation direction, press either of the orange buttons (**AM or AN**) on the LDU until the reel direction screen is on the LCD display. Press the black button (**AL**) to enter set mode. Set reel direction for each reel, pressing black button to change between each reel. Direction is viewed from front of motor shaft

Reel ..... Counter-Clockwise (CCW)  
 Vertical Mower ..... Clockwise (CW) or CCW

**Software Code Revision Level:** Displays the revision level for software loaded for each controller. This information is shown on two screens. The software revision levels may be an aid for service technicians working on the mower.

The first screen displays the software revision levels for the 3WD (If installed), TCU, and SCU.

The second screen displays the software revision levels for the MCU, RCU, and LDU.

**CAN Network Status:** Displays the CAN (Controller Area Network) status for each of the controllers. A steady (non flashing) controller name indicates CAN traffic has been detected from controller within the last two seconds. A flashing controller name indicates CAN traffic has not been detected from controller.

## 3 LCD DISPLAY

**Switch Status:** Displays the current switch settings, and is used to diagnose switch problems. A status of 0 indicates the switch is in the OFF position. A status of 1 indicates the switch is in the ON position. Check the wiring and operation of any switch that is not displaying the correct status.

The switches are broken up into three sets of numbers, with a gap between each set. Refer to **Safety & Operation Manual** for switch references.

The first set of numbers displays the status of the left, center, and right reel switches (**C, D, and E**) on the instrument panel.

The second set of numbers displays the status of the mow switch (**B**), light switch (**F**), horn switch (**G**), and system power switch in start position (**H**).

The third set of numbers displays the status of the lower and raise switches that are part of the joystick (**J**), and the seat switch.

**Maximum Mow Speed:** To set the maximum mow speed, press either of the orange buttons (**AM or AN**) on the LDU until the set **MAX MOW SPEED** screen is on the LCD display. Press the black button (**AL**) to enter set mode. Use the orange buttons to raise (**AN**) or lower (**AM**) the maximum mow speed to the desired speed. Press the black button to set speed.

Maximum mow speed must be between 1.0 and 5.0 mph (1.6 and 8.0 kph), and is adjustable in 0.5 mph (0.8 kph) increments.

**Maximum Transport Speed:** To set the maximum transport speed, press either of the orange buttons (**AM or AN**) on the LDU until the set **MAX SPEED** screen is on the LCD display. Press the black button (**AL**) to enter set mode. Use the orange buttons to raise (**AN**) or lower (**AM**) the maximum transport speed to the desired speed. Press the black button to set speed.

Maximum transport speed must be between 1.0 and 9 mph (1.6 and 14.5 kph), and is adjustable in 0.5 mph (0.8 kph) increments.

**Number of Reel Blades:** To set the number of blades on each reel, press either of the orange buttons (**AM or AN**) on the LDU until the reel blades screen is on the LCD display. Press the black button (**AL**) to enter set mode. Use the orange buttons to raise (**AN**) or lower (**AM**) the number of reel blades. Press the black button to set speed. Entering the wrong number of blades will affect the fixed FOC setting. The only reels currently available are 7, 9, 11, or 15 blade reels.

**2WD/3WD Mode:** pressing black button (**AL**) toggles mower between 2WD and 3WD modes. Do not set mower to 3WD if the 3WD system is not installed.

**Fixed FOC Setting:** To set the fixed FOC, press either of the orange buttons (**AM or AN**) on the LDU until the **FOC x.xxx CHANGE?** screen is on the LCD display. Press the black button (**AL**) to enter set mode. Use the orange buttons to raise (**AN**) or lower (**AM**) the FOC value to the desired setting. Press the black button to set speed. The minimum and maximum fixed FOC setting varies, depending on the number of blades. **[See Section 3.2].**

15 Blade Reel..... 0.05 - 0.25 in. (1.2 - 6.3 mm)

11 Blade Reel..... 0.05 - 0.25 in. (1.2 - 6.3 mm)

9 Blade Reel..... 0.06 - 0.30 in. (1.5 - 7.7 mm)

7 Blade Reel..... 0.07 - 0.39 in. (1.9 - 9.9 mm)

**Factory Reset:** To reset controller to factory default values, press either of the orange buttons (**AM or AN**) on the LDU until the Factory Reset screen is on the LCD display. Press the black button (**AL**) to reset values back to factory default settings. All values saved in mower attachment modes will also revert to their original factory default settings.

Mower Attachment Mode 1 (11 Blade Reel)

Reel Direction..... CW

Reel Speed..... 2200 rpm

Mow Speed..... 4 mph

Transport Speed ..... 9 mph

FOC..... 0.160 in.

Reel Blades ..... 11

Display Units..... English

Backlap Timer..... 10 Minutes

**Mower Attachment Mode:** To set the mower attachment mode, press either of the orange buttons (**AM or AN**) until the **MODE CHANGE?** screen is on the LCD display. Press the back button (**AL**) to enter set mode. Press the right orange button until the desired mode is on the screen, then press the black button to select it. See **Section 3.1.5** for default values.

### NOTICE

If a mower attachment mode change is required, change mower attachment mode first before setting other values. Values stored in new mode will override previous settings for reel speed, FOC, maximum mow and travel speeds, reel direction, and display units.



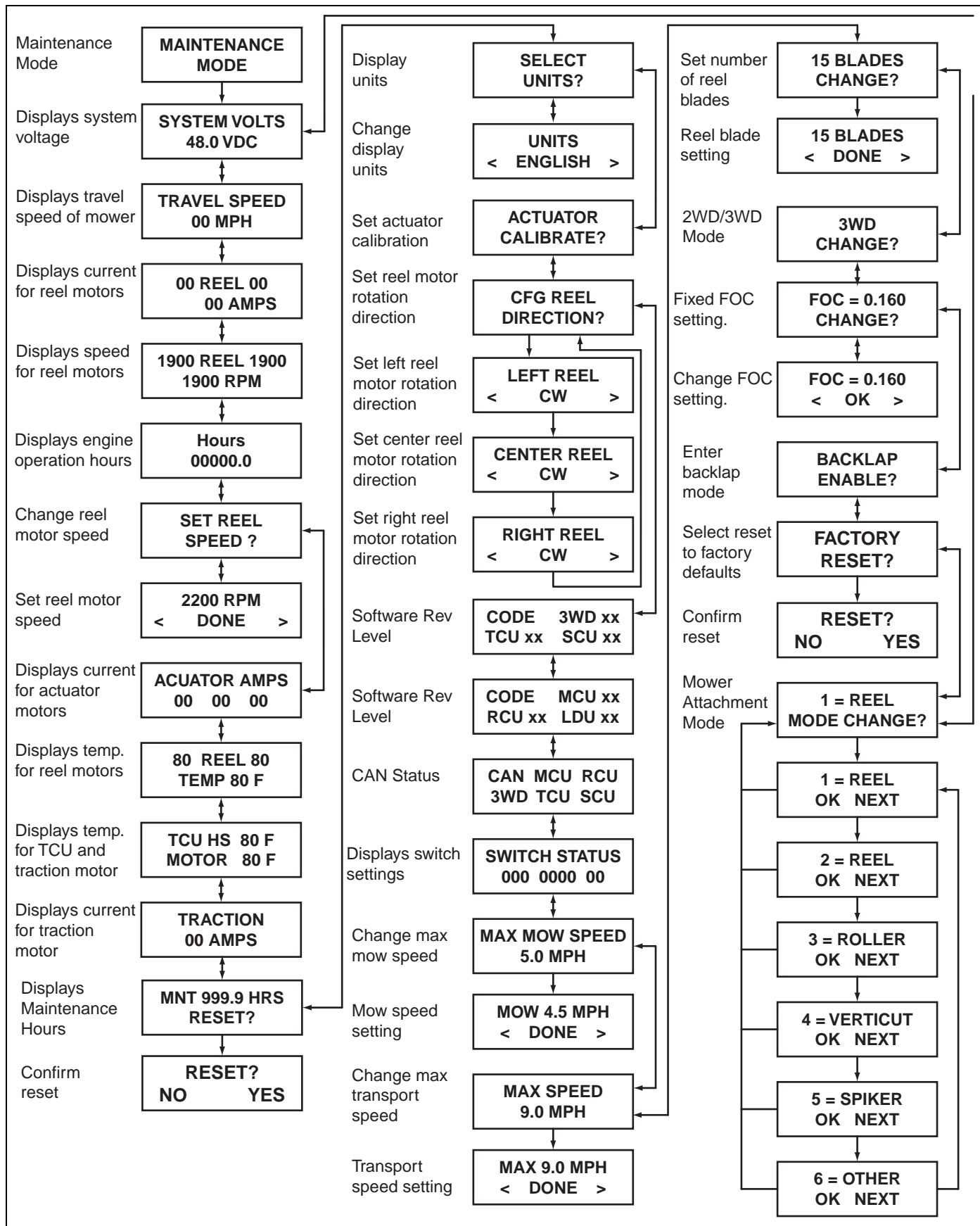


Figure 3J

## 3 LCD DISPLAY

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### 3.2 FREQUENCY OF CUT

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The FOC (Frequency of Cut) is the distance, in inches (mm), the machine travels forward between reel blades contacting the bedknife. The FOC can be adjusted either by changing the Fixed FOC setting or by changing the maximum mow speed and the fixed reel speed on the LCD display.

#### Adjust FOC with Fixed FOC setting

Changing the FOC setting to a value other than 0 will enable the fixed FOC mode and overrides the reel speed setting. As mower travel speed increases or decreases, reel speed will automatically adjust as required to maintain set FOC.

#### NOTICE

When using a fixed FOC setting, the reels will not turn if the mower is not moving.

Maximum mow speed may be lower than what is set in the LDU when using a very low FOC.

#### Adjust FOC with Reel Speed Setting

1. Using the FOC charts, determine the maximum mow speed and fixed reel speed required for the desired FOC.
2. Switch to Maintenance Mode. [Section 3.1.7]
3. Set fixed FOC setting to 0.
4. Set desired Maximum Mow Speed.
5. Set desired Fixed Reel Speed.

**NOTE:** *Mow speed is measured in mph (kph), FOC is measured in inches (millimeters).*

**15 Blade Reel FOC Table**

Mow Speed	Reel RPM								
	1800	1850	1900	1950	2000	2050	2100	2150	2200
MPH (KPH)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
<b>1.0</b> <b>(1.61)</b>	0.039 (0.993)	0.038 (0.967)	0.037 (0.941)	0.036 (0.917)	0.035 (0.894)	0.034 (0.872)	0.034 (0.852)	0.033 (0.832)	0.032 (0.813)
<b>1.25</b> <b>(2.01)</b>	0.049 (1.242)	0.048 (1.208)	0.046 (1.176)	0.045 (1.146)	0.044 (1.118)	0.043 (1.090)	0.042 (1.064)	0.041 (1.040)	0.040 (1.016)
<b>1.50</b> <b>(2.41)</b>	0.059 (1.490)	0.057 (1.450)	0.056 (1.412)	0.054 (1.376)	0.053 (1.341)	0.052 (1.308)	0.050 (1.277)	0.049 (1.248)	0.048 (1.219)
<b>1.75</b> <b>(2.82)</b>	0.068 (1.738)	0.067 (1.692)	0.065 (1.647)	0.063 (1.605)	0.062 (1.565)	0.060 (1.526)	0.059 (1.490)	0.057 (1.455)	0.056 (1.422)
<b>2.00</b> <b>(3.22)</b>	0.078 (1.987)	0.076 (1.933)	0.074 (1.882)	0.072 (1.834)	0.070 (1.788)	0.069 (1.745)	0.067 (1.703)	0.065 (1.663)	0.064 (1.626)
<b>2.25</b> <b>(3.62)</b>	0.088 (2.235)	0.086 (2.175)	0.083 (2.118)	0.081 (2.063)	0.079 (2.012)	0.077 (1.963)	0.075 (1.916)	0.074 (1.871)	0.072 (1.829)
<b>2.50</b> <b>(4.02)</b>	0.098 (2.484)	0.095 (2.416)	0.093 (2.353)	0.090 (2.293)	0.088 (2.235)	0.086 (2.181)	0.084 (2.129)	0.082 (2.079)	0.080 (2.032)
<b>2.75</b> <b>(4.43)</b>	0.108 (2.732)	0.105 (2.658)	0.102 (2.588)	0.099 (2.522)	0.097 (2.459)	0.094 (2.399)	0.092 (2.342)	0.090 (2.287)	0.088 (2.235)
<b>3.00</b> <b>(4.83)</b>	0.117 (2.980)	0.114 (2.900)	0.111 (2.823)	0.108 (2.751)	0.106 (2.682)	0.103 (2.617)	0.101 (2.555)	0.098 (2.495)	0.096 (2.438)
<b>3.25</b> <b>(5.23)</b>	0.127 (3.229)	0.124 (3.141)	0.120 (3.059)	0.117 (2.980)	0.114 (2.906)	0.112 (2.835)	0.109 (2.767)	0.106 (2.703)	0.104 (2.642)
<b>3.50</b> <b>(5.63)</b>	0.137 (3.477)	0.133 (3.383)	0.130 (3.294)	0.126 (3.210)	0.123 (3.129)	0.120 (3.053)	0.117 (2.980)	0.115 (2.911)	0.112 (2.845)
<b>3.75</b> <b>(6.04)</b>	0.147 (3.725)	0.143 (3.625)	0.139 (3.529)	0.135 (3.439)	0.132 (3.353)	0.129 (3.271)	0.126 (3.193)	0.123 (3.119)	0.120 (3.048)
<b>4.00</b> <b>(6.44)</b>	0.156 (3.974)	0.152 (3.866)	0.148 (3.765)	0.144 (3.668)	0.141 (3.576)	0.137 (3.489)	0.134 (3.406)	0.131 (3.327)	0.128 (3.251)
<b>4.25</b> <b>(6.84)</b>	0.166 (4.222)	0.162 (4.108)	0.157 (4.000)	0.153 (3.897)	0.150 (3.800)	0.146 (3.707)	0.142 (3.619)	0.139 (3.535)	0.136 (3.454)
<b>4.50</b> <b>(7.24)</b>	0.176 (4.470)	0.171 (4.350)	0.167 (4.235)	0.162 (4.127)	0.158 (4.023)	0.155 (3.925)	0.151 (3.832)	0.147 (3.743)	0.144 (3.658)

### 3 LCD DISPLAY

11 Blade Reel FOC Table

Mow Speed	Reel RPM								
	1800	1850	1900	1950	2000	2050	2100	2150	2200
MPH (KPH)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
1.0 (1.61)	0.053 (1.355)	0.052 (1.318)	0.051 (1.283)	0.049 (1.250)	0.048 (1.219)	0.047 (1.189)	0.046 (1.161)	0.045 (1.134)	0.044 (1.108)
1.25 (2.01)	0.067 (1.693)	0.065 (1.648)	0.063 (1.604)	0.062 (1.563)	0.060 (1.524)	0.059 (1.487)	0.057 (1.451)	0.056 (1.418)	0.055 (1.385)
1.50 (2.41)	0.080 (2.032)	0.078 (1.977)	0.076 (1.925)	0.074 (1.876)	0.072 (1.829)	0.070 (1.784)	0.069 (1.742)	0.067 (1.701)	0.065 (1.663)
1.75 (2.82)	0.093 (2.371)	0.091 (2.307)	0.088 (2.246)	0.086 (2.188)	0.084 (2.134)	0.082 (2.082)	0.080 (2.032)	0.078 (1.985)	0.076 (1.940)
2.00 (3.22)	0.107 (2.709)	0.104 (2.636)	0.101 (2.567)	0.098 (2.501)	0.096 (2.438)	0.094 (2.379)	0.091 (2.322)	0.089 (2.268)	0.087 (2.217)
2.25 (3.62)	0.120 (3.048)	0.117 (2.966)	0.114 (2.888)	0.111 (2.814)	0.108 (2.743)	0.105 (2.676)	0.103 (2.613)	0.100 (2.552)	0.098 (2.494)
2.50 (4.02)	0.133 (3.387)	0.130 (3.295)	0.126 (3.208)	0.123 (3.126)	0.120 (3.048)	0.117 (2.974)	0.114 (2.903)	0.112 (2.835)	0.109 (2.771)
2.75 (4.43)	0.147 (3.725)	0.143 (3.625)	0.139 (3.529)	0.135 (3.439)	0.132 (3.353)	0.129 (3.271)	0.126 (3.193)	0.123 (3.119)	0.120 (3.048)
3.00 (4.83)	0.160 (4.064)	0.156 (3.954)	0.152 (3.850)	0.148 (3.751)	0.144 (3.658)	0.140 (3.568)	0.137 (3.483)	0.134 (3.402)	0.131 (3.325)
3.25 (5.23)	0.173 (4.403)	0.169 (4.284)	0.164 (4.171)	0.160 (4.064)	0.156 (3.962)	0.152 (3.866)	0.149 (3.774)	0.145 (3.686)	0.142 (3.602)
3.50 (5.63)	0.187 (4.741)	0.182 (4.613)	0.177 (4.492)	0.172 (4.377)	0.168 (4.267)	0.164 (4.163)	0.160 (4.064)	0.156 (3.969)	0.153 (3.879)
3.75 (6.04)	0.200 (5.080)	0.195 (4.943)	0.189 (4.813)	0.185 (4.689)	0.180 (4.572)	0.176 (4.460)	0.171 (4.354)	0.167 (4.253)	0.164 (4.156)
4.00 (6.44)	0.213 (5.419)	0.208 (5.272)	0.202 (5.133)	0.197 (5.002)	0.192 (4.877)	0.187 (4.758)	0.183 (4.645)	0.179 (4.537)	0.175 (4.433)
4.25 (6.84)	0.227 (5.757)	0.221 (5.602)	0.215 (5.454)	0.209 (5.314)	0.204 (5.182)	0.199 (5.055)	0.194 (4.935)	0.190 (4.820)	0.185 (4.711)
4.50 (7.24)	0.240 (6.096)	0.234 (5.931)	0.227 (5.775)	0.222 (5.627)	0.216 (5.486)	0.211 (5.353)	0.206 (5.225)	0.201 (5.104)	0.196 (4.988)

9 Blade Reel FOC Table

Mow Speed	Reel RPM								
	1800	1850	1900	1950	2000	2050	2100	2150	2200
MPH (KPH)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
1.0 (1.61)	0.065 (1.656)	0.063 (1.611)	0.062 (1.569)	0.060 (1.528)	0.059 (1.490)	0.057 (1.454)	0.056 (1.419)	0.055 (1.386)	0.053 (1.355)
1.25 (2.01)	0.081 (2.070)	0.079 (2.014)	0.077 (1.961)	0.075 (1.910)	0.073 (1.863)	0.072 (1.817)	0.070 (1.774)	0.068 (1.733)	0.067 (1.693)
1.50 (2.41)	0.098 (2.484)	0.095 (2.416)	0.093 (2.353)	0.090 (2.293)	0.088 (2.235)	0.086 (2.181)	0.084 (2.129)	0.082 (2.079)	0.080 (2.032)
1.75 (2.82)	0.114 (2.897)	0.111 (2.819)	0.108 (2.745)	0.105 (2.675)	0.103 (2.608)	0.100 (2.544)	0.098 (2.484)	0.096 (2.426)	0.093 (2.371)
2.00 (3.22)	0.130 (3.311)	0.127 (3.222)	0.124 (3.137)	0.120 (3.057)	0.117 (2.980)	0.114 (2.908)	0.112 (2.838)	0.109 (2.772)	0.107 (2.709)
2.25 (3.62)	0.147 (3.725)	0.143 (3.625)	0.139 (3.529)	0.135 (3.439)	0.132 (3.353)	0.129 (3.271)	0.126 (3.193)	0.123 (3.119)	0.120 (3.048)
2.50 (4.02)	0.163 (4.139)	0.159 (4.027)	0.154 (3.921)	0.150 (3.821)	0.147 (3.725)	0.143 (3.634)	0.140 (3.548)	0.136 (3.465)	0.133 (3.387)
2.75 (4.43)	0.179 (4.553)	0.174 (4.430)	0.170 (4.314)	0.165 (4.203)	0.161 (4.098)	0.157 (3.998)	0.154 (3.903)	0.150 (3.812)	0.147 (3.725)
3.00 (4.83)	0.196 (4.967)	0.190 (4.833)	0.185 (4.706)	0.181 (4.585)	0.176 (4.470)	0.172 (4.361)	0.168 (4.258)	0.164 (4.159)	0.160 (4.064)
3.25 (5.23)	0.212 (5.381)	0.206 (5.236)	0.201 (5.098)	0.196 (4.967)	0.191 (4.843)	0.186 (4.725)	0.182 (4.612)	0.177 (4.505)	0.173 (4.403)
3.50 (5.63)	0.228 (5.795)	0.222 (5.638)	0.216 (5.490)	0.211 (5.349)	0.205 (5.215)	0.200 (5.088)	0.196 (4.967)	0.191 (4.852)	0.187 (4.741)
3.75 (6.04)	0.244 (6.209)	0.238 (6.041)	0.232 (5.882)	0.226 (5.731)	0.220 (5.588)	0.215 (5.452)	0.210 (5.322)	0.205 (5.198)	0.200 (5.080)
4.00 (6.44)	0.261 (6.623)	0.254 (6.444)	0.247 (6.274)	0.241 (6.113)	0.235 (5.961)	0.229 (5.815)	0.223 (5.677)	0.218 (5.545)	0.213 (5.419)
4.25 (6.84)	0.277 (7.037)	0.270 (6.847)	0.262 (6.666)	0.256 (6.495)	0.249 (6.333)	0.243 (6.179)	0.237 (6.031)	0.232 (5.891)	0.227 (5.757)
4.50 (7.24)	0.293 (7.451)	0.285 (7.249)	0.278 (7.059)	0.271 (6.878)	0.264 (6.706)	0.258 (6.542)	0.251 (6.386)	0.246 (6.238)	0.240 (6.096)

### 3 LCD DISPLAY

7 Blade Reel FOC Table

Mow Speed	Reel RPM								
	1800	1850	1900	1950	2000	2050	2100	2150	2200
MPH (KPH)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
1.0 (1.61)	0.084 (2.129)	0.082 (2.071)	0.079 (2.017)	0.077 (1.965)	0.075 (1.916)	0.074 (1.869)	0.072 (1.825)	0.070 (1.782)	0.069 (1.742)
1.25 (2.01)	0.105 (2.661)	0.102 (2.589)	0.099 (2.521)	0.097 (2.456)	0.094 (2.395)	0.092 (2.336)	0.090 (2.281)	0.088 (2.228)	0.086 (2.177)
1.50 (2.41)	0.126 (3.193)	0.122 (3.107)	0.119 (3.025)	0.116 (2.948)	0.113 (2.874)	0.110 (2.804)	0.108 (2.737)	0.105 (2.673)	0.103 (2.613)
1.75 (2.82)	0.147 (3.725)	0.143 (3.625)	0.139 (3.529)	0.135 (3.439)	0.132 (3.353)	0.129 (3.271)	0.126 (3.193)	0.123 (3.119)	0.120 (3.048)
2.00 (3.22)	0.168 (4.258)	0.163 (4.142)	0.159 (4.033)	0.155 (3.930)	0.151 (3.832)	0.147 (3.738)	0.144 (3.649)	0.140 (3.564)	0.137 (3.483)
2.25 (3.62)	0.189 (4.790)	0.183 (4.660)	0.179 (4.538)	0.174 (4.421)	0.170 (4.311)	0.166 (4.206)	0.162 (4.105)	0.158 (4.010)	0.154 (3.919)
2.50 (4.02)	0.210 (5.322)	0.204 (5.178)	0.198 (5.042)	0.193 (4.913)	0.189 (4.790)	0.184 (4.673)	0.180 (4.562)	0.175 (4.456)	0.171 (4.354)
2.75 (4.43)	0.230 (5.854)	0.224 (5.696)	0.218 (5.546)	0.213 (5.404)	0.207 (5.269)	0.202 (5.140)	0.198 (5.018)	0.193 (4.901)	0.189 (4.790)
3.00 (4.83)	0.251 (6.386)	0.245 (6.214)	0.238 (6.050)	0.232 (5.895)	0.226 (5.748)	0.221 (5.607)	0.216 (5.474)	0.210 (5.347)	0.206 (5.225)
3.25 (5.23)	0.272 (6.918)	0.265 (6.731)	0.258 (6.554)	0.251 (6.386)	0.245 (6.227)	0.239 (6.075)	0.233 (5.930)	0.228 (5.792)	0.223 (5.661)
3.50 (5.63)	0.293 (7.451)	0.285 (7.249)	0.278 (7.059)	0.271 (6.878)	0.264 (6.706)	0.258 (6.542)	0.251 (6.386)	0.246 (6.238)	0.240 (6.096)
3.75 (6.04)	0.314 (7.983)	0.306 (7.767)	0.298 (7.563)	0.290 (7.369)	0.283 (7.185)	0.276 (7.009)	0.269 (6.842)	0.263 (6.683)	0.257 (6.531)
4.00 (6.44)	0.335 (8.515)	0.326 (8.285)	0.318 (8.067)	0.309 (7.860)	0.302 (7.664)	0.294 (7.477)	0.287 (7.299)	0.281 (7.129)	0.274 (6.967)
4.25 (6.84)	0.356 (9.047)	0.347 (8.803)	0.337 (8.571)	0.329 (8.351)	0.321 (8.143)	0.313 (7.944)	0.305 (7.755)	0.298 (7.574)	0.291 (7.402)
4.50 (7.24)	0.377 (9.579)	0.367 (9.321)	0.357 (9.075)	0.348 (8.843)	0.339 (8.621)	0.331 (8.411)	0.323 (8.211)	0.316 (8.020)	0.309 (7.838)

## 3.3 GENERAL INFORMATION

When the Eclipse mower encounters an error or fault in one of the controllers, an error code will display on the LDU, and certain machine functions may shut down.

Record any error codes that appear on the LDU, and notify maintenance at the end of the day.

Refer to the following list for LDU error codes and machine functions.

## 3.4 SYSTEM ERROR CODES

LDU Error Message	Error Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
<b>OIL PRESSURE ALARM</b>	Engine oil pressure low. Return mower to maintenance shed. Transport speed will be limited to 3 mph (4.8 kph).	✓		✓		✓			✓	✓	
<b>TEMPERATURE HIGH ALARM</b>	Diesel engine coolant above 230°F. (110° C). Return mower to maintenance shed. Transport speed will be limited to 3 mph (4.8 kph).	✓		✓		✓			✓	✓	
<b>12 VOLT SYSTEM LOW</b>	12 VDC system below 12.5 VDC. Return mower to maintenance shed.	✓		✓			✓		✓		✓
<b>48 VOLT SYSTEM LOW</b>	System voltage drops below 43 VDC for 10 seconds or more. Return mower to maintenance shed. Transport speed will be limited to 4 mph (6.4 kph).	✓		✓			✓		✓	✓	
<b>48 VOLT SYSTEM HIGH</b>	System voltage above 60 VDC. Return mower to maintenance shed. Transport speed will be limited to 3 mph (4.8 kph).	✓		✓		✓			✓	✓	
<b>LOW FUEL WARNING</b>	Fuel level in tank is low. Less than 2 qts (1.9 l) fuel remaining in tank. Return to fueling area. Do not allow tank to completely empty.	✓		✓			✓		✓		✓

### 3 LCD DISPLAY

#### 3.5 REEL CONTROL UNIT ERROR CODES

RCU error codes are displayed on the LDU as a message.

LDU Error Message	Error Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
<b>LEFT REEL TEMPERATURE</b>	Left Reel Motor Temperature above 266° F (130° C).	✓		✓			✓		✓		✓
<b>CENTER REEL TEMPERATURE</b>	Center Reel Motor Temperature above 266° F (130° C).	✓		✓			✓		✓		✓
<b>RIGHT REEL TEMPERATURE</b>	Right Reel Motor Temperature above 266° F (130° C).	✓		✓			✓		✓		✓
<b>LEFT REEL FAULT</b>	Left Reel Motor Short Circuit. Shut mower off, and remove key. Check reel for blockage. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓		✓●
<b>CENTER REEL FAULT</b>	Center Reel Motor Short Circuit. Shut mower off, and remove key. Check reel for blockage. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓		✓●
<b>RIGHT REEL FAULT</b>	Right Reel Motor Short Circuit. Shut mower off, and remove key. Check reel for blockage. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓		✓●
<b>LEFT REEL OVERCURRENT</b>	Left Reel Motor current over 35 Amps for 30 seconds. Shut mower off, and remove key. Check reel for blockage. Restart mower. If fault returns, return mower to maintenance shed. Excessive grass height being mowed.	✓		✓			✓		✓		✓●
<b>CENTER REEL OVERCURRENT</b>	Center Reel Motor current over 35 Amps for 30 seconds. Shut mower off, and remove key. Check reel for blockage. Restart mower. If fault returns, return mower to maintenance shed. Excessive grass height being mowed.	✓		✓			✓		✓		✓●
<p>● If fault returns after shutting down and restarting mower, mowing can continue with other reels if reel enable switch for indicated reel is turned OFF.</p>											



LDU Error Message	Error Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
<b>RIGHT REEL OVERCURRENT</b>	Right Reel Motor current over 35 Amps for 30 seconds. Shut mower off, and remove key. Check reel for blockage. Restart mower. If fault returns, return mower to maintenance shed. Excessive grass height being mowed.	✓		✓			✓		✓	✓●	
<b>LEFT REEL VOLTS LOW</b>	Left Reel Motor fuse blown. Return mower to maintenance shed. Check 150 amp fuse in PDU.	✓		✓			✓		✓	✓	
<b>CENTER REEL VOLTS LOW</b>	Center Reel Motor fuse blown. Return mower to maintenance shed. Check 150 amp fuse in PDU.	✓		✓			✓		✓	✓	
<b>RIGHT REEL VOLTS LOW</b>	Right Reel Motor fuse blown. Return mower to maintenance shed. Check 150 amp fuse in PDU.	✓		✓			✓		✓	✓	
<b>CHECK LEFT REEL</b>	Left Reel Motor RPM is not within the range of the set point. Shut mower off, and remove key. Check reel for blockage. Restart mower. If fault returns, return mower to maintenance shed. Excessive grass height being mowed.	✓		✓			✓		✓	✓	
<b>CHECK CENTER REEL</b>	Center Reel Motor RPM is not within the range of the set point. Shut mower off, and remove key. Check reel for blockage. Restart mower. If fault returns, return mower to maintenance shed. Excessive grass height being mowed.	✓		✓			✓		✓	✓	
<b>CHECK RIGHT REEL</b>	Right Reel Motor RPM is not within the range of the set point. Shut mower off, and remove key. Check reel for blockage. Restart mower. If fault returns, return mower to maintenance shed. Excessive grass height being mowed.	✓		✓			✓		✓	✓	
<b>L ACTUATOR OVERCURRENT</b>	Left Actuator Overcurrent. Shut mower off, and remove key. Check grass catcher for excessive weight. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓	✓●	
		● If fault returns after shutting down and restarting mower, mowing can continue with other reels if reel enable switch for indicated reel is turned OFF.									

### 3 LCD DISPLAY

LDU Error Message	Error Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
<b>C ACTUATOR OVERCURRENT</b>	Center Actuator Overcurrent. Shut mower off, and remove key. Check grass catcher for excessive weight. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓	✓●	
<b>R ACTUATOR OVERCURRENT</b>	Right Actuator Overcurrent. Shut mower off, and remove key. Check grass catcher for excessive weight. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓	✓●	
<b>L ACTUATOR FAULT</b>	Left Actuator or wiring Short Circuit. Shut off mower and remove key. Check both actuator connectors for a tight connection. Check visible portion of wire harness for damage. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓	✓	
<b>C ACTUATOR FAULT</b>	Center Actuator or wiring Short Circuit. Shut off mower and remove key. Check both actuator connectors for a tight connection. Check visible portion of wire harness for damage. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓	✓	
<b>R ACTUATOR FAULT</b>	Right Actuator or wiring Short Circuit. Shut off mower and remove key. Check both actuator connectors for a tight connection. Check visible portion of wire harness for damage. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓	✓	
<b>CHECK LEFT ACTUATOR</b>	Left actuator did not reach position within 6 seconds. Shut mower off, and remove key. Check grass catcher for excessive weight. Restart mower. If fault returns, return mower to maintenance shed.	✓			✓		✓		✓		✓
<b>CHECK CENTER ACTUATOR</b>	Center actuator did not reach position within 6 seconds. Shut mower off, and remove key. Check grass catcher for excessive weight. Restart mower. If fault returns, return mower to maintenance shed.	✓			✓		✓		✓		✓
		● If fault returns after shutting down and restarting mower, mowing can continue with other reels if reel enable switch for indicated reel is turned OFF.									

LDU Error Message	Error Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
<b>CHECK RIGHT ACTUATOR</b>	Right actuator did not reach position within 6 seconds. Shut mower off, and remove key. Check grass catcher for excessive weight. Restart mower. If fault returns, return mower to maintenance shed.	✓			✓		✓		✓		✓

### 3.6 TRACTION & STEERING CONTROLLER ERROR CODES

Traction and steering controller error/fault codes display on the LDU as a four digit error code.

LDU Error Code	Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
<b>TRACTION FAULT 2310</b>	Software detected short circuit in controller, cabling to motor or in motor. Measured current is 50% above the 2 min., rating current. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
<b>STEERING FAULT 2310</b>		✓		✓			✓	✓			✓
<b>3WD TRACTION FAULT 2310</b>		✓		✓			✓	✓			✓
<b>TRACTION FAULT 2340</b>	Hardware detected short circuit in controller, cabling to motor or in motor. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
<b>STEERING FAULT 2340</b>		✓		✓			✓	✓			✓
<b>3WD TRACTION FAULT 2340</b>		✓		✓			✓	✓			✓
<b>TRACTION FAULT 3120</b>	The DC Bus charging is not finished within 10 seconds. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
<b>STEERING FAULT 3120</b>		✓		✓			✓	✓			✓
<b>3WD TRACTION FAULT 3120</b>		✓		✓			✓	✓			✓

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LDU Error Code	Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
TRACTION FAULT 3211	DC Voltage is above the High Trip level. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 3211		✓		✓			✓	✓			✓
3WD TRACTION FAULT 3211		✓		✓			✓	✓			✓
TRACTION FAULT 3212	DC Voltage is above the hardware defined trip level. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 3212		✓		✓			✓	✓			✓
3WD TRACTION FAULT 3212		✓		✓			✓	✓			✓
TRACTION FAULT 3221	DC Bus voltage is below the Low Trip Level. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 3221		✓		✓			✓	✓			✓
3WD TRACTION FAULT 3221		✓		✓			✓	✓			✓
TRACTION FAULT 4210	Motor temperature is above 356° F (180° C). Shut mower off and wait ten minutes. Restart mower. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 4210		✓		✓			✓	✓			✓
3WD TRACTION FAULT 4210		✓		✓			✓	✓			✓
TRACTION FAULT 4310	Heatsink temperature is above 185° F (85° C). Shut mower off and wait ten minutes. Restart mower. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 4310		✓		✓			✓	✓			✓
3WD TRACTION FAULT 4310		✓		✓			✓	✓			✓

LDU Error Code	Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
TRACTION FAULT 5111	15 V Supply voltage on the DSP board is too low. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 5111		✓		✓			✓	✓			✓
3WD TRACTION FAULT 5111		✓		✓			✓	✓			✓
TRACTION FAULT 5113	5V Supply voltage on the DSP board is too high or too low. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 5113		✓		✓			✓	✓			✓
3WD TRACTION FAULT 5113		✓		✓			✓	✓			✓
TRACTION FAULT 5210	The offset in the current measurement is too high. The offset is adjusted during power-up of the drive. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 5210		✓		✓			✓	✓			✓
3WD TRACTION FAULT 5210		✓		✓			✓	✓			✓
TRACTION FAULT 5410	Current is above the error limit. Open drain outputs disabled and drive is tripped. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 5410		✓		✓			✓	✓			✓
3WD TRACTION FAULT 5410		✓		✓			✓	✓			✓
TRACTION FAULT 6210	Direction Error. Traction fault: Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 6210		✓		✓			✓	✓			✓
	Steering fault: Shut mower off. Check steering proximity switches for debris or obstruction. Restart mower. If fault returns, mower must be towed back to maintenance shed.										

### 3 LCD DISPLAY

LDU Error Code	Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
TRACTION FAULT 6211	Throttle Sensor Error. Shut mower off, then restart, making certain traction pedal is in neutral. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 6211		✓		✓			✓	✓			✓
TRACTION FAULT 6212	Reverse Alarm Test Failed. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 6212		✓		✓			✓	✓			✓
TRACTION FAULT 6213	Mechanical Brake Test failed. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 6213		✓		✓			✓	✓			✓
TRACTION FAULT 6214	Brake sensor error. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 6214		✓		✓			✓	✓			✓
STEERING FAULT 7310	Speed Sensor feedback error. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 7320	Center switch has not reached cam end within 6 seconds. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 7321	The position error during the calibration is greater than the error window. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
STEERING FAULT 7322	wheel angle and cam center switch signal are not synchronized. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓

LDU Error Code	Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
<b>STEERING FAULT 7380</b>	Reference generator not connected or short circuited. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
<b>STEERING FAULT 8010</b>	Difference between set value and actual value for current regulator are above limit. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
<b>STEERING FAULT 8020</b>	Difference between set value and actual value for position regulator are above limit. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
<b>STEERING FAULT 8030</b>	One or more of the motor cables are not connected. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
<b>STEERING FAULT 8040</b>	8040 Difference between set value and actual value for speed regulator are above limit. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
<b>STEERING FAULT 8050</b>	8050 The estimated speed is above limit. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
<b>TRACTION FAULT 8100</b>	Controller has not received an expected CANopen message within the time out time. Shut mower off, then restart. If fault returns, mower must be towed back to maintenance shed.	✓		✓			✓	✓			✓
<b>STEERING FAULT 8100</b>		✓		✓			✓	✓			✓
<b>3WD TRACTION FAULT 8100</b>		✓		✓			✓	✓			✓

### 3 LCD DISPLAY

#### 3.7 OVER-VOLTAGE LIMIT CONTROLLER ERROR CODES

Only used on 2WD mowers with the following serial numbers:

6280101601~6280102499  
 6280301601~6280302499  
 6280501601~6280502499  
 6282501601~6282502499

LDU Error Code	Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
<b>OLM WARNING 05</b>	OLM internal temperature high. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>OLM WARNING 11</b>	OLM detects a short circuit to ground in resistor 1. Resistor is no longer operable. Check wiring and/or resistor. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>OLM WARNING 12</b>	OLM detects no current through resistor 1. Check wiring/resistor and resistor bank ground connection. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>OLM WARNING 13</b>	OLM detects less current than expected through resistor 1. Inspect wiring and connectors. Resistor may be degraded. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>OLM WARNING 21</b>	OLM detects a short circuit to ground in resistor 2. Resistor is no longer operable. Check wiring and/or resistor. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>OLM WARNING 22</b>	OLM detects no current through resistor 2. Check wiring/resistor and resistor bank ground connection. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓



LDU Error Code	Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
<b>OLM WARNING 23</b>	OLM detects less current than expected through resistor 2. Inspect wiring and connectors. Resistor may be degraded. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>OLM WARNING 31</b>	OLM detects a short circuit to ground in resistor 3. Resistor is no longer operable. Check wiring and/or resistor. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>OLM WARNING 32</b>	OLM detects no current through resistor 3. Check wiring/resistor and resistor bank ground connection. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>OLM WARNING 33</b>	OLM detects less current than expected through resistor 3. Inspect wiring and connectors. Resistor may be degraded. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>OLM WARNING 41</b>	OLM detects a short circuit to ground in resistor 4. Resistor is no longer operable. Check wiring and/or resistor. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>OLM WARNING 42</b>	OLM detects no current through resistor 4. Check wiring/resistor and resistor bank ground connection. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>OLM WARNING 43</b>	OLM detects less current than expected through resistor 4. Inspect wiring and connectors. Resistor may be degraded. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓

### 3 LCD DISPLAY

#### 3.8 HYBRID ENGINE CONTROLLER ERROR CODES

Hybrid engine controller error/fault codes display on the LDU as a two digit error code.

LDU Error Code	Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
<b>GENERATOR FAULT 14</b>	Pack Voltage too high. Engine speed is set to idle. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>GENERATOR FAULT 15</b>	Pack Voltage too low. Engine speed is set to idle. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>GENERATOR FAULT 21</b>	Generator temperature greater than 266° F (130° C). Engine speed is set to idle. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>GENERATOR FAULT 22</b>	Generator temperature greater than 212° F (100° C) or rectifier temperature greater than 176° F (80° C). Generator derates. Shut mower down and wait ten minutes. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓		✓
<b>GENERATOR FAULT 23</b>	Throttle actuator Fault. Engine speed is set to idle/spring return. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓		✓
<b>GENERATOR FAULT 31</b>	Rectifier temperature greater than 212° F (100° C) for 3 seconds. Generator derates. Restart mower. Continue with normal operation. Notify maintenance personnel at end of shift.	✓		✓			✓		✓		✓
<b>GENERATOR FAULT 54</b>	Pack voltage sensor greater than 70 VDC for 3 seconds. Engine shut down. Restart mower and return to maintenance shop	✓		✓		✓			✓		✓
<b>GENERATOR FAULT 55</b>	Pack voltage sensor 2VDC for 2 seconds. Engine speed set to idle. Return mower to maintenance shop.	✓		✓			✓		✓		✓

LDU Error Code	Description	Caution LED		Alarm Sounding		Engine Stop		Traction Stop		Mow Stop	
		On	Off	Yes	No	Yes	No	Yes	No	Yes	No
<b>GENERATOR FAULT 56</b>	Generator temperature greater than 340° F (171° C). Engine speed is set to idle. Shut mower down and wait ten minutes. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓		✓
<b>GENERATOR FAULT 57</b>	Generator temperature less than -20° F (-29° C). Engine speed is set to idle. Allow engine to run until generator warms up.	✓		✓			✓		✓		✓
<b>GENERATOR FAULT 58</b>	Rectifier temperature greater than 340° F (171° C). Engine speed is set to idle. Shut mower down and wait ten minutes. Restart mower. If fault returns, return mower to maintenance shed.	✓		✓			✓		✓		✓
<b>GENERATOR FAULT 59</b>	Rectifier temperature less than -20° F (-29° C). Engine speed is set to idle. Allow engine to run until generator warms up.	✓		✓			✓		✓		✓
<b>GENERATOR FAULT 88</b>	Current sense fault. Current less than 20A when engine above 2900 rpm. Restart mower. Return to maintenance shed.	✓		✓			✓		✓		✓

## 4 ADJUSTMENTS

### 4.1 GENERAL

#### **WARNING**

Before you clean, adjust, or repair this equipment, disengage all drives, lower implements to the ground, turn system power off, remove key from ignition switch, and disconnect battery pack(s) to prevent injuries

Make sure the mower is parked on a solid and level surface. Never work on a mower that is supported only by the jack. Always use jack stands.

1. Adjustments and maintenance should always be performed by a qualified technician. If proper adjustment cannot be made, contact an authorized Jacobsen Dealer.

### 4.2 BEDKNIFE-TO-REEL

(Pre-adjustment Check)

1. Check the reel bearings for end play or radial play. There should be no end play or radial play. See Section 4.24.

#### **CAUTION**

To prevent personal injury and damage to the cutting edges, wear gloves and handle the reel and bedknife with extreme care.

2. Inspect the reel blades and bedknife to insure good sharp edges without bends or nicks.
  - a. The leading edge of the reel blades must be sharp, free of burrs and show no signs of rounding off.
  - b. The bedknife and bedknife backing must be securely tightened. The bedknife must be straight and sharp.
  - c. A flat surface of at least 1/32 in. (0.8 mm) minimum must be maintained on the front face of the bedknife. Use a standard flat file to dress the bedknife.
3. If wear or damage is beyond the point where the reel or bedknife can be corrected by the lapping process, they must be reground.
4. Proper reel-to-bedknife adjustment is critical. A gap of 0.001 to 0.003" (0.025 to 0.076 mm) must be maintained across the entire length of the reel and bedknife.
5. The reel must be parallel to the bedknife. An improperly adjusted reel will lose its sharp edges prematurely and may result in serious damage to the reel and bedknife.
6. Grass conditions will also affect the adjustment.

2. Replace, do not adjust, worn or damaged components.
3. Long hair, jewelry or loose fitting clothing may get tangled in moving parts.

#### **CAUTION**

Be careful to prevent entrapment of the hands and fingers between moving and fixed components of the machine.

4. Do not change speed limit settings or overspeed the drive motors.

- a. Dry, sparse conditions will require a wider gap to prevent heat buildup and damage to the reel and bedknife.
- b. High quality grass with a good moisture content requires a closer gap (near zero).

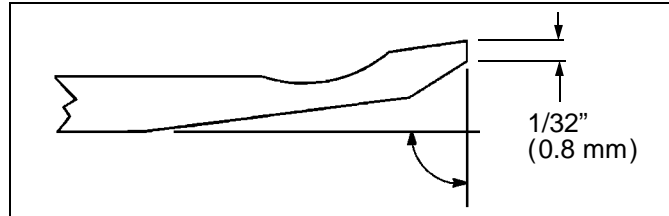


Figure 4A

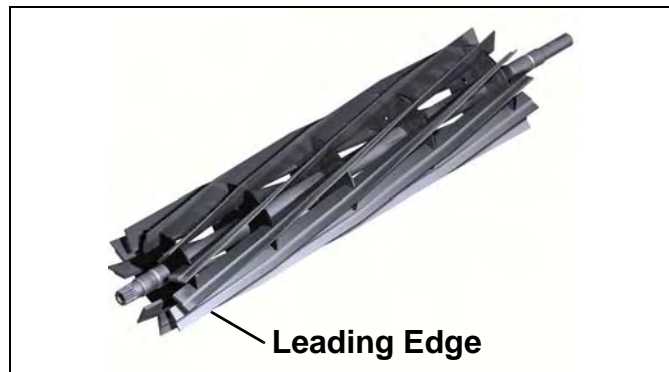


Figure 4B

## 4.3 BEDKNIFE ADJUSTMENT

1. Read Section 4.2 before making the adjustment.
2. Start adjustment at the leading end of the reel, followed by the trailing end. *The leading end of the reel blades is that end which passes over the bedknife first during normal reel rotation.*
3. Use adjusters (**B** and **C**), to adjust gap. Rotate adjusters (Clockwise) to close gap. Each click of the adjuster moves the bedknife 0.001" (0.025 mm) closer to the reel.
  - a. Slide a feeler gauge or shim stock 0.001" - 0.003" (0.025 - 0.075 mm) between the reel blade and the bedknife. Do not turn the reel.
  - b. Adjust the trailing end of the reel to the same gap in a similar manner then recheck the adjustment at the leading end.
  - c. When the reel is properly adjusted to the bedknife, the reel will spin freely and you should be able to cut a piece of newspaper, along the full length of the reel, when the paper is held at 90° to the bedknife.

### NOTICE

Avoid excessive tightening or serious damage may result to bedknife and reel blades. Reels must turn freely.

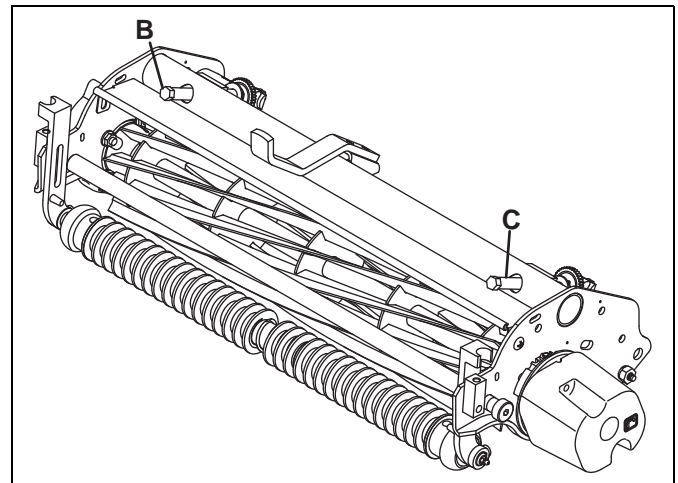


Figure 4C

## 4.4 CUTTING HEIGHT

**Note:** Always make the reel to bedknife adjustment before adjusting height of cut. (Sections 4.2 and 4.3).

1. Set desired cutting height on the gauge (**E**).
  - a. Measure distance between the underside of screw head and gauge block surface (**F**).
  - b. Adjust screw (**H**) to obtain desired height then tighten the wing nut.
2. Loosen the nuts on the front roller brackets (**G**) just enough to allow the adjuster knob (**K**) to raise or lower the front roller.
3. Place gauge (**E**) across bottom of front and rear rollers near one end of roller.
4. Slide the head of gauge screw (**H**) over the bedknife (**L**) and adjust the knob (**K**) to close the gap between the screw head and bedknife. Then tighten locknut (**G**).
5. Repeat Steps 4 and 5 on opposite end. Complete adjustment to one end before adjusting opposite end.
6. Tighten nuts (**G**) and recheck each end.

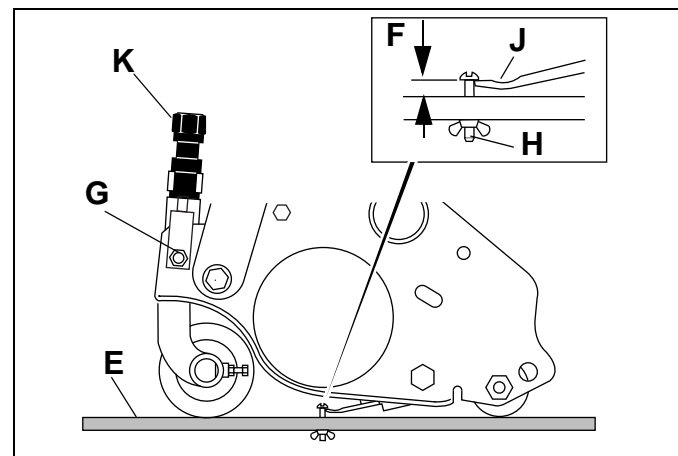


Figure 4D

## 4 ADJUSTMENTS

### 4.5 REEL ASSEMBLY

1. Slide splined end of coupler (AC) onto reel shaft
2. Assemble o-ring (AD) onto motor adapter on reel.
3. Insert key (AE) into motor shaft.
4. Slide motor (AF) into coupler (AC), and secure to reel using three 1/4-20 x 1-3/4" socket head screws (AG). Torque hardware to 75 in. lbs. (8.5 Nm).
5. Assemble lift yoke (AH) to reel, using shoulder bolts (AJ) included with reel.
6. Start mower, and lower lift arms. Shut mower off.
7. Move reel into position, lift up on lift arms, and slide lift yoke shaft into lift pivot. Secure with lock pin (AP), and assemble cap (AR).
8. Route right front reel motor harnesses along lift yoke to lift arm. Open connector cover (AU) and assemble motor harness to mower harness. Check to be certain harness does not contact moving parts, and secure harness to lift arm using one cable tie (AW) and lift yoke using two cable ties (AV).
9. Route left front reel motor harness along lift yoke and under lift arm. Open connector cover (AU) and assemble motor harness to mower harness. Check to be certain harness does not contact moving parts, and secure harness to lift arm using one cable tie (AW) and lift yoke using two cable ties (AV).
10. Route center reel motor harness along lift yoke and under lift arm. Open connector cover (AU) and assemble motor harness to mower harness. Check to be certain harness does not contact moving parts, and secure harness to lift yoke using three cable ties (AV).
11. Assemble harness clips (AX) onto back of connector assemblies and press clips into holes in lift arm brackets.
12. Place grass catchers (AS) in place on all three reels.
13. **Center Reel Only:** Connect centering spring (AT) to pin on lift yoke.

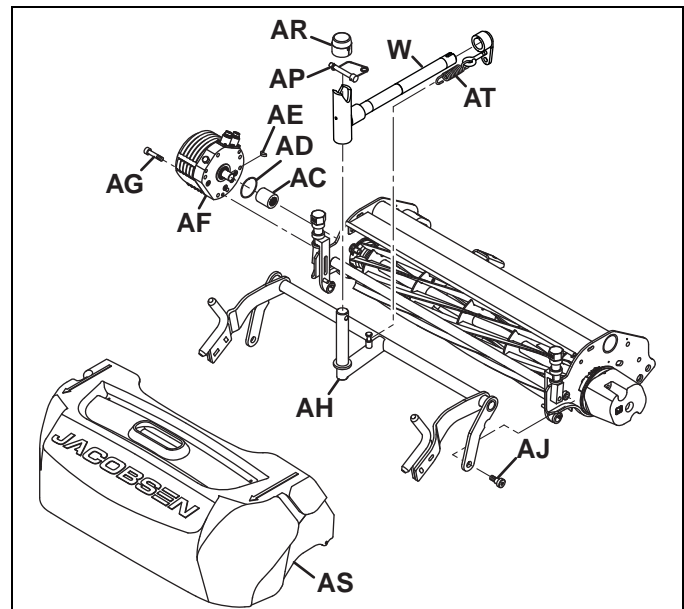


Figure 4J

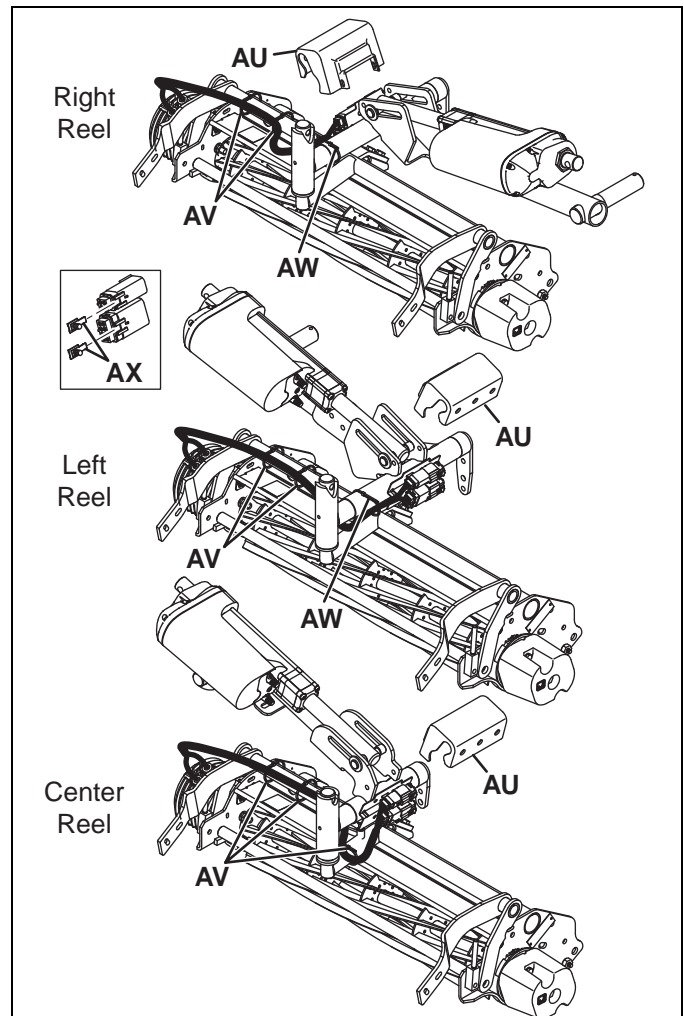


Figure 4K

## 4.6 REEL BEARING

Any radial play or excessive end play indicates bad bearings, a weak tension spring or a backed off nut.

1. Check bearing housing mounting hardware. Tighten or replace components as required. Carefully clean threads with degreaser.
2. Apply a medium strength grade of Loctite to nut **(P)**, then thread nut onto the reel shaft until the nut is 1-27/32" (46 mm) from the end of the reel shaft.
3. Fill reel bearing housings with NLGI - Grade O grease after adjusting spring.

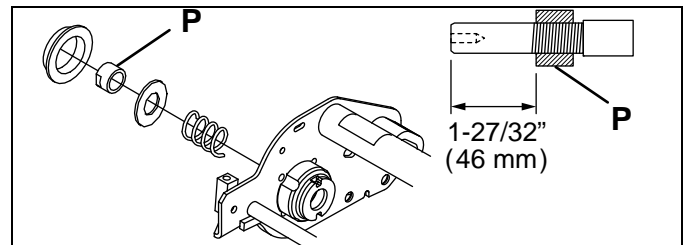


Figure 4L

## 4.7 REEL STABILIZER RODS

The reel stabilizer rods help keep the reels level when raising or lowering reels or making turns.

### Pre-Adjustment

On the end of the reel stabilizer rod with the springs and lock collar, the adjustment is set at the factory, and should not need to be changed. To set adjustment after replacement of components, use the following procedure.

1. Lower reels to the ground, and disconnect pin **(T)** from lift arm.
2. Measure distance from end of rod **(CA)** to face of collar **(CB)**. If required, loosen set screw **(CC)** and adjust position of collar to achieve a dimension of 5-1/4 in. (133.3 mm). Tighten set screw.
3. Measure distance from end of rod **(CA)** to face of nut **(CD)**. Adjust position of nut as required to achieve a dimension of 1/8 in. (3.2 mm).

### Adjustment

1. Lower reels to one-touch position. Shut mower off.
2. Loosen hex nut **(S)**.
3. Turn stabilizer rod **(U)** in or out of connecting pin **(T)** as required until reel is leveled. Tighten hex nut **(S)**.
4. Repeat for remaining reels.

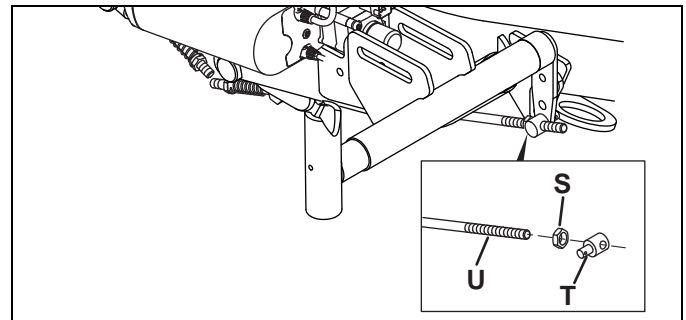


Figure 4N

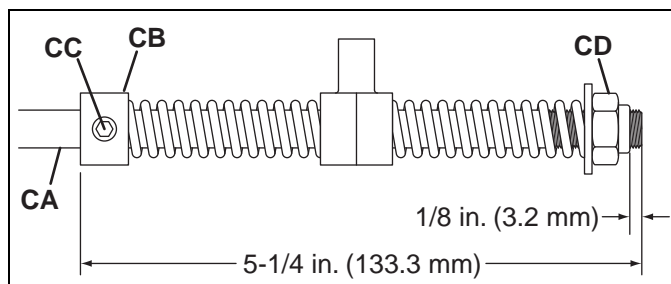


Figure 4M

## 4 ADJUSTMENTS

### 4.8 BEDKNIFE ADJUSTER SPRING

For proper operation, bedknife adjuster spring should be compressed to a dimension of 1-7/16 - 1-1/2 in. (36.5-38 mm).

To adjust spring compression, loosen or tighten nut **(R)** to obtain a distance of 1-7/16 - 1-1/2 in. (36.5-38 mm).

After adjusting spring, check reel to bedknife adjustment.

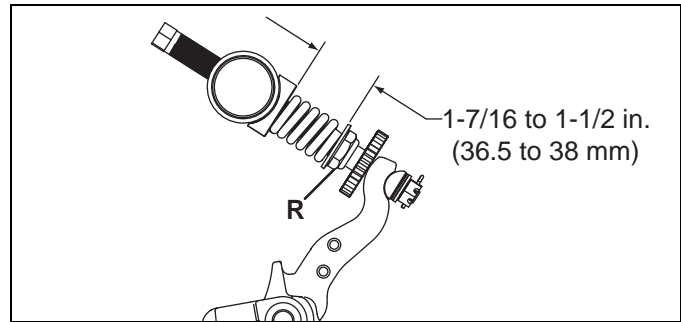


Figure 4O

### 4.9 BEDKNIFE ADJUSTER TENSION

#### NOTICE

Over tightening slotted nut **(S)** will make bedknife adjuster rod **(T)** difficult to adjust.

Remove cotter pin **(U)** and fully loosen, then tighten slotted nut **(S)** to remove clearance (no end play) between components. Continue to tighten nut until next slot in nut aligns with hole in bedknife adjuster rod **(T)**. Install new cotter pin.

Check torque required to rotate adjuster rod **(T)**. Maximum torque should be 24 in. lb. (2 ft. lb.) (2.7 Nm).

After adjusting nut, check reel to bedknife adjustment.

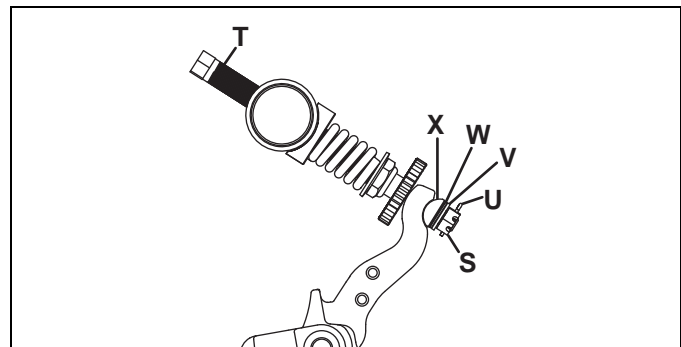


Figure 4P

### 4.10 GRINDING BEDKNIFE

Bedknife can be lowered out of the reel for grinding without completely removing the bedknife assembly.

1. Remove cotter pin **(U)**, slotted nut **(S)**, belleville washer **(V)**, shim washer **(W-if required)**, and half trunnion **(X)**. See Figure 4P

4. Press down on adjuster end of rod **(T)** to rotate other end of the adjuster out of the bedknife finger.
5. Rotate bedknife backing to access the reel and bedknife for grinding.
6. After grinding, assemble bedknife using reverse order of removal. Check adjustment of bedknife adjuster tension **(Section 4.9)**, and reel to bedknife adjustment **(Section 4.3)**.

### 4.11 STEERING CHAIN TENSION

1. Loosen hardware **(Y)**.
2. Adjust steering motor position to obtain 1/16 to 1/4 in. (1.5 to 6 mm) deflection, with 2 to 10 lb. (9 to 45 N) push at mid span of chain.

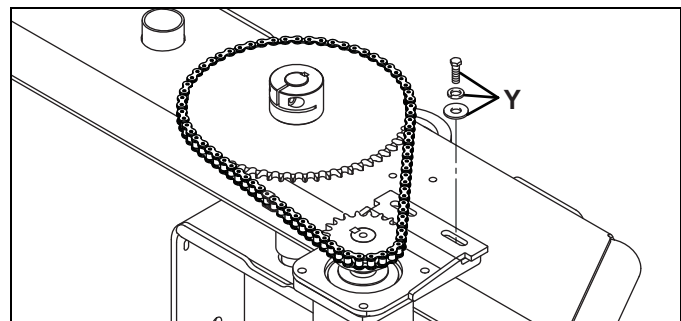


Figure 4J



## 4.12 ARMREST HEIGHT ADJUSTMENT

The armrest has three available height settings for operator convenience. To adjust armrest height:

1. Shut mower off and remove key.
2. Remove three bolts (**V**) from bracket on right side of seat.
3. Raise or lower armrest as needed until another set of holes in armrest bracket line up with seat bracket. Assemble hardware (**V**).
4. After adjusting height, check three armrest wire harness connectors for a tight connection to main harness.

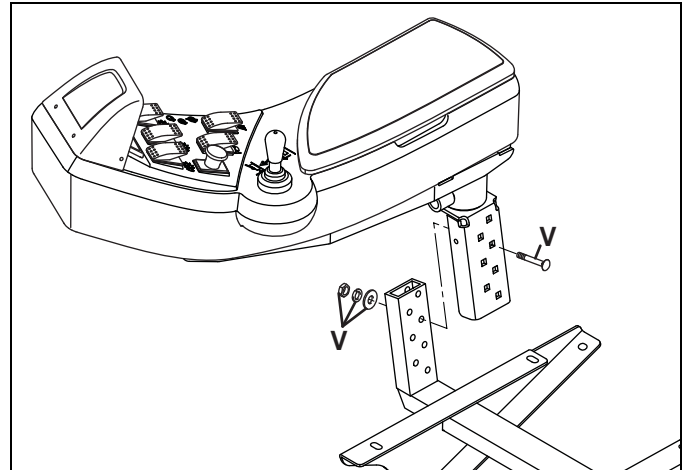


Figure 4K

## 4.13 ARMREST PIVOT

1. Tighten or loosen pivot plunger (**W**) as required so plunger button stops the armrest at both ends of armrest pivot slots, and plunger body does not contact armrest pivot. Do not use plunger to increase pivot tension.
2. Adjust hardware (**X**) as required to obtain 2 to 6 lbs (9 to 26.7 N) of force required, at visor end of armrest, to pivot armrest. Do not overtighten pivot hardware or leave too loose.

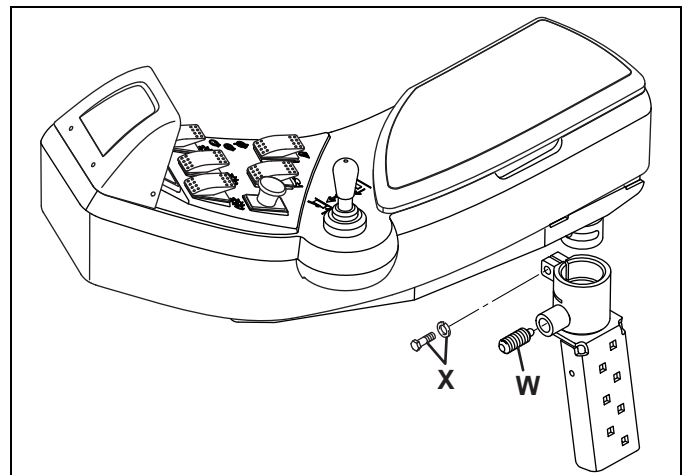


Figure 4L

## 4.14 GRASS CATCHER YOKE ADJUSTMENT

1. Loosen hardware (**AT**).
2. Adjust yoke (**AU**) as required so lip of grass catcher is resting on reel crossbar (**AV**).
3. Tighten hardware (**AT**).

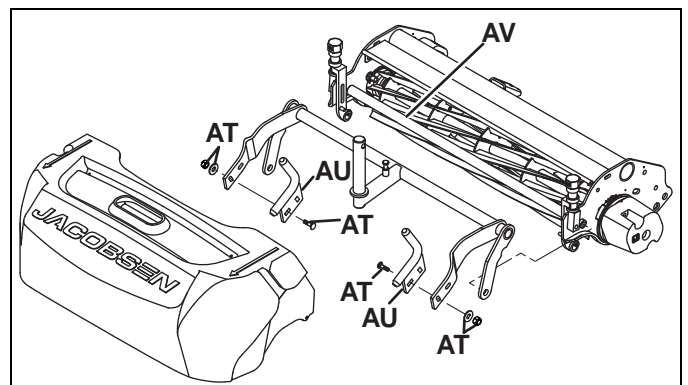


Figure 4M

## 4 ADJUSTMENTS

### 4.15 HOOD STOPS

1. Adjust position of hood stop bumpers (**Z**) as required so hood contacts bumpers with approximately 1/8 in. (3 mm) clearance between hood and cowlings.
2. Adjust left and right side bumpers as required so hood is level.
3. Test operation of hood latch. Hood latch must be able to latch hood.

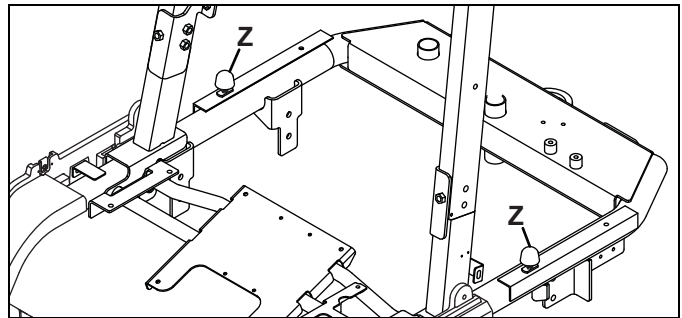


Figure 4N

### 4.16 LIFT STOPS

If the lift actuators make a ratcheting sound when being raised, lift stop adjustment may be required. Lift stops must be adjusted with lift system in Mow Mode. Refer to **Safety & Operation manual, Section 3.8**.

1. Loosen left and right reel stop hardware (**AA**).
2. Start mower, turn mow switch on, and fully raise reels. Shut off mower.
3. Adjust left reel stop bracket (**AB**) so reel stop pin (**AC**) is resting in bracket slot. Tighten hardware (**AA**). If additional adjustment is needed, adjust position of stop pin (**AC**).
4. Repeat for right reel stop bracket.
5. Loosen hardware (**AD**). Adjust left reel bumper and bracket (**AE**) to contact left reel in fully raised position.
6. Repeat bumper adjustment for right reel bumper.
7. Loosen hardware (**AF**). Adjust left side bumper (**AG**) to contact center reel in fully raised position. Hardware (**AF**) is located on battery tray on battery power modules and buffer battery tray on hybrid power modules.
8. Loosen hardware (**AJ**). Adjust right side center reel bumper (**AH**) to contact center reel. Adjust center bumper (**AK**) if required.

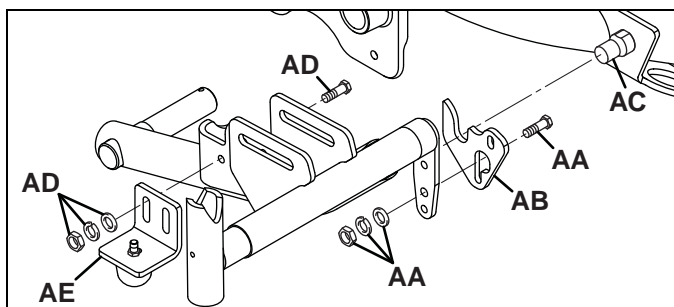


Figure 4O

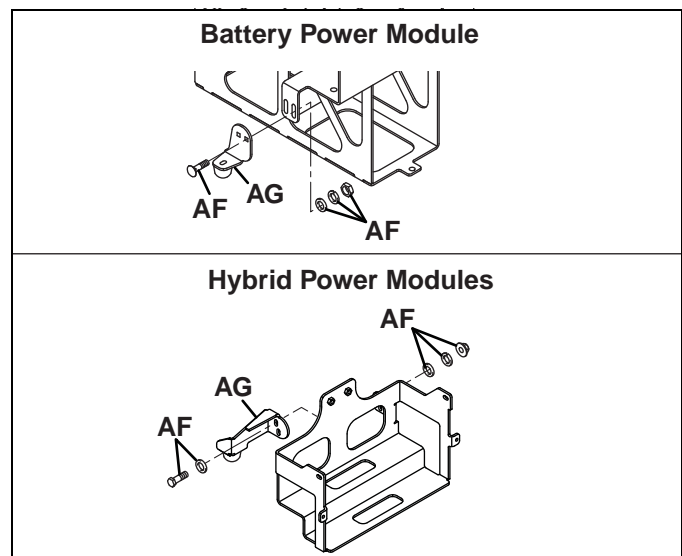


Figure 4P

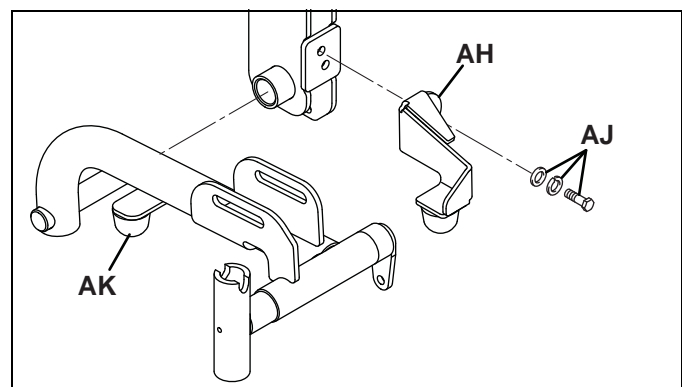


Figure 4P

## 4.17 DIESEL ENGINE ALTERNATOR BELT

1. Inspect and adjust new alternator belt after the first 10 hours of operation. Check and adjust every 100 hours thereafter.
2. Adjust the alternator pulley so the belt deflects  $9/32$  to  $11/32$  in. (7 - 9 mm) with 22 lbs. (10 kg) push at midpoint between pulleys. Refer to your engine manual.
3. To adjust, loosen alternator mounting bolts (**AL**), and adjust alternator until the proper belt tension is achieved.

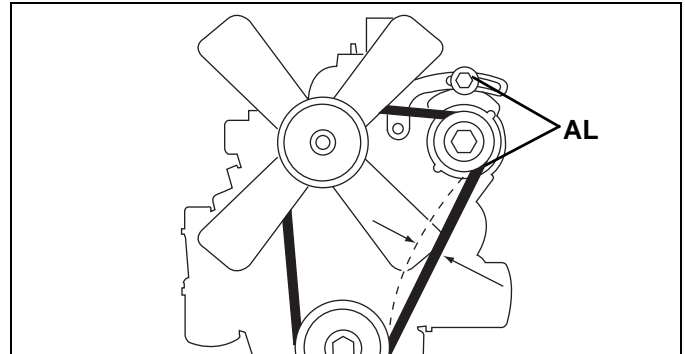


Figure 4R

## 4.18 HEADLIGHT ADJUSTMENT

Headlight has four adjustment positions to change distance head light beam lights up. To Adjust headlight:

1. Remove access plug (**AM**) from left side of steering column.
2. Raise or lower adjustment tab (**AN**) until headlight latches in desired detent position.
3. Insert access plug.

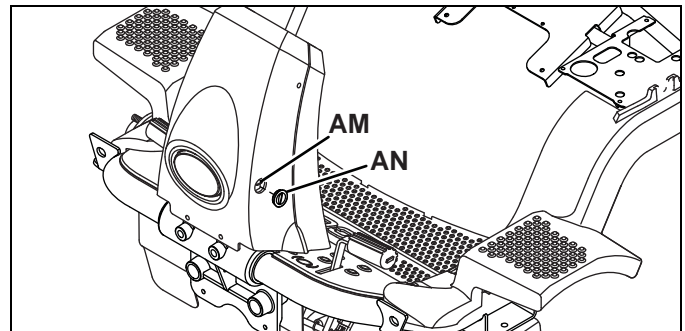


Figure 4S

## 4.19 TRACTION PEDAL ADJUSTMENT

Check traction pedal adjustment if mower is not maintaining correct speeds.

1. Obtain optional pedal test connector (**AS**) (Part Number 4225240). Connect test connector to main harness and traction pedal.
2. Turn mow switch to RUN position. Do not start mower.
3. Measure voltage using White and Black wires on test connector (**AS**). If test connector is not used, measure directly at Orange and Black wires in pedal connector, pins 2 and 3.
4. Press pedal for full forward movement. If voltage reading is between 3.8 and 4.8, no adjustment is needed.
5. If voltage is below 3.8 volts, loosen jam nut and turn stop screw (**AP**) clockwise, until correct reading is obtained. Tighten jam nut.

6. If voltage is above 4.8 volts, loosen jam nut and turn stop screw (**AP**) counter-clockwise, until correct reading is obtained. Tighten jam nut.
7. Repeat steps 4, 5, and 6 for reverse pedal movement, adjusting stop screw (**AR**).
8. Remove test connector (**AS**).

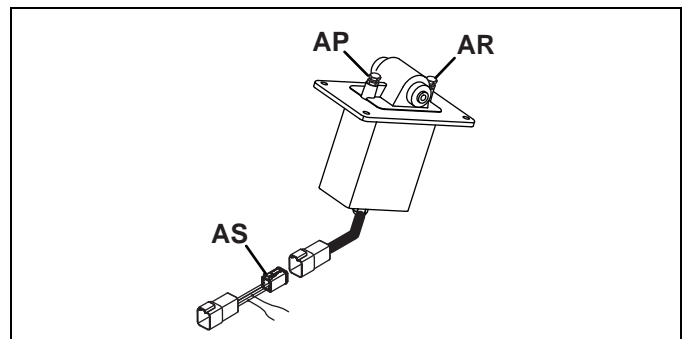


Figure 4T

# 4 ADJUSTMENTS

## 4.20 STEERING PROXIMITY SWITCHES

Only used on 2WD mowers with the following serial numbers:

- 6280101601~6280102499
- 6280301601~6280302499
- 6280501601~6280502499
- 6282501601~6282502499

1. Clean any dirt or debris off sensing portion of steering proximity switches.
2. Adjust steering proximity switches (**AD**) so orange sensing portion is flush with the face of the mounting bracket. Tighten both jam nuts on back of switch.

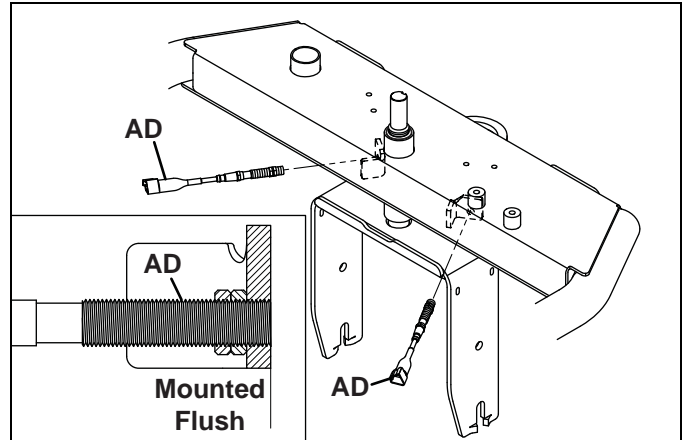


Figure 4U

## 4.21 STEERING SENSOR ADJUSTMENT (3WD UNITS)

Used on all 3WD units, and 2WD units with the following serial numbers.

- 6280102500 and Up
- 6280302500 and Up
- 6280502500 and Up
- 6282502500 and Up

1. Open hood and remove controller cover.
2. Loosen controller brace hardware (**ZA**).
3. Adjust position of controller brace (**ZD**) as required to allow an air gap of 1/8 to 3/16 in. (3.2 to 4.8 mm) between magnetic portion of sensor (**ZB**) and sensor body (**ZC**). Torque hardware (**ZA**) to 53 in. lb. (6 Nm).

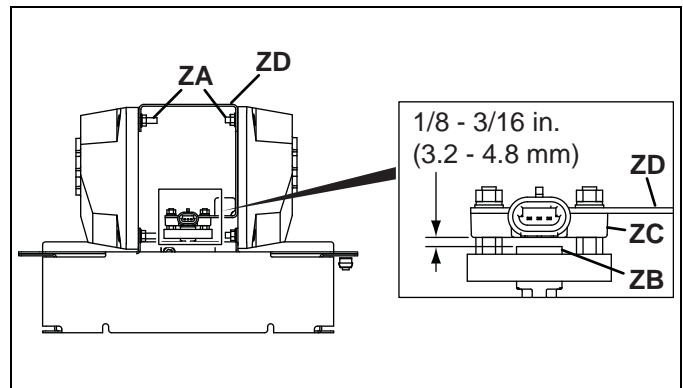


Figure 4V

## 4.22 DIESEL THROTTLE ACTUATOR ADJUSTMENT

1. Open hood.
2. With mower off, and actuator fully retracted, loosen jam nuts (**AW**) and move engine throttle lever as required so engine throttle lever is resting against low idle stop and actuator against its internal stop. Tighten jam nuts (**AW**).
3. Manually pull actuator linkage towards generator. Engine throttle lever should contact full throttle stop.

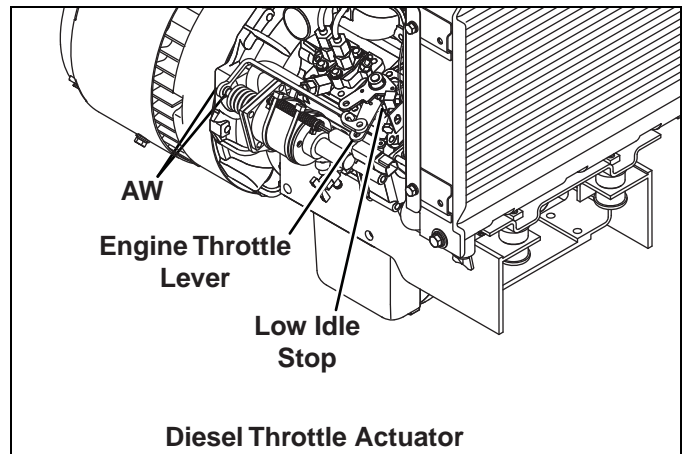


Figure 4W

### NOTICE

Improper adjustment of the throttle adjustment can result in generator output voltage that exceeds the system limits and may result in damage to mower components.

## 4.23 GAS THROTTLE ACTUATOR ADJUSTMENT

1. Open hood.
2. With mower off, remove air filter cover (BD), element (BE), and base housing (BF) from engine.

### NOTICE

To prevent hardware from dropping into intake manifold, close choke plate before removing air filter base.

### NOTICE

To prevent serious engine damage, never operate the engine with the air filter removed.

3. Disconnect spring (AY) from spring clip (AZ) at the carburetor.
4. Unlatch the spring clip (AZ) from throttle linkage (BA) by rotating upwards. Remove engine throttle linkage from throttle lever (BB).
5. Loosen jam nut (AW) on the actuator.
6. Disconnect engine throttle linkage (BA) and spring (AY) from throttle link (AX).
7. Insert the throttle linkage (BA) into the engine side throttle bushing, but do not attach the spring clip.
8. Pull the linkage away from the engine so throttle lever (BB) is against the idle stop (BC).
9. With engine throttle linkage in low idle position (against stop (BC)) and actuator fully retracted (against internal stop), loosen nut (AW) and turn throttle link (AX) as required so hole in throttle link (AX) visually aligns with throttle linkage (BA). Tighten nut (AW).
10. Remove throttle linkage (BA) from lever (BB).
11. Connect throttle linkage (BA) and spring (AY) to throttle link (AX).
12. Insert throttle linkage (BA) in throttle lever (BB). Secure by rotating spring clip (AZ) down and latching onto linkage. Connect spring (AY) to spring clip (AZ).
13. Check that throttle lever (BB) is still against stop (BC) and actuator is fully retracted.

14. Manually pull actuator linkage towards engine. Throttle lever should contact full throttle stop.

### NOTICE

Improper adjustment of the throttle actuator can result in generator output voltage that exceeds the system limits and may result in damage to mower components.

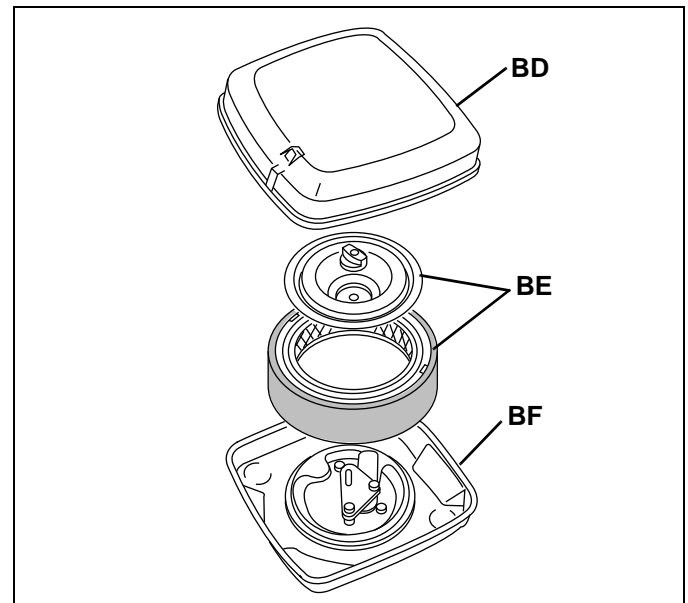


Figure 4X

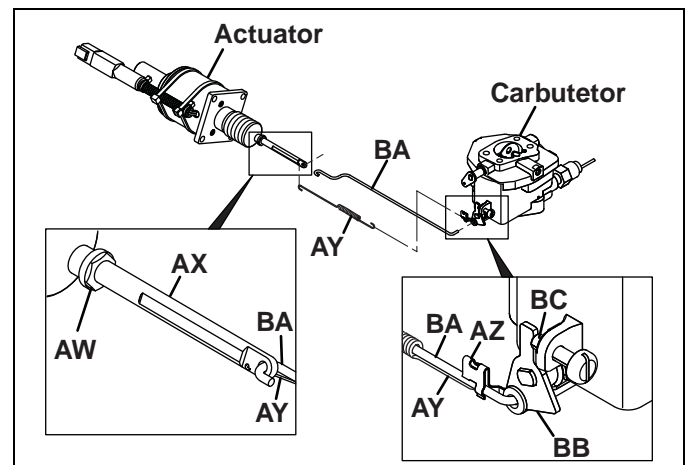


Figure 4Y

# 4 ADJUSTMENTS

## 4.24 TORQUE SPECIFICATION

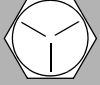



### NOTICE

All torque values included in these charts are approximate and are for reference only. Use of these torque values is at your sole risk. Jacobsen is not responsible for any loss, claim, or damage arising from the use of these charts.





**Extreme caution should always be used when using any torque value.**

Jacobsen uses Grade 5 Plated bolts as standard unless otherwise noted. For tightening plated bolts use the value given for lubricated.

### AMERICAN NATIONAL STANDARD FASTENERS

SIZE	UNITS					SIZE	UNITS				
		GRADE 5		GRADE 8				GRADE 5		GRADE 8	
		Lubricated	Dry	Lubricated	Dry			Lubricated	Dry	Lubricated	Dry
#6-32	in-lb (Nm)	–	20 (2.3)	–	–	7/16-14	ft-lb (Nm)	37 (50.1)	50 (67.8)	53 (71.8)	70 (94.9)
#8-32	in-lb (Nm)	–	24 (2.7)	–	30 (3.4)	7/16-20	ft-lb (Nm)	42 (56.9)	55 (74.6)	59 (80.0)	78 (105)
#10-24	in-lb (Nm)	–	35 (4.0)	–	45 (5.1)	1/2-13	ft-lb (Nm)	57 (77.2)	75 (101)	80 (108)	107 (145)
#10-32	in-lb (Nm)	–	40 (4.5)	–	50 (5.7)	1/2-20	ft-lb (Nm)	64 (86.7)	85 (115)	90 (122)	120 (162)
#12-24	in-lb (Nm)	–	50 (5.7)	–	65 (7.3)	9/16-12	ft-lb (Nm)	82 (111)	109 (148)	115 (156)	154 (209)
1/4-20	in-lb (Nm)	75 (8.4)	100 (11.3)	107 (12.1)	143 (16.1)	9/16-18	ft-lb (Nm)	92 (124)	122 (165)	129 (174)	172 (233)
1/4-28	in-lb (Nm)	85 (9.6)	115 (13.0)	120 (13.5)	163 (18.4)	5/8-11	ft-lb (Nm)	113 (153)	151 (204)	159 (215)	211 (286)
5/16-18	in-lb (Nm)	157 (17.7)	210 (23.7)	220 (24.8)	305 (34.4)	5/8-18	ft-lb (Nm)	128 (173)	170 (230)	180 (244)	240 (325)
5/16-24	in-lb (Nm)	173 (19.5)	230 (26.0)	245 (27.6)	325 (36.7)	3/4-10	ft-lb (Nm)	200 (271)	266 (360)	282 (382)	376 (509)
3/8-16	ft-lb (Nm)	23 (31.1)	31 (42.0)	32 (43.3)	44 (59.6)	3/4-16	ft-lb (Nm)	223 (302)	298 404	315 (427)	420 (569)
3/8-24	ft-lb (Nm)	26 (35.2)	35 (47.4)	37 (50.1)	50 (67.8)	7/8-14	ft-lb (Nm)	355 (481)	473 (641)	500 (678)	668 (905)

### METRIC FASTENERS

SIZE	UNITS									Non Critical Fasteners into Aluminum
		4.6		8.8		10.9		12.9		
		Lubricated	Dry	Lubricated	Dry	Lubricated	Dry	Lubricated	Dry	
M4	Nm (in-lb)	–	–	–	–	–	–	3.83 (34)	5.11 (45)	2.0 (18)
M5	Nm (in-lb)	1.80 (16)	2.40 (21)	4.63 (41)	6.18 (54)	6.63 (59)	8.84 (78)	7.75 (68)	10.3 (910)	4.0 (35)
M6	Nm (in-lb)	3.05 (27)	4.07 (36)	7.87 (69)	10.5 (93)	11.3 (102)	15.0 (133)	13.2 (117)	17.6 (156)	6.8 (60)
M8	Nm (in-lb)	7.41 (65)	9.98 (88)	19.1 (69)	25.5 (226)	27.3 (241)	36.5 (323)	32.0 (283)	42.6 (377)	17.0 (150)
M10	Nm (ft-lb)	14.7 (11)	19.6 (14)	37.8 (29)	50.5 (37)	54.1 (40)	72.2 (53)	63.3 (46)	84.4 (62)	33.9 (25)
M12	Nm (ft-lb)	25.6 (19)	34.1 (25)	66.0 (48)	88.0 (65)	94.5 (70)	125 (92)	110 (81)	147 (108)	61.0 (45)
M14	Nm (ft-lb)	40.8 (30)	54.3 (40)	105 (77)	140 (103)	150 (110)	200 (147)	175 (129)	234 (172)	94.9 (70)

## 4.25 SPECIFIC TORQUE

Rear Axle Shaft ..... 150 ft. lbs. (203 Nm)

12 Volt Battery Posts .....80 in. lbs. (9 Nm)

Tire Lug Nuts ..... 85-95 ft. lbs (115-128 Nm)


T890 Battery Posts ..... 95-120 in. lbs. (10.7-13.5 Nm)

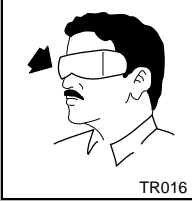
## 5.1 BATTERY SAFETY

Batteries contain dilute sulfuric acid which can result in severe burns.

Hydrogen gas is formed within a battery during the charging cycle. Hydrogen in concentrations of 4% and higher are explosive and can be ignited by open flame or an electrical spark. A battery explosion will cause sulfuric acid and battery components to be thrown over a large area with considerable force.

Always observe the following warnings when working on or near batteries:


WARNING



TR016

The electrolyte in a storage battery is a dilute acid which can cause severe burns to the skin and eyes. Treat all electrolyte spills to the body and eyes with extended flushing with clear water. Contact a physician immediately. Always wear a safety shield or approved safety goggles when charging batteries.


Hydrogen is explosive in concentrations as low as 4% and is generated in the charging cycle of electric mowers. Because it is lighter than air, it will collect in the ceiling of buildings necessitating proper ventilation. Air exchanges of 5 changes per hour is considered the minimum requirement.

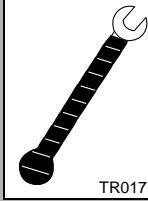
Never smoke around batteries.

Never charge batteries in an area that has open flame or electrical equipment that could cause an electrical arc.

Be sure that the key switch is off, all electrical accessories are turned off and power connector is disconnected before starting work on vehicle.

Remove all jewelry (watches, rings, etc.).


WARNING



TR017

Wrap wrenches with vinyl tape to prevent the possibility of a dropped wrench from 'shorting out' a battery, which could result in an explosion and severe personal injury.

Electrolyte spills should be neutralized with a solution of 1/4 cup (59.1ml) of sodium bicarbonate (baking soda) dissolved in 1-1/2 gallons (5.7 liters) of water and flushed with water.

Never disconnect a circuit under load at a battery terminal.

Wear appropriate protective clothing when working with batteries. Electrolyte can cause severe burns to the eyes, skin, and clothing.

Batteries, battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. **Wash your hands after handling.**

## 5.2 BATTERY CONDITIONING

A new battery set must go through a conditioning process before it will develop its maximum capacity. Conditioning may take up to 50 charge/discharge cycles until full capacity and run time are achieved. A battery has a maximum life, therefore good maintenance is designed to maximize the **available** life and reduce the factors that can reduce the life of the battery. Refer to **Figure 5A** for battery age vs. capacity chart.

NOTICE

Chart shown in **Figure 5A** refers to an 80% Depth of Discharge (DOD) with theoretical life of 750 cycles.

The charts shown in **Figure 5A** and **Figure 5B** are provided for reference only and is to be used as a guideline for estimating capacity of a battery pack. Actual battery life may be shorter or longer, depending on the actual DOD experienced by the battery set, and maintenance battery set receives.

# 5 BATTERIES

The conditioning process can be monitored by checking the **specific gravity** of the battery cells. After the battery set has been recharged, spot check two or more battery cells. A fully charged fully conditioned battery with an electrolyte temperature of 80° F (27° C) has a gravity reading of 1.280.

Once the battery set has completed 50 charge/discharge cycles, Depth of Discharge (DOD) can be measured.

To determine the DOD, measure the battery pack voltage after mowing for a period of two weeks. Average the results and look up the DOD, using the left side chart in

**Figure 5B.** These values are based on a standard 78° F (25.5° C) battery temperature. Using the DOD refer to the right side chart in **Figure 5B** to determine theoretical life cycles.

As a battery ages, it still performs adequately except the expected run time, or capacity, will decrease. Capacity describes the time that a battery can continue to provide its design amperes from a full charge.

Temperature is important when conducting tests on a battery and test results must be corrected to compensate for temperature differences.

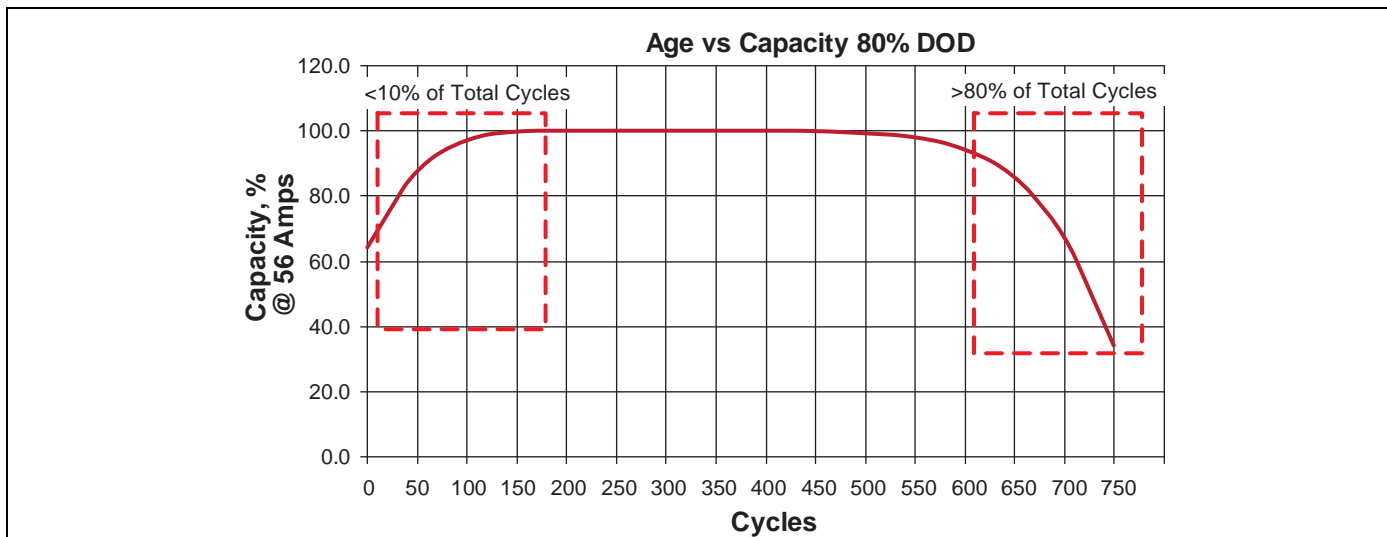


Figure 5A

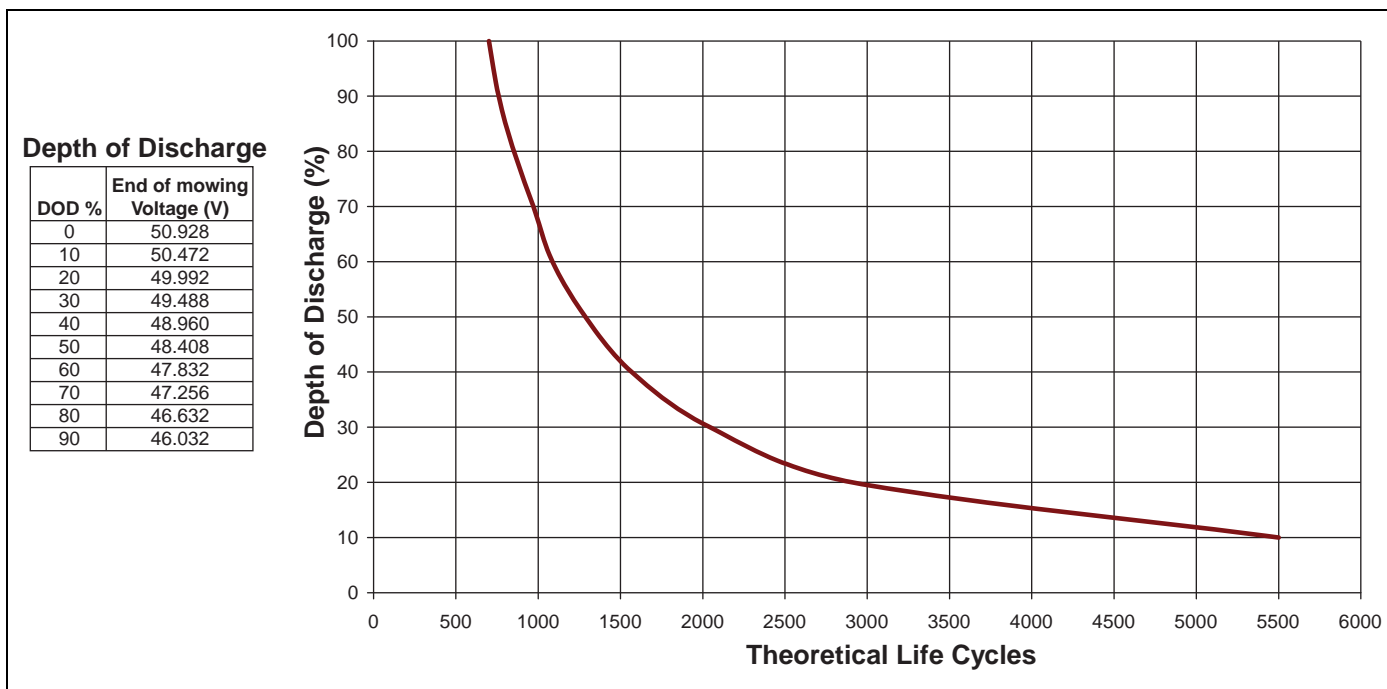


Figure 5B



## 5.3 BATTERY SYSTEMS

The Eclipse mower is available with either a battery power module, a gas engine hybrid power module, or a diesel engine hybrid power module.

1. The battery powered Eclipse has six, 8 VDC batteries wired in series. Batteries must be disconnected from the mower for charging.
2. The gas and diesel hybrid powered mowers contain two separate battery systems.
  - a. A 48 VDC buffer battery pack, comprised of four 12VDC batteries wired in series. The buffer

batteries are charged by the hybrid generator during operation. See **Section 5.8** for charging buffer batteries using an external charger.

### NOTICE

The buffer batteries can be charged using the same battery charger that is used on battery power modules. The charger is not included with hybrid power modules and must be ordered separately.

- b. A 12 VDC battery for engine operation.

## 5.4 BATTERY FILLING (BATTERY POWERED MOWERS)

### CAUTION

Battery electrolyte is an acidic solution and should be handled with care. If electrolyte is splashed on any part of the body, immediately flush the exposed area with liberal amounts of water, and obtain medical aid immediately.

### NOTICE

The 12 VDC batteries used on hybrid powered mowers are sealed and do not require filling.

When the batteries require additional water, distilled water is recommended (never use water with high mineral content).

The Eclipse mower with battery power module is equipped with a battery filling system. Water should be added **AFTER** the batteries have been charged so that it will not overflow during charging.

However, batteries should **NOT** be charged if the electrolyte level is below the top of the plates. If the level has been allowed to go below the top of the plates, add just enough water to cover the plates before charging. Then after charging, check the level again, and add water as required to bring it to the proper level.

To fill batteries using the battery filling system:

1. Fully charge the battery pack.
2. Fill battery filling system tank with distilled water. Support tank at least 36 in. (1 meter) above batteries.
3. Locate filling system connector on right side of battery tray and connect to tank hose.

4. Flow indicator will start spinning and distilled water will flow down to any batteries that require additional water. Each battery connection has a float to prevent over filling.
5. Observe flow indicator on tank hose. Keep tank connected to batteries until flow indicator stops spinning. Disconnect hose and store tank in secure location for future use. Do not operate mower with tank connected to batteries.
6. Periodically spot check the electrolyte level in the cells. Excessive water consumption indicates one or all of the following:
  - a. Overcharging.
  - b. High temperature operation.
  - c. The battery is nearing the end of its service life.

## 5 BATTERIES

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### 5.5 BATTERY MAINTENANCE

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A regularly scheduled maintenance program is vital to the performance and maximum life of the batteries.

1. Keep the batteries clean at all times. Make sure the cell caps are in place to prevent water or debris from getting in the cells.
2. Be sure the batteries are fully charged before using the unit each day.
  - a. Never allow the batteries to become completely discharged at any time. Do not operate unit with low voltage shown on LDU for any length of time.
  - b. Always fully recharge the batteries after every use, no matter how short.
  - c. After use in hot weather, the batteries should be allowed to cool for at least an hour before

charging.

- d. In cold weather, it is better to charge the batteries just before use.
3. **DO NOT** allow discharged batteries to be stored or to sit idle for an extended period of time.
4. **DO NOT** use battery additives; they will shorten the life of the batteries.
5. Once a week during the regular mowing season, spot check the specific gravity of two or more battery cells, after fully charging the batteries.
6. Periodically spot check the electrolyte level in the cells.

### 5.6 BATTERY PERFORMANCE

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To ensure maximum battery life:

1. Never allow the batteries to become completely discharged at any time.
2. Always fully recharge the batteries after every use.
3. Check for conditions that will affect battery performance and life.
  - a. Too little clearance between the bedknife and reel
  - b. Improper cutting head lubrication
  - c. Low tire pressure

- c. Excessive use of Whisper mode on hybrid power modules.
- d. Improper operation of electrical system
- e. Poor condition of charger plug and receptacle
4. Battery performance is also affected by the ambient temperature. Battery capacity is **increased** by 7 percent for every 15° F (8° C) the temperature is **above** 77° F (25° C). Battery capacity is **decreased** by 7 percent for every 15° F (8° C) the temperature is **below** 77° F (25° C).

### 5.7 BATTERY DISPOSAL

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**FEDERAL LAW PROHIBITS IMPROPER DISPOSAL OF LEAD-ACID BATTERIES.** Laws prohibit disposal of batteries in landfills and requires dealers to accept them for recycling. Spent lead acid batteries must be returned to the dealer for proper disposal and/or recycling.

## 5.8 BATTERY CHARGER

The battery charger is designed to fully charge the battery pack and will shut off automatically when the batteries are fully charged. Read the instruction manual included with the charger for proper operating procedure.

An AC power extension cord, not included with mower, is required to use the battery charger. The cord should be as short as possible (must be less than 100 feet long) and a minimum of 12 AWG.

Always connect the charger to a dedicated, grounded outlet protected by a 15 or 20 amp circuit breaker.

Before charging, the following should be observed:

### **WARNING**

Hydrogen is explosive in concentrations as low as 4% and is generated in the charging cycle of electric mowers. Because it is lighter than air, it will collect in the ceiling of buildings necessitating proper ventilation. Air exchanges of 5 changes per hour is considered the minimum requirement.

Never smoke around batteries.

Never charge batteries in an area that has open flame or electrical equipment that could cause an electrical arc.

Be sure that the key switch is off, all electrical accessories are turned off, and power connector is disconnected before starting work on vehicle.

Remove all jewelry (watches, rings, etc.).

The charging must take place in an area that is well ventilated and capable of removing the hydrogen gas that is generated by the charging process. A **minimum** of five air exchanges per hour is recommended.

The charger AC cord is fully inserted into the charger receptacle.

The charger AC cord is protected from damage and is located in an area to prevent injury that may result from personnel running over or tripping over the cord set.

If the charger is not operating correctly, unplug charger from both the AC outlet and the mower and check the fuse.

#### **Battery Power Modules:**

The battery charger is installed under the hood of the vehicle, and is always connected to the battery pack.

If this is the first time charging the batteries, or if charger was removed from this mower to charge buffer batteries on a hybrid mower, check charger algorithm before charging. Algorithm 38 (Preferred) or 11 (Alternate)

should be used. See **Section 5.9**.

1. Make certain ignition switch is off. Disconnect battery pack power connector.
2. Lift up on the charger receptacle cover on the left side of the machine. Plug end of the AC extension cord into charger receptacle.
3. Plug the AC power cord from the charger into a suitable wall outlet.
4. Charging time should be between 4-6 hours.
5. When the batteries are fully charged, the charger will turn off automatically. Unplug the charger AC cord from the wall outlet first, then disconnect the cord from the mower. Store the AC cord in a safe location for the next time charging is required.

#### **Buffer Batteries on Hybrid Power Modules:**

The buffer batteries were designed to be charged by the generator, however they can be recharged using an external charger if needed. An external charger is not included with the mower and must be purchased separately. Order charger part number 4203742 (Delta-Q). Batteries can also be removed from mower and charged individually using a 12 volt charger.


The 4203742 Delta-Q charger comes with the default algorithm programming set for charging the battery power module batteries and must be switched to a different algorithm for charging the buffer batteries. Set charger to use algorithm 66. See **Section 5.9**.

1. Make certain ignition switch is off. Disconnect buffer battery pack connector.
2. **Delta Q Charger:** Using insulated tools, connect charger leads to buffer battery pack, using same terminals buffer battery connector is attached to.
3. **Eclipse Walker Charger:** Connect harness adapter 4229560 (Order Separately) to both charger connector and buffer battery connector.
3. Plug end of the AC extension cord into charger receptacle.
4. Plug the AC power cord from the charger into a suitable wall outlet.
5. When the batteries are fully charged, the charger will turn off automatically. Unplug the charger AC cord from the wall outlet first, then disconnect the cord from the mower. Store the AC cord in a safe location for the next time charging is required.
6. Disconnect charger from buffer battery pack.

# 5 BATTERIES

## 5.9 BATTERY CHARGER ALGORITHM

Three algorithms are programmed into the Delta-Q charger. Make sure correct algorithm is set for the batteries being charged.


WARNING

Use charger only with the algorithm that is appropriate to the specific battery type. Using incorrect algorithm may cause personal injury and damage.

Algorithm	Description
11	Used as alternate algorithm for charging Trojan T890 batteries, but without random equalization.
38	Default setting for charger. Used for charging Trojan T890 batteries with random equalization. Used with battery power module batteries.
66	Used to charge buffer batteries on hybrid power modules.

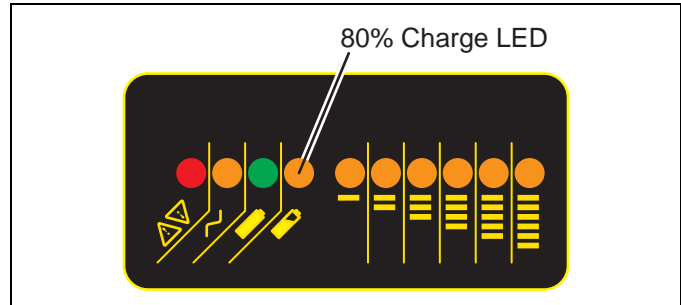
### Checking Charge Algorithm

1. Make sure system power switch is in off position and key is removed.
2. Disconnect battery pack power connector from mower.
3. Disconnect AC cord from wall outlet and charger receptacle.
4. **Battery Power Modules:** Using insulated tools, disconnect positive lead for charger from battery pack.

**Hybrid Power Modules:** Using insulated tools, connect negative lead for charger to same battery terminal negative cable for battery connector is connected to.

**All Units:** Be careful not to allow positive lead from charger to contact the mower or other battery terminals.

5. Connect charger to wall outlet. Charger will do a Power On Self Test, then display the algorithm code by flashing the amber 80% charge led on the left side of the charger.



The number will flash for the first digit, then a pause, then the second digit, then a pause, and then repeat for 11 seconds.

For algorithm 38, the following sequence will flash on the LED.

Flash - Flash - Flash - Pause - Flash - Flash - Flash - Flash - Flash - Flash - Flash - Flash - Flash - Pause - Repeat

6. Disconnect charger from wall outlet.

### Changing Charge Algorithm

1. Follow instructions for checking charge algorithm.
2. When 80% Charge LED is flashing the algorithm code, touch the positive lead from charger to positive battery terminal for 3 seconds, then remove positive lead. Charger will switch to next algorithm program in charger.
3. Touch positive lead to positive terminal until relay clicks (approximately 10 seconds or more). New algorithm is now active.
4. Disconnect AC power cord and positive lead. Recheck to be certain correct algorithm is active.

## 5.10 CLEANING BATTERIES

When cleaning the batteries, do not use a water hose without first spraying with a solution of sodium bicarbonate (baking soda) and water to neutralize any acid deposits. Use of a water hose without first neutralizing any acid, will move acid from the top of the batteries to another area of the mower or storage facility where it will attack the metal structure or the concrete/ asphalt floor. After hosing down the batteries, a residue will be left on the batteries which is conductive and will contribute to corrosion and the discharge of the batteries. Make sure the battery filling system caps are in place before cleaning batteries. Use care to insure the soda and water solution does not enter the battery through the vent caps.

When cleaning the batteries, be sure all of the batteries on the mower are cleaned. Particular attention should be placed on cleaning batteries on bottom level of battery tray as they will tend to pick up more sand and debris.

The correct cleaning technique is to spray the top and sides of the batteries with a solution of sodium bicarbonate (baking soda) and water. This solution is best applied with a garden type sprayer equipped with a **non metallic spray wand**. The solution should consist of 1/4 cup (59.1 ml) of sodium bicarbonate (baking soda) mixed with 1-1/2 gallons (5.7 l) of clear water. In addition to the batteries, metallic components (battery tray, hold downs, etc.) adjacent to the batteries should also be sprayed with the sodium bicarbonate (baking soda) solution.

Allow the solution to sit for at least three minutes; use a soft bristle brush or cloth to wipe the tops of the batteries in order to remove any residue that could cause the self discharge of the battery. Be careful not to disconnect or dislodge battery filling system components (hoses, caps). Rinse the entire area with low pressure clear water. Cleaning should take place weekly or more often under extreme conditions.

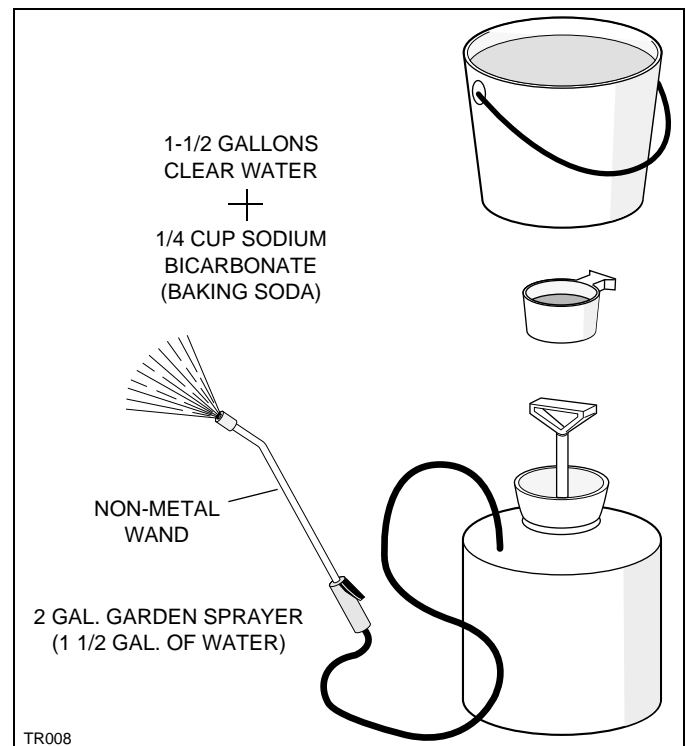


Figure 5C

# 5 BATTERIES

## 5.11 SPECIFIC GRAVITY (62801 ONLY)

The normal specific gravity readings for a fully charged battery should be between 1.250 and 1.280 after correcting for temperature.

Check the specific gravity **after** the batteries have been charged and **before** adding water to the cells

It is possible to purchase a combination hydrometer-thermometer which measures both specific gravity and the electrolyte temperature, otherwise use a standard hydrometer and a separate battery thermometer.

Temperature is important when measuring specific gravity and test results must be corrected to compensate for temperature differences. To compensate for different temperatures, **subtract** one point (0.001) from the measured reading for every 3° F (1.7° C) **below** 80° F (26.7° C) or **add** one point (0.001) from the measured reading for every 3° F **above** 80° F.

**EXAMPLE:** A reading of 1.282 taken at 65° F (18.3° C) is compensated for temperature to 1.277 (1.282 minus five points (0.005) equals 1.277).

### ***If low specific gravity readings are found:***

1. Make sure the cells you checked have a sufficient electrolyte level.
2. Check all battery connections for tightness and corrosion. A non metallic grease or protective spray may be applied to the connections to inhibit further corrosion
3. Check for cracked or damaged battery case.
4. Check for broken or frayed battery cables.

If the hydrometer reading varies 30 points (0.030) or more, it may indicate an aging or defective battery. Mark

the cells with low specific gravity readings. Check electrolyte levels and recharge the batteries.

Take another gravity reading from all of the cells. If the hydrometer reading varies by more than 30 points (0.030) between two cells in the same battery, and the electrolyte level is not low, it is a bad cell and the battery should be replaced.

If one of the batteries have been found defective, mark the bad battery and recharge with the bad battery still in place. Once the batteries are charged, replace the defective battery with a fully charged one (either a new battery or one of equal age).

Below 80° (26.7° C)			Above 80° (26.7° C)		
° F	° C	Subtract	° F	° C	Add
77	25	0.001	83	28.3	0.001
74	23.3	0.002	86	30	0.002
71	21.6	0.003	89	31.6	0.003
68	20	0.004	92	33.3	0.004
65	18.3	0.005	95	35	0.005
62	16.6	0.006	98	36.6	0.006
59	15	0.007	101	38.3	0.007
56	13.3	0.008	104	40	0.008
53	11.6	0.009	107	41.6	0.009
50	10	0.010	110	43.3	0.010
47	8.3	0.011	113	45	0.011
44	6.6	0.012	116	46.6	0.012

## 5.12 END OF CHARGE VOLTAGE TEST (62801 ONLY)

This test is made using a voltmeter, also on fully charged batteries and with the charger connected. Check end of charge voltage whenever LDU displays less than 50 VDC immediately after a full charge.

1. Verify the batteries have been fully charged. Restart the charger by disconnecting the AC cord from the wall and reconnecting it.
2. After 15 minutes (with the charger still running) measure the individual battery voltages using a volt-ohm meter. Place the **Black** probe on the **Negative** (-) terminal of the battery and the **Red** probe on the **Positive** (+) terminal. Record all readings for the batteries.

- a. A fully charged battery should have a voltage reading between 9.3 and 10.4 volts.
- b. A reading of less than 9.3 volts from every battery indicates they are all nearing the end of their working life.
- c. If one battery has a reading of less than 9.3 volts or varies by more than 0.5 volts from the other batteries, check the specific gravity reading and/or perform a battery discharge test.

## 5.13 DISCHARGE TEST (62801 ONLY)

Battery serviceability can be tested using a Battery Discharge tester of the same voltage as the system to be tested (48 volts for the Eclipse 322).

The Battery Discharge Tester will discharge the batteries until the battery pack reaches terminal voltage (48 volt systems terminal voltage is 42 volts). The time it takes to reach a terminal voltage is a useful test of battery discharge time.

Items required for the test:

- Battery Discharge Tester
- Battery Thermometer or use
- Hydrometer/thermometer

### **WARNING**

Use care when using tools around the battery terminals, and when possible, use insulated tools. Charge batteries in a well ventilated area to prevent explosive gas build up.

Battery discharge time is affected by temperature and rate of discharge (amps). If the Jacobsen discharger (Part No. 892857) is being used in this test, the discharge rate for the batteries is 56.25 amps at 48 volts (if another discharger is being used, the discharge rate will have to be determined before continuing).

The following charts and instructions will be used for the discharge test.

Use **Discharge Test Temperature Correction** table for the temperature compensation needed in step 6.

Use **Battery Discharge Rates** table to determine the optimum amount of discharge time for the type of battery being tested.

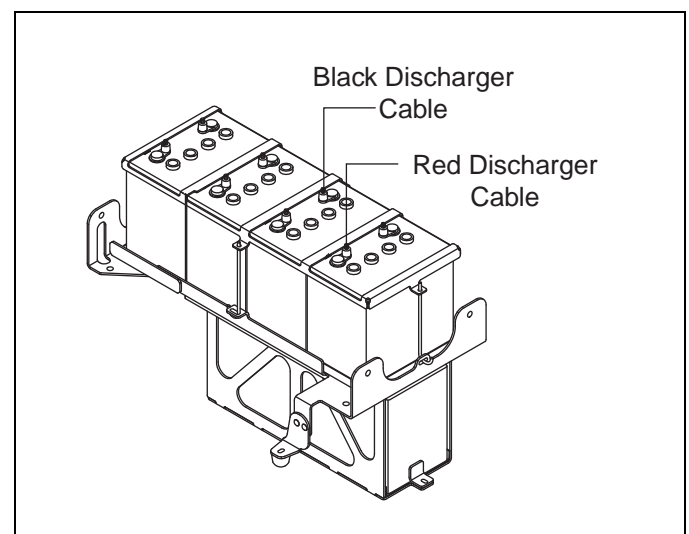
1. Connect the discharger to a fully charged set of batteries. Connect the clamps of the discharger to the same terminals charger and battery connector cables are assembled to.
2. Turn on the discharger.
3. The discharger should automatically turn off when the terminal voltage is reached (48 volt system, the terminal voltage is 42 volts).
4. During the discharge time, periodically measure the battery pack voltage. Use a volt-ohm meter, set to measure DC volts. Connect the black lead of the volt-ohm meter to the black cable of the discharge tester. Connect the red lead to the red cable of the discharge tester.

5. When the voltage is within 0.5 volts of the terminal voltage for the pack (42.5 volts), measure and record the voltage of the individual batteries. If the discharger shuts off before all the measurements can be taken, record the discharge time and then restart the discharger and finish taking the readings.
6. Take the electrolyte temperature reading and find the correction factor for that reading in Chart 1 (See Page 10).
7. Multiply the discharge time by the correction factor. The new value is the temperature compensated discharge time.

#### **EXAMPLE:**

The discharge rate for a matured Trojan T890 is 132 minutes. If the electrolyte temperature is 75° F (23.9° C), multiply  $132 \times 1.025 = 135$ .

8. If the number of minutes required to reach the terminal voltage is 60% or more of the battery's discharge time rating, then the batteries are in good condition.
9. If the discharge time is below 60%, compare the individual battery readings taken in step 5.
10. If any of the battery readings vary more than 0.5 volts, then that battery is nearing the end of its useful life and should be replaced.
11. If all the individual battery readings are within the 0.5 volts and the discharge time was low, then the battery pack is nearing the end of its useful life and will need to be replaced soon.



**Figure 5D**

# 5 BATTERIES

## Discharge Test Temperature Correction

Below 80° (26.7° C)			Above 80° (26.7° C)		
° F	° C	Correction Factor	° F	° C	Correction Factor
75	23.9	1.025	85	29.4	0.975
70	21.1	1.050	90	32.2	0.950
65	18.3	1.075	95	35	0.925
60	15.6	1.100	100	37.7	0.900
55	12.8	1.125	105	40.6	0.875
50	10	1.150	110	43.3	0.850
45	7.2	1.175	115	46.1	0.825
40	4.4	1.200	120	48.9	0.800
			125	51.7	0.775
			130	54.4	0.750
			135	57.2	0.725


## Battery Discharge Rates (48 Volt System)

Discharge time at 80° (26.7° C)		
Battery Type	Number or complete discharge and recharge cycles from new	
	0-50 Cycles	50 Plus Cycles
Trojan T890	95 minutes	132 minutes

### 5.14 BUFFER BATTERY WIRING

Refer to the following diagram for buffer battery wiring.

After battery cables are properly installed and torqued, the use of standard battery terminal anti corrosion spray is recommended.


**WARNING**

Use care when using tools around the battery terminals, and when possible, use insulated tools.

Always disconnect power connectors before connecting or disconnecting battery cables.

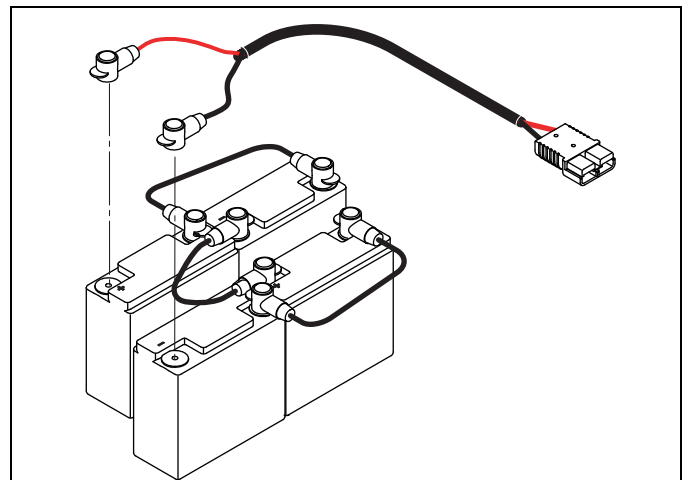


Figure 5E

### 5.15 BUFFER BATTERY TESTING

Testing batteries can be complex and there are many application specific variables that cannot be considered in one simple test. This section is a guide to help you determine the over all condition of the buffer batteries. Contact your Jacobsen Dealer for assistance.

#### 1. Test Preparation

- a. Check that battery cables are in good condition. Replace damaged or broken cables.
- b. Check that all terminal connections are tightened to the proper torque.
- c. Fully charge the buffer batter pack.
- d. Disconnect the large blue Anderson plug to remove all load from the battery pack.

- e. Let the batteries rest for at least 1/2 to 1 hour after the charge is complete.
- #### 2. Open circuit voltage test.
- a. Check and record open circuit voltage of each battery. All batteries in a good set should be above 12.7 volts when fully charged.
  - b. If all of the batteries are below 12.1 volts, the buffer battery pack has failed, Replace the entire set of batteries.
  - c. Any battery that is 0.5 volt lower than the highest battery voltage, may have failed. Make a note of the battery location in the pack.



## 5.16 BATTERY POWER MODULE WIRING

Refer to the following diagrams for battery power module wiring.

### WARNING

Use care when using tools around the battery terminals, and when possible, use insulated tools.

Always disconnect power connectors before connecting or disconnecting battery cables.

1. Label four battery cables with numbers 1~4.
2. Slide **Cable 1** and **Cable 3** through grommet at rear of battery tray. Slide **Cable 2** and **Cable 4** through grommet at front of battery tray. Slide two boots onto each cable.
3. Assemble cables to battery posts in order, starting at the right side with **Cable 1**, and ending on the left side of mower with **Cable 4**. Torque battery connections to 95-120 in. lbs. (10.7-13.5 Nm). Apply battery terminal anti-corrosion spray and/or dielectric grease to battery terminals and cover using boots.

### WARNING

To prevent injury to yourself or others, or damage to batteries, use caution not to let unconnected ends of cables touch each other, or any metal surface.

4. Label upper batteries A ~ D.
5. Connect cables to upper batteries. Torque battery connections to 95-120 in. lbs. (10.7-13.5 Nm). Apply battery terminal anti-corrosion spray and/or dielectric grease to battery terminals and cover using boots.
  - a. Connect **Cable 1** to Negative terminal of **Battery C**.
  - b. Connect **Cable 2** to Positive terminal of **Battery D**.
  - c. Connect **Cable 3** to Negative terminal of **Battery A**.
  - d. Connect **Cable 4** to Positive terminal of **Battery C**.
  - e. Slide boots onto remaining cable. Connect cable to Negative terminal of **Battery D**, and Positive terminal of **Battery B**.

- f. Connect red power connector cable and red wire from battery charger to Positive terminal of **Battery A**.
- g. Connect black power connector cable and black wire from battery charger to Negative terminal of **Battery B**.

**NOTE:** Green wire from battery charger is not used, and should be left unconnected. Do not remove cap from end of green wire.

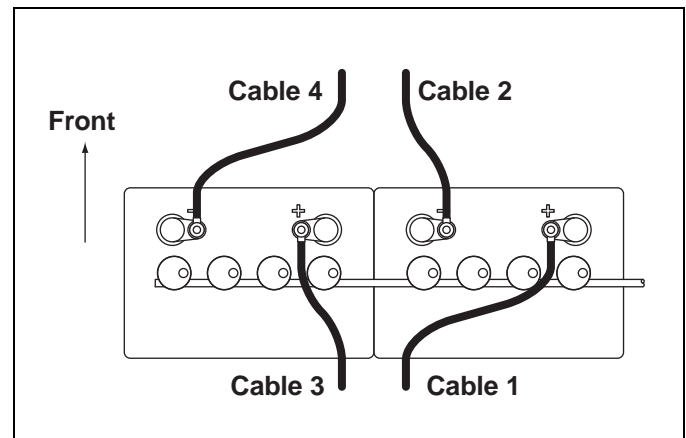


Figure 5F - Lower Battery Wiring

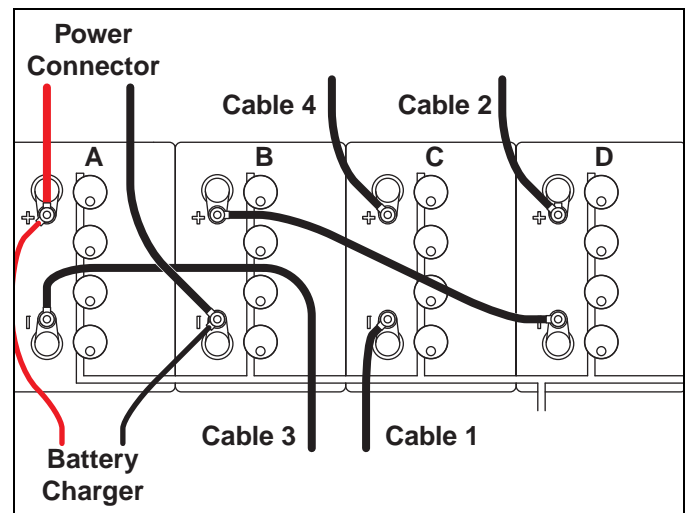


Figure 5G - Upper Battery Wiring

# 6 HYBRID ENGINE MAINTENANCE

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## 6.1 GENERAL

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### WARNING

Before you clean, adjust, or repair this equipment, disengage all drives, lower implements to the ground, turn system power off, remove key from ignition switch, and disconnect battery pack(s) to prevent injuries

Make sure the mower is parked on a solid and level surface. Never work on a mower that is supported only by the jack. Always use jack stands.

1. Adjustment and maintenance should always be performed by a qualified technician. If proper adjustments cannot be made, contact an Authorized Jacobsen Dealer.
2. Inspect the equipment on a regular basis, establish a maintenance schedule and keep detailed records.

- a. Keep the equipment clean.
  - b. Keep all moving parts properly adjusted and lubricated.
  - c. Replace worn or damaged parts before operating the machine.
  - d. Keep all fluids at their proper levels.
  - e. Keep shields in place and all hardware securely fastened.
  - f. Keep tires properly inflated.
3. Do not wear jewelry or loose fitting clothing when making adjustments or repairs.
  4. Use the illustrations in the Parts Catalog as reference for the disassembly and reassembly of components.
  5. Recycle or dispose of all hazardous materials (batteries, fuel, lubricants, anti-freeze, etc.) according to local, state, or federal regulations.

## 6.2 ENGINE

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**IMPORTANT: A separate Engine Manual, prepared by the engine manufacturer, is supplied with this mower. Read the engine manual carefully until you are familiar with the operation and maintenance of the engine. Proper attention to the engine manufacturer's directions will assure maximum service life of the engine. To order replacement engine manuals contact the engine manufacturer.**

The proper break-in of a new engine can make a considerable difference to the performance and life of the engine.

**Note:** *The mower is designed to operate and cut most efficiently at the preset governor setting. Do not change the engine governor settings or overspeed the engine.*

During the break-in period, Jacobsen recommends the following:

### Diesel Engine:

1. During the first 50 hours of operation, a new engine should be allowed to reach an operating temperature of at least 140°F (60°C) prior to operation at full load.
2. Check the engine oil level twice daily during the first 50 hours of operation. Higher than normal oil consumption is not uncommon during the initial break-in period.
3. Change engine oil and oil filter element after first 50 hours of operation.

4. Check and adjust alternator belt.
5. Refer to Section 10.3 and Engine Manual for specific maintenance intervals.

If the injection pump, injectors, or the fuel system require service, contact an authorized Jacobsen Dealer.

### Gasoline Engine:

1. Operate modestly for the first 25 hours.
2. Allow the engine to reach operating temperature before operating at full load.
3. Change the oil and filter after the first 8 hours of operation.
4. Refer to Section 10.3 and Engine Manual for specific maintenance intervals.

## 6.3 ENGINE OIL

Check the engine oil at the start of each day, before starting the engine. If the oil level is low, remove oil filler cap, and add oil as required.

### Diesel Engine:

Perform initial oil change after first 50 hours of operation and every 100 hours thereafter. See Engine Manual.

Use only engine oils with API classification CD/CE.

Above 77°F (25°C)	SAE 30W or SAE 10W30/10W40
32 to 77°F (0 to 25°C)	SAE 20W or SAE 10W30/10W40
Below 32° (0°C)	SAE 10W or SAE 10W30/10W40

### Gas Engine:

Perform initial oil change after the first 8 hours of operation. Change oil every 50 hours thereafter.

**See the engine manufacturer's Owners's Manual for detailed service information.**

After adding or changing oil, start and run engine for 30 seconds. Shut engine off. Wait 30 seconds and check oil level. Add oil to bring up to FULL mark on dipstick.

Use only engine oils with API classification SF, SG,SH.

Above 40° F (5° C)	SAE 30W
0 to 40° F (-18 to 5° C)	SAE 5W30 or SAE 10W30

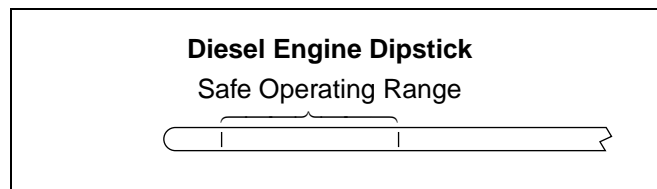


Figure 6A

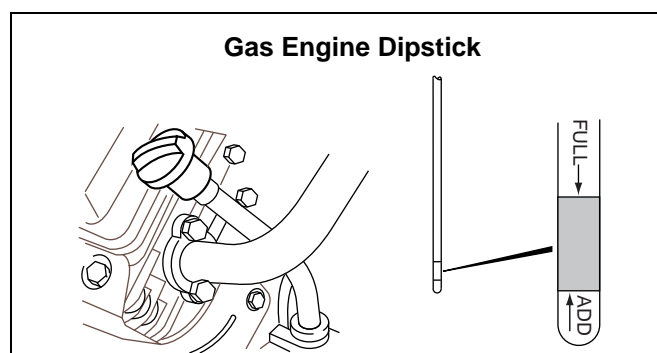


Figure 6B

## 6.4 GAS ENGINE AIR FILTER

1. Remove and service the foam pre-cleaner every 25 hours. Replace if dirty or damaged.

To service pre-cleaner, wash in a liquid detergent and water. Squeeze dry in a clean cloth. Saturate in clean engine oil and squeeze out excess oil in a clean, absorbent cloth.

2. Replace the air cleaner cartridge every 400 hours, more often when operating in dusty conditions.

**Note:** Do not use petroleum solvents such as kerosene to clean cartridge. Do not use pressurized air to clean cartridge.

**See the engine manufacturer's Owners's Manual for detailed service information.**

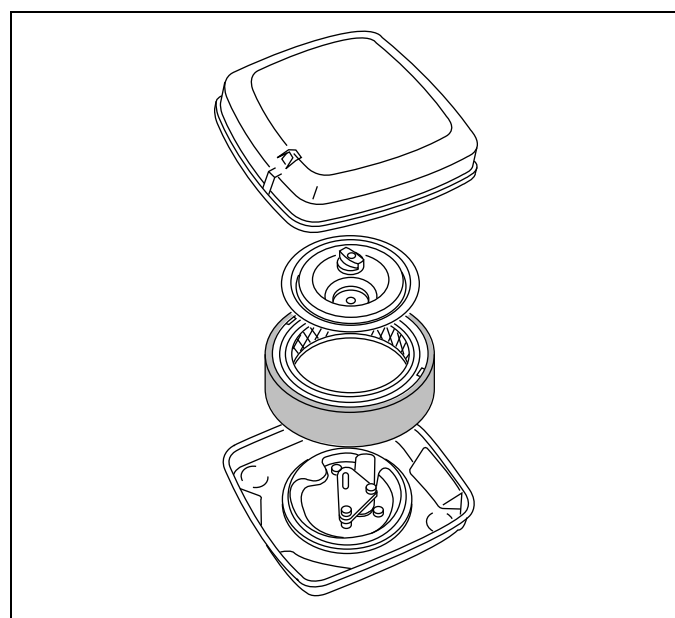


Figure 6C

## 6 HYBRID ENGINE MAINTENANCE

### 6.5 DIESEL AIR FILTER

**Do not remove the element for inspection or cleaning.** Unnecessary removal of the filter increases the risk of injecting dust and other impurities into the engine.

When service is required, first clean the outside of the filter housing; then remove the old element as gently as possible and discard.

1. Carefully clean the inside of the filter housing without allowing dust into the air intake.
2. Inspect the new element. Do not use a damaged element and never use an incorrect element.
3. Assemble the new element and make sure it seats properly.
4. Reassemble cap making sure it seals completely around the filter housing. Dust evacuator must be facing down, at approximately the 5 o'clock position.

5. Check all hoses and air ducts. Tighten hose clamps.

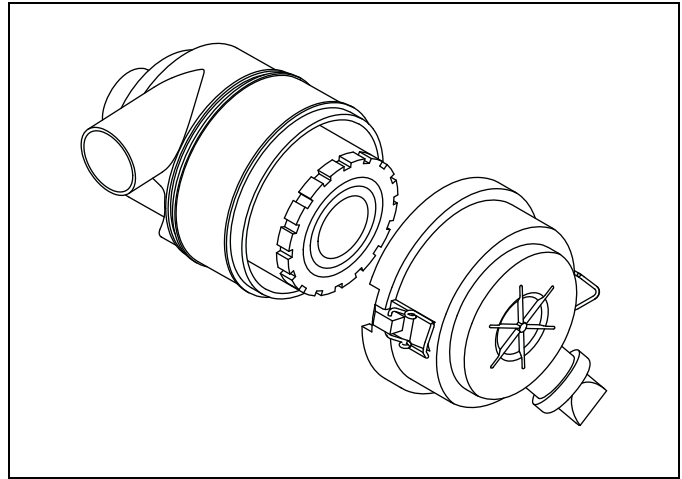


Figure 6D

### 6.6 FUEL

**Handle fuel with care - it is highly flammable.** Use an approved container, the spout must fit inside the fuel filler neck. Avoid using cans and funnels to transfer fuel.



#### WARNING

Never remove the fuel cap from the fuel tank, or add fuel, when the engine is running or while the engine is hot.

Do not smoke when handling fuel. Never fill or drain the fuel tank indoors.

Do not spill fuel and clean spilled fuel immediately.

Never handle or store fuel containers near an open flame or any device that may create sparks and ignite the fuel or fuel vapors.

Be sure to reinstall and tighten fuel cap securely.

- Fill the fuel tank to within 1 in. (25 mm) of the bottom of the filler neck.

- Store fuel according to local, state or federal ordinances and recommendations from your fuel supplier.
- Never overfill or allow the tank to become empty.
- Check fuel lines and clamps every 50 hours. Replace fuel lines and clamps at the first sign of damage.

#### Diesel Engine:

- Use clean, fresh, low or ultra low sulfur #2 Diesel fuel. Minimum Cetane rating 45. Refer to Engine Manual for additional information.

#### Gas Engine:

- Use clean, fresh, regular grade, unleaded gasoline minimum 85 Octane.
- Do not use hi-test gasoline or an oil-gasoline mixture. When using blended fuel, do not use a blend with more than 10% ethanol. Under no circumstances should you use a blend with methanol.

### 6.7 FUEL SYSTEM

Refer to Section 10.3 for specific maintenance intervals.

Before replacing any filter, thoroughly clean the filter housing and the area around the filter. Dirt must not be allowed to enter into fuel system.

For diesel engines, refer to the Engine Manual for instructions to bleed the fuel system if the fuel filter and lines have been removed, or the fuel tank has become empty.

## 6.8 12 VOLT ENGINE BATTERY

Make absolutely certain the system power switch is OFF and the key has been removed before servicing the battery.

### CAUTION

Always use insulated tools, wear protective glasses or goggles, and protective clothing when working with batteries. You must read and obey all battery manufacturer's instructions.

Tighten cables securely to battery terminals and apply a light coat of silicone dielectric grease to terminals and cable ends to prevent corrosion. Keep vent caps and terminal covers in place

Check the electrolyte level every 100 hours. Keep the cable ends, battery, and battery posts clean.

Verify battery polarity before connecting or disconnecting the battery cables.

1. When installing the battery, always assemble the RED, positive (+) battery cable first and the ground, BLACK, negative (-) cable last.
2. When removing the battery, always remove the ground, BLACK, negative (-) cable first and the RED, positive (+) cable last.
3. Make sure battery is properly installed and secured to the battery tray.

### WARNING

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. **Wash your hands after handling.**

## 6.9 JUMP STARTING ENGINE BATTERY

Before attempting to "jump start" the mower, check the condition of the discharged battery. **Section 6.8.**

### NOTICE

Do not use 12 volt studs on PDU unit to connect jumper cables.

#### When connecting jumper cables:

1. Stop the engine on the vehicle with a good battery.
2. Connect RED jumper cable to the positive (+) terminal on the good battery and to the positive (+) terminal on the "discharged" battery.
3. Connect the BLACK jumper cable from the negative (-) terminal on the good battery to the negative (+) terminal on the "discharged" battery.

After cables have been connected, start the engine on the vehicle with the good battery then start the mower.

## 6.10 CHARGING BATTERY

### WARNING

Charge battery in a well ventilated area. Batteries generate explosive gases. To prevent an explosion, keep any device that may create sparks or flames away from the battery.

To prevent injury, stand away from battery when the charger is turned on. A damaged battery could explode.

2. Always disconnect the blue 12 volt battery connector from the mower before charging. If battery is not sealed, check that the electrolyte covers the plates in all the cells.
3. Make sure the charger is "Off". Then connect the charger to the battery terminals as specified in the charger's manual.
4. Always turn the charger "Off" before disconnecting charger from the battery terminals.

1. Refer to Section 6.8. Read the Charger's manual for specific instructions.

## 6 HYBRID ENGINE MAINTENANCE

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### 6.11 MUFFLER AND EXHAUST

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#### WARNING

Exhaust fumes contain carbon monoxide that is toxic and can be fatal when inhaled.

**NEVER** operate an engine without proper ventilation.

To protect from carbon monoxide poisoning, inspect the complete exhaust system regularly and always replace a defective muffler.

If you notice a change in the color or sound of the exhaust, stop the engine immediately. Identify the problem and have the system repaired.

Torque all exhaust manifold hardware evenly. Tighten or replace exhaust clamps.

### 6.12 RADIATOR (DIESEL ENGINES)

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#### WARNING

To prevent serious bodily injury from hot coolant or steam blow-out, never attempt to remove the radiator cap while the engine is running. Stop the engine and wait until it is cool. Even then, use extreme care when removing the cap.



#### CAUTION

Do not pour cold water into a hot radiator. Do not operate engine without a proper coolant mixture. Install cap and tighten securely.

Check coolant level daily. Radiator should be full and recovery bottle should be up to the **cold** mark.

Drain and refill annually. Remove the radiator cap, open the engine block drain and the radiator drain. Empty and clean the recovery bottle.

Combine 50/50 mixture of clean water and ethylene glycol based anti-freeze for 50/50 mixture. Read and follow the instructions on the anti-freeze container and engine manual.

Keep radiator air passages clean. Use compressed air (30 psi (2.1 BAR) maximum) to clean the fins.

Check and tighten the fan belt. Replace clamps and hoses every two years.

If you have to add coolant more than once a month, or add more than one quart at a time, have a authorized Jacobsen Dealer check the cooling system.

## 7.1 GENERAL

### WARNING

Before you clean, adjust, or repair this equipment, disengage all drives, lower implements to the ground, turn system power off, remove key from ignition switch, and disconnect battery pack(s) to prevent injuries.

Make sure the mower is parked on a solid and level surface. Never work on a mower that is supported only by the jack. Always use jack stands.

1. Adjustment and maintenance should always be performed by a qualified technician. If proper adjustments cannot be made, contact an Authorized Jacobsen Dealer.
2. Inspect the equipment on a regular basis, establish a maintenance schedule and keep detailed records.

- a. Keep the equipment clean.
  - b. Keep all moving parts properly adjusted and lubricated.
  - c. Replace worn or damaged parts before operating the machine.
  - d. Keep all fluids at their proper levels.
  - e. Keep shields in place and all hardware securely fastened.
  - f. Keep tires properly inflated.
3. Do not wear jewelry or loose fitting clothing when making adjustments or repairs.
  4. Use the illustrations in the Parts Catalog as reference for the disassembly and reassembly of components.
  5. Recycle or dispose of all hazardous materials (batteries, fuel, lubricants, anti-freeze, etc.) according to local, state, or federal regulations.

## 7.2 FRONT AXLE

To check front axle fluid, determine which axle is used on your mower. Early mowers have a rubber plug aligned with the axle shafts center line. Later mowers have a hex plug below the level of the axle shafts center line.

**Early Style:** Remove rubber plug (**A-Early**) from differential cover. Fluid level should be between 1-1/8 in. (28 mm) and 1-1/4 in. (32 mm) below fill hole. Add Mobilfluid 424 or SAE 30 wt. as required to bring fluid to correct level. Insert plug and clean up any spilled fluid.

**Later Style:** Remove hex plug and check fluid level. Fluid should be up to the bottom of the plug. Add Mobilfluid 424 or SAE 30 wt. as required to bring fluid to correct level. Insert plug and clean up any spilled fluid.

To drain fluid:

1. Place a suitable container under front axle.
2. Remove bottom five screws (**B**), and loosen remaining screws from differential cover.
3. Being careful not to damage sealing surface, or deform cover, break seal to drain fluid into pan.
4. Remove differential cover and apply bead of RTV sealant to axle housing, inside of cover holes.
5. Assemble cover bolts. Torque bolts to 16 - 24 ft. lbs. (21 - 32 Nm).
6. Remove plug (**A**), and fill with 23 ounces (680 ml) (Early Style) or 18 ounces (532 ml) (Later Style) of

Mobilfluid 424 or SAE 30 wt. oil to bring fluid to correct level. Insert plug and clean up any spilled fluid.

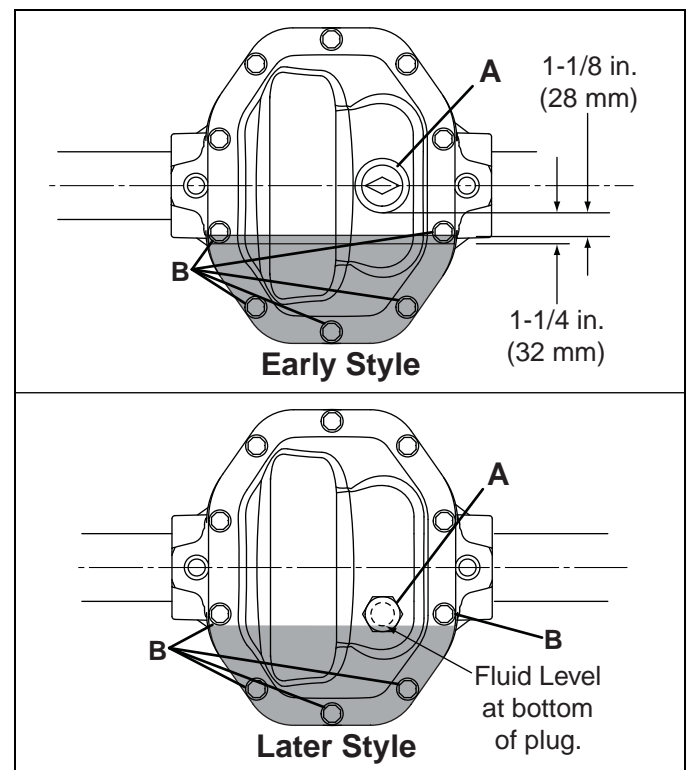


Figure 7A

# 7 MAINTENANCE

## 7.3 LIFT ACTUATOR CALIBRATION

The actuators need to be calibrated at initial setup, whenever an actuator or the RDU was replaced, or when switching from reels to vertical mowers.

### NOTICE

Any changes made to settings in the Maintenance Mode will not be active until the mower is powered down and restarted.

Before calibrating, reels or vertical mowers must be properly set-up with rollers, and installed on the Eclipse mower.

To calibrate the actuators:

1. Park the mower on a flat and level surface.
2. Enter Maintenance Mode. [See Section 3.1.7].
3. Press either of the orange buttons (**AM** or **AN**) on the LDU until the **ACTUATOR CALIBRATE?** screen is on the LCD display. Press the black button (**AL**) to enter set mode.
4. With mow switch off, all three mower switches on, and automatic parking brake engaged, raise or lower all three reels until the left reel is at the desired crosscut position. Crosscut position may be measured by the distance actuator is extended, or by measuring the distance from the ground to the reel.

### NOTICE

To ensure all three reels lower and start cutting at the same point, the crosscut position should be the same distance from the ground for each reel.

- a. Press the left orange button (**AN**) on the LDU to save the crosscut position for the left reel.
- b. Raise or lower the center reel as required to match the crosscut position of the left reel. Press the left orange button (**AN**) on the LDU to save the crosscut position for the center reel. Repeat for the right reel.
- c. Lower all three reels until the left reel actuator pin (**D**) is centered in the lift arm slot (**C**). Save the lowered position for the left reel.
- d. Raise or lower the center reel as required until the center reel actuator pin (**D**) is centered in the lift yoke bracket slot (**C**). Press the left orange button (**AN**) on the LDU to save the lowered position for the center reel. Repeat for the right reel.

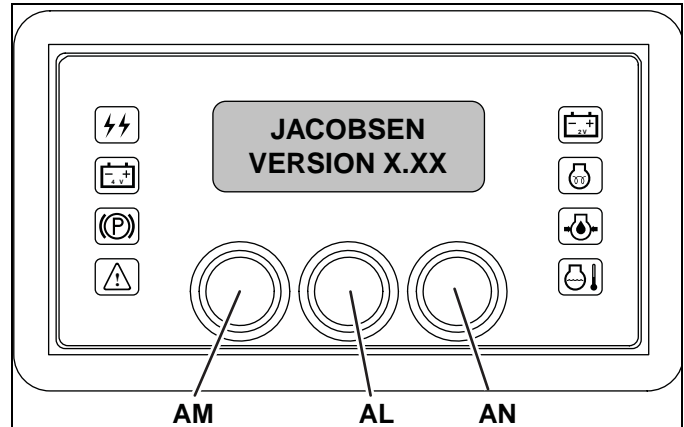


Figure 7B

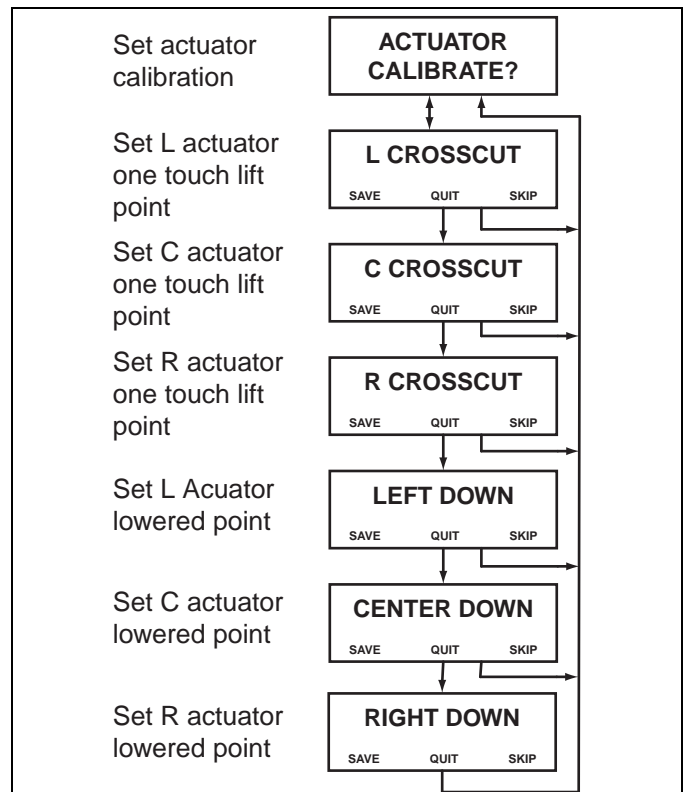


Figure 7C

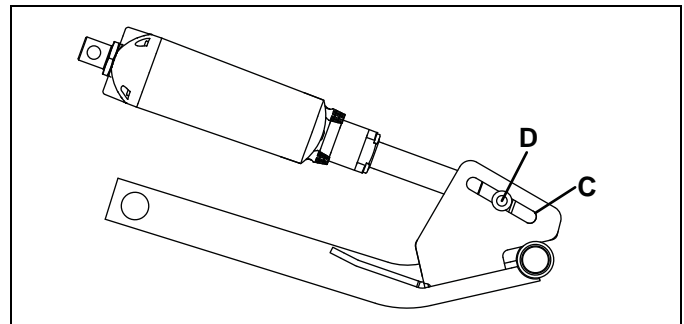


Figure 7D



## 7.4 BACKLAPPING AND GRINDING

To backlap:

1. Park the mower on a flat and level surface.
2. Enter Maintenance Mode. [See Section 3.1.7].
3. Press either of the orange buttons (**AM** or **AN**) on the LDU until the **BACKLAP ENABLE?** screen is on the LCD display. Press the black button (**AL**) to enter backlap mode.
4. If reels are not lowered, the **LOWER ALL ACTUATORS** will display on the LDU. Lower reels to the ground. Pressing any of the three buttons (**AL**, **AM**, or **AN**) with **LOWER ALL ACTUATORS** on the display will cancel backlap mode.
5. Use orange buttons (**AM** and **AN**) to adjust timer. Press black button (**AL**) to start backlapping. Selected motors will start rotating and horn will periodically chirp.
6. Turn mow switch (**E**) and desired reel switches (**F**, **G**, and **H**) to ON position.
7. Adjust reel speed between 150 and 400 rpm using the orange buttons (**AM** or **AN**).
8. Apply lapping compound with a long handle brush along the entire length of the reel.
9. Continue lapping and at the same time make a fine adjustment on the reel and bedknife until there is a uniform clearance along the full length of the cutting edges.
10. Exit backlap mode by allowing the timer to end, or pressing the black button (**AL**) to select **QUIT**.
11. Turn key switch (**J**) to off position.
12. Carefully and thoroughly remove all lapping compound from reel and bedknife *before running the reel in forward direction*.

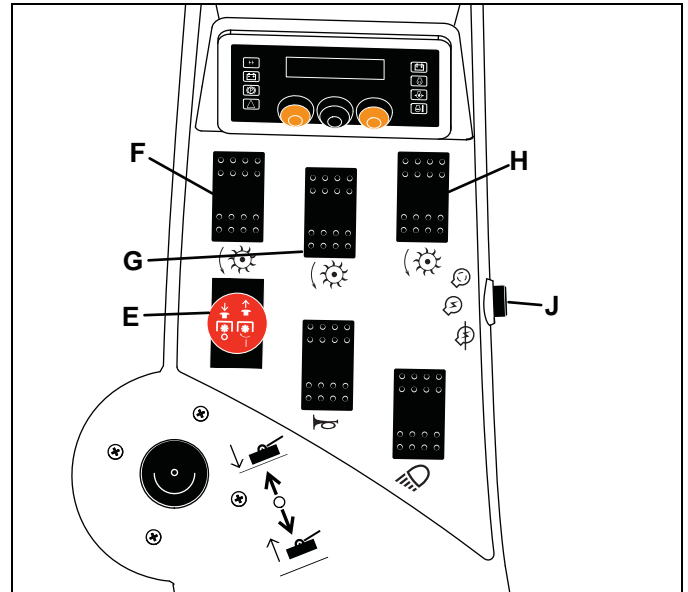


Figure 7E

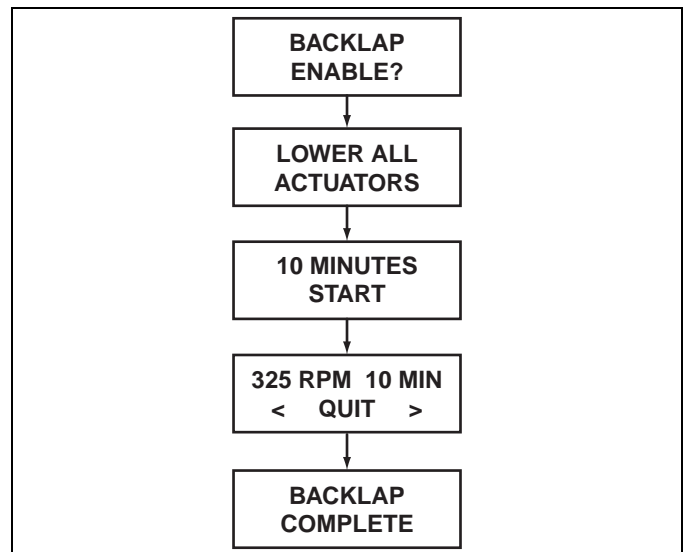


Figure 7F

# 7 MAINTENANCE

## 7.5 TIRES

1. Keep tires properly inflated to prolong tire life. Check inflation pressure while the tires are cool. Inspect tread wear.
2. Check the pressure with an accurate, low pressure tire gauge.
3. Keep tires inflated to:  
Front..... 16 psi (1.1 BAR)  
Rear ..... 20 psi (1.3 BAR)

### NOTICE

Under inflated tires may leave tire marks in turf. For soft turf, tire inflation pressure may need to be increased to 22 psi (1.5 BAR).



### CAUTION

Unless you have the proper training, tools and experience, DO NOT attempt to mount a tire on a rim. Improper mounting can produce an explosion which may result in serious injury.

## 7.6 WHEEL MOUNTING PROCEDURE



### WARNING

Make sure the mower is parked on a solid and level surface. Never work on a mower that is supported only by the jack. Always use jack stands.

If only the front or rear of the mower is raised, place chocks in front of and behind the wheels that are not raised.

1. Remove dirt, grease and oil from stud thread. Do not lubricate threads.
2. Position wheel on hub and inspect to insure full contact between mounting surface of wheel and hub or brake drum.
3. Finger tighten all hardware then torque hardware in criss-cross order; always tighten nuts in the top position.
4. Check and retorque daily until torque is maintained, 85-95 ft.lbs. (115-128 Nm)

## 7.7 CARE AND CLEANING

Clean the mower and implements after each use. Keep the equipment clean. Whenever possible, use compressed air to clean mower.

### NOTICE

Do not wash any portion of the equipment while it is hot. Do not use high pressure spray or steam. Use cold water and automotive cleaners.

1. Use compressed air to clean engine and radiator fins (30 psi (2.1 BAR) maximum).
2. Use only fresh water for cleaning your equipment.

### NOTICE

Use of salt water or affluent water has been known to encourage rust and corrosion of metal parts resulting in premature deterioration or failure. Damage of this nature is not covered by the factory warranty.

3. Do not spray water directly at the instrument panel, ignition switch, controller, or any other electrical components, or at bearing housings and seals.
4. Clean all plastic or rubber components with a mild soap solution and warm water, or use commercially available vinyl/rubber cleaners.

Repair damaged metal surfaces and use Jacobsen touch-up paint. Wax the equipment for maximum paint protection.



### CAUTION

Clean grass and debris from cutting units, drives, muffler, and engine to prevent fires.



### WARNING

**NEVER** use your hands to clean cutting units. Use a brush to remove grass clippings from blades. Blades are extremely sharp and can cause serious injuries.

## 7.8 STORAGE

### General

1. Clean the mower thoroughly and lubricate. Repair and paint damaged or exposed metal.
2. Inspect the mower, tighten all hardware, replace worn or damaged components.
3. Drain and refill radiator.
4. Clean the tires thoroughly and store the mower so the load is off the tires. If mower is not on jack stands, check tires at regular intervals and reinflate as necessary.
5. Keep the machine and all its accessories clean, dry and protected from the elements during storage. Never store equipment near an open flame or spark which could ignite fuel or fuel vapors.

### Battery (Trojan, Buffer, and 12 Volt Batteries)

1. Before storing the vehicle or batteries for an extended period, the batteries should be cleaned, fully charged, and the electrolyte brought up to the correct level.
2. Remove and store battery in upright position in a cool, dry place. If batteries are stored on the vehicle, disconnect the power connector.
3. During storage, batteries should be periodically recharged. Charging intervals depend on the average temperature in which the batteries are stored.  
Below 40° (4° C) Charge every 6 Months.  
40° to 60° F (4° to 15° C) Charge every two months.  
Above 60° F (15° C) Charge once a month.
4. Store batteries in a cool, dry place. To reduce the self discharge rate, room temperature should not be above 80°F (27°C) or fall below 20°F (-7°C) to prevent electrolyte from freezing.

### Hybrid Engine (General)

1. While the engine is warm, remove the drain plug, drain the oil from the crankcase, and change oil filter. Install drain plug and refill with fresh oil. Let engine cool before storing.
2. Clean exterior of engine. Paint exposed metal, or apply a light coat of rust preventative oil.

**Diesel Hybrid** - Add a fuel conditioner or biocide to prevent gelling or bacterial growth in fuel. See your local fuel supplier.

**Gas Hybrid** - For engine protection Jacobsen recommends the use of a fuel additive such as STABIL®. Mix additive following instructions on container. Run

engine for a short time to circulate additive through carburetor.

Remove spark plugs and pour 1 oz. (30 ml) of engine oil into each cylinder. Replace spark plugs and crank slowly (do not start) to distribute oil in cylinder.

If storing indoors, drain fuel from tank.

Close fuel shut off valve.

**Note:** Do not use fuel with ethanol during storage.

### Cutting Units

1. Wash the cutting units thoroughly, then repair and paint any damaged or exposed metal.
2. Lubricate all fittings and friction points.
3. Backlap the reels then back the reel away from the bedknife. Apply a light coat of rust preventative oil to the sharpened edges of the reel and bedknife.

### CAUTION

To prevent personal injury and damage to the cutting edges, handle the reel with extreme care

### After Storage

1. Clean, inspect and test the batteries before putting them back into service.
2. Check or service fuel filter and air cleaner.
3. Check the radiator coolant level.
4. Check oil level in the engine crankcase.
5. Fill the fuel tank with fresh fuel. Open fuel shut off valve and bleed the fuel system.
6. Make certain that the tires are properly inflated.
7. Remove all oil from the reels and bedknife. Adjust bedknife and cutting height.
8. Start the engine. Allow enough time for the engine to become properly warmed and lubricated.

### WARNING

Never operate the engine without proper ventilation; exhaust fumes can be fatal when inhaled.

# 8 ELECTRICAL SYSTEM

## 8.1 GENERAL INFORMATION



### CAUTION

Always turn the system power switch off, remove key, and disconnect battery connector(s), before inspecting or working on the electrical system.

General precautions that can be taken to reduce electrical problems are listed below.

1. Make certain all terminals and connections are clean and properly secured.
2. Check the interlock system, fuses, and circuit breakers regularly.

If the interlock does not function properly and the problem cannot be corrected, contact an authorized Jacobsen Dealer.

3. Keep the wire harness and all individual wires away from moving parts to prevent damage.
4. Make sure the seat switch harness is connected to the main wire harness.
5. Check the battery and battery charging circuit.
6. Do not wash or pressure spray around electrical connections and components.

The electrical system is monitored and controlled by the multiple controllers. The controllers are equipped with LED's which can be used when troubleshooting the electrical system.

## 8.2 CONTROLLERS

Controller	Location/Function
<b>Traction Controller (TCU)</b>	Located to the right of the operator seat, under the right cowling. Traction controller is used to control the operation of the traction drive motor. The traction controller has one green light for diagnostics.
<b>Steering Controller (SCU)</b>	Located at the rear of the unit below the hood. Steering controller is used to control the power steering system. The steering controller has one green light for diagnostics.
<b>Main Controller Unit (MCU)</b>	Located to the left of the operator seat, under the left cowling. MCU is used to control communications between the different controllers. The MCU has diagnostic lights to help troubleshoot controller functions. <b>See Section 8.5.</b>
<b>Reel Controller Unit (RCU)</b>	Located on the right side of the steering column, under the steering column cover. RCU is used to control the operation of the reel motors and the lift/lower actuators. The RCU has diagnostic lights to help troubleshoot controller functions. <b>See Section 8.4.</b>
<b>LCD Display Unit (LDU)</b>	Located on the instrument panel. Used to display and set functions. <b>See Section 3.1.</b>
<b>Over-Voltage Limit Module Controller (OLM)</b>	(Early Units) Located under the operator's seat. OLM controller is used to cycle the over-voltage resistors on the side of the machine. <b>See Section 8.6.</b>
<b>Braking Resistor Controller (BRC)</b>	(Later Units) Located on side of TCU. BRC controller is used to energize the four over-voltage resistors on the side of the machine.
<b>Power Distribution Unit (PDU)</b>	Located to the left of the operator seat, under the MCU. PDU is used to switch 48V and 12V motor/controller outputs on or off. Three circuit breakers are located on the rear of the PDU.
<b>Genset Controller (APU) (Hybrid Powered Mowers only)</b>	Located on the engine side of the fuel tank. Used to control engine speed and generator functions.
<b>3WD Controller (3WD)</b>	Located at the rear of the unit below the hood. 3WD controller is used to control the rear wheel motor. The 3WD controller has one green light for diagnostics.

## 8.3 PDU AND CONTROLLER LOCATIONS

- A. Power Distribution Unit (PDU) Circuit Breakers**  
Used to protect electrical system. Three manual reset circuit breakers located on the PDU are accessible by opening the hood and looking towards the left ROPS post. Push down on rubber boot to reset circuit breaker.
- B. Main Controller Unit (MCU) Diagnostic Lights**  
Twenty four lights are used to indicate active MCU functions. Lift MCU access panel to access MCU.
- C. Reel Controller Unit (RCU) Diagnostic Lights**  
Eighteen lights are used to indicate active RCU functions. Remove access plug from right side of steering column to view RCU diagnostic lights.
- D. Over-Voltage Limit Module (OLM) Diagnostic Lights (Early Units)**  
Six lights are used to indicate communication, power, and energized resistors.
- D. Braking Resistor Controller (BRC) (Later Units)**  
Remove right side operator platform cover to access BRC.
- E. Traction Controller Diagnostic Light**  
Single green light on traction controller indicates power and faults. A steady light indicates the controller is active. A flashing light indicates a traction system fault/error has occurred. Remove right side operator platform cover to access traction controller.
- F. Steering Controller Diagnostic Light**  
Single green light on steering controller indicates power and faults. A steady light indicates the controller is active. A flashing light indicates a steering system fault/error has occurred. Open the hood and remove controller cover to access the steering controller.
- G. 3WD Controller Diagnostic Light**  
Single green light on 3WD controller indicates power and faults. A steady light indicates the controller is active. A flashing light indicates a 3WD system fault/error has occurred. Open the hood and remove controller cover to access the 3WD controller.

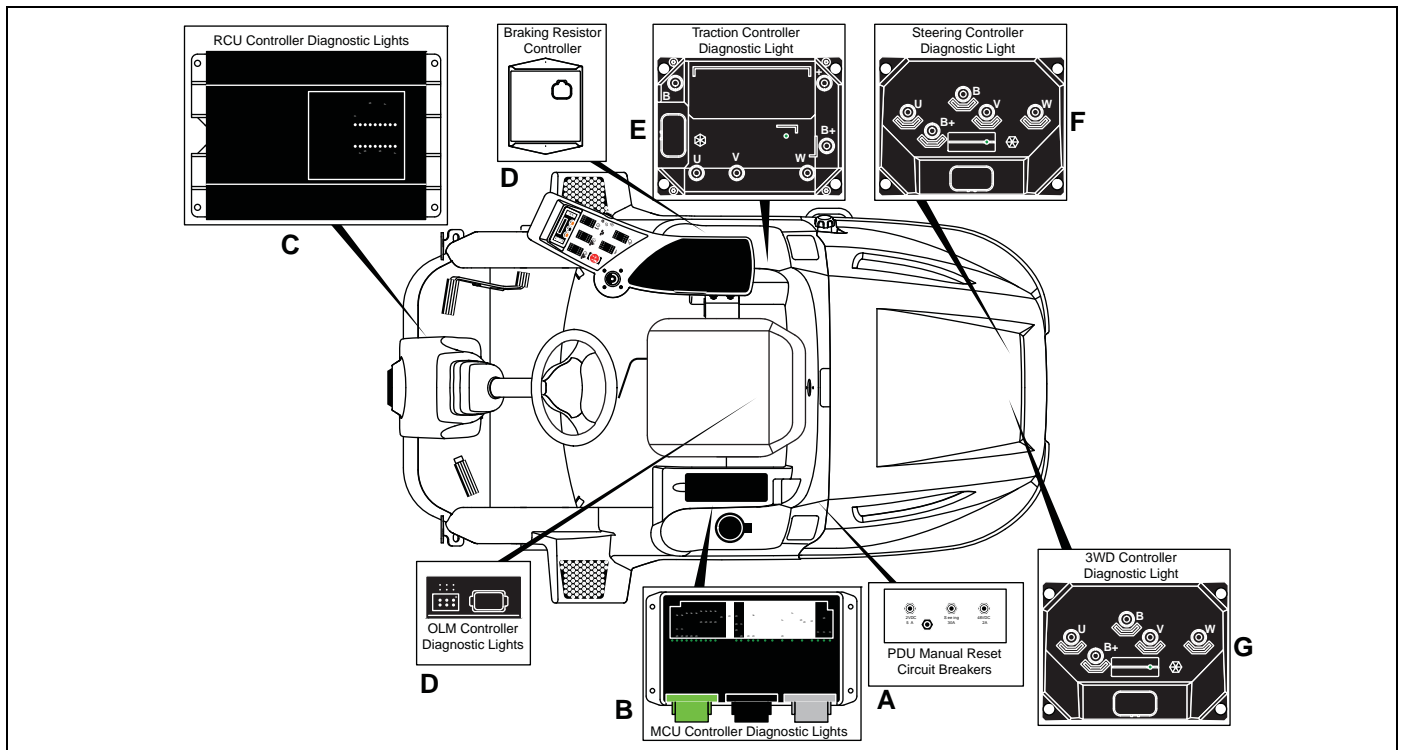


Figure 8A

# 8 ELECTRICAL SYSTEM

## 8.4 RCU CONTROLLER LIGHTS

The RCU controller is a solid state device that monitors and controls reel and lift electrical functions. The RCU communicates with the MCU via the CAN network.

Each input and output signal is displayed through lamps located on front face of the controller. An active circuit will turn an input lamp on, an inactive circuit will turn a lamp off. Outputs are active when their lights are on.

### Controller Functions by Lamp Number

Lamp On - Circuit is active  
Lamp Off - Circuit is inactive

INPUTS		OUTPUTS	
Lamp	Circuit	Lamp	Circuit
1	CAN Low	3	Left Reel Clockwise/Counter-Clockwise
2	CAN High	4	Left Reel Forward/Reverse
9	48 Volt DC	5	Left Reel Raise
		6	Left Reel Lower
		7	Right Reel Motor
		8	Left Reel Motor
		10	Right Reel Clockwise/Counter-Clockwise
		11	Right Reel Forward/Reverse
		12	Right Reel Lower
		13	Right Reel Raise
		14	Center Reel Motor
		15	Center Reel Lower
		16	Center Reel Raise
		17	Center Reel Clockwise/Counter-Clockwise
		18	Center Reel Forward/Reverse

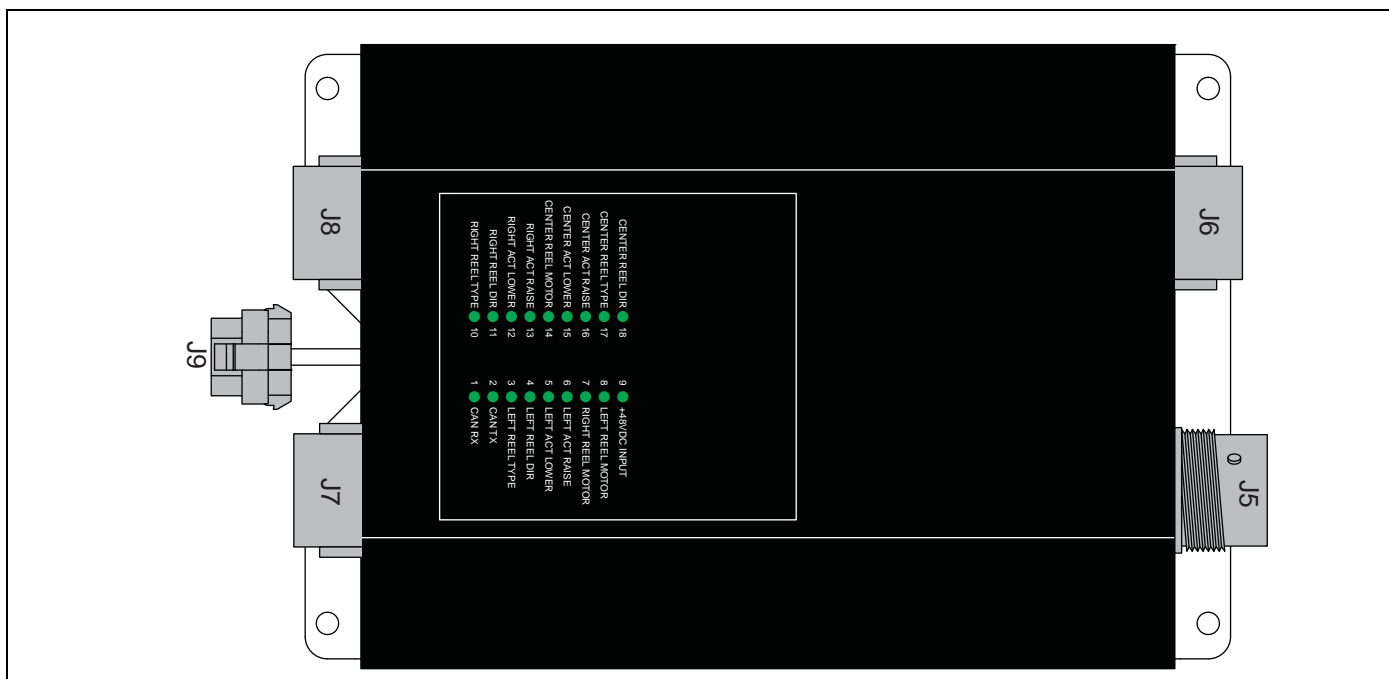


Figure 8B

## 8.5 MCU CONTROLLER LIGHTS

The MCU controller is a solid state device that monitors and controls mower functions. The MCU communicates with the other controllers via the CAN network.

Each input and output signal is displayed through lamps located on top face of the controller. A closed input switch indicates an active circuit and will turn an input lamp on, an open switch an inactive circuit and will turn a lamp off. Outputs are active when their lights are on.

### Controller Functions by Lamp Number

Lamp On - Circuit is active

Lamp Off - Circuit is inactive

INPUTS		OUTPUTS	
Lamp	Circuit	Lamp	Circuit
1	+48 Volt DC Power In	4	Fuel Pull Solenoid
2	+12 Volt DC Fuel Solenoid Power In	5	Fuel Hold Solenoid/Anti-Fire Solenoid
3	+12 Volt DC Power In	6	Glow Plug Relay
13	Spare 12 Volt Digital Low In	7	Start Relay
14	Genset Status	8	Traction Contactor Output
15	Program Select #4	9	Head Light
16	Program Select #3	10	TCU Fan Output
17	Program Select #2 (Diesel)	11	Spare Output #2
18	Program Select #1 (Gas)	12	Silent Mode Output
19	Spare 48 Volt Digital In #5		
20	Spare 48 Volt Digital In #4		
21	Spare 48 Volt Digital In #3		
22	Spare 48 Volt Digital In #2		
23	Spare 48 Volt Digital In #1		
24	Seat Switch		

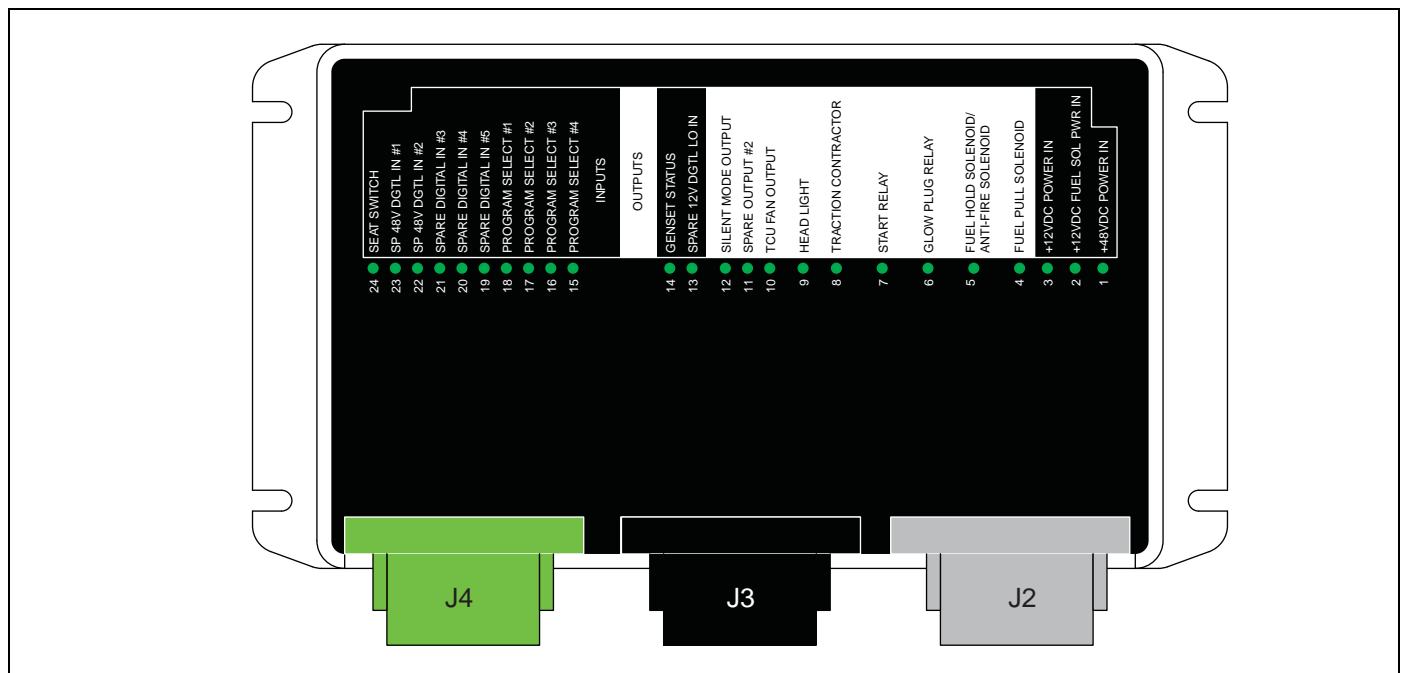


Figure 8C

# 8 ELECTRICAL SYSTEM

## 8.6 OLM CONTROLLER LIGHTS (EARLY UNITS)

The OLM controller is a solid state device that monitors and controls resistor functions. The controller communicates with the MCU controller via the CAN network.

Each input and output signal is displayed through lamps located on front face of the controller. A closed input switch indicates an active circuit and will turn an input lamp on, an open switch an inactive circuit and will turn a lamp off. Outputs are active when their lights are on.

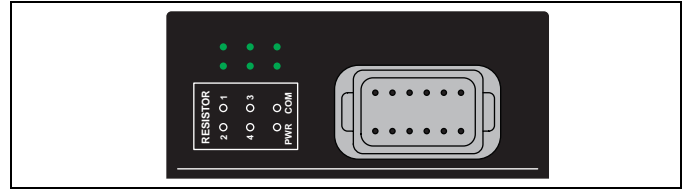


Figure 8D

### Controller Functions by Lamp Number

Lamp On - Circuit is active  
Lamp Off - Circuit is inactive

INPUTS		OUTPUTS	
Lamp	Circuit	Lamp	Circuit
<b>PWR</b>	+48 Volt DC Power In	<b>1</b>	Resistor #1
<b>COM</b>	CAN Network	<b>2</b>	Resistor #2
		<b>3</b>	Resistor #3
		<b>4</b>	Resistor #4

## 8.7 PDU (EARLY UNITS)

The PDU is located to the left of the operator seat, under the MCU, and is used to switch 48V and 12V motor/controller outputs on or off. Three circuit breakers are located on the rear of the PDU.

Before working on, or opening the PDU, shut mower off, remove key, disconnect 48 volt battery connector, and disconnect 12 volt battery connector (Hybrid mowers). Use caution to prevent shorting between PDU input, output, and ground cable studs.

Inside the PDU are the following components:

**Traction Contactor** - Used to control 48 volt power output to TCU and OLM.

**48 Volt Contactor** - Used to control 48 volt power output to MCU, RCU, SCU, and other components.

**12 Volt Contactor** - Used to control 12 volt power output to MCU, 12 volt lights, and engine components.

**150 Amp Fuse** - Used to provide circuit protection for 48 volt contactor.

**300 Amp Fuse** - Used to provide circuit protection for traction contactor.

**12 Amp Circuit Breaker** - Used to provide circuit protect for 48 volt contactor output except for RCU and SCU.

**30 Amp Circuit Breaker** - Used to provide circuit protection for SCU.

**50 Amp Circuit Breaker** - Used to provide circuit protection for 12 volt contactor.

**Printed Circuit Board** - Used for controlling PDU inputs and outputs.

**Glow Plug Relay** - Used to control glow plug operation for Diesel hybrid engines.

**Start Relay** - Used to control starter motor operation for Gas and Diesel hybrid engines.

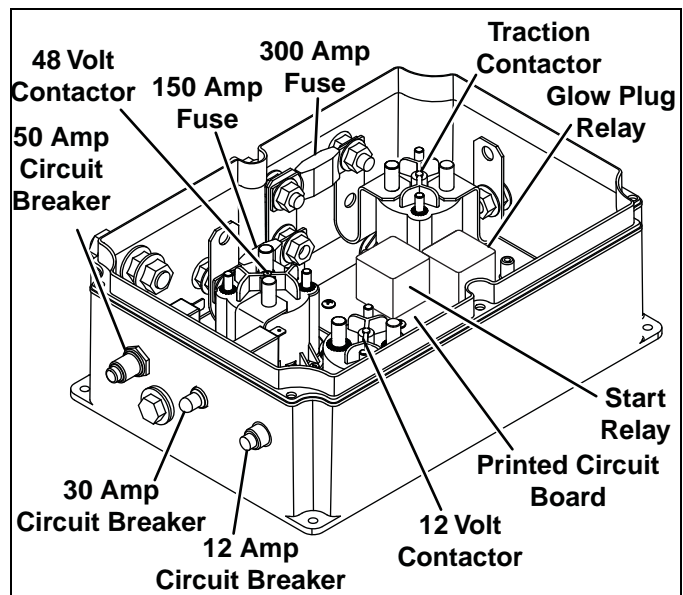


Figure 8E



## 8.8 PDU (LATER UNITS)

The PDU is located to the left of the operator seat, under the MCU, and is used to switch 48V and 12V motor/controller outputs on or off. Three circuit breakers are located on the rear of the PDU.

Before working on, or opening the PDU, shut mower off, remove key, disconnect 48 volt battery connector, and disconnect 12 volt battery connector (Hybrid mowers). Use caution to prevent shorting between PDU input, output, and ground cable studs.

Inside the PDU are the following components:

**Traction Contactor** - Used to control 48 volt power output to TCU and OLM.

**48 Volt Contactor** - Used to control 48 volt power output to MCU, RCU, SCU, and other components.

**12 Volt Relay** - Used to control 12 volt power output to MCU, 12 volt lights, and engine components.

**150 Amp Fuse** - Used to provide circuit protection for 48 volt contactor.

**300 Amp Fuse** - Used to provide circuit protection for traction contactor.

**12 Amp Circuit Breaker** - Used to provide circuit protect for 48 volt contactor output except for RCU and SCU.

**30 Amp Circuit Breaker** - Used to provide circuit protection for SCU.

**50 Amp Circuit Breaker** - Used to provide circuit protection for 12 volt contactor.

**Printed Circuit Board** - Used for controlling PDU inputs and outputs.

**Glow Plug Relay** - Used to control glow plug operation for Diesel hybrid engines.

**Start Relay** - Used to control starter motor operation for Gas and Diesel hybrid engines.

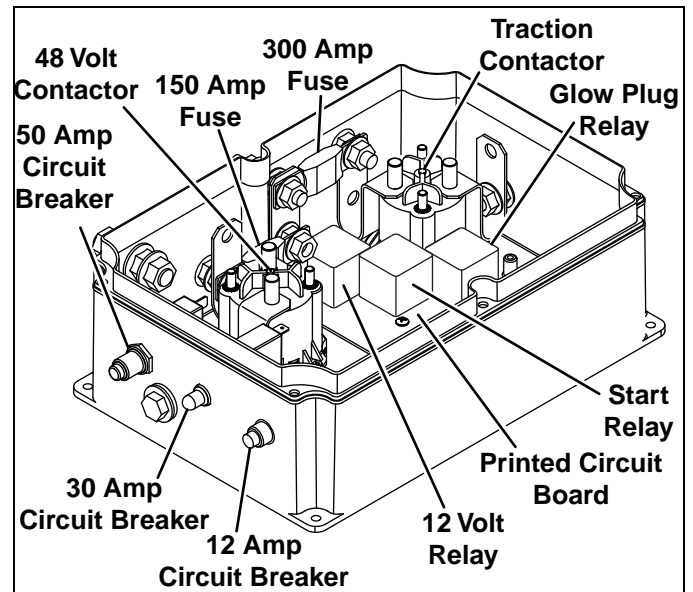


Figure 8F

# 9 TROUBLESHOOTING

## 9.1 TROUBLE SHOOTING

Problem	Possible Cause/Items to Check	Additional Items to Check
Key switch ON - No power to LDU.	48VDC Battery or 48VDC Buffer Battery not connected or discharged.	Check battery connections and voltage.
	No 12V power to LDU. 12 or 50 Amp circuit breaker in PDU may be tripped. Check for open connection or shorted wire to GND for LDU 48V power.	Cycle power once corrected.
Key switch ON - No power to MCU or RCU.	Main Contactor not on due to blown fuse.	Check to see if 150 Amp fuse is blown.
	Fault Code on LDU.	Review any fault codes and take appropriate action.
	12 Amp circuit breaker in PDU tripped. Check for open connection or shorted wire to battery for main contactor coil power.	Cycle power once corrected.
Key switch START - Engine won't crank. (Gas or Diesel Hybrid)	Note: Only 1 start sequence per Ignition on is allowed. Must recycle keyswitch for another start sequence.	Cycle power.
	12VDC Battery not connected or discharged.	Check battery connections.
	Operator not on seat.	Operator must be seated to start engine.
	Check MCU LED's #2 and #3 to see if they are on.	If not on check to see if 50 Amp circuit breaker is tripped.
	Ensure a Genset program is selected. Check MCU LED #18 on for Gas, or #17 on for Diesel.	If neither are on check engine harness connections.
	50 Amp circuit breaker in LDU tripped. Check for open connection or shorted wire to battery for 12V contactor coil power.	Check 50 Amp circuit breaker.
	Overcurrent protection device in MCU tripped. Check for open connection or shorted wire to GND for Start relay coil power.	
	No power to genset logic. 50 Amp circuit breaker in PDU may be tripped. Check for open connection or shorted wire to GND for genset 12V power.	Cycle power once corrected.
	No power to starter from start relay contact. 50 Amp circuit breaker in PDU may be tripped. Check for open connection or shorted wire to GND for Start relay output.	Cycle power once corrected.
	No 12V power to MCU. 50 Amp circuit breaker in PDU may be tripped. Check for open connection or shorted wire to GND for MCU 12V power.	Cycle power once corrected.
	Fault Code on LDU.	Review any fault codes and take appropriate action.
No CAN communication.	Check that three armrest connectors for tight connection. Check to make sure CAN resistor terminator has tight connection	

No Glowplug operation.	Ensure Diesel Genset is selected. Check MCU LED #17 should be on.	Check engine harness connections.
	Check MCU LED #6 should be on when glowplugs should be on (i.e. Pre-glow, during cranking, and post-glow).	If not on check to see if 50 Amp circuit breaker is tripped.
	Overcurrent protection device in MCU tripped. Check for open connection or shorted wire to GND for Glow Plug relay coil power.	
	No 12V power to MCU. 50 Amp circuit breaker in PDU may be tripped. Check for open connection or shorted wire to GND for MCU 12V power.	Cycle power once corrected.
	Fault Code on LDU.	Review any fault codes and take appropriate action.
	No CAN communication.	Check connections.
Engine cranks but won't start (Diesel).	Ensure Diesel Genset is selected. Check MCU LED #17 should be on.	Check harness connections.
	Check for Fuel Solenoid power. Check MCU LED #2 should be on.	If not on check to see if 50 Amp circuit breaker is tripped
	Fault Code on LDU	Review any fault codes and take appropriate action.
	Check to see if Fuel Solenoid Pulls and Holds. Check MCU LED'S #4 for Pull on for 0.5 sec then #5 on for Hold.	Overcurrent protection device in MCU tripped. Check for open connection or shorted wire to GND for Pull and Hold solenoids power.
	No 12V power to MCU. Overcurrent protection device in PDU may be tripped. Check for open connection or shorted wire to GND for MCU 12V power.	Cycle power once corrected.
Engine cranks but won't start (Gas).	Ensure Gas Genset is selected. Check MCU LED #18 should be on.	Check engine harness connection.
No Traction Movement.	Ensure Machine was started. Check LDU Green Lightning Bolt for steady on.	If flashing initiate start sequence.
	Fault Code on LDU.	Review any fault codes and take appropriate action.
	Traction Contactor is off. Check MCU LED # 8 should be on when contactor is on. If off see next item.	Overcurrent protection device in MCU tripped. Check 300 Amp fuse in PDU. Check for open connection or shorted wire to battery for traction contactor power.
	Check if Seat Switch is functioning. Check MCU LED #24 should be on when on seat and off when off seat.	Check switch and harness connection.
	No CAN communication.	Check connections.
	Automatic Parking Brake not releasing	Manually release parking brake, then remove release screws. Cycle power.
	12 Amp circuit breaker in PDU tripped. Check for open connection or shorted wire to GND for throttle pedal power, TCU logic power, and park brake power.	Cycle power once corrected.
	Overcurrent protection device in MCU tripped. Check for open connection or shorted wire to battery for traction contactor coil power.	

## 9 TROUBLESHOOTING

No Steering (Electric steering system).	Check if Seat Switch is functioning. Check MCU LED #24 should be on when on seat and off when off seat.	Check switch and harness connection.
	SCU does not have power.	Check to see if 30 Amp circuit breaker is tripped.
	Fault Code on LDU.	Review any fault codes and take appropriate action.
	150 Amp fuse in PDU blown. Check for open connection or shorted wire to GND for SCU logic power.	Cycle power once corrected.
	Proximity switches dirty.	Clean all dirt or debris from proximity switch. Check for obstructions that may interfere with switch operations.
Manual Actuator Mode not working.	Park brake off. Check LDU Park Brake LED should be on.	Cycle power.
	No CAN communication.	Check connections.
	Fault Code on LDU	Review any fault codes and take appropriate action.
	Mow switch is in ON position.	Ensure Mow switch is in OFF position.
One or more Reel Motors won't run.	Mow switch is in OFF position.	Ensure Mow switch is in ON position.
	Reel enable switches are in OFF position.	Ensure to enable reels.
	Machine not moving. (Applicable if FOC is not zero.)	Reel motors should come on when machine starts moving forward.
	Fault Code on LDU	Review any fault codes and take appropriate action.
	No power to reels. When actuators are down check RCU LED's #8 for Left, #14 for Center, #7 for right should be on.	Check 150 Amp fuse in PDU.
Reel motor temperature or current high when mowing.	Excessive amount of grass being cut.	Reduce mower speed, increase FOC, or change height of cut.
Actuators raise and motors shut off while mowing.	Low Battery Power. LDU-Red 48V Battery LED will be on.	Recharge Batteries.
	Reel or Actuator Fault. LDU-Yellow Caution LED will be on.	Review fault codes to determine which reel or actuator is faulted.
Steering wheel has no resistance.	12 Amp circuit breaker in PDU tripped. Check for open connection or shorted wire to GND for Lord brake, Lord protection diode.	Cycle power once corrected.
Headlights don't turn on.	12 Amp circuit breaker in PDU tripped. Check for open connection or shorted wire to GND for headlight(s).	Cycle power once corrected.
Genset overheating.	Genset fan not running. 50 Amp circuit breaker in PDU may be tripped. Check for open connection or shorted wire to GND for genset fan 12V power.	Cycle power once corrected.

## 10.1 GENERAL

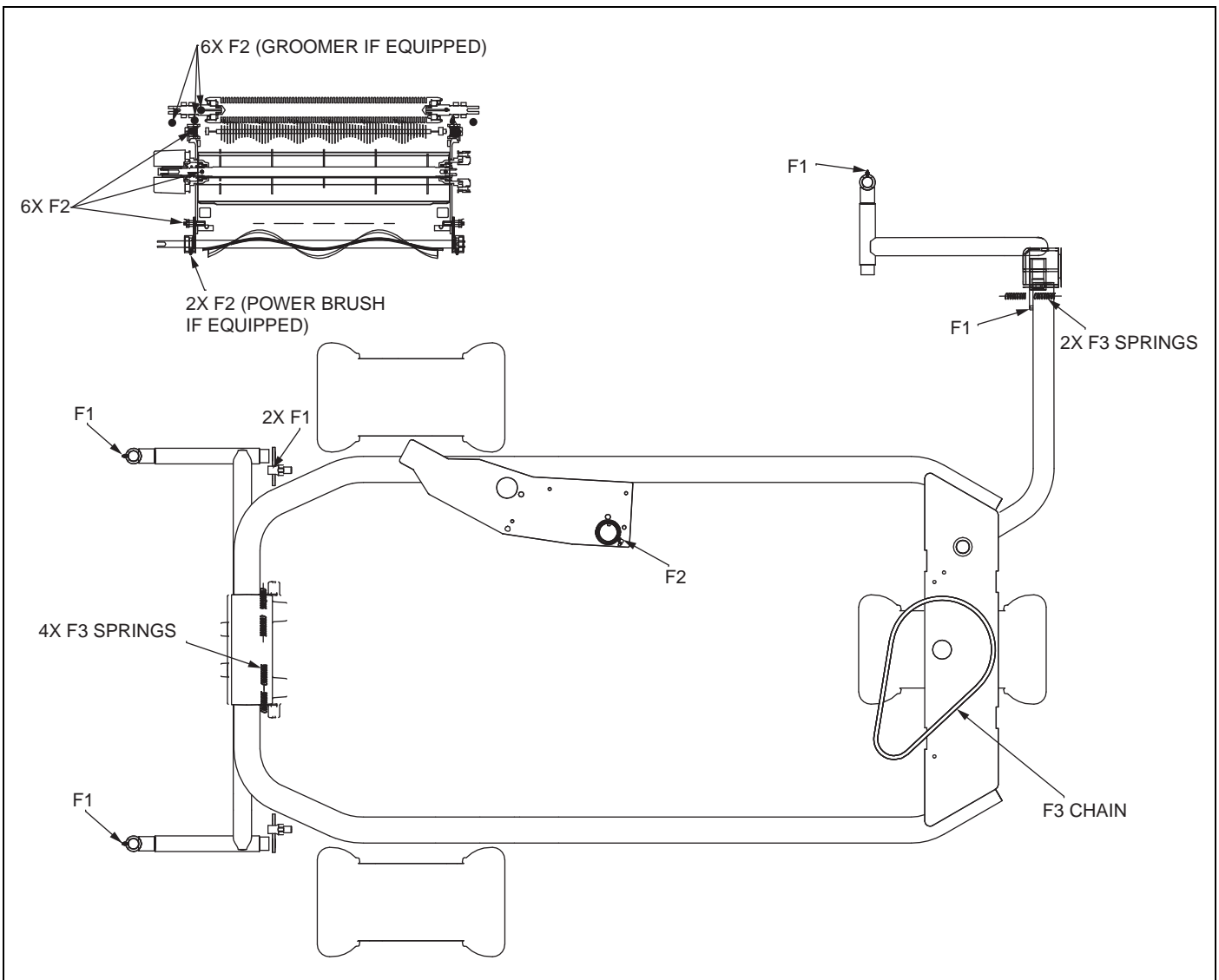
### **WARNING**

Before you clean, adjust, or repair this equipment, disengage all drives, lower implements to the ground, engage parking brake, stop engine and remove key from ignition switch to prevent injuries

1. Always clean the grease fitting before and after lubricating.

2. Lubricate with grease that meets or exceeds NLGI Grade 2 LB specifications. Apply grease with a manual grease gun and fill slowly until grease begins to seep out. Do not use compressed air guns.
3. Periodically apply a small amount of lithium based grease to the seat runners.
4. For smooth operation of all levers, pivot points and other friction points that are not shown on the lubrication chart apply several drops of SAE 30 oil every 40 hours or as required.
5. Grease fittings **(F1)** every 50 hours, fittings **(F2)** every 100 hours, and fittings **(F3)** every 200 hours.

## 10.2 LUBRICATION CHART



# 10 MAINTENANCE & LUBRICATION CHARTS

## 10.3 MAINTENANCE CHARTS

Recommended Service and Lubrication Intervals

	Every 8-10 Hours	Every 25 Hours	Every 40-50 Hours	Every 100 Hours	Every 200 Hours	Every 400 Hours	Every 500 Hours	Every 1000 Hours	See Section	Lubricant Type
Air Filter (Diesel)		I/C						R	6.5	
Air Filter Pre-Cleaner (Gas)		I/C							6.4	
Air Filter Cartridge (Gas)			I	C		R			6.4	
Battery Electrolyte (Battery)				I				A		
Battery Fluid (Battery)	I/A								5.3	
Battery Terminals				I/C					5.10	
Belts	I-A*			I-A					4.17	
Brake Resistors	I/C									
Cooling System (Diesel)	I-C-A							R	7.8	IV
Front Axle Fluid								I/A	7.2	III
Electrical System			I/C						8.1	
Engine Oil (Diesel)	I		R*	R					6.3	II
Engine Oil (Gas)	I-R*		R						6.3	II
Engine Oil Filter (Diesel)			R*		R					
Engine Oil Filter (Gas)			R							
Fuel System	I								6.7	
Fuel Filter (Diesel)				C		R			6.7	
Fuel Filter (Gas)	I					R			6.7	
Grease Fittings - F1			L						10.2	I
Grease Fittings - F2				L					10.2	I
Grease Fittings - F3					L				10.2	I
Muffler and Exhaust	I			I					7.5	
Radiator Hoses	C				I				7.8	
Radiator Screens	I-C/AR								7.8	
Rear Wheel Bearings							L			I
Steering Chain				I/L						V
Tires			I-A						7.5	
Valve Clearance (Gas)				C**						

**A - Add or Adjust    C - Clean    I - Inspect    L - Lubricate    R - Replace    AR - As Required**

\* Indicates initial service for new machines.

\*\* Not required unless engine problems occur.

I - Manual grease gun with NLGI Grade 2 (Service Class LB).

II - Engine Oil - See **Section 6.3**.

III - Mobilfluid 424 or SAE 30 wt.

IV - Capacity: 3qt. (2.8 l) 50/50 water ethylene glycol mix.



# 12 PARTS CATALOG

---

## 12.1 HOW TO USE THE PARTS CATALOG

---

### Abbreviations

**N/S** -Not serviced separately, can only be obtained by ordering main component or kit.

**AR** - Variable quantity or measurement is required to obtain correct adjustment.

**Symbols** such as ●, next to the item number, indicate that a note exists which contain additional information important in ordering that part.

### Indented Items

Indented items indicate component parts that are included as part of an assembly or another component. These parts can be ordered separately or as part of the main component.

Item	Part No.	Qty	Description	Serial Numbers/Notes
● 1	123456	1	Mount, Valve	<i>Indicates a piece part</i>
2	789012	1	Valve, Lift	<i>Includes Items 2 and 3</i>
3	345678	1	• Handle	<i>Serviced part included with Item 2</i>
4	N/S	1	• Seal Kit	<i>Non serviced part included with Item 2</i>
5	901234	1	Screw, 1/4-20 x 2" Hex Head	

## 12.2 TO ORDER PARTS

---

1. Write your **full** name and **complete** address on the order.
2. Explain where and how to make shipment.
3. Give product number, name, and serial number that is stamped on the name plate or serial plate of your product.
4. Order by the quantity desired, the part number, and description of the part as given in the parts list.
5. Send or bring the order to an authorized Jacobsen Distributor.
6. Inspect all shipments on receipt. If any parts are damaged or missing, file a claim with the carrier before accepting.
7. Do not return material without a letter of explanation, listing the parts being returned. Transportation charges must be prepaid.

**Use of other than Jacobsen authorized parts will void the warranty.**



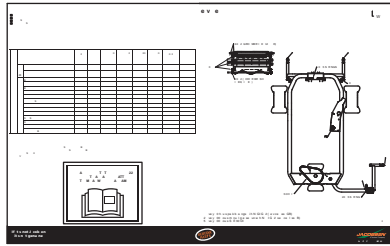
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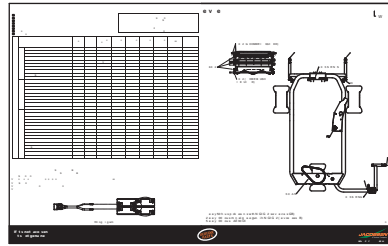
# ECLIPSE 322

Serial No. All

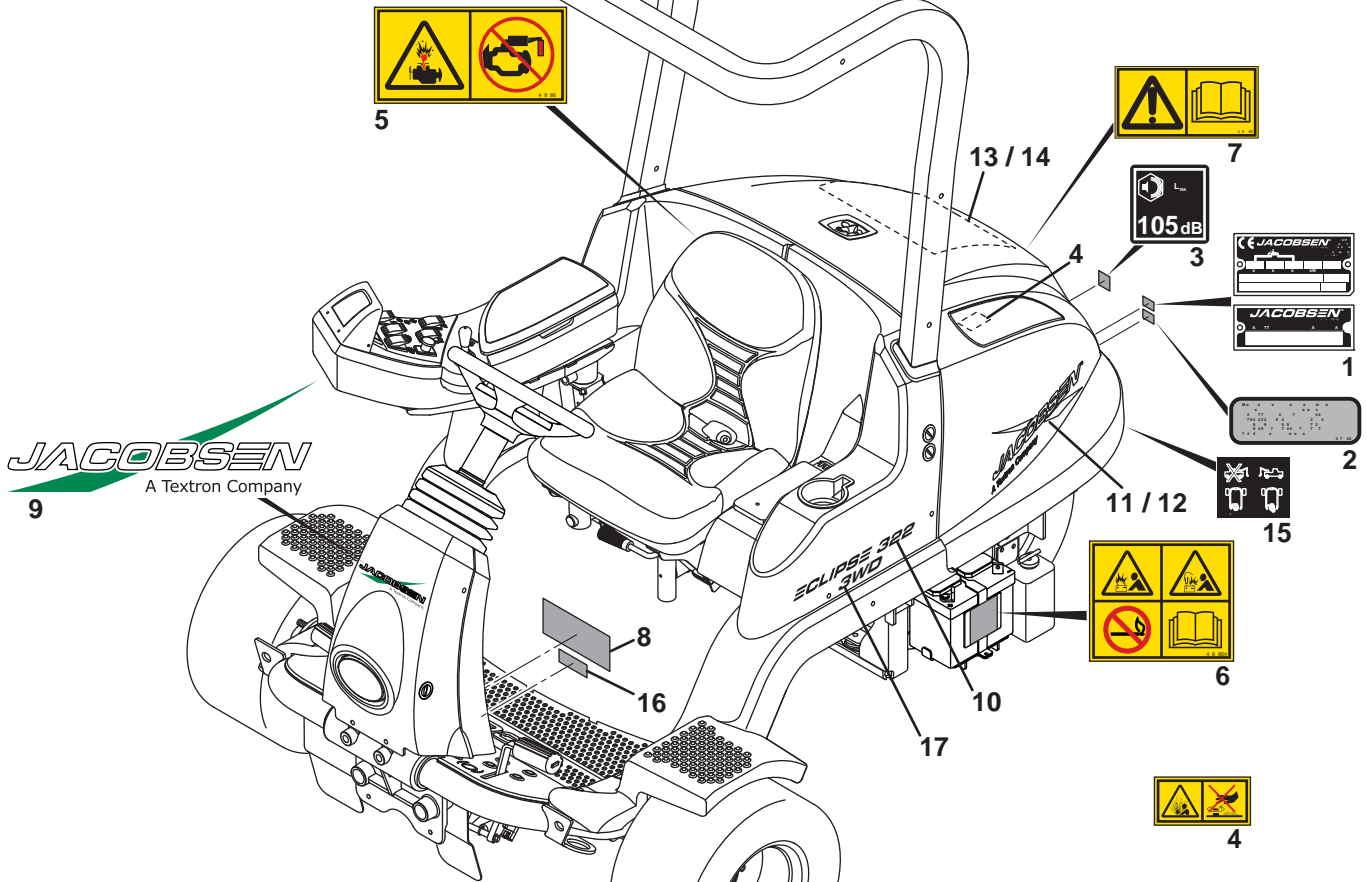
## 1.1 Decals



13



14



**JACOBSEN**  
A Textron Company



8



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Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	N/S	1	Serial Plate	Located on Rear Frame
2	4178542	1	Decal, Patent	Located on Rear Frame
3	4131528	1	Decal, 98 dB Noise	Battery Units
3	4131529	1	Decal, 102 Noise	Gas and Diesel Hybrid Units Located on Rear Frame
4	4181862	1	Decal, Radiator Cap	Diesel Units Only Located on Radiator Bracket
5	4181861	1	Decal, Start Fluids	Diesel Units Only Located on Air Intake Plenum
6	4181864	1	Decal, Battery Warning	Gas and Diesel Hybrid Units
7	4181860	1	Decal, Read Manual	Located on Steering Cover
8	4181865	1	Decal, Warning	
9	4179664	1	Decal, Jacobsen Logo	
10	4179660	3	Decal, Eclipse Logo	Located on Left Side Cowling, Right Side Cowling, and Hood
11	4179662	1	Decal, Left Side Jacobsen	
12	4179663	1	Decal, Right Side Jacobsen	
13	4225602	1	Decal, LA Maintenance	Battery Units
14	4225600	1	Decal, Hybrid Maintenance	Gas and Diesel Hybrid Units
15	4216820	1	Decal, Towing	Located on Rear Fender
16	4169840	1	Decal, Danger	
17	4257350	3	Decal, 3WD	3WD Units Only

> Change from previous revision

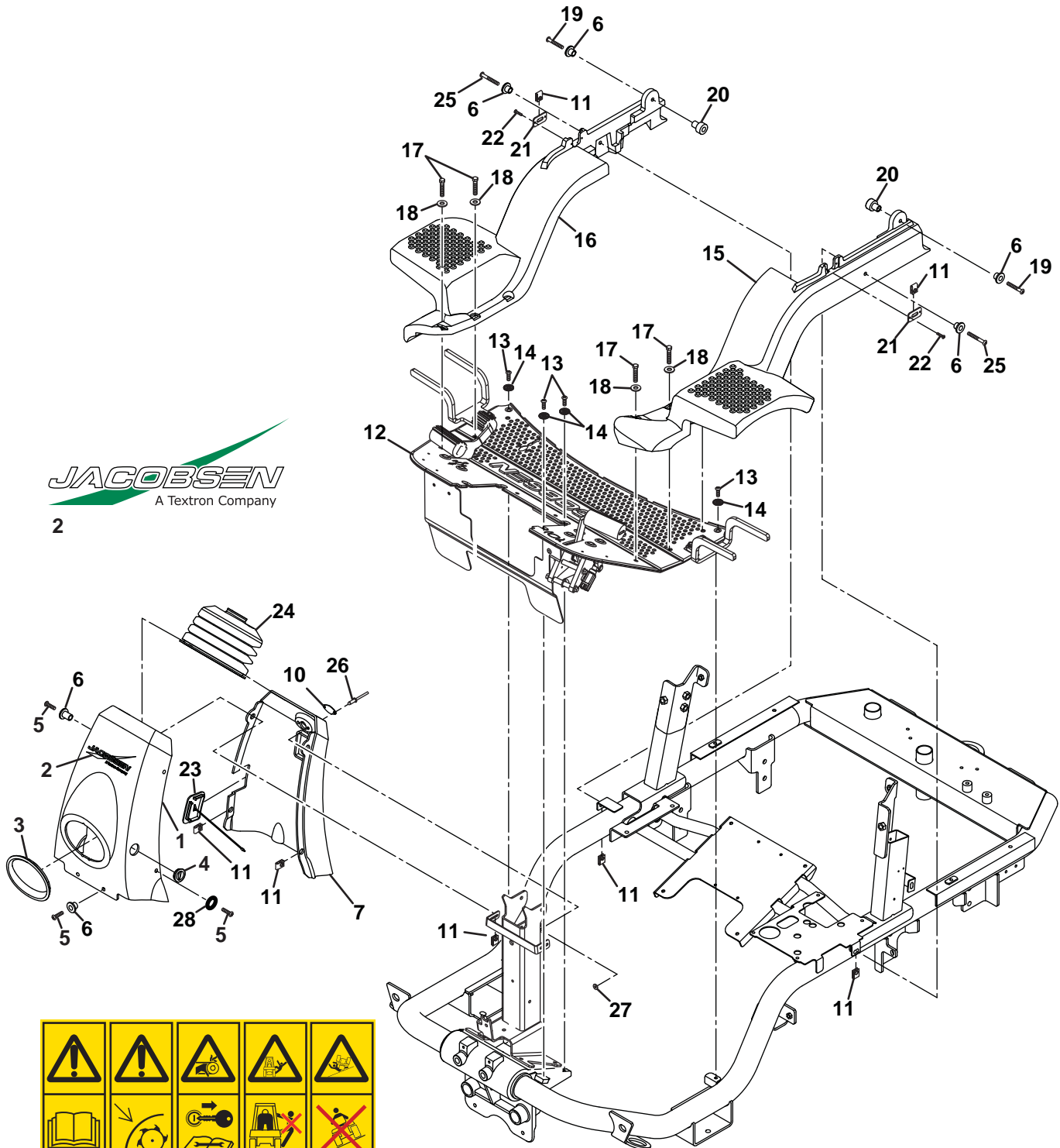
# ECLIPSE 322

Serial No. All

## 2.1 Front Body



2



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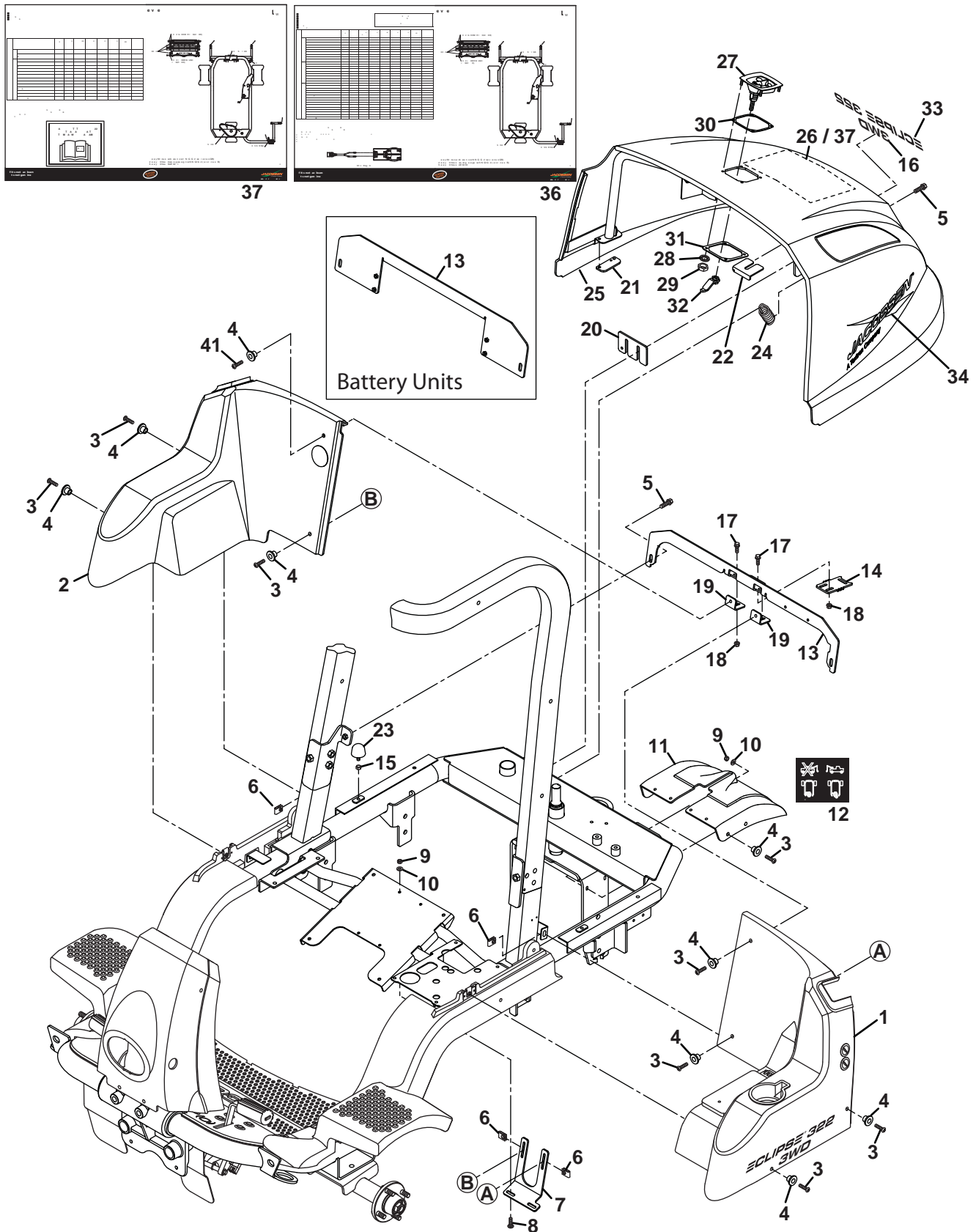
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4192700	1	Front Cover	
2	4179664	1	• Decal, Jacobsen Logo	
3	4188241	1	• Grommet, Headlight	
4	4187100	1	• Plug	
5	64205-081	8	Screw, M6-1 x 25 mm Pan Head	Stainless Steel
6	4258950	6	Screw Insulator, Nylon	
7	4212440	1	Rear Cover	Includes two of Item 13
8	4181865	1	• Decal, Warning	Located on surface facing operator
9	4169840	1	• Decal, Danger	Located on surface facing operator
10	4198682	1	Cover, Choke Opening	Diesel and Battery Only
11	4168402	8	Nut, M6-1 Speed	
12	N/S	1	Floorboard Assembly	See 8.1
13	450542	6	Screw, M6-1 x 20 mm Pan Head	
14	306999	6	Lockwasher, 1/4" Internal/External	
15	4167023	1	Fender, Left	
16	4167024	1	Fender, Right	
17	4200340	6	Screw, M8-1.25 x 35 mm Hex Head	Stainless Steel
18	4188483	6	Flat Washer, M10	Stainless Steel
19	4187424	2	Screw, M6-1 x 45 mm Pan Head	Stainless Steel
20	4187423	2	Spacer, Fender	
21	4214620	2	Plate, Speed Nut	
22	4189540	4	Screw, M4-0.7 x 20 mm Torx	
23	4194940	1	Cover, LED Access	Secured to Steering Column
24	4167028	1	Boot, Steering	
25	4222120	2	Screw, M6-1 x 50 mm Pan Head	
26	64215-05	2	Pop Rivet, 3/16 x 7/16	
27	64211-02	2	Flat Washer, 3/16	
28	4194845	2	Sealing Washer, M6	

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# ECLIPSE 322

Serial No. All

## 3.1 Rear Body



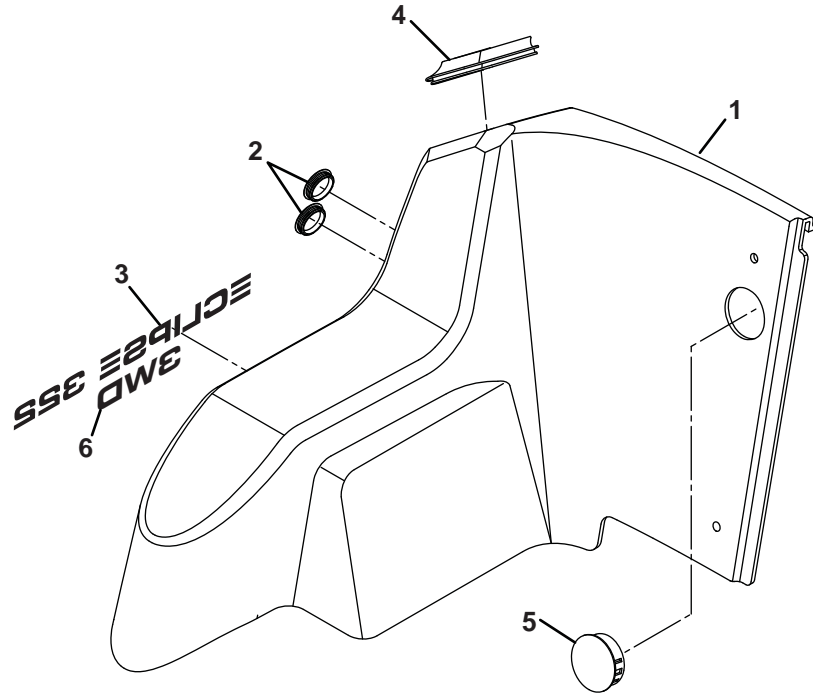
Item	Part No.	Qty.	Description	Serial Numbers/Notes	
	1	4184101	1	Left Side Cowling	See 4.1
	2	4188020	1	Right Side Cowling	See 5.1
	3	64205-081	12	Screw, M6-1 x 25 mm Pan Head	Stainless Steel
>	4	4258950	12	Screw Insulator, Nylon	
>	5	452390	10	Screw, M8-1.25 x 30 mm Hex Flange	
	6	4168402	4	Nut, M6-1 Speed	
	7	4183400	1	Bracket, Cowling	
	8	452542	2	Carriage Bolt, M6-1 x 20 mm	
	9	450377	6	Nut, M6-1 Hex Nylock	
	10	450399	8	Flat Washer, M6	
	11	4216821	1	Rear Fender	2WD Units
>	11	4263311	1	Rear Fender	3WD Units
	12	4216820	1	• Decal, Towing	
	13	4247692	1	Cross Bracket	Battery Powered Mowers
	13	4247691	1	Cross Bracket	Gas and Diesel Hybrid Mowers
	14	4247690	1	Plate, Striker	
	15	443806	2	Nut, 5/16-18 Hex Jam	
>	16	4257350	1	Decal, 3WD	3WD Units Only
>	17	452378	4	Screw, M6-1 x 20 mm Hex Flange	
>	18	450452	4	Nut, M6-1 Hex Flange	
	19	4184706	2	Bolt Tab	
	20	4223440	AR	Shim, Hood Hinge	
	21	4223240	AR	Shim, Hood Bumper	Shims used for proper alignment of hood to cowlings and positioning.
	22	4223220	AR	Shim, Hood Holder	
>	23	523126	2	Bumper, Rubber	
>	24	4212160	2	Spring, Extension	
>	25	4190042	1	Hood Assembly	Battery Powered Mowers
>	25	4168620	1	Hood Assembly	Gas and Diesel Hybrid Mowers
>	26	4225602	1	• Decal, LA Maintenance	Battery Powered Mowers
		4215082	1	• Hood Latch Kit	
	27	4188502	1	• • Handle, Latch	
	28	N/S	4	• • • Lockwasher, M6 Internal	
	29	450323	4	• • • Nut, M6-1 Hex	
	30	4187422	1	• • Gasket, Hood Latch	
	31	4187421	1	• • Support, Hood Latch	
	32	4188503	1	• • Pawl, Latch	
	33	4179660	1	• Decal, Eclipse 322	
	34	4179662	1	• Decal, Left Side Jacobsen	
	35	4179663	1	• Decal, Right Side Jacobsen	
	36	4225600	1	• Decal, Hybrid Maintenance	Gas and Diesel Hybrid Mowers
>	37			•	
>	38				
>	39				
>	40				

> Change from previous revision

# ECLIPSE 322

Serial No. All

## 4.1 Right Side Cowling

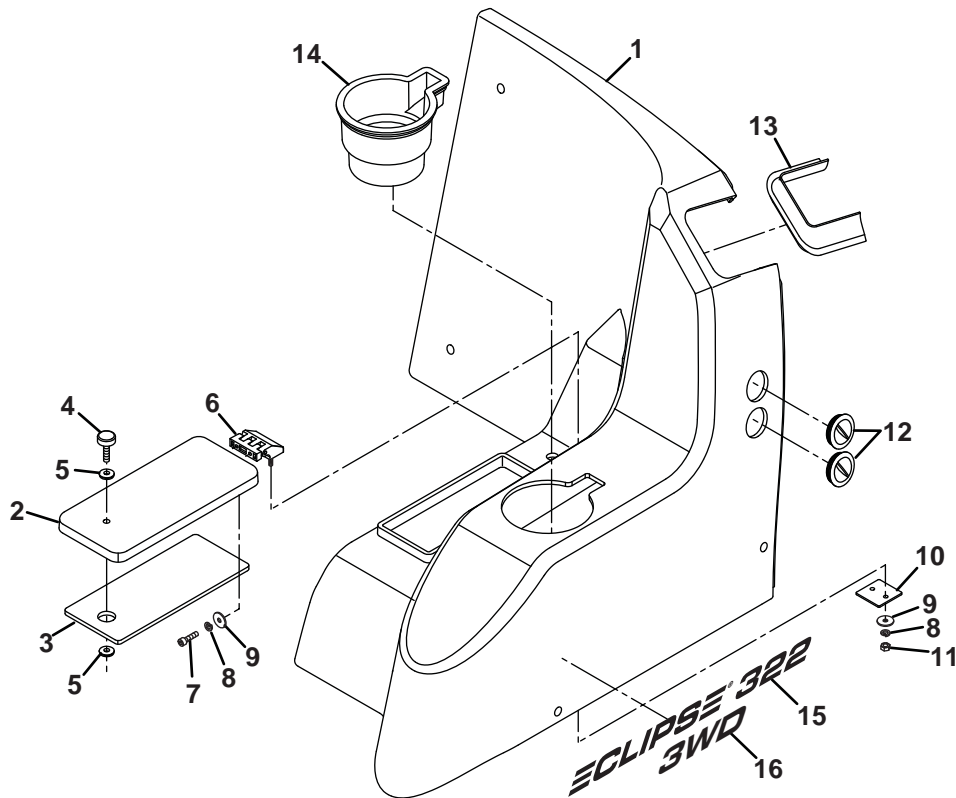


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4188020	1	Right Side Cowling	
2	4187100	2	• Plug	
3	4179660	1	• Decal, Eclipse 322	
4	4188944	1	• Moulding, Right Side Cowling	
5	4210920	1	• Plug, Body Cover	Not used on Diesel Hybrid Mowers
6	4257350	1	Decal, 3WD	3WD Units Only

> Change from previous revision



## 5.1 Left Side Cowling



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4184101	1	Left Side Cowling	
	4215040	1	• Access Cover Kit	
2	4183080	1	• Access Cover	
3	4194842	1	• Gasket, Cover	
4	4194843	1	• Thumb Screw, M6-1 x 25 mm	
5	4194845	2	• Washer, M6 Sealing	
6	4183081	1	• Hinge	
7	4216840	2	• Screw, M4-0.7 x 10 mm Socket	Stainless Steel
8	4216842	4	• Lockwasher, M4	Stainless Steel
9	4216841	4	• Flat Washer, M4	Stainless Steel
10	4205820	1	• Support Plate	
11	4216860	2	• Nut, M4-0.7 Hex	Stainless Steel
12	4187100	2	• Plug	
13	4188942	1	• Molding, Left Side Cowling	
14	4183040	1	• Cup Holder	
15	4179660	1	• Decal, Eclipse 322	
16	4257350	1	Decal, 3WD	3WD Units Only

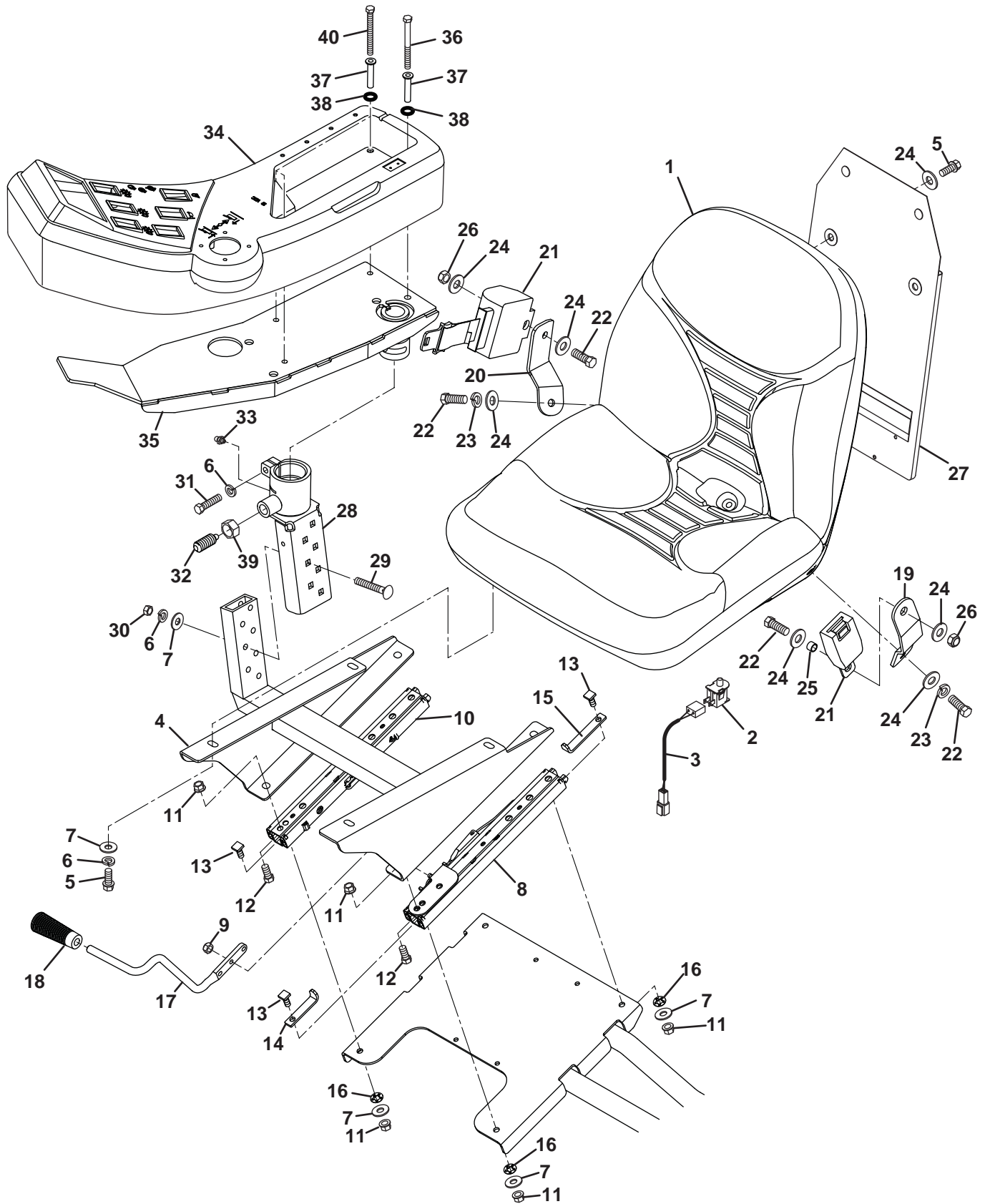
> Change from previous revision

# ECLIPSE 322

## 6.1 Seat

Serial No. 62800 - All  
Serial No. 62801 - All  
Serial No. 62802 - All

Serial No. 62803 - All  
Serial No. 62804 - All  
Serial No. 62805 - All



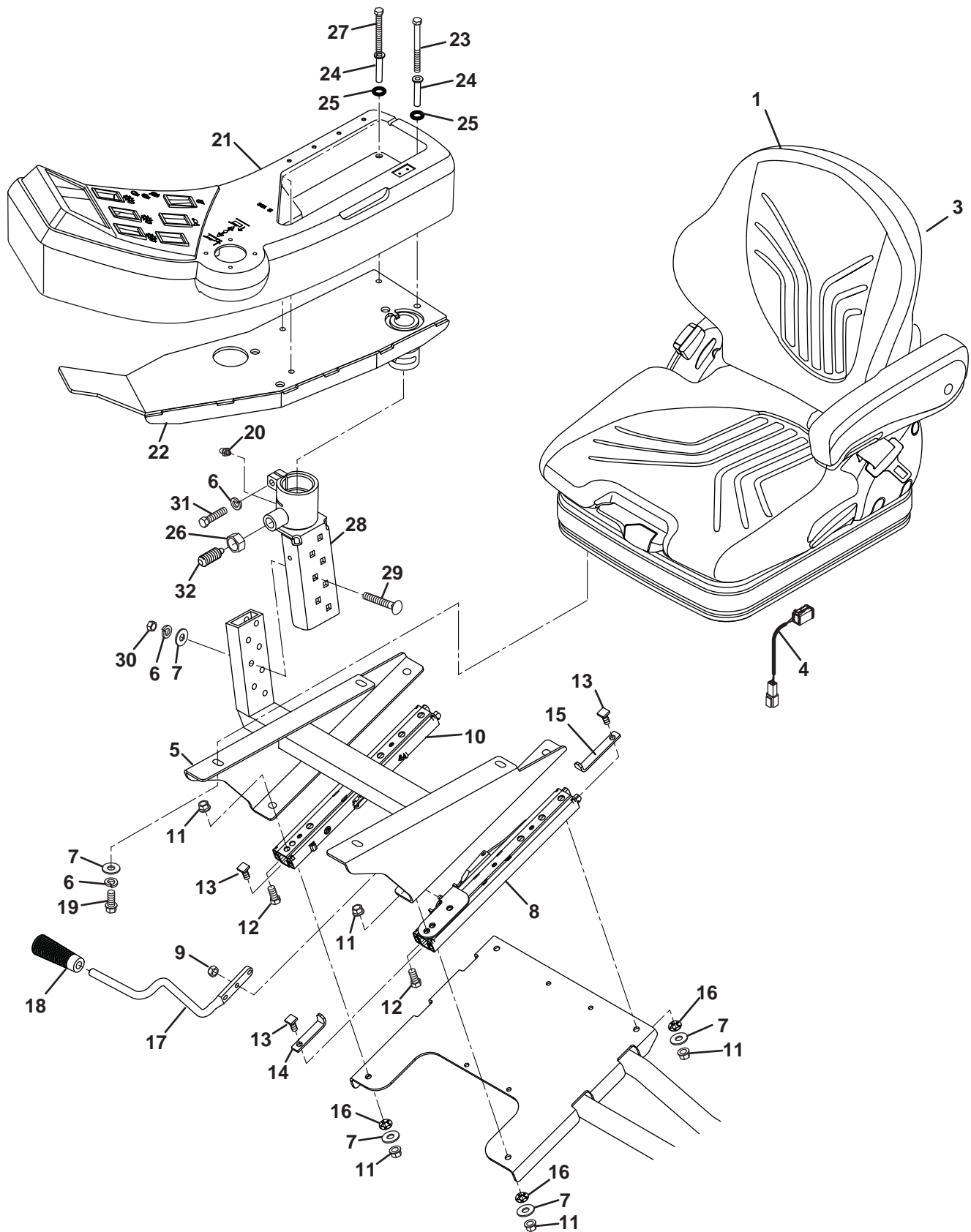
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4202462	1	Seat, V2853	
2	4217502	1	Switch, Seat	
3	5003769	1	Harness, Seat Switch	
4	4173380	1	Base, Armrest and Seat	
5	452388	6	Screw, M8-1.25 x 20 mm Hex Flange	
6	450411	8	Lockwasher, M8	
7	450400	11	Flat Washer, M8	
8	4205941	1	Latching Seat Track	
9	450377	1	• Locknut, M6-1 Hex	
10	4205940	1	Slave Seat Track	
11	64246-02	8	Nut, M8-1.25 Whizlock Flange	
12	450190	4	Screw, M8-1.25 x 16 mm Hex Head	
13	4203220	4	Screw, M8-1.25 x 20 mm Square Hd	
14	4205141	1	Stop, Rear Seat Track Movement	
15	4205140	1	Stop, Fwd Seat Track Movement	
16	4202464	4	Push Nut, 5/16-18	
17	4186620	1	Rod, Seat Adjuster	
18	4203488	1	Handle, Seat Adjuster	
19	4256475	1	Bracket, Left Side Seat Belt	
20	4204341	1	Bracket, Right Side Seat Belt	
21	4257812	1	Seat Belt Assembly	
22	450214	4	Screw, M10-1.5 x 25 mm Hex Head	
23	450412	2	Lockwasher, M10	
24	450401	8	Flat Washer, M10	
25	4205942	1	Spacer, Seat Belt	
26	450379	2	Nut, M10-1.5 Nylock	
27	3003928	1	Pouch, Product Literature	
28	4188565	1	Armrest Receiver	
29	452749	3	Carriage Bolt, M8-1.25 x 45 mm	
30	450324	3	Nut, M8-1.25 Hex	
31	450193	1	Screw, M8-1.25 x 30 mm Hex Head	
32	4188569	1	Plunger, Round Nose	
33	471216	1	Grease Fitting, 1/4-28 Straight	
34	N/S	1	Armrest Assembly	See 9.1
35	4188380	1	Armrest Support	
36	4189843	1	Screw, M6-1 x 65 mm Hex Head	
37	4188484	4	Flange, 6 mm x 44 mm Body	
38	473211	4	Washer, 9 mm Neoprene Rubber	
39	450334	1	Nut, M16-2 Hex	
40	4234800	3	Screw, M6-1 x 60 mm Hex Head	

> Change from previous revision

# ECLIPSE 322

## 7.1 Premium Seat

Serial No. 62825 - All  
Serial No. 62826 - All



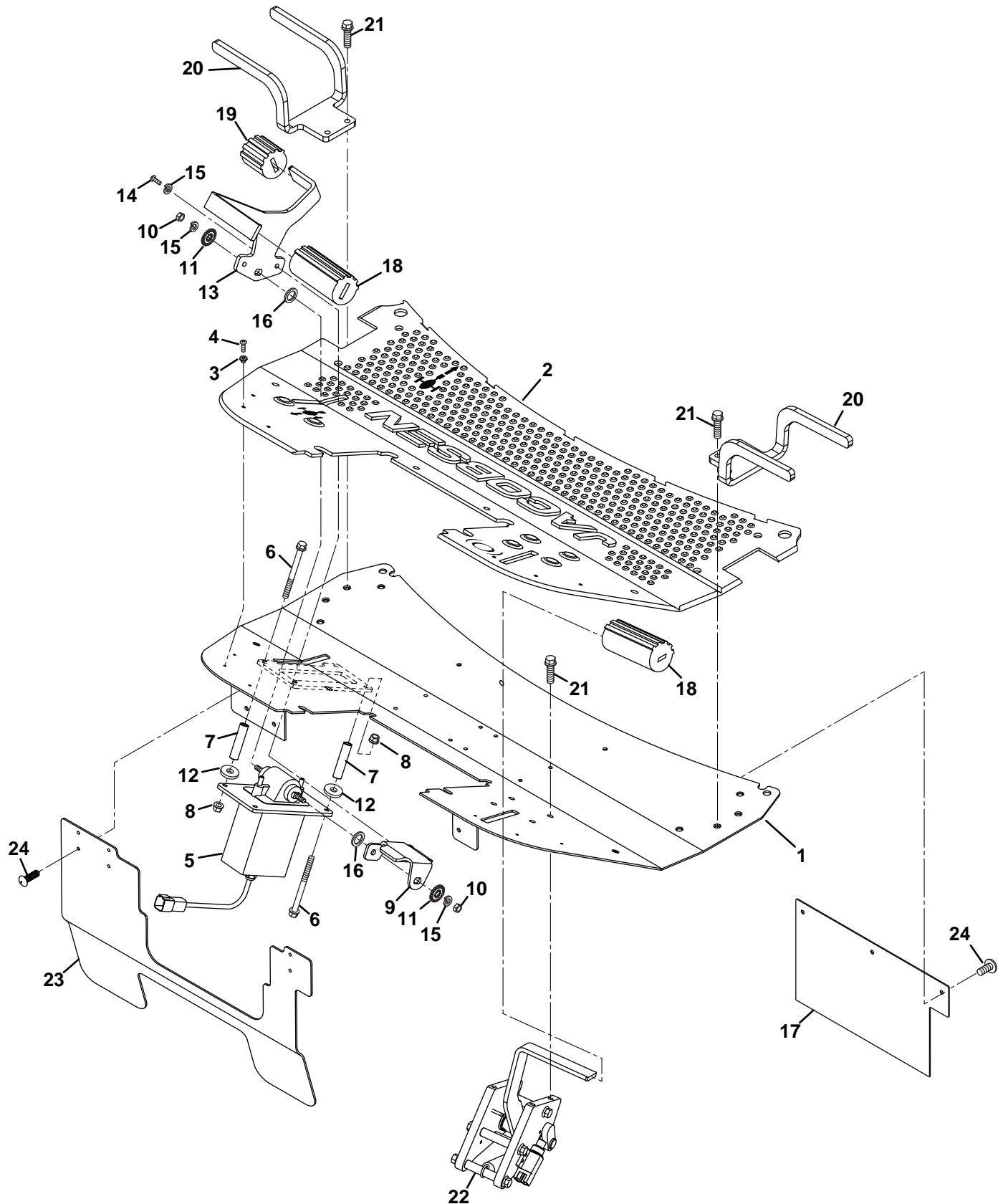
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4180700	1	Seat, Premium	
2	4173566	1	• Switch, Seat	
3	4200258	1	• Document Net	Located on back of seat
4	4158060	1	Hanress, Seat Switch	
5	4173380	1	Base, Armrest and Seat	
6	450411	8	Lockwasher, M8	
7	450400	11	Flat Washer, M8	
8	4205941	1	Latching Seat Track	
9	450377	1	• Locknut, M6-1 Hex	
10	4205940	1	Slave Seat Track	
11	64246-02	8	Nut, M8-1.25 Whizlock Flange	
12	450190	4	Screw, M8-1.25 x 16 mm Hex Head	
13	4203220	4	Screw, M8-1.25 x 20 mm Square Hd	
14	4205141	1	Stop, Rear Seat Track Movement	
15	4205140	1	Stop, Fwd Seat Track Movement	
16	4202464	4	Push Nut, 5/16-18	
17	4186620	1	Rod, Seat Adjuster	
18	4203488	1	Handle, Seat Adjuster	
19	452388	4	Screw, M8-1.25 x 20 mm Hex Flange	
20	471216	1	Grease Fitting, 1/4-28 Straight	
21	N/S	1	Armrest Assembly	See 9.1
22	4188380	1	Armrest Support	
23	4189843	1	Screw, M6-1 x 65 mm Hex Head	
24	4188484	4	Flange, 6 mm x 44 mm Body	
25	473211	4	Washer, 9 mm Neoprene Rubber	
26	450334	1	Nut, M16-2 Hex	
27	4234800	3	Screw, M6-1 x 60 mm Hex Head	
28	4188565	1	Armrest Receiver	
29	452749	3	Carriage Bolt, M8-1.25 x 45 mm	
30	450324	3	Nut, M8-1.25 Hex	
31	450193	1	Screw, M8-1.25 x 30 mm Hex Head	
32	4188569	1	Plunger, Round Nose	

> Change from previous revision

# ECLIPSE 322

## 8.1 Floorboard

Serial No. All



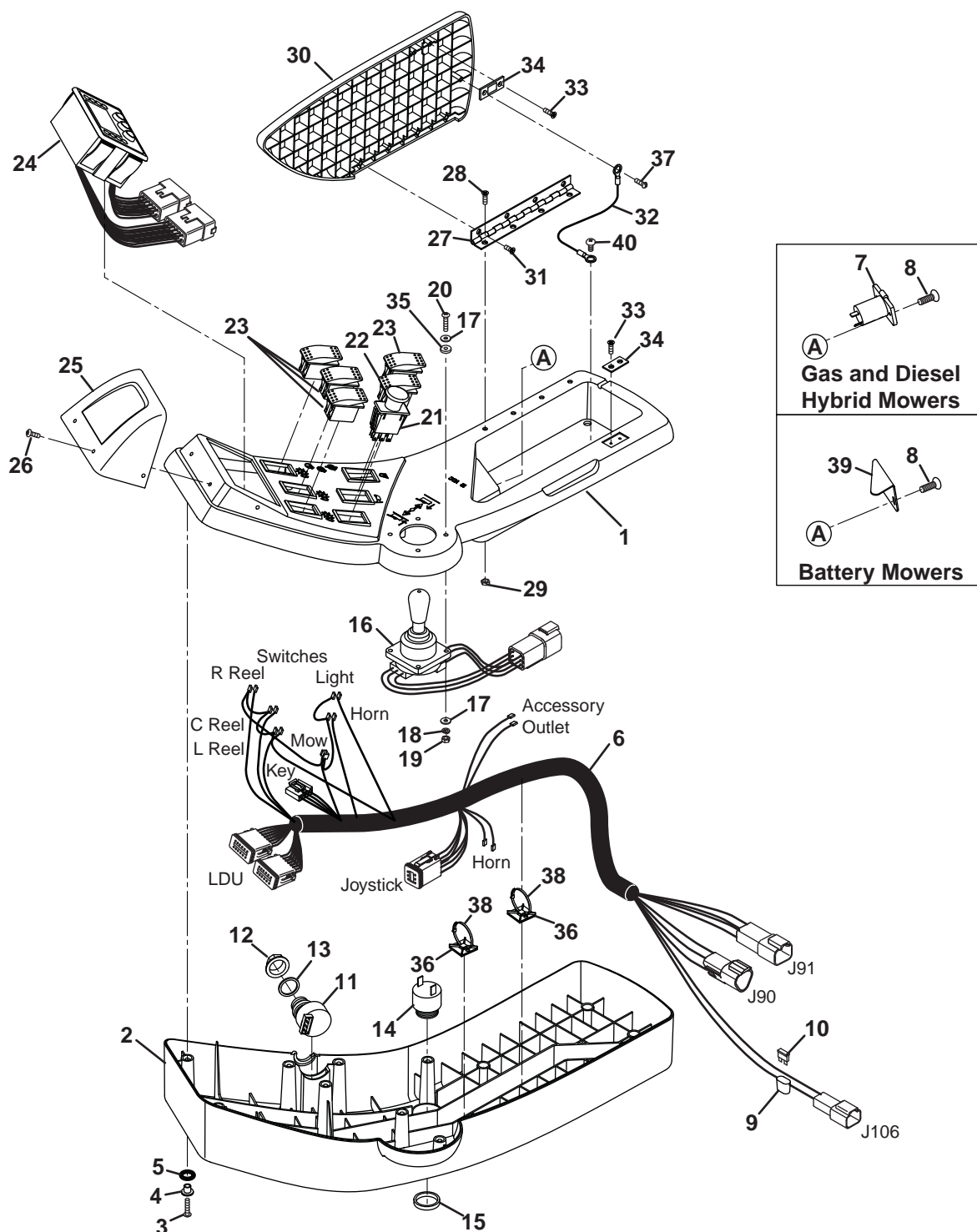
Item	Part No.	Qty.	Description	Serial Numbers/Notes		
>	1	4156547	1	Floorboard	S/N 1651 ~ 2999 for all models S/N 3000 and Up for all models	
>	1	4269192	1	Floorboard		
	2	4177461	1	Floor Mat		
	3	4188480	6	Flange, M4 Body		
	4	409952	6	Screw, M4-0.7 x 13 mm Phillips Head		
	5	4232480	1	Traction Pedal Unit RoHS		
	6	452385	4	Screw, M6-1 x 80 mm Hex Flange		
	7	4165388	4	Spacer		
	8	452418	4	Nut, M6-1 Hex Flange		
	9	4165904	1	Mount, Accelerator Arm		
	10	361001	2	Nut, M6-1 Hex		
>	11	306999	2	Lockwasher, 1/4 Internal/External		
	12	364441	4	Spacer		
	13	4165901	1	Arm, Accelerator		
	14	450171	2	Screw, M6-1 x 20 mm Hex Head		
	15	450410	4	Lockwasher, M6		
	16	455012	AR	Flat Washer, 1/2"		
>	17	4254010	1	Shield, Axle		
	18	3003475	2	Grip, Pedal		
	19	3003474	1	Grip, Pedal		
	20	4247430	2	Fender Support		
>	21	450472	8	Screw, M8-1.25 x 25 Hex Flange		
	22	N/S	1	Brake Pedal Assembly		See 10.1
>	23	4227021	1	Front Splash Shield		
>	24	4222500	6	Fastener, Shield		

> Change from previous revision

# ECLIPSE 322

Serial No. All

## 9.1 Armrest

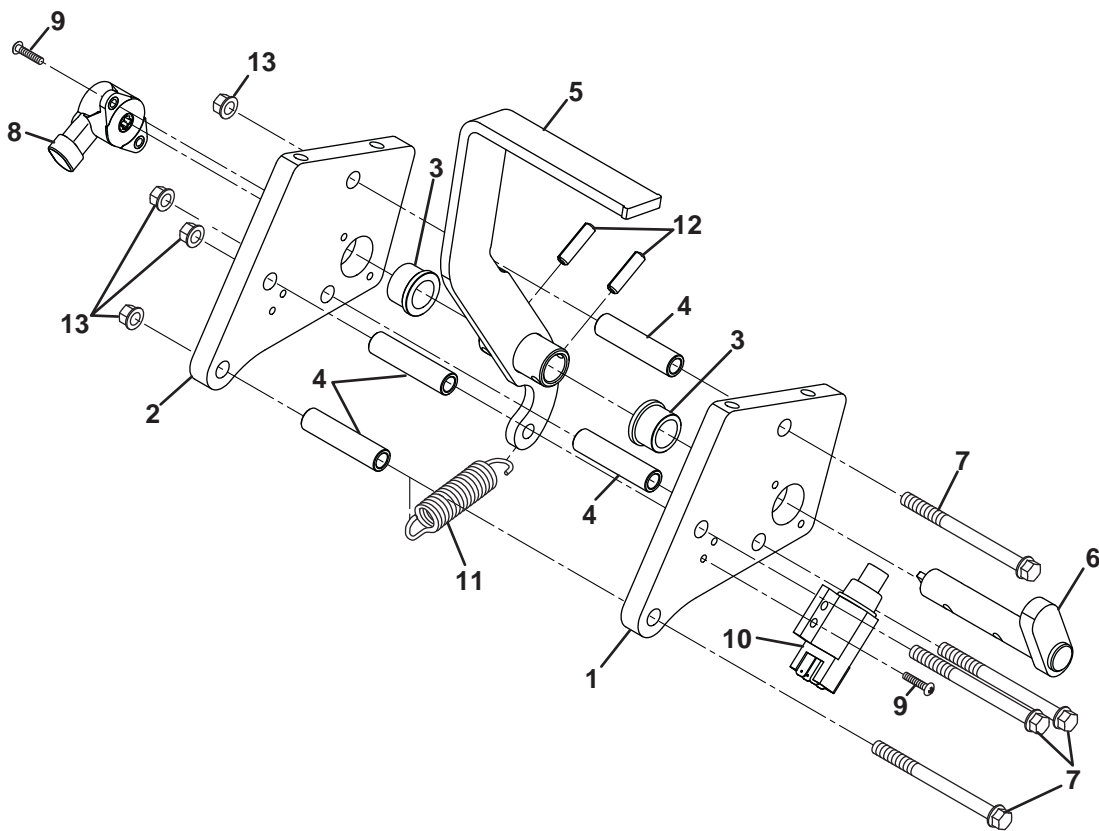




Item	Part No.	Qty.	Description	Serial Numbers/Notes	
1	4230600	1	Armrest, Eclipse 322 Upper		
2	4168560	1	Armrest, Lower		
3	4189540	8	Screw, M4-0.7 x 20 mm Torx		
4	4188480	8	Flange, M4 x 4 mm Body		
5	4188482	8	Spacer, Black Neoprene		
6	4175120	1	Harness, LDU		
7	843942	1	• Socket, 12V Accessory Plug	Not used on Battery Mowers	
8	N/S	2	• • Screw		
9	4131299	1	• Fuse Holder		
10	836892	1	• Fuse, 10 Amp		
11	4128888	1	Key Switch		
	4131618	1	• Key		
12	N/S	1	• Mounting Nut		
13	4192480	1	Washer, 7/8"		
14	4150539	1	Horn		
15	N/S	1	• Ring Nut		
16	1004290	1	Joystick, 1 Axis		
17	4189841	8	Flat Washer, 4 mm	Stainless Steel	
18	450408	4	Lockwasher, 4 mm		
19	450321	4	Nut, M4-0.7 Hex		
20	4189840	4	Screw, M4-0.7 x 20 mm Pan Head	Stainless Steel	
21	4174684	1	Switch, Mow		
22	4130133	1	Rocker Switch, Momentary	Horn	
23	4130132	4	Rocker Switch	Lights, Reel Enable Switches	
24	4166684	1	LDU Controller	OLM Controller Units	
24	4263000	1	LDU Controller	BRC Controller Units	
25	4188840	1	Visor, Armrest		
26	409952	4	Screw, M4 x 13 mm Thread Cutting	Stainless Steel	
27	4168564	1	Hinge, Armrest		
28	4201880	4	Screw, #6-32 x 1/2" Flat Head		
29	444304	4	Nut, #6-32 Hex		
30	4168562	1	Door, Armrest		
31	4201867	4	Screw, #6-32 x 3/8" Thread Cutting	Stainless Steel	
32	4156925	1	Lanyard		
33	4201980	4	Screw, #4 x 1/2" Self Threading		
34	4168563	1	Set, Magnetic Catch		
35	4189842	4	Spacer		
36	4200540	2	Adhesive Mount, Cable Tie		
37	402006	1	Screw, #6-32 x 1/2" Slotted Head		
38	473142	2	Cable Tie		
>	39	4222040	1	Cover, 12V Accessory	Battery Mowers Only
	40	819165	1	Screw, #8-18 x 1/2" Thread Cutting	

> Change from previous revision

## 10.1 Brake Pedal



<b>Item</b>	<b>Part No.</b>	<b>Qty.</b>	<b>Description</b>	<b>Serial Numbers/Notes</b>
1	4222320	1	Plate, Left Side Brake	Includes Item 3
2	4222480	1	Plate, Right Side	Includes Item 3
3	521117	2	• Bushing, Bronze Flanged	
4	4165388	4	Spacer	
5	4165383	1	Brake Arm	
6	4165541	1	Switch Arm	
7	452396	4	Screw, M8-1.25 x 90 mm Hex Flange	
8	4164960	1	Sensor, Rotary Position	
9	450520	4	Screw, M4-0.7 x 20 mm Pan Head	
10	4208074	1	Switch, Brake	
11	4165666	1	Spring, Brake Return	
12	461387	2	Roll Pin, 1/4 x 1"	
13	64246-02	4	Nut, M8-1.25 Whizlock Flange	

> Change from previous revision

# ECLIPSE 322

## 11.1 Frame and Axles

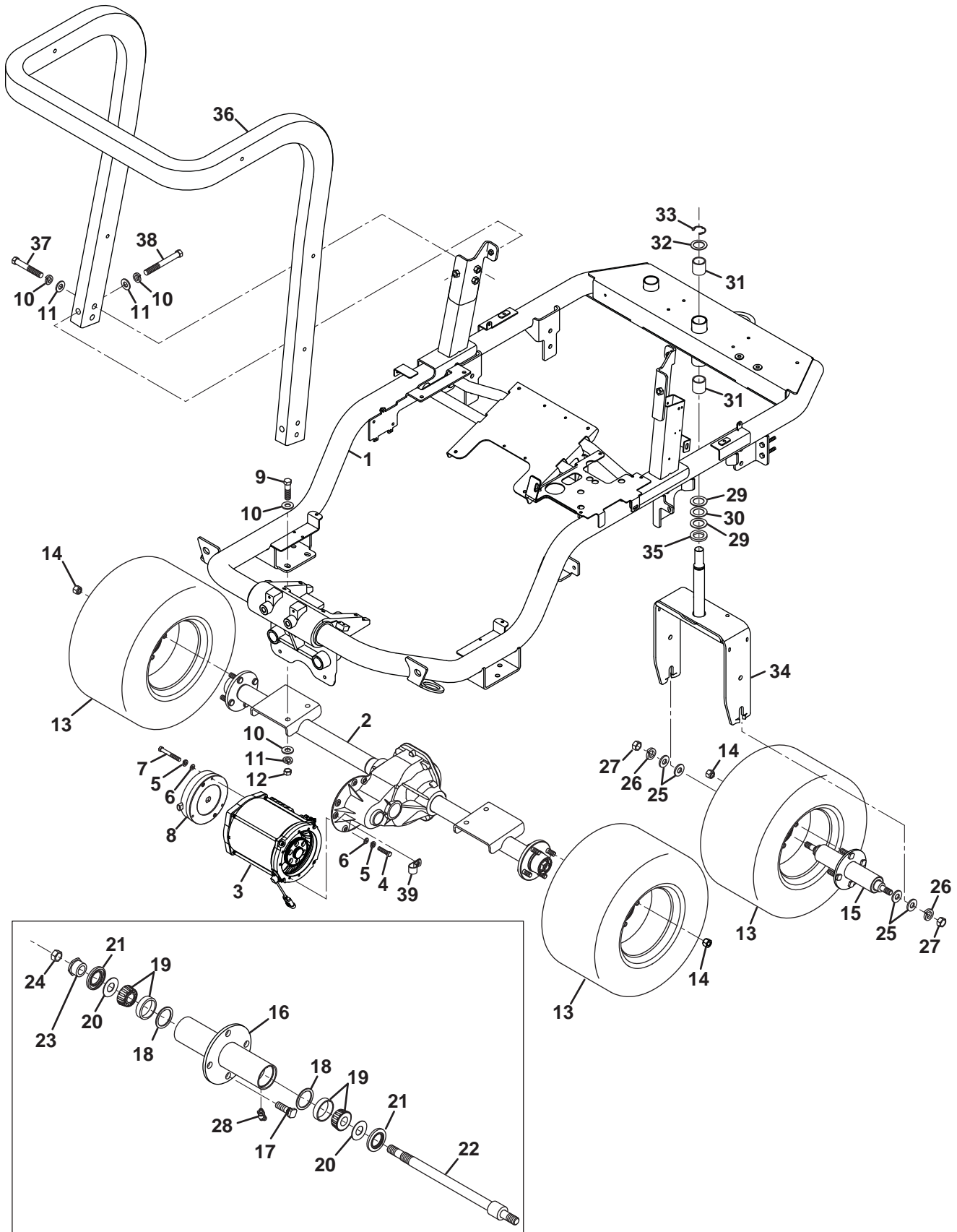
2WD Units

Serial No. 62801 - All

Serial No. 62803 - All

Serial No. 62805 - All

Serial No. 62825 - All



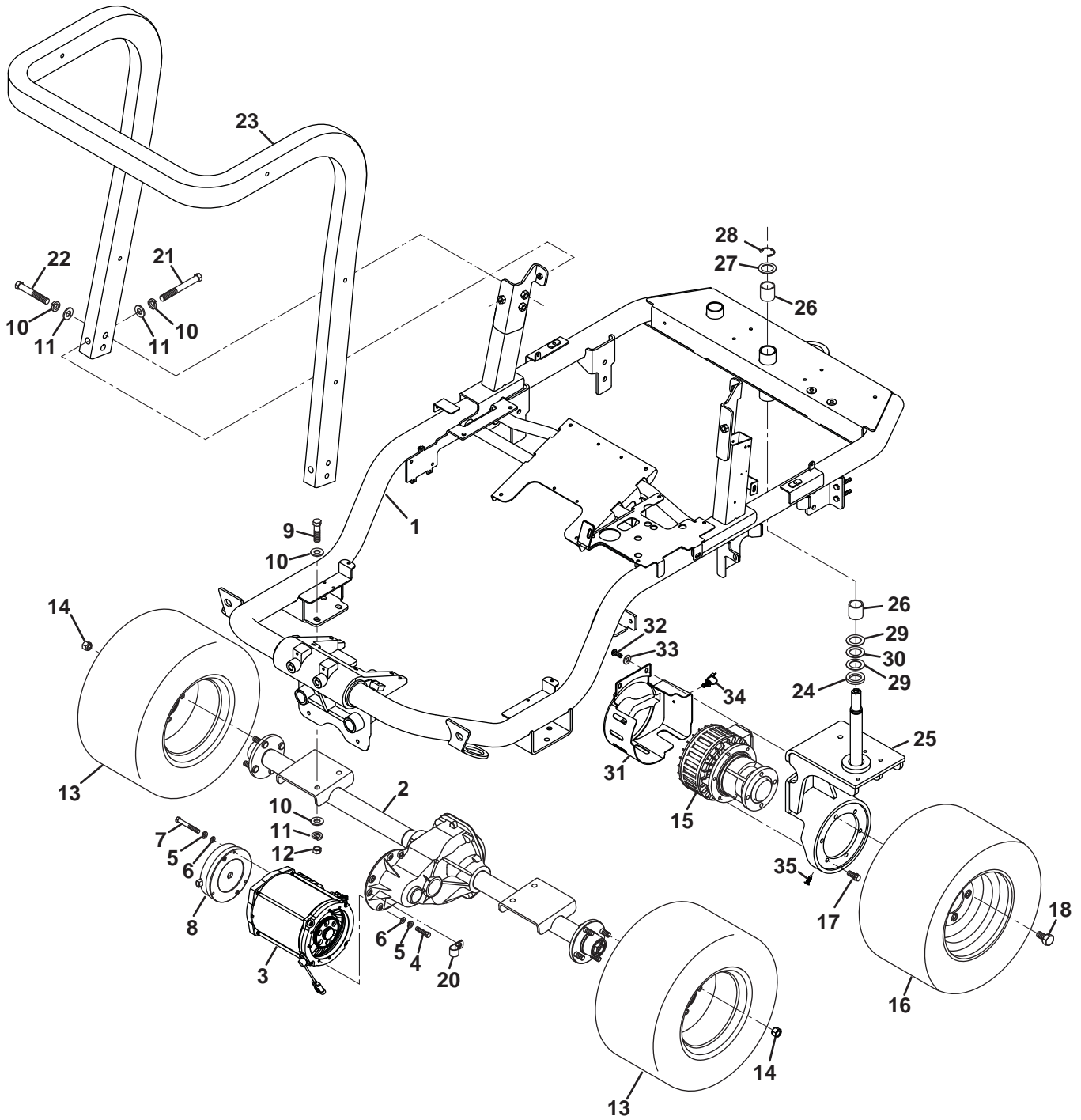
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	N/S	1	Frame	
2	4165582	1	Front Axle	See 50.1
3	4166593	1	Motor, 48V AC Electric	S/N 1651 ~ 2999 for all models
3	4274971	1	Motor, 48V AC Electric	S/N 3000 and Up for all models
	4215020	1	• Sensor Bearing	
4	450001	6	Screw, M6-1 x 30 mm Hex Head	
5	450410	9	Lockwasher, M6	
6	450399	9	Flat Washer, M6	
7	452383	3	Screw, M6-1 x 60 mm Hex Flange	
8	4166594	1	Brake, Electric Motor	
9	450048	4	Screw, M12-1.75 x 40 mm Hex Head	
10	450402	14	Flat Washer, M12	
11	450424	10	Lockwasher, M12	
12	450326	6	Nut, M12-1.75 Hex	
13	N/S	3	Wheel and Tire Assembly	
	360111	1	• Valve, Inflation	
	4208021	1	• Wheel Rim, 8 x 8.5	
	4208022	1	• Tire, 18 x 10.5 - 8 4 Ply	
14	800909	12	Lug Nut, M12-1.5 Hex	
15	N/S	1	Rear Axle Assembly	
16	4167041	1	• Axle Tube	Includes Cup portion of Item 19
17	4167039	4	• • Wheel Bolt, M12-1.5 x 38 mm	
18	809268	2	• • Ring, Bearing Backing	
19	500534	2	• Bearing Cup and Cone	
20	809229	2	• Flat Washer, M18	
21	836621	2	• Seal	
22	4167037	1	• Axle Shaft	
23	4167035	1	• Nut, Bearing Adjuster	
24	452526	1	• Nut, M18-1.5 Hex	
25	809156	4	• Flat Washer, M16	
26	450425	2	• Lockwasher, M16	
27	800886	2	• Nut, M16-1.5 Hex	
28	471227	1	• Grease Fitting, 1/4-28 45°	
29	361648	2	Thrust Washer	
30	4211340	1	Thrust Bushing	
31	4168103	2	Bushing, Polygon	
32	2500477	1	Bushing	
33	458466	1	External Retaining Ring	
34	4156489	1	Fork, Rear Axle	S/N's 1651 ~ 2499 for 2WD models
34	4262491	1	Fork, Rear Axle	S/N's 2500 and Up for 2WD models
35	367350	1	Washer, Thrust	
36	4168724	1	ROPS	
37	450055	4	Screw, M12-1.75 x 75 mm Hex Head	
38	450059	2	Screw, M12-1.75 x 100 mm Hex Head	
> 39	366424	1	Clamp, 1/2"	
40	450154	2	Screw, M5 x 30 mm	Not Shown, Brake Release Screws, Stored in manual pouch on seat.

> Change from previous revision

# ECLIPSE 322

## 12.1 Frame and Axles 3WD Units

Serial No. 62800 - All  
Serial No. 62802 - All  
Serial No. 62804 - All  
Serial No. 62826 - All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	N/S	1	Frame	
2	4165582	1	Front Axle	See 50.1
3	4166593	1	Motor, 48V AC Electric	S/N 1651 ~ 2999 for all models
3	4274971	1	Motor, 48V AC Electric	S/N 3000 and Up for all models
	4215020	1	• Sensor Bearing	
4	450001	6	Screw, M6-1 x 30 mm Hex Head	
5	450410	9	Lockwasher, M6	
6	450399	9	Flat Washer, M6	
7	452383	3	Screw, M6-1 x 60 mm Hex Flange	
8	4166594	1	Brake, Electric Motor	
9	450048	4	Screw, M12-1.75 x 40 mm Hex Head	
10	450402	14	Flat Washer, M12	
11	450424	10	Lockwasher, M12	
12	450326	6	Nut, M12-1.75 Hex	
13	N/S	2	Front Wheel and Tire Assembly	
	360111	1	• Valve, Inflation	
	4208021	1	• Wheel Rim, 8 x 8.5	
	4208022	1	• Tire, 18 x 10.5 - 8 4 Ply	
14	800909	8	Lug Nut, M12-1.5 Hex	
15	4258090	1	Motor, 3WD	
16	N/S	1	Rear Wheel and Tire Assembly	
	4163860	1	• Tire, 10 x 10.5 - 10 4 Ply Smooth	
	4247411	1	• Rim, 10" x 7"	
	360111	1	• Inflation Valve	
17	452399	6	Screw, M10-1.5 x 25 mm Hex Flange	
18	353914	4	Wheel Bolt, 1/2-20 x 3/4	
19	450154	2	Screw, M5 x 30 mm	Not Shown, Brake Release Screws, Stored in manual pouch on seat.
20	366424	1	Clamp, 1/2"	
21	450059	2	Screw, M12-1.75 x 100 mm Hex Head	
22	450055	4	Screw, M12-1.75 x 75 mm Hex Head	
23	4168724	1	ROPS	
24	367350	1	Washer, Thrust	
25	4231280	1	Fork, Rear Axle	
26	4168103	2	Bushing, Polygon	
27	2500477	1	Bushing	
28	458466	1	External Retaining Ring	
29	361648	2	Thrust Washer	
30	4211340	1	Thrust Bushing	
31	4260414	1	Cover, Wheel Motor	
32	4261990	2	Screw, 3/8-16 x 1" Button Head	
33	453011	2	Flat Washer, 3/8	
34	4167640	1	Cable Tie, Fir Tree	
35	4222500	1	Plug, Fir-Tree	

> Change from previous revision

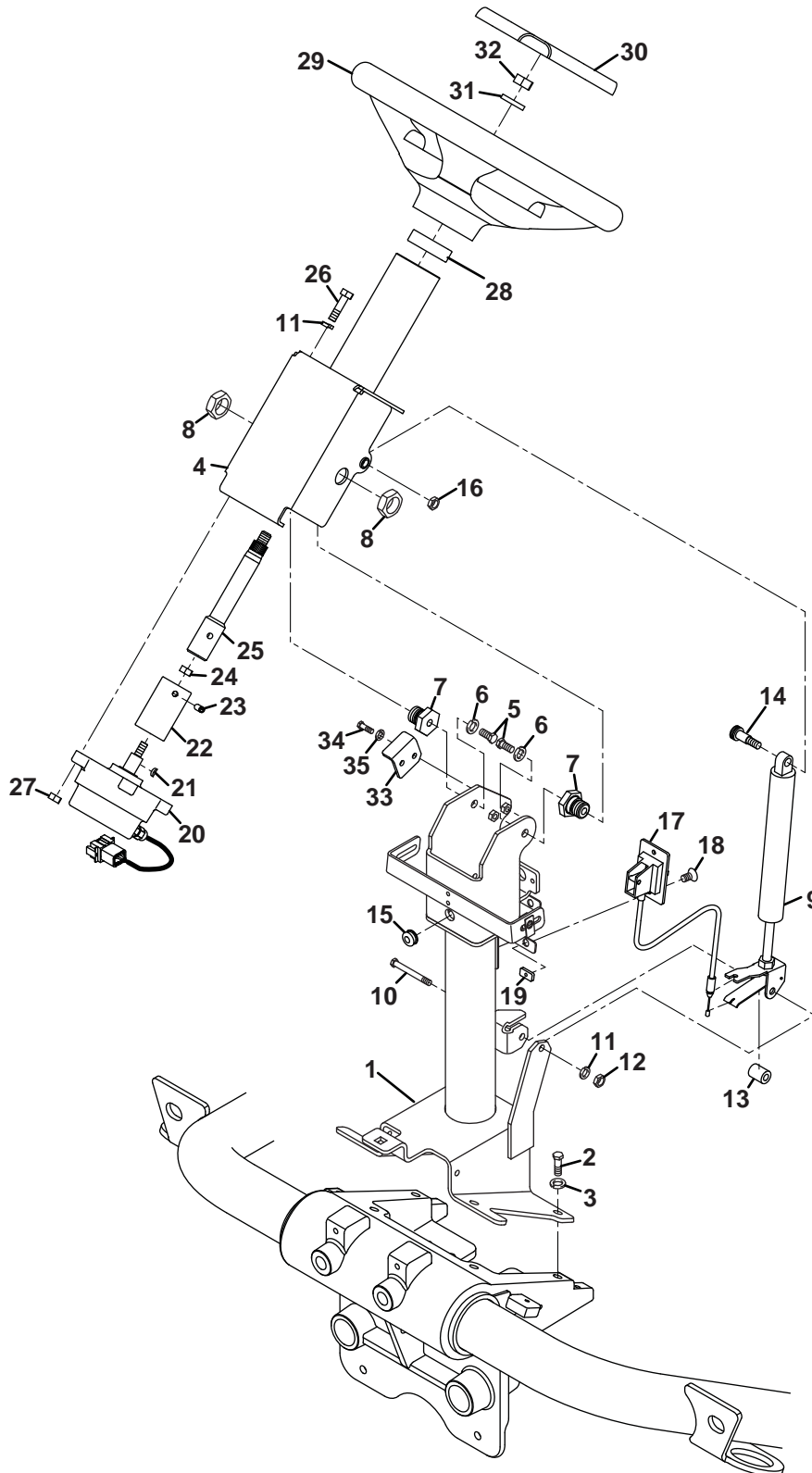
# ECLIPSE 322

## 13.1 Steering Column

Serial No. 62801 - 1601 ~ 1875

Serial No. 62803 - 1601 ~ 1895

Serial No. 62805 - 1601 ~ 2207





Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4165134	1	Steering Column	
2	450214	4	Screw, M10-1.5 x 25 mm Hex Head	
3	450412	4	Lockwasher, M10	
4	4165952	1	Upper Steering Column	
5	400258	2	Screw, 3/8-16 x 3/4" Hex Head	
6	446142	2	Lockwasher, 3/8 Heavy	
7	3005934	2	Shoulder Bolt, 3/4-10	
8	444849	2	Locknut, 3/4-10 Hex Center	
9	4186560	1	Actuator, Gas Spring	
10	450197	1	Screw, M8-1.25 x 50 mm Hex Head	
11	450411	5	Lockwasher, M8	
12	450324	1	Nut, M8-1.25 Hex	
13	4189046	1	Spacer	
14	4188086	1	Shoulder Bolt, M8-1.25	
> 15	809203	1	Grommet	
16	450377	1	Nut, M6-1 Nylock	
17	5002919	1	Cable, Actuator	
18	450592	2	Screw, M4-0.7 x 4 mm Flat Head	
19	4177043	2	Nut, M4-0.7 Rectangular	
20	4146530	1	LORD Steering Unit	
21	4173500	1	Key, Woodruff	
22	4198461	1	Collar, Steering Shaft	
23	461408	1	Roll Pin, 1/4 x 1-1/2"	
24	450378	1	Nut, M8-1.25 Nylock	
25	4198460	1	Shaft, Steering	
26	450014	4	Screw, M8-1.25 x 30 mm Hex Head	
27	450378	4	Nut, M8-1.25 Hex Lock	
28	4171880	1	Ball Bearing	
29	2811364	1	Steering Wheel	
30	2811365	1	• Cover, Steering Wheel	
31	450402	1	Flat Washer, M12	
32	450326	1	Nut, M12-1.75 Hex	
33	4181060	1	Stop, Tilt Steering	
34	450169	2	Screw, M6-1 x 14 mm Hex Head	
35	450410	2	Lockwasher, M6	

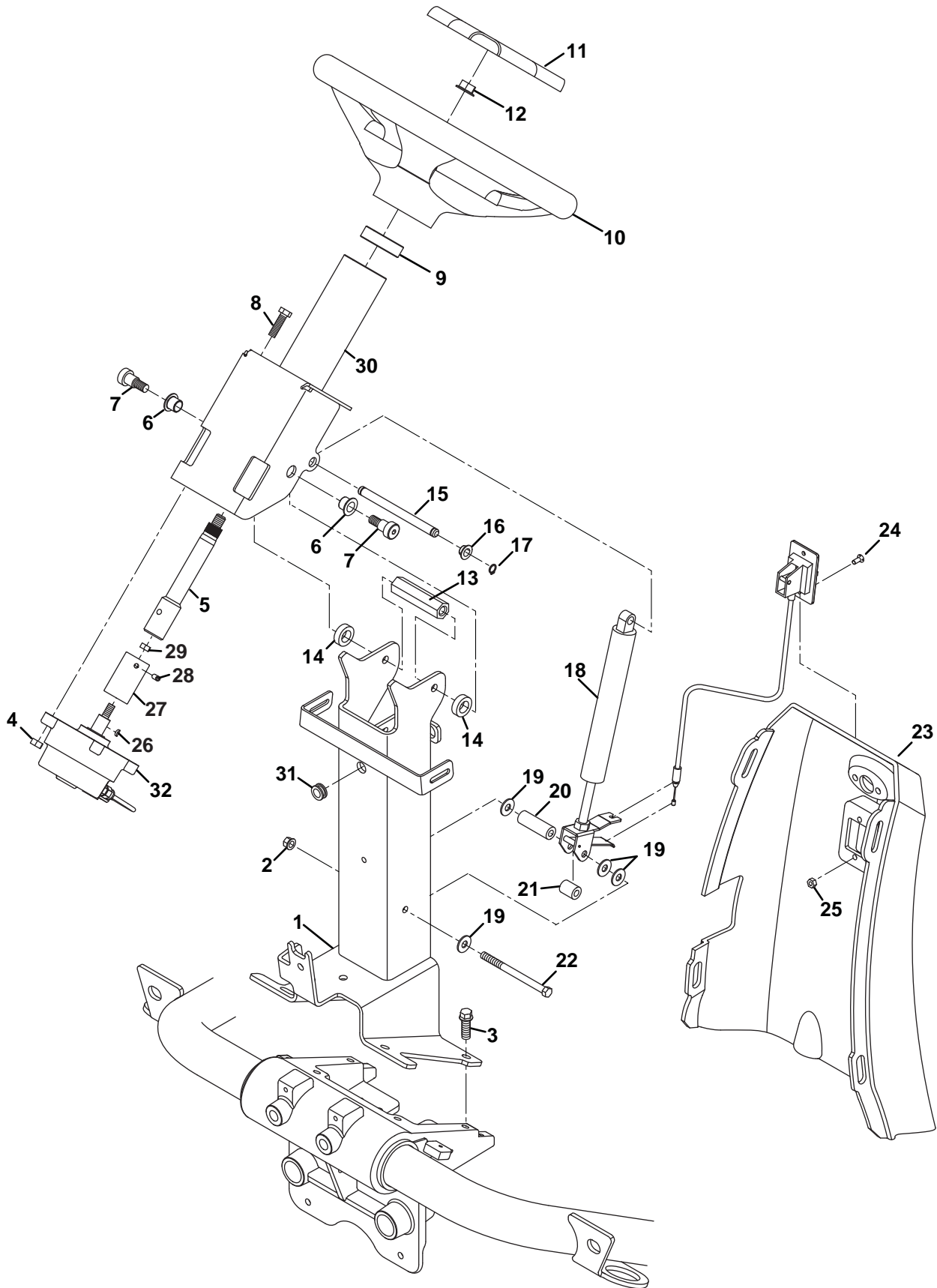
> Change from previous revision

# ECLIPSE 322

## 13.2 Steering Column

Serial No. 62800 - 1601 and Up  
Serial No. 62801 - 1876 and Up  
Serial No. 62802 - 1601 and Up  
Serial No. 82803 - 1896 and Up

Serial No. 62804 - 1601 and Up  
Serial No. 62805 - 2208 and Up  
Serial No. 62825 - 1601 and Up  
Serial No. 62826 - 1601 and Up



Item	Part No.	Qty.	Description	Serial Numbers/Notes	
	1	4234140	1	Steering Column	
>	2	450453	1	Nut, M8-1.25 Hex Flange	
>	3	452399	4	Screw, M10-1.5 x 25 Hex Flange	
>	4	450378	4	Nut, M8-1.25 Hex Nyloc	
>	5	4198460	1	Shaft, Steering	
>	6	4255270	2	Flange, Bearing	
>	7	365033	2	Bolt, 3/8-16 Shoulder	
>	8	450014	4	Screw, M8-1.25 x 30 Hex Head	
>	9	4171880	1	Ball Bearing	
>	10	2811364	1	Steering Wheel	
>	11	2811365	1	• Cover, Steering Wheel	
>	12	450455	1	Nut, M12-1.75 Hex Flange	
>	13	4247313	1	Spacer, Steering	
>	14	4247312	2	Spacer, Steering Column	
>	15	4254630	1	Pin	
>	16	4254650	2	Bearing	
>	17	548357	2	Retaining Ring	
>	18	4186561	1	Actuator, Tilt Steering	
>	19	450400	4	Washer, M8 Flat	
>	20	4247350	1	Spacer, Steering Lower Actuator	
>	21	4189046	1	Spacer	
>	22	450027	1	Screw, M8-1.25 x 100 mm Hex Head	
>	23	4212440	1	Rear Cover	
>	24	416911	2	Screw, #10-24 x 1/2" Thread Cutting	
>	25	444782	2	Locknut, #10-24 Hex Center	
	26	4173500	1	Key, Woodruff	
	27	4198461	1	Collar, Steering Shaft	
	28	461408	1	Roll Pin, 1/4 x 1-1/2"	
	29	450378	1	Nut, M8-1.25 Nylock	
	30	4247291	1	Upper Steering Column	
	31	809203	1	Grommet	
	32	4146530	1	Steering Unit	

> Change from previous revision

# ECLIPSE 322

## 14.1 Rear Steering

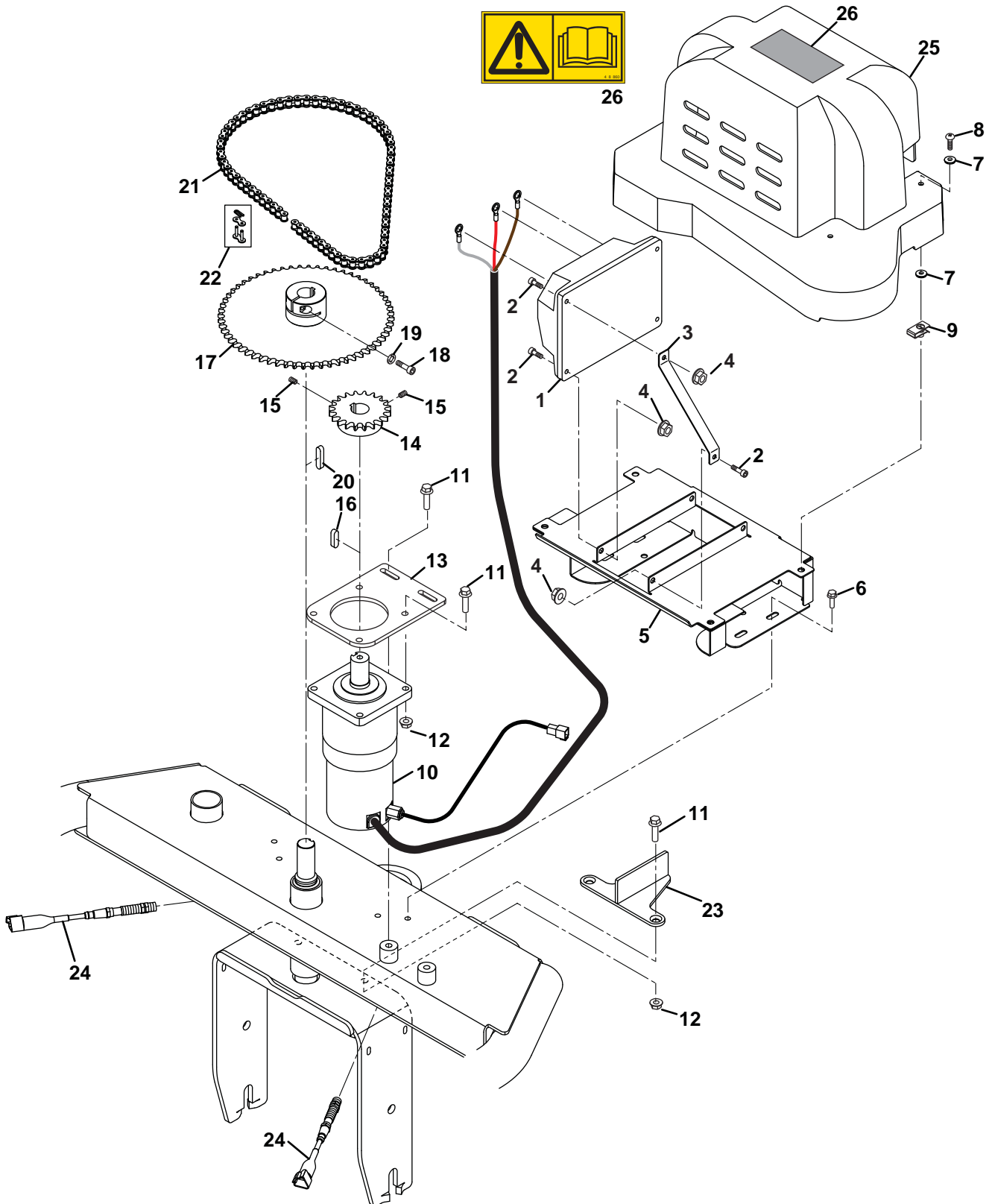
### Proximity Sensors

Serial No. 62801 - 1601 ~ 2499

Serial No. 62803 - 1601 ~ 2499

Serial No. 62805 - 1601 ~ 2499

Serial No. 62825 - 1601 ~ 2499



Item	Part No.	Qty.	Description	Serial Numbers/Notes	
	1	4233000	1	Power Steering Controller RoHS	
	2	450712	6	Screw, M6-1 x 20 mm Hex Socket	
	3	4187420	2	Brace, Steering Controller	
>	4	452418	6	Nut, M6-1 Hex Flange	
>	5	4237882	1	Controller Bracket	
>	6	452378	4	Bolt, M6-1 x 20 mm Hex Flange	
>	7	4194845	8	Washer, M6 Sealing	
>	8	64205-081	4	Screw, M6 x 25 mm Hex Head	Stainless Steel
>	9	4168402	4	Nut, M6 Speed	
>	10	4140026	1	Motor, Power Steering	
>	11	452390	8	Bolt, M8	
>	12	450453	6	Nut, M8 1.25 Verbus Ripp	
>	13	4247292	1	Steering Motor Mount	
>	14	4167261	1	Sprocket, 20 Tooth, #40 Chain	
>	15	NS	2	• Set Screw, M8-1.25	
>	16	452191	1	Key, 8 x 7 x 28 mm Rounded Ends	
>	17	4194181	1	Sprocket, 60 Tooth, #40 Chain	
>	18	434036	1	Screw, 5/16-18 x 1-1/4" Hex Socket	
>	19	548183	1	Lockwasher, 5/16	
>	20	523185	1	Key, 1/4 x 1/4 x 1-1/2" Rounded Ends	
>	21	4166403	1	Chain, #40, 81 Pitches	
>	22	876431	1	• Connecting Link	
>	23	4247293	1	Power Steering Stop	
>	24	4196920	2	Switch, Proximity	
>	25	4227020	1	Cover, Rear Controller	
>	26	4181860	1	• Decal, Read Manual	

> Change from previous revision

# ECLIPSE 322

## 14.2 Rear Steering

### Steering Yoke Sensor

Serial No. 62800 - 1601 and Up

Serial No. 62801 - 2500 and Up

Serial No. 62802 - 1660 and Up

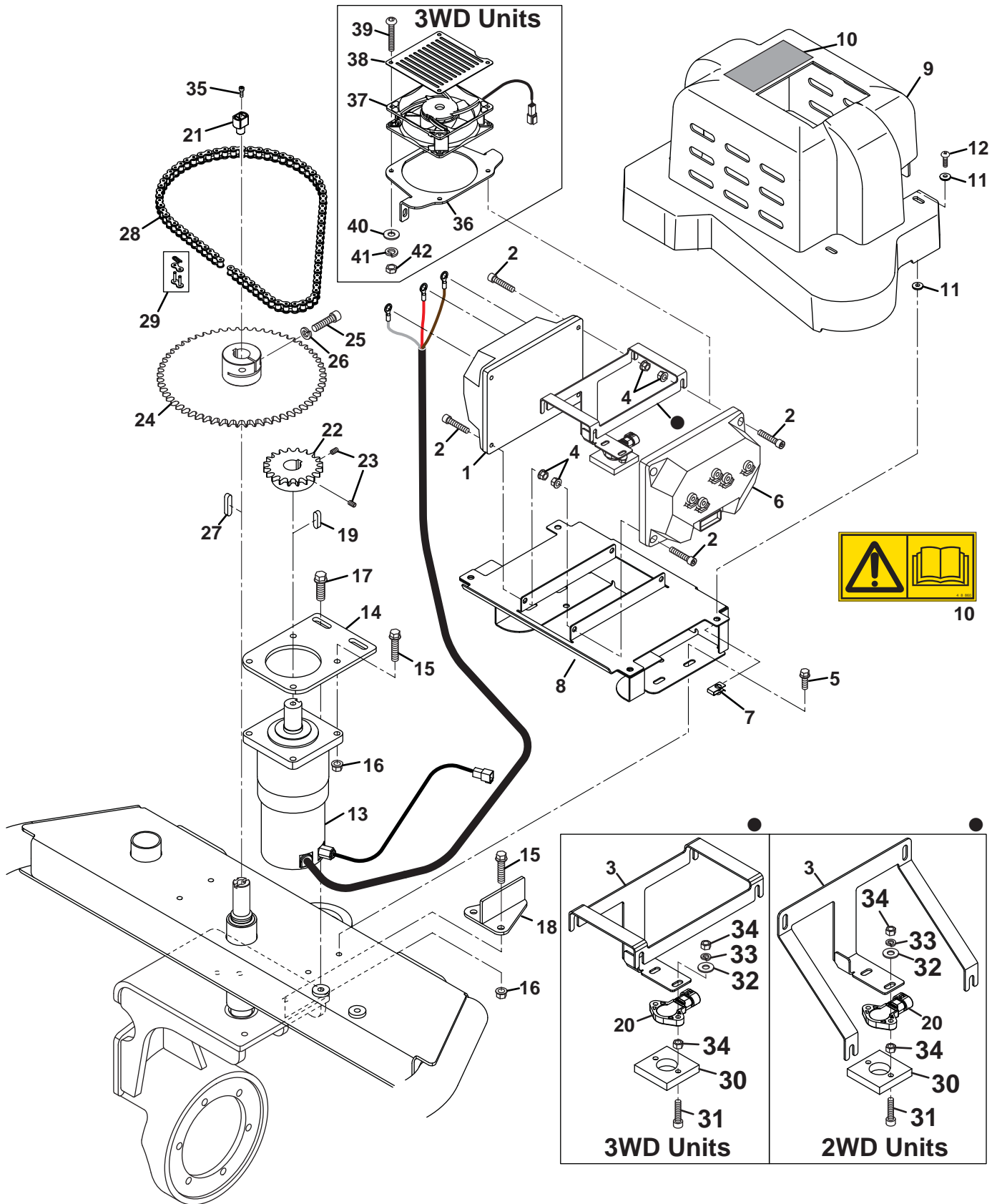
Serial No. 62803 - 2500 and Up

Serial No. 62804 - 1659 and Up

Serial No. 62805 - 2500 and Up

Serial No. 62825 - 2500 and Up

Serial No. 62826 - 1663 and Up



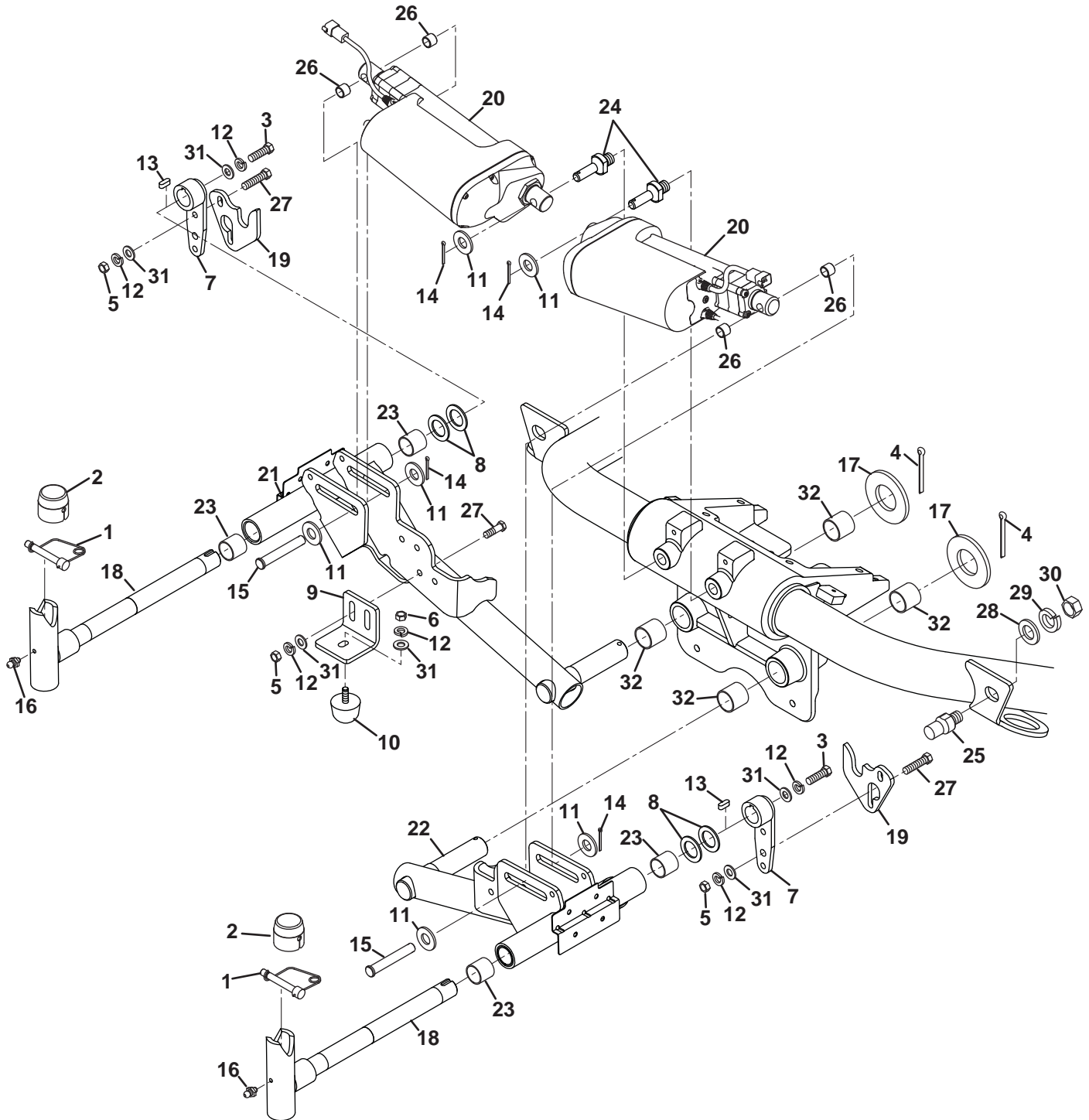
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4262750	1	Power Steering Controller RoHS	
2	450712	6	Screw, M6-1 x 20 mm Hex Socket	2WD Units
2	450712	7	Screw, M6-1 x 20 mm Hex Socket	3WD Units
3	4262530	1	Brace, Controller	2WD Units
3	4255671	1	Brace, Controller	3WD Units
4	64246-01	6	Nut, M6-1 Hex Flange	2WD Units
4	64246-01	8	Nut, M6-1 Hex Flange	3WD Units
5	452378	4	Screw, M6-1 x 20 mm Hex Flange	
6	4233561	1	Controller, 3WD Traction	3WD Units Only
7	4168402	4	Nut, M6-1 Speed	
8	4237882	1	Controller Bracket	
9	4222680	1	Cover, Rear Controller	2WD Units
9	4273890	1	Cover, Rear Controller	3WD Units
10	4181860	1	• Decal, Read Manual	
11	4194845	8	• Washer, M6 Sealing	
12	64205-081	4	• Screw, M6 x 25 mm Hex Head	Stainless Steel
13	4140026	1	Motor, Power Steering	
14	4247292	1	Steering Motor Mount	
15	452390	6	Screw, M8-1.25 x 30 mm Hex Flange	
16	450453	6	Nut, M8-1.25 Hex	
17	452399	2	Screw, M10-1.5 x 25 mm Hex Flange	
18	4255670	1	Power Steering Stop	
19	452191	1	Key, 8 x 7 x 28 mm Rounded Ends	
20	4233560	1	Sensor, Steering Yoke	Non-Contact Sensor
21	N/S	1	• Actuator, Magnetic	
22	4167261	1	Sprocket, 20 Tooth, #40 Chain	
23	NS	2	• Set Screw, M8-1.25	
24	4194181	1	Sprocket, 60 Tooth, #40 Chain	
25	434036	1	Screw, 5/16-18 x 1-1/4" Hex Socket	
26	548183	1	Lockwasher, 5/16	
27	523185	1	Key, 1/4 x 1/4 x 1-1/2" Rounded Ends	
28	4166403	1	Chain, #40, 81 Pitches	
29	876431	1	• Connecting Link	
30	4236642	1	Mount, Sensor	
31	450699	2	Screw, M5-0.8 x 25 mm Hex Socket	
32	450388	2	Flat Washer, M5	
33	450409	2	Lockwasher, M5	
34	450322	4	Nut, M5-0.8 Hex	
35	450687	1	Screw, M4-0.7 x 12 mm Hex Socket	
36	4192680	1	Bracket, Fan Mount	3WD Units Only
37	4193360	1	Fan, Controller	3WD Units Only
38	4273910	1	Screen, Fan	3WD Units Only
39	4200800	4	Screw, M4-0.7 x 48 mm Hex Socket	3WD Units Only
40	450387	4	Flat Washer, M4	3WD Units Only
41	450408	4	Lockwasher, M4	3WD Units Only
42	450321	4	Nut, M4-0.7 Hex	3WD Units Only

> Change from previous revision

# ECLIPSE 322

Serial No. All

## 15.1 Front Lift Arms





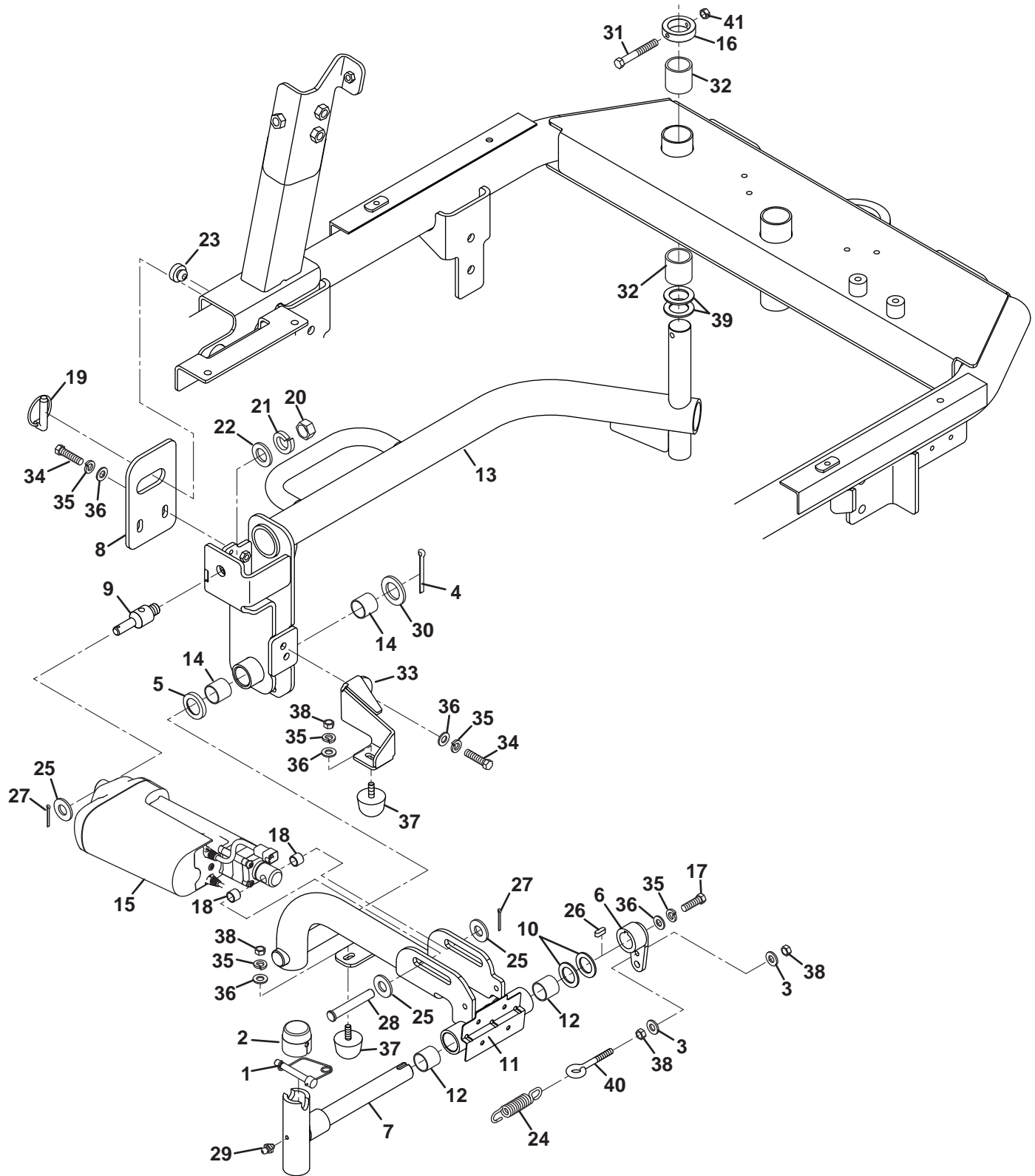
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	3007798	2	Pin, Lock	
2	3008432	2	Cap, Swivel Housing	
3	450192	2	Screw, M8-1.25 x 25 mm Hex Head	
4	316930	2	Cotter Pin, 3/16 x 1-3/4"	
5	362539	8	Nut, M8-1.25 Hex	
6	443106	2	Nut, 5/16-18 Hex	
7	4150899	2	Link Arm	
8	345699	AR	Washer, Shim	
9	4194642	2	Bracket, Stop	
10	523126	2	Bumper, Rubber	
11	450402	6	Flat Washer, M12	
12	450411	12	Lockwasher, M8	
13	4205040	2	Key	
14	460026	4	Cotter Pin, 1/8 x 3/4"	
15	461478	2	Clevis Pin, 1/2 x 3-5/32	
16	471216	2	Grease Fitting, 1/4-28	
17	453030	2	Flat Washer, 1-1/8"	
18	4163845	2	Pivot, Front Reel Steering	
19	4165142	2	Bracket, Stop	
20	4165944	2	Lift Actuator	
	4224660	2	• Harness, 6 Pin Connector	S/N's 1651 ~ 2499 for 2WD models
	4224680	1	• Harness, 2 Pin Connector	Not Used on 3WD models
21	4200981	1	Right Front Lift Arm	S/N 1651 ~ 2999 for all models
21	4271532	1	Right Front Lift Arm	S/N 3000 and Up for all models
22	4200980	1	Left Front Lift Arm	S/N 1651 ~ 2999 for all models
22	4271533	1	Left Front Lift Arm	S/N 3000 and Up for all models
23	4168102	2	• Bushing, Polygon	
24	4172644	2	Boss, Actuator Pivot	
25	4168146	2	Shaft, Upstop	
26	4168182	4	Spacer, Lift Arm	
27	450014	8	Screw, M8-1.25 x 30 mm Hex Head	
28	450393	2	Flat Washer, M16	
29	450425	2	Lockwasher, M16	
30	450334	2	Nut, M16-2 Hex	
31	450390	12	Flat Washer, M8	
32	4201960	4	Bushing	

> Change from previous revision

# ECLIPSE 322

Serial No. All

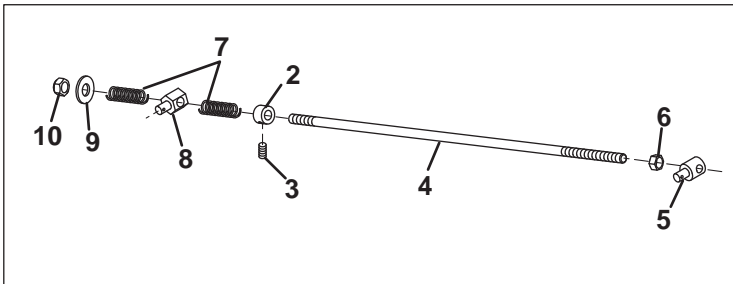
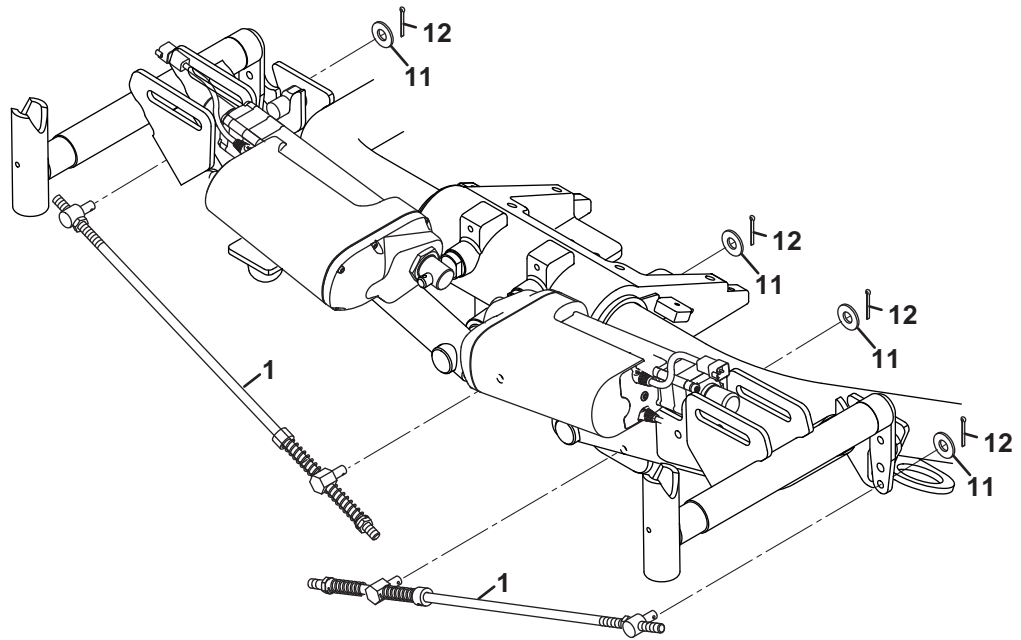
## 16.1 Center Lift Arms



Item	Part No.	Qty.	Description	Serial Numbers/Notes	
	1	3007798	1	Pin, Lock	S/N 1651 ~ 2999 for all models S/N 3000 and Up for all models
	2	3008432	1	Cap, Swivel Housing	
>	3	453009	2	Flat Washer, 5/16	
	4	316930	1	Cotter Pin, 3/16 x 1-3/4"	
	5	367349	1	Thrust Washer	
	6	4176103	1	Link Arm	
	7	4150902	1	Pivot, Center Reel Steering	
	8	4172642	1	Bracket, Locking Pin	
	9	4173240	1	Pin, Actuator Pivot	
	10	345699	AR	Washer, Shim	
	11	4156432	1	Center Lift Arm	
	11	4271531	1	Center Lift Arm	
	12	4168102	2	• Bushing, Polygon	
	13	4156439	1	Center Reel Swing Arm	
	14	4168102	2	• Bushing, Polygon	
	15	4165944	1	Lift Actuator	
		4224660	2	• Harness, 6 Pin Connector	S/N's 1651 ~ 2499 for 2WD models Not Used on 3WD models
		4224680	1	• Harness, 2 Pin Connector	
	16	4166981	1	Locking Collar	
	17	450192	1	Screw, M8-1.25 x 25 mm Hex Head	
	18	4168182	2	Spacer, Lift Arm	
	19	3004894	1	Pin, Klik Type	
	20	450334	1	Nut, M16-2 Hex	
	21	450425	1	Lockwasher, M16	
	22	450393	1	Flat Washer, M16	
	23	810149	1	Bumper, Side	
>	24	4216320	1	Spring	
>	25	450402	3	Flat Washer, M12	
	26	4205040	1	Key	
>	27	460026	2	Cotter Pin, 1/8 x 3/4"	
	28	461478	1	Clevis Pin, 1/2 x 3-5/32	
	29	471216	1	Grease Fitting, 1/4-28	
	30	548173	1	Flat Washer, 1"	
	31	400198	1	Screw, 5/16-18 x 2-1/4" Hex Head	
	32	4168103	2	Bushing, Polygon	
	33	4278131	1	Bracket, Center Stop	
	34	450014	4	Screw, M8-1.25 x 30 mm Hex Head	
	35	450411	7	Lockwasher, M8	
	36	450390	7	Flat Washer, M8	
	37	523126	2	Bumper, Rubber	
	38	443106	4	Nut, 5/16-18 Hex	
	39	2500477	2	Bushing	
	40	800850	1	Eye Bolt, 5/16-18 x 2-1/4"	
	41	444718	1	Locknut, 5/16-18 Hex Center	

> Change from previous revision

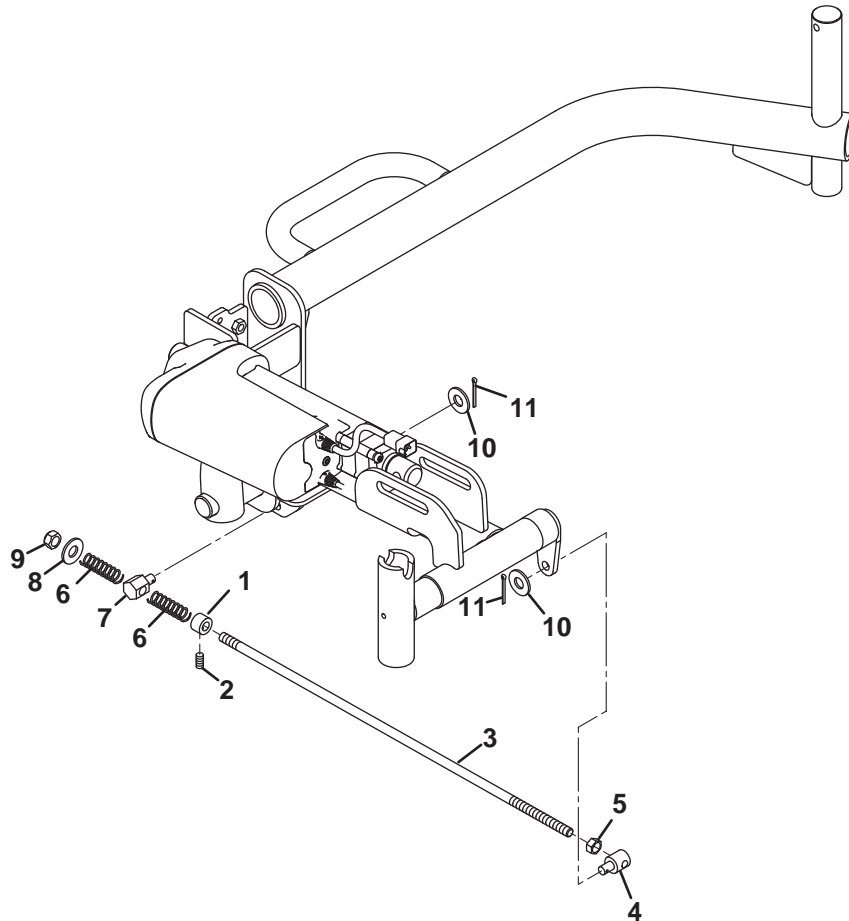
## 17.1 Front Reel Stabilizing Rods



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	N/S	2	Stabilizing Rod Assembly	
2	4150906	1	• Collar	
3	450959	1	• Set Screw, M6-1 x 8 mm	
4	4165125	1	• Rod	
5	4164785	1	• Pin, Connecting Rod	
6	450332	1	• Nut, M10-1.5 Hex	
7	814499	2	• Spring	
8	4174380	1	• Pin, Connecting	
9	450401	1	• Flat Washer, M10	
10	450379	1	• Nut, M10-1.5 Hex Nylock	
11	450401	4	Flat Washer, M10	
12	306328	4	Cotter Pin, 3/32 x 3/4"	

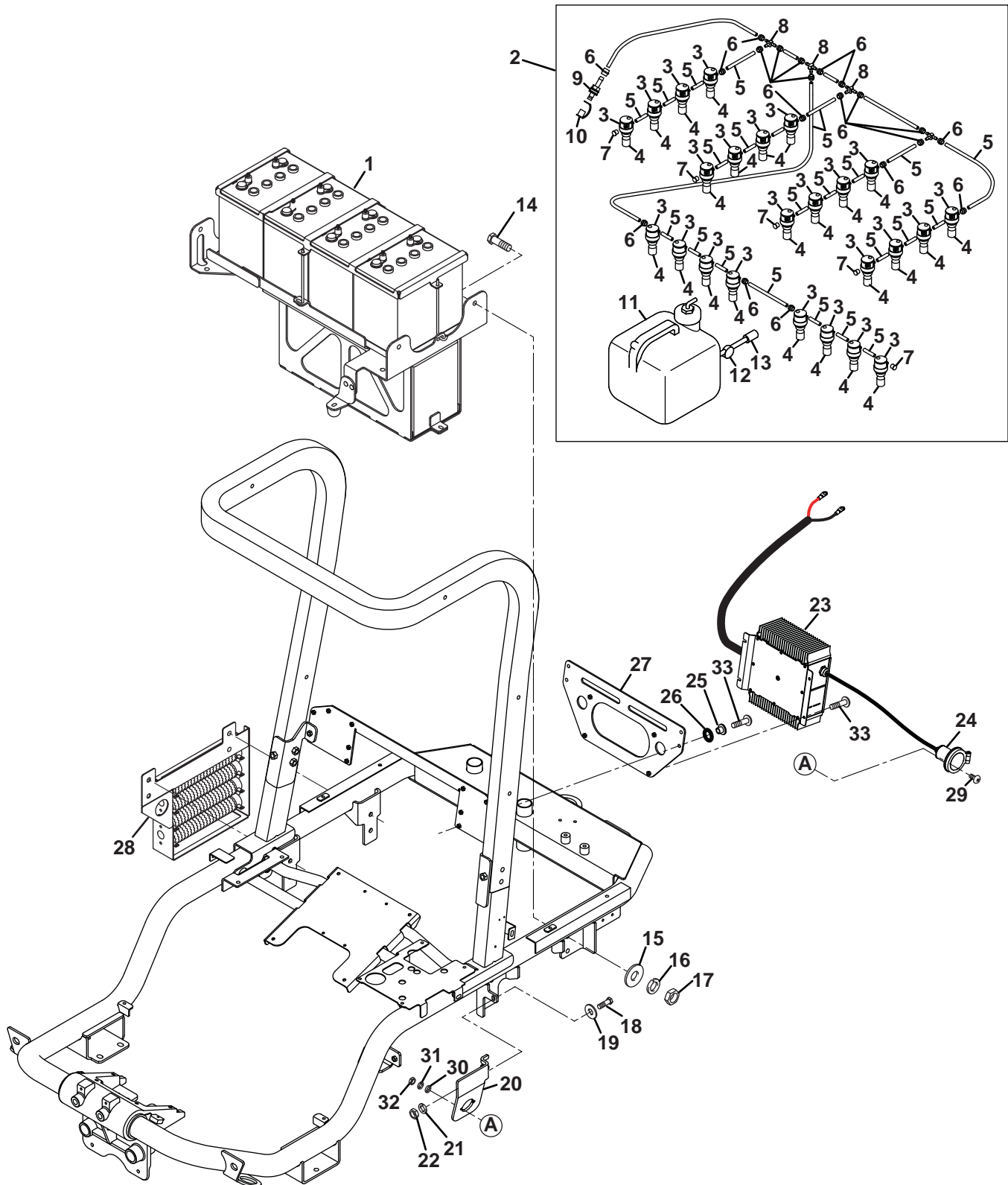
> Change from previous revision

**18.1 Center Reel Stabilizing Rod**



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4150906	1	Collar	
2	450959	1	Set Screw, M6-1 x 8 mm	
3	4165125	1	Rod	
4	4164785	1	Pin, Connecting Rod	
5	450332	1	Nut, M10-1.5 Hex	
6	814499	2	Spring	
7	4174380	1	Pin, Connecting	
8	450401	1	Flat Washer, M10	
9	450379	1	Nut, M10-1.5 Hex Nylock	
10	450401	2	Flat Washer, M10	
11	306328	2	Cotter Pin, 3/32 x 3/4"	

> Change from previous revision



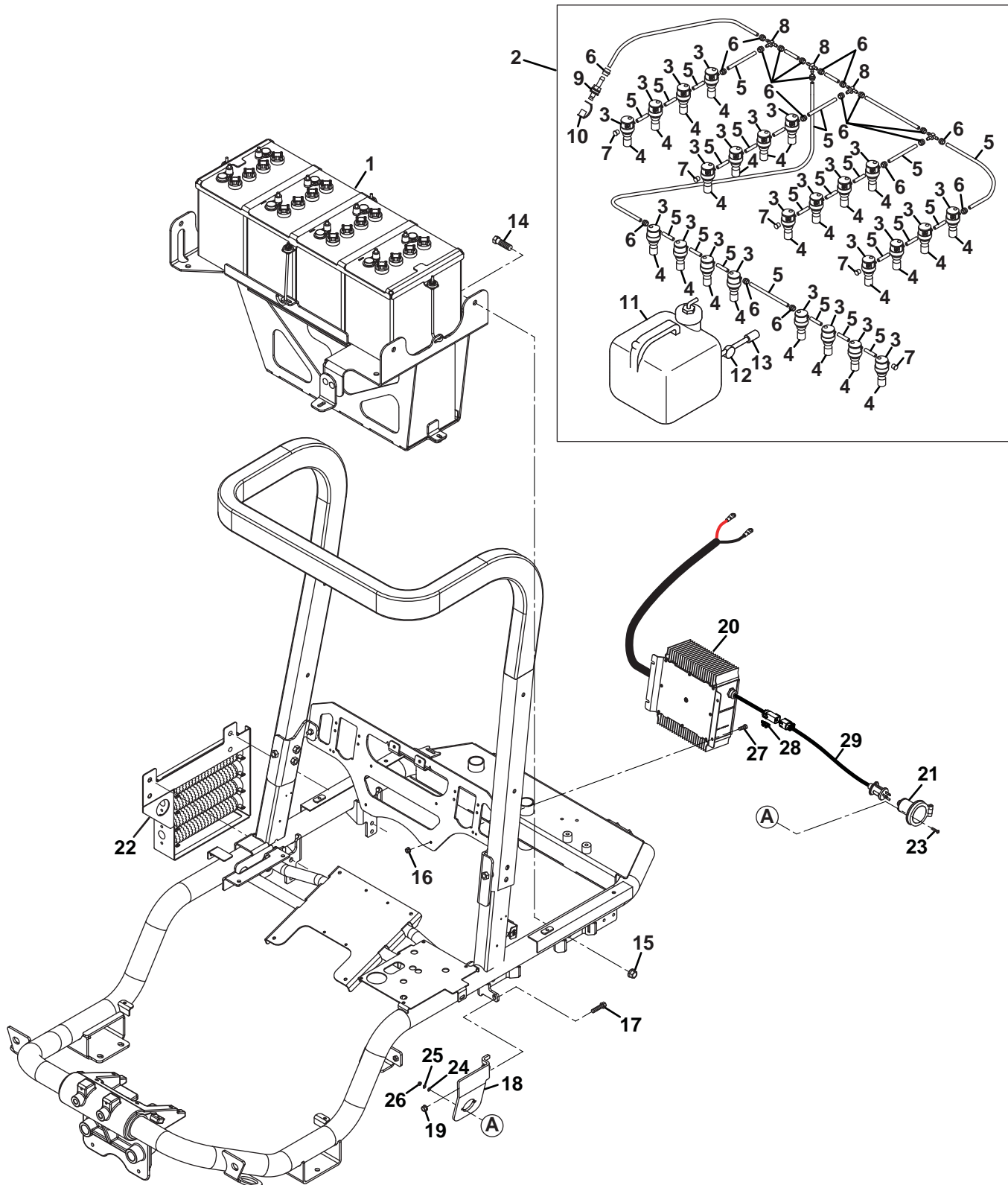
Item	Part No.	Qty.	Description	Serial Numbers/Notes	
1	N/S	1	Battery Tray	See 20.1	
2	4192042	1	Battery Filling System		
3	N/S	24	• Battery Filling System Plug		
4	N/S	24	• Float		
5	N/S	AR	• 6 mm Hose		
6	N/S	20	• Clamp, Hose		
7	N/S	5	• End Piece		
8	N/S	4	• T-Piece 6-6-6		
9	N/S	1	• Connection, Male		
10	N/S	1	• Dust Cap		
11	N/S	1	• Tank, 2-1/2 Gallon		9.5 liter
12	N/S	1	• Flow Indicator		
13	N/S	1	• Connection, Female		
14	450242	4	Screw, M12-1.75 x 35 mm Hex Head		
15	450402	4	Flat Washer, M12		
16	450424	4	Lockwasher, M12		
17	450333	4	Nut, M12-1.75 Hex		
18	450014	1	Screw, M8-1.25 x 30 mm Hex Head		
19	450400	1	Flat Washer, M8		
20	4207000	1	Bracket, Charger Connector		
21	450422	1	Lockwasher, M8		
22	450324	1	Nut, M8-1.25 Hex		
23	4203742	1	Battery Charger	See 20.1 for battery connections	
24	4206980	1	• Connector, Charger		
25	473210	4	Flange, 6 mm x 6 mm Body		
26	473211	4	Washer, 9 mm Neoprene Rubber		
27	4203820	1	Bracket, Battery Charger Mounting		
28	REF	1	Resistor Bank Assembly		See 34.1
29	450520	2	Screw, M4 x 20 mm Pan Head		
30	450408	2	Lockwasher, M4		
31	450387	2	Flat Washer, M4		
32	450321	2	Nut, M4 Hex		
33	64205-081	8	Screw, M6-1 x 25 mm Pan Head		

> Change from previous revision

# ECLIPSE 322

## 19.2 Battery Power Module

Serial No. 62800 - 1601 and Up  
Serial No. 62801 - 1869 and Up





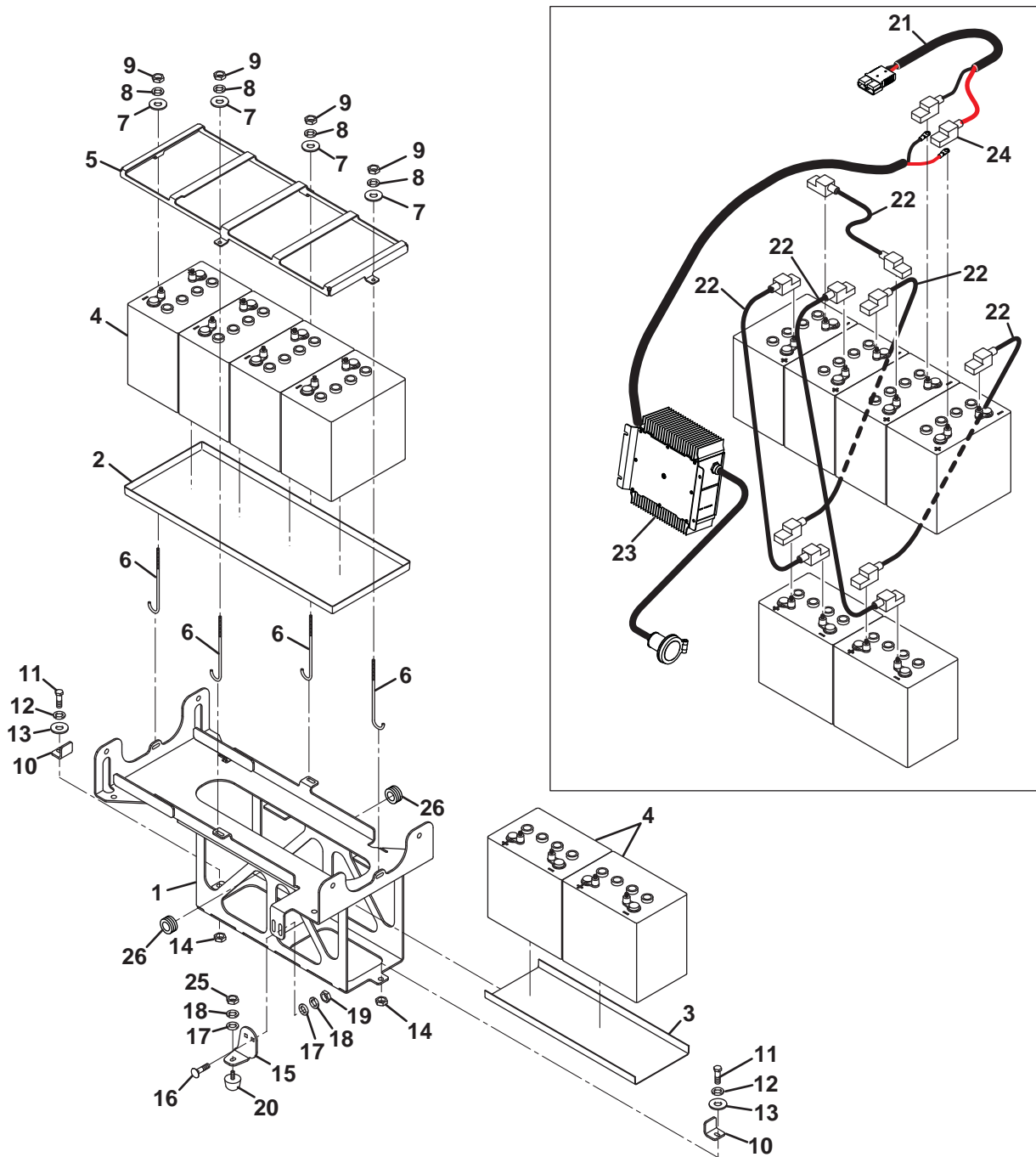
Item	Part No.	Qty.	Description	Serial Numbers/Notes	
1	N/S	1	Battery Tray	See 20.1	
2	4192042	1	Battery Filling System		
3	N/S	24	• Battery Filling System Plug		
4	N/S	24	• Float		
5	N/S	AR	• 6 mm Hose		
6	N/S	20	• Clamp, Hose		
7	N/S	5	• End Piece		
8	N/S	4	• T-Piece 6-6-6		
9	N/S	1	• Connection, Male		
10	N/S	1	• Dust Cap		
11	N/S	1	• Tank, 2-1/2 Gallon	9.5 liter	
12	N/S	1	• Flow Indicator		
13	N/S	1	• Connection, Female		
14	452411	4	Screw, M12 - 1.75 x 40 Hex Flange		
15	450455	4	Nut M12-1.75 Hex Flange		
16	452418	4	Nut, M6-1 Hex Flange		
17	452390	1	Screw, M8-1.25 x 30 mm Hex Flange		
18	4207000	1	Bracket, Charger Connector		
19	450453	1	Nut, M8-1.25 Hex Flange		
20	4236302	1	Battery Charger	See 20.1 for battery connections	
21	4229223	1	Connector, Charger		
22	REF	1	Resistor Bank Assembly	See 34.1	
23	450520	2	Screw, M4 x 20 mm Pan Head		
24	450408	2	Lockwasher, M4		
25	450387	2	Flat Washer, M4		
26	450321	2	Nut, M4 Hex		
27	450465	4	Screw, M6 x1 x16 mm Hex Flange		
>	28	4236622	1	Clip, Connector Mounting	
>	29	4236383	1	Cord, Charger	

> Change from previous revision

# ECLIPSE 322

Serial No. 62801 - 1601 ~ 1868

## 20.1 Battery Tray Battery Power Module



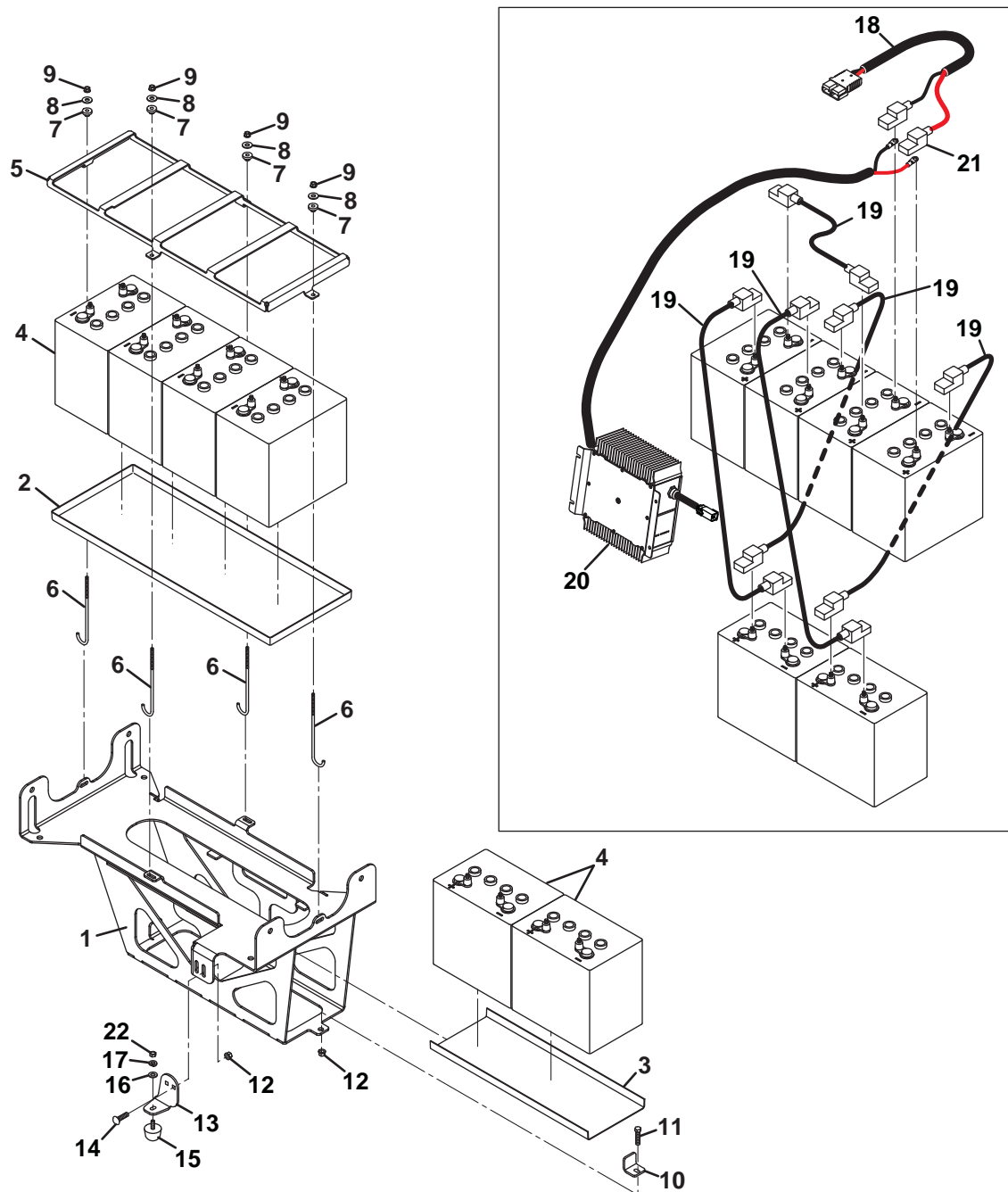
Item	Part No.	Qty.	Description	Serial Numbers/Notes	
1	4170240	1	Battery Tray	Obtain Locally	
2	4164956	1	Mat, Upper Tray		
3	4164957	1	Mat, Lower Tray		
4	N/S	6	Battery, Trojan T-890 8 Volt		
5	4164951	1	Carrier, Battery Hold Down		
6	4168640	4	J-Bolt, M6-1 x 200 mm		
7	450399	4	Flat Washer, M6		
8	450421	4	Lockwasher, M6		
9	450323	4	Nut, M6-1 Hex		
10	4164953	2	Bracket, Battery		
11	450193	2	Screw, M8-1.25 x 30 mm Hex Head		
12	450422	2	Lockwasher, M8		
13	450400	2	Flat Washer, M8		
14	450324	2	Nut, M8-1.25 Hex		
15	4186502	1	Bracket, Stop Bumper		
16	452748	2	Carriage Bolt, M8-1.25 x 25 mm		
17	450390	3	Flat Washer, M8		
18	450411	3	Lockwasher, M8		
19	362539	2	Nut, M8-1.25		
20	523126	1	Bumper		
21	4168038	1	Battery Cable Assembly		See 38.1 For PDU half of Cable
	840572	2	• Plug, 175 Amp Blue		
22	4212060	5	Cable, 29" 4 Gauge Black Battery		
23	4203742	1	Charger, Battery		
24	837462	12	Boot, Battery Terminal		
25	443106	1	Nut, 5/16-18 Hex		
26	4207480	2	Grommet	Cables routed through grommets	

> Change from previous revision

# ECLIPSE 322

## 20.2 Battery Tray Battery Power Module

Serial No. 62800 - 1601 and Up  
Serial No. 62801 - 1869 and Up



Item	Part No.	Qty.	Description	Serial Numbers/Notes	
1	4170240	1	Battery Tray	Obtain Locally	
2	4164956	1	Mat, Upper Tray		
3	4164957	1	Mat, Lower Tray		
4	N/S	6	Battery, Trojan T-890 8 Volt		
5	4164951	1	Carrier, Battery Hold Down		
6	4168640	4	J-Bolt, M6-1 x 200 mm		
>	7	361117	Bushing		
>	8	452004	Flat Washer, 1/4		
>	9	452418	Nut, M6-1 Hex Flange		
>	10	4164953	Bracket, Battery		
>	11	452390	Screw, M8-1.25 x30 mm Hex Flange		
>	12	450453	Nut, M8-1.25 Hex Flange		
>	13	4186502	Bracket, Stop Bumper		
>	14	452564	Carriage Bolt, M8-1.25 x 25 mm		
>	15	523126	Bumper		
>	16	450390	Flat Washer, M8		
>	17	450411	Lockwasher, M8		
>	18	4168038	Battery Cable Assembly		See 38.1 For PDU half of Cable
>		840572	• Plug, 175 Amp Blue		
>	19	4212060	5 Cable, 29" 4 Gauge Black Battery		
>	20	4236302	1 Charger, Battery		
>	21	837462	12 Boot, Battery Terminal		
>	22	443106	1 Nut, 5/16-18 Hex		

> Change from previous revision

# ECLIPSE 322

## 21.1 Hybrid Power Module Installation

### Gas and Diesel Power Modules

Serial No. 62802 - All

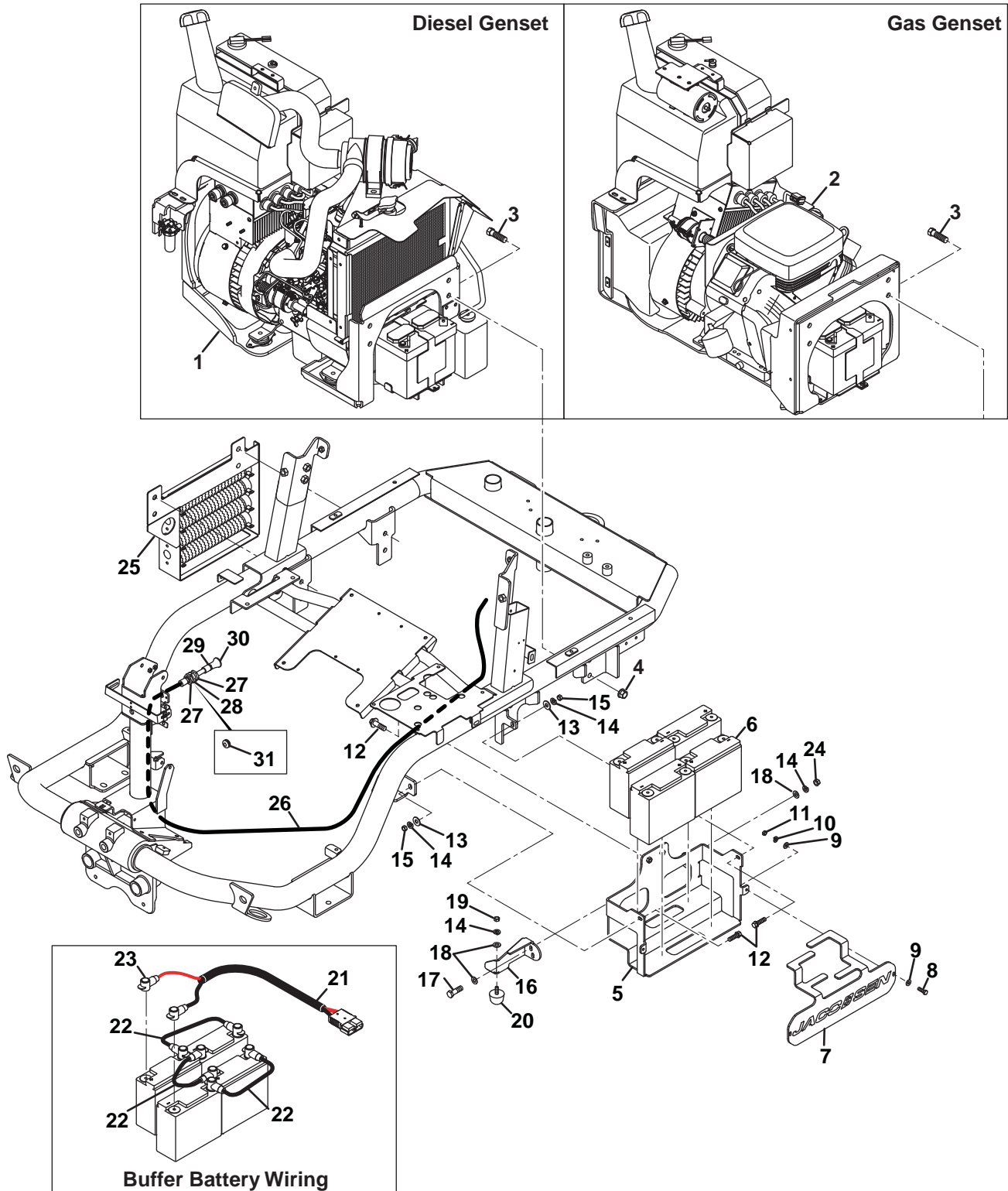
Serial No. 62803 - All

Serial No. 62804 - All

Serial No. 62805 - All

Serial No. 62825 - All

Serial No. 62826 - All



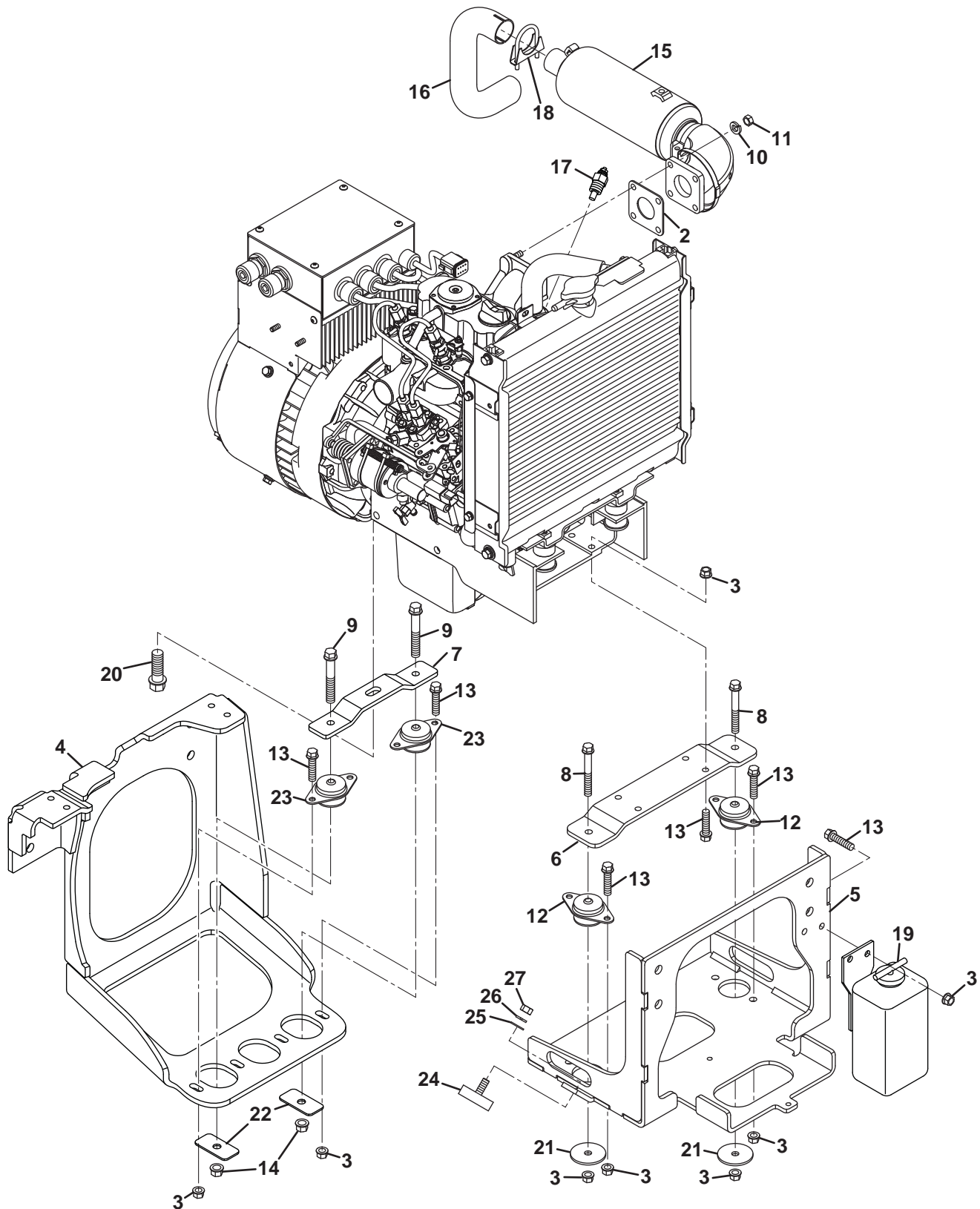
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	N/S	1	Diesel Hybrid Power Module	
	N/S	1	• Diesel Cradle Assembly	See 22.1
	N/S	1	• Diesel Genset Assembly	See 23.1
	N/S	1	• Diesel Air Cleaner Assembly	See 24.1
	N/S	1	• Diesel Fuel Tank	See 27.1
	N/S	1	• Diesel Fuel Routing	See 29.1
	N/S	1	• Diesel Starter Battery	See 31.1
2	N/S	1	Gas Hybrid Power Module	
	N/S	1	• Gas Cradle Assembly	See 25.1
	N/S	1	• Gas Genset Assembly	See 26.1
	N/S	1	• Gas Fuel Tank	See 27.1
	N/S	1	• Gas Fuel Routing	See 28.1
	N/S	1	• Gas Starter Battery	See 30.1
3	452411	8	Screw, M12-1.75 x 40mm Hex Head	
4	450455	8	Nut, M12-1.75 Hex Flange	
5	4176022	1	Tray, Buffer Battery	
6	N/S	4	Battery, 12V Buffer	Obtain Locally
7	4177080	1	Cover, Buffer Battery	
8	450171	2	Screw, M6-1 x 20 mm Hex Head	
9	450399	4	Flat Washer, M6	
10	450410	2	Lockwasher, M6	
11	450323	2	Nut, M6-1 Hex	
12	452389	4	Screw, M8-1.25 x 25 mm Hex Flange	
13	450400	2	Flat Washer, M8	
14	450411	5	Lockwasher, M8	
15	450331	2	Nut, M8-1.25 Hex	
16	4175961	1	Bracket, Center Stop	
17	450014	2	Screw, M8-1.25 x 30 mm Hex Head	
18	450390	5	Flat Washer, M8	
19	443106	1	Nut, 5/16-18 Hex	
20	523126	1	Bumper, Rubber	
21	4168038	1	Battery Cable Assembly	See 39.1 for PDU half of cable
	840572	1	• Plug, 175 Amp Blue	
22	883078	3	Wire, 10" Black	
23	840177	8	Boot, Terminal	
24	362539	2	Nut, M8-1.25 Hex Flange	
25	REF	1	Resistor Bank Assembly	See 34.1
26	4188682	1	Cable, Choke	Gas Units Only
27	NS	2	• Nut, 5/16-24 Thin Hex	Gas Units Only
28	NS	1	• Lockwasher, 5/16	Gas Units Only
29	NS	1	• Jam Nut	Gas Units Only
30	NS	1	• Knob, Choke Cable	Gas Units Only
31	4194660	1	Grommet	Gas Units Only
			•	

> Change from previous revision

# ECLIPSE 322

## 22.1 Diesel Engine Carrier Diesel Hybrid Power Module

Serial No. 62804 - All  
Serial No. 62805 - All  
Serial No. 62825 - All  
Serial No. 62826 - All





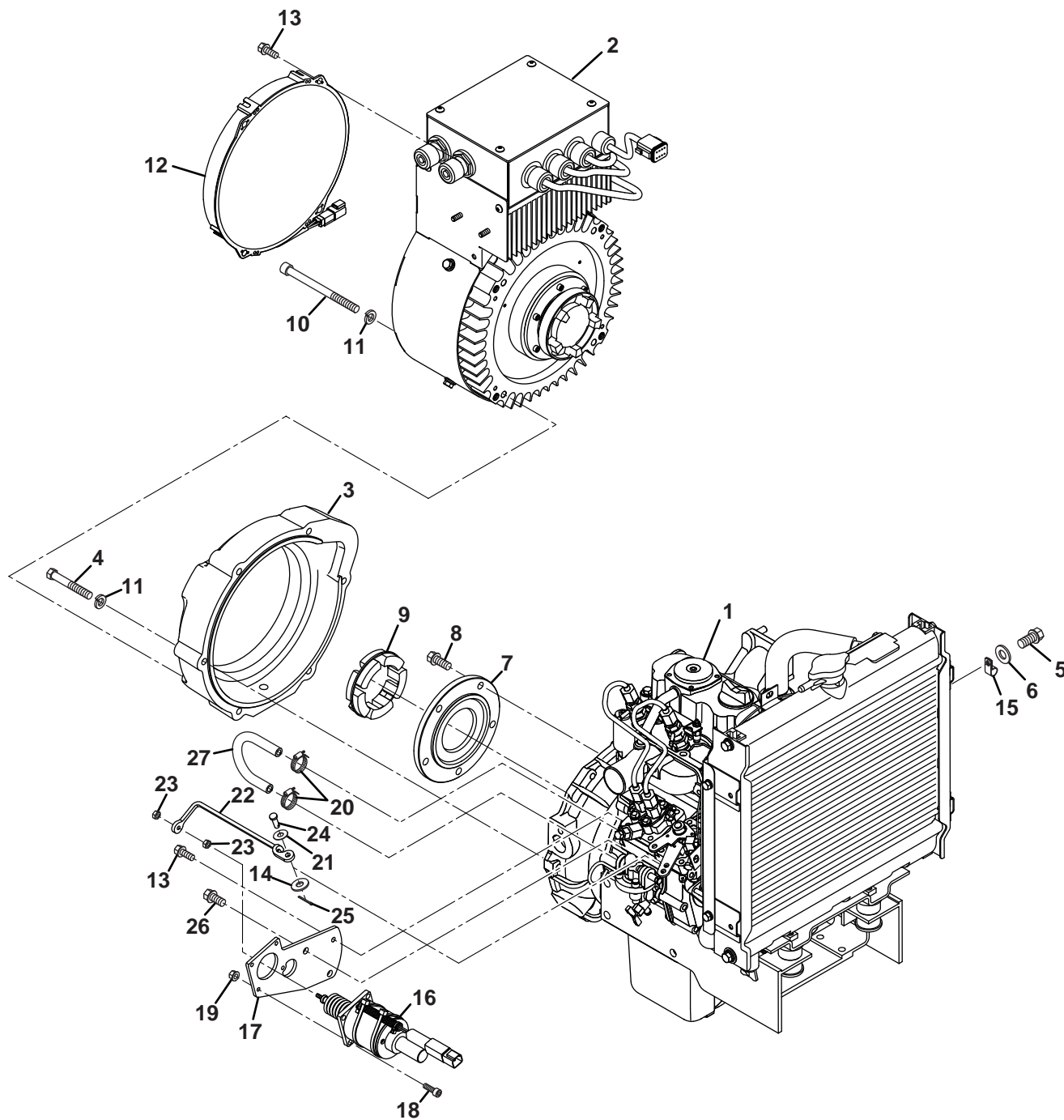
Item	Part No.	Qty.	Description	Serial Numbers/Notes
	1	N/S	1 Diesel Genset	See 23.1
●	2	553020	1 Gasket, Exhaust Manifold	
>	3	450453	16 Nut, M8-1.25 Hex	
	4	4193660	1 Carrier, Right Side Engine	
L	5	4270050	1 Carrier, Left Side Engine	
	6	4168043	1 Mount, Left Side Engine	
	7	4164774	1 Mount, Right Side Engine	
	8	452393	2 Screw, M8-1.25 x 60 mm Hex Head	
>	9	452403	2 Screw, M10-1.5 x 60 mm Hex Flange	
>	10	450422	4 Lockwasher, M8	
	11	450331	4 Nut, M8-1.25 Hex	
	12	3006143	2 Mount, Isolation	
>	13	452390	14 Screw, M8-1.25 x 30 mm Hex Flange	
>	14	450454	2 Nut, M10-1.5 Hex	
●	15	REF	1 Diesel Muffler Assembly	See Engine Parts Catalog
	16	4168081	1 Exhaust Pipe	
	17	364501	1 Temperature Sender	
	18	348856	1 Clamp, Exhaust	
●	19	REF	1 Radiator Overflow Bottle Assembly	See Engine Parts Catalog
>	20	452411	1 Screw, M12-1.75 x 40 mm Hex Flange	
>	21	367559	2 Washer, Isolation	
>	22	3009886	2 Washer, Isolation	
	23	4183500	2 Mount, Isolation	
>	24	361723	1 Stop, Rubber	
>	25	453011	1 Flat Washer, 3/8	
>	26	446142	1 Lockwasher, 3/8 Heavy	
>	27	443110	1 Nut, 3/8-16 Hex	
●	Included with Engine. See Engine Parts Catalog for Service Parts.			

> Change from previous revision

# ECLIPSE 322

## 23.1 Diesel Genset Diesel Hybrid Power Module

Serial No. 62804 - All  
Serial No. 62805 - All  
Serial No. 62825 - All  
Serial No. 62826 - All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4169101	1	Engine, Kubota Z482-E3B	See Engine Parts Catalog
	5002644	1	• Engine Oil Filter	
	5001951	1	• Belt, Alternator-Water Pump	
2	4208063	1	Diesel Generator Assembly	See 40.1 for cable connections
	4216544	1	• Rectifier Repair Kit	See 49.1
3	4238823	1	Flange, Generator	
4	450019	6	Screw, M8-1.25 x 55 mm Hex Head	
>	5	REF	Screw	Radiator Frame to Engine Mounting Hardware, See Engine Parts Catalog
>	6	453011	1 Flat Washer, 3/8	
	7	4201860	1 Shaft, Engine Drive Coupling	
>	8	450471	5 Screw, M8-1.25 x 20 mm Hex Flange	
	9	4201863	1 Coupling, Blind SAE 6-1/2 x 7/8"	
>	10	400043	4 Screw, M8-1.25 x 100 mm Hex Socket	
	11	450411	10 Lockwasher, M8	
	12	4167983	1 Fan, 9" Low Profile 12 Volt	
>	13	450485	5 Screw, M6-1 x 16 mm Hex Flange	
>	14	452004	1 Flat Washer, 1/4	
>	15	366424	1 Clamp, Fuel Hose	
	16	4204000	1 Actuator, Diesel Throttle	
	17	4201862	1 Bracket, Actuator	
>	18	450699	4 Screw, M5-0.8 x 25 mm Hex Socket	
>	19	450451	4 Nut, M5-0.8 Hex Flange	
>	20	48540	2 Hose Clamp	
>	21	4218301	1 Washer, Nylon	
	22	4201866	1 Arm, Governor Linkage	
	23	444312	2 Nut, #10-32 Hex	
	24	4206261	1 Clevis Pin, 1/4 x 5/8"	
	25	460004	1 Cotter Pin, 1/16 x 3/4"	
>	26	450470	2 Screw, M8-1.25 x 16 mm Hex Flange	
>	27	4218621	AR Hose, 7.9 mm	6 Foot Length, Cut to 9"
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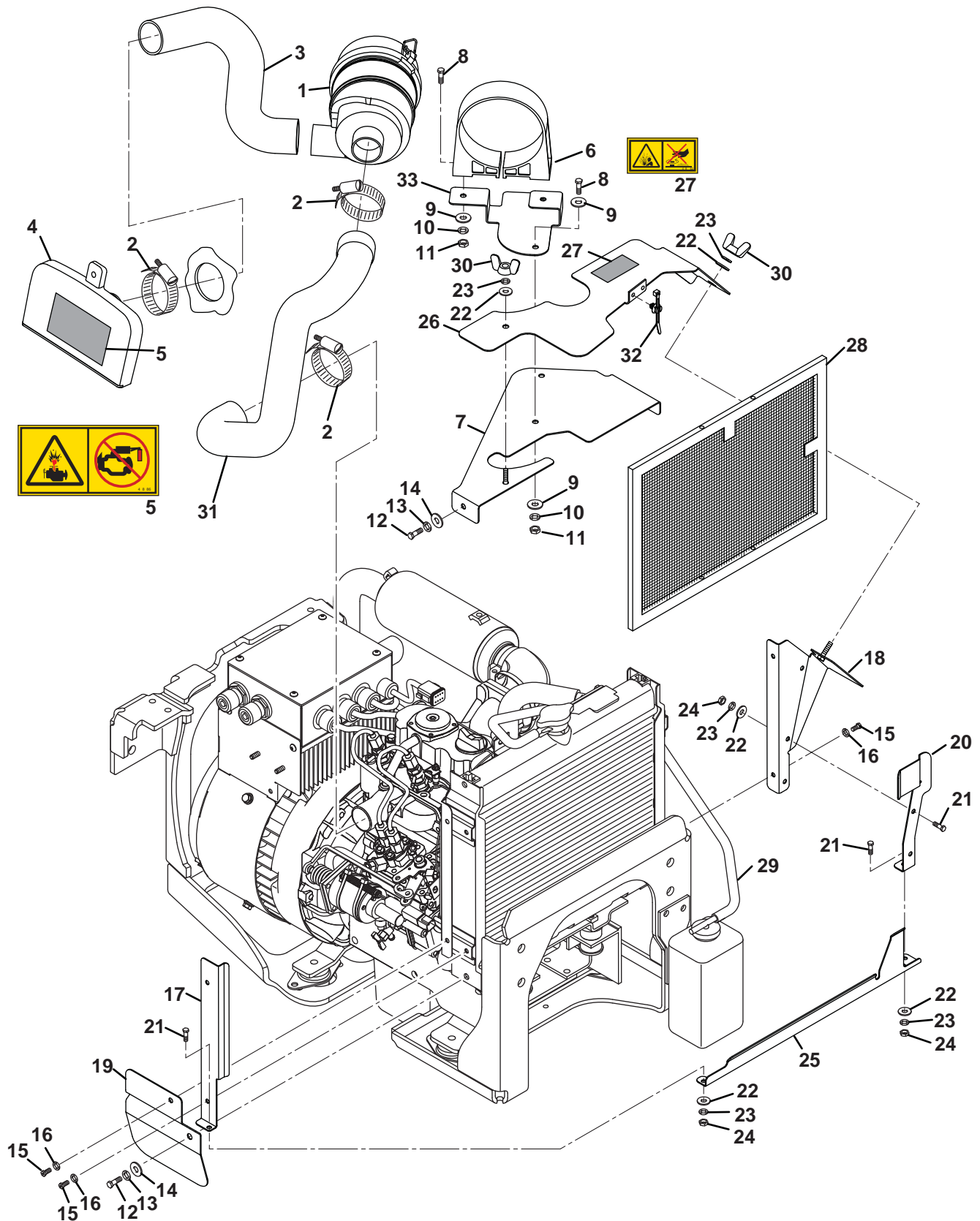
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# ECLIPSE 322

Serial No. 62805 - 1601 ~ 2208

## 24.1 Diesel Engine Air Filter

Diesel Hybrid Power Module



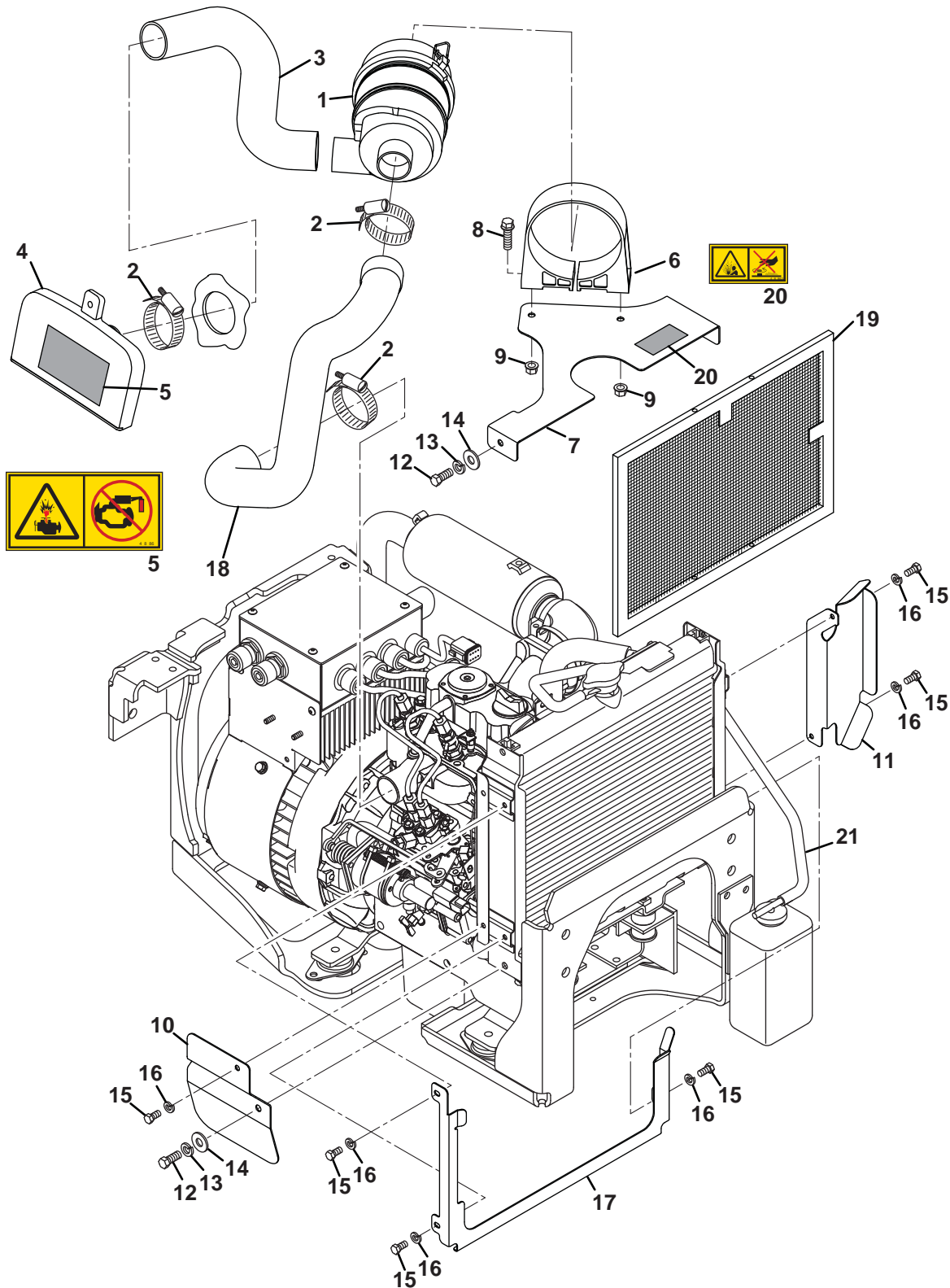
Item	Part No.	Qty.	Description	Serial Numbers/Notes	
●	1	4216263	1	Air Cleaner	
		4216281	1	• Element, Air Cleaner	
	2	326799	4	Clamp, Hose	
	3	4167847	1	Hose, Air Intake	
>	4	4222681	1	Plenum, Air Cleaner	
>	5	4181861	1	• Decal, Start Assist Fluids	
●	6	4216282	1	Bracket, Air Cleaner	
	7	4204860	1	Bracket, Air Cleaner	
	8	450193	4	Screw, M8-1.25 x 30 mm Hex Head	
	9	450400	6	Flat Washer, M8	
	10	450422	4	Lockwasher, M8	
	11	450324	4	Nut, M8-1.25 Hex	
●	12	N/S	3	Screw, M8-1.25 x 20 mm Hex Head	
●	13	N/S	3	Lockwasher, M8	
●	14	N/S	3	Flat Washer, M8	
●	15	N/S	5	Screw, M6-1 x 12 mm Hex Head	
●	16	N/S	5	Lockwasher, M6	
	17	4204841	1	Holder, Left Side Screen	
	18	4204861	1	Bracket, Screen	
	19	4199320	1	Deflector, Air	
	20	4204843	1	Holder, Right Side Screen	
	21	362535	4	Screw, M6-1 x 16 mm Hex Head	
	22	450399	6	Flat Washer, M6	
	23	450410	4	Lockwasher, M6	
	24	450323	4	Nut, M6-1 Hex	
	25	4204842	1	Holder, Bottom Screen	
>	26	4222985	1	Duct, Intake	
>	27	4181862	1	• Decal, Radiator Cap Warning	
	28	3003511	1	Screen	
	29	3002622	1	Hose, Radiator Overflow	
>	30	4223660	2	Nut, M6-1 Wing	
>	31	4167846	1	Hose, Engine Air Intake	
>	32	4167640	2	Cable Tie, Fir Tree	
	33	4237222	1	Bracket, Air Filter	
●	Included with Engine. See Engine Parts Catalog for Service Parts.				

> Change from previous revision

# ECLIPSE 322

## 24.2 Diesel Engine Air Filter Diesel Hybrid Power Module

Serial No. 62804 - 1601 and Up  
Serial No. 62805 - 2209 and Up  
Serial No. 62825 - 1601 and Up  
Serial No. 62826 - 1601 and Up



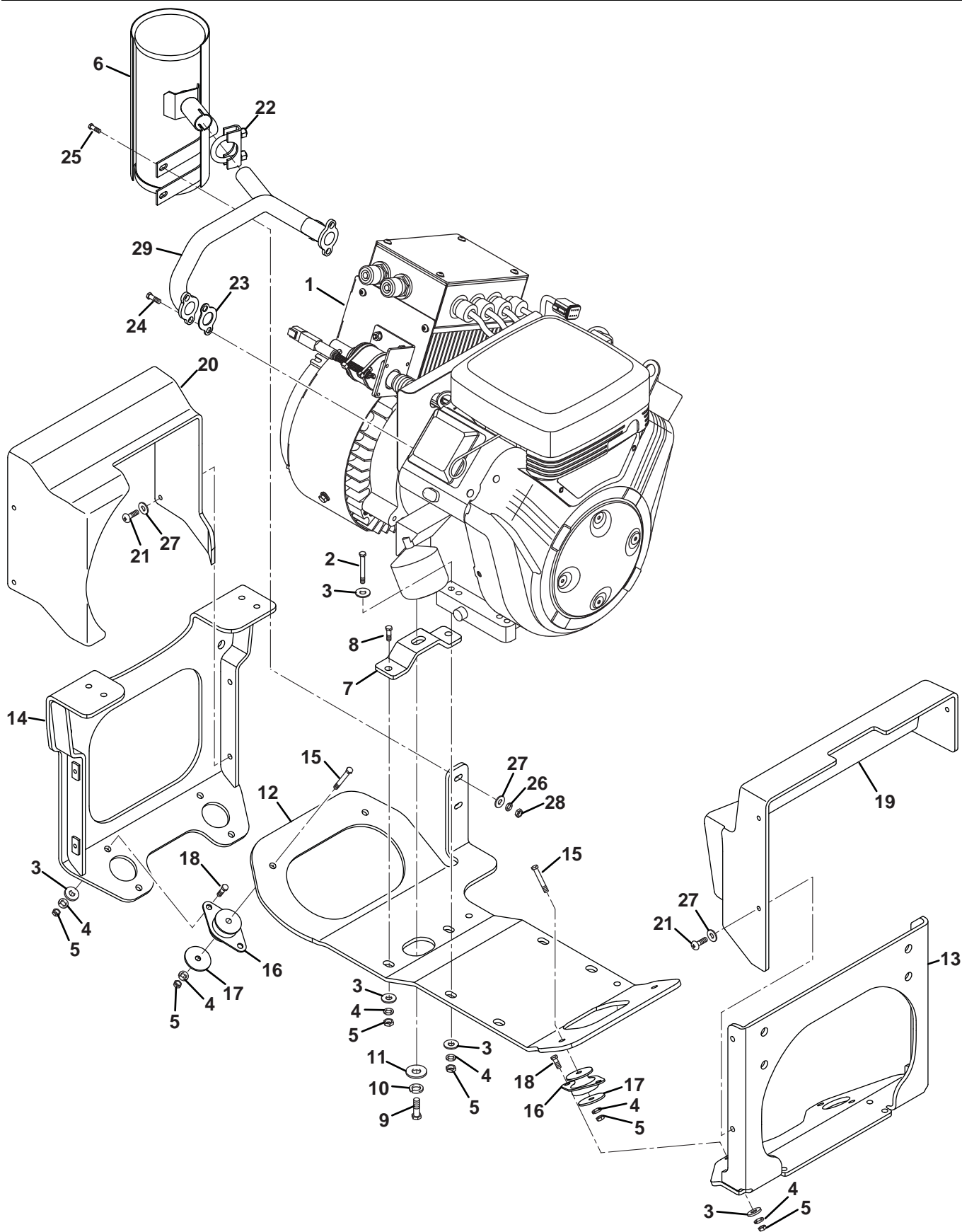
Item	Part No.	Qty.	Description	Serial Numbers/Notes
> ● 1	1001121	1	Air Cleaner	
> ●	5000913	1	• Element, Air Cleaner	
> ●	4216264	1	• Body, Air Cleaner	
> ●	5000912	1	• Cover, Air Cleaner	
> ●	5000914	1	• Valve, Vactuator	
	2	4	Clamp, Hose	
	3	1	Hose, Air Intake	
	4	1	Plenum, Air Cleaner	
	5	1	• Decal, Start Assist Fluids	
●	6	1	Bracket, Air Cleaner	
>	7	1	Duct, Air Cleaner	
>	8	2	Screw, M8-1.25 x 25 mm Hex Flange	
>	9	2	Nut, M8-1.25 Hex Flange	
>	10	1	Deflector, Left Side Air	
>	11	1	Deflector, Right Side Air	
●	12	3	Screw, M8-1.25 x 20 mm Hex Head	
●	13	3	Lockwasher, M8	
●	14	3	Flat Washer, M8	
●	15	5	Screw, M6-1 x 12 mm Hex Head	
●	16	5	Lockwasher, M6	
>	17	1	Holder, Screen	
>	18	1	Hose, Lower	
>	19	1	Screen	
>	20	1	Decal, Radiator Cap Warning	
	21	1	Hose, Radiator Overflow	
●	Included with Engine. See Engine Parts Catalog for Service Parts.			

> Change from previous revision

# ECLIPSE 322

## 25.1 Gas Engine and Carrier

Serial No. 62803 - 1601 ~ 1909

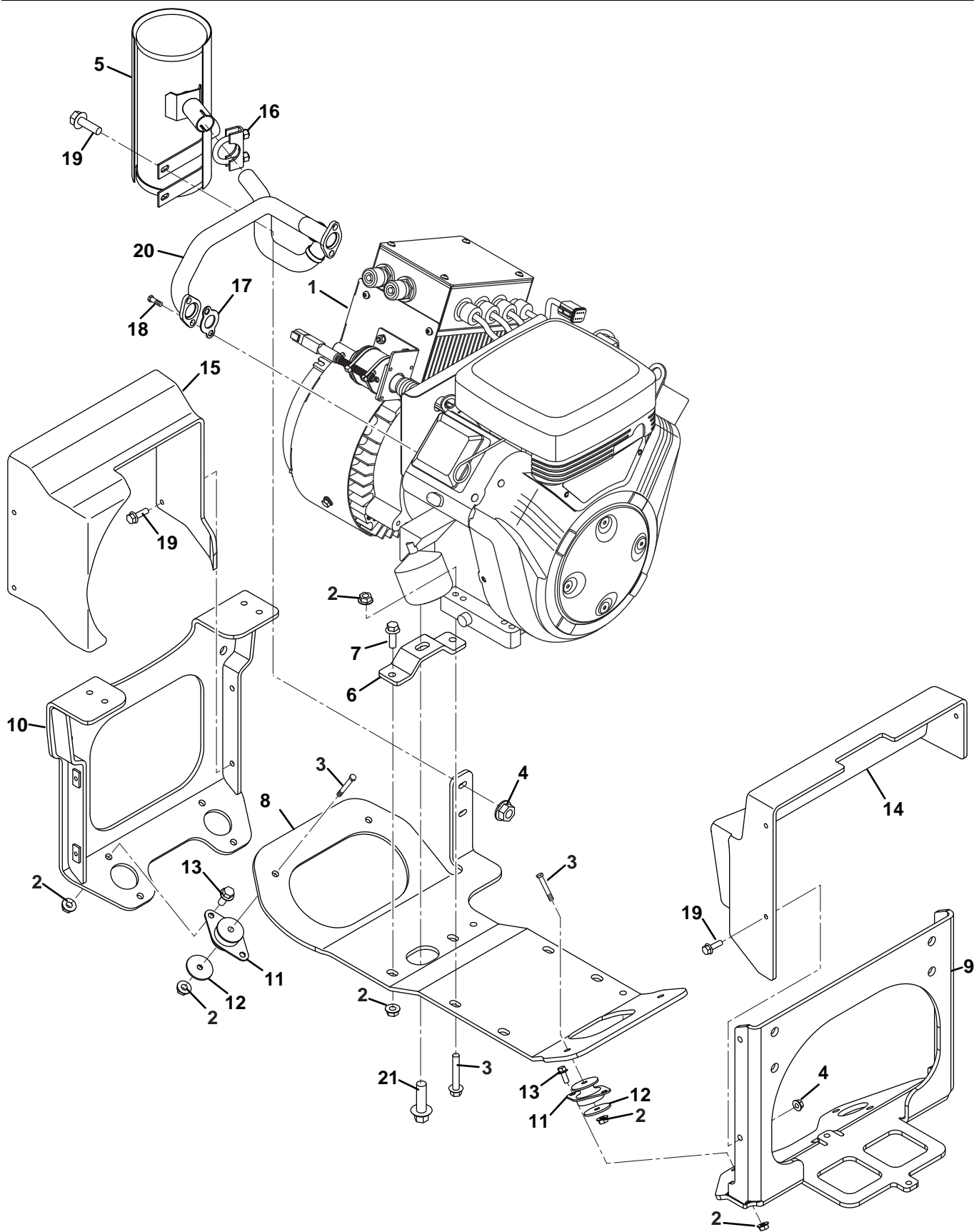




Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	N/S	1	Gas Genset Assembly	See 26.1
2	450019	4	Screw, M8-1.25 x 55 mm Hex Head	
3	450400	18	Flat Washer, M8	
4	450422	18	Lockwasher, M8	
5	450324	18	Nut, M8-1.25 Hex	
6	4203800	1	Muffler, Gas Engine	
7	4208800	1	Bracket, Gas Genset Support	
8	450193	2	Screw, M8-1.25 x 30 mm Hex Head	
9	400408	1	Screw, 1/2-13 x 1-1/2" Hex Head	
10	446154	1	Lockwasher, 1/2	
11	452012	1	Flat Washer, 1/2	
12	4165583	1	Plate, Engine	
13	4189900	1	Left Side Gas Cradle	
14	4189901	1	Right Side Gas Cradle	
15	452393	4	Screw, M8-1.25 x 60 mm Hex Head	Full Thread
16	3006143	4	Mount, Isolation	
17	367559	4	Washer, Snubber	
18	452390	8	Screw, M8-1.25 x 30 mm Hex Head	Full Thread
19	4185781	1	Duct, Engine Intake	
20	4185782	1	Duct, Generator Intake	
21	450544	7	Screw, M6-1 x 30 mm Pan Head	
22	813688	1	Clamp, Exhaust	
23	N/S	2	Gasket, Manifold	Included with Engine
24	N/S	4	Screw, M8-1.25 x 20 mm Hex Torx	Included with Engine
25	450171	2	Screw, M6-1 x 20 mm Hex Head	
26	450410	2	Lockwasher, M6	
27	450399	9	Flat Washer, M6	
28	450323	2	Nut, M6-1 Hex	
29	4165959	1	Manifold, Exhaust	

> Change from previous revision

## 25.2 Gas Engine and Carrier



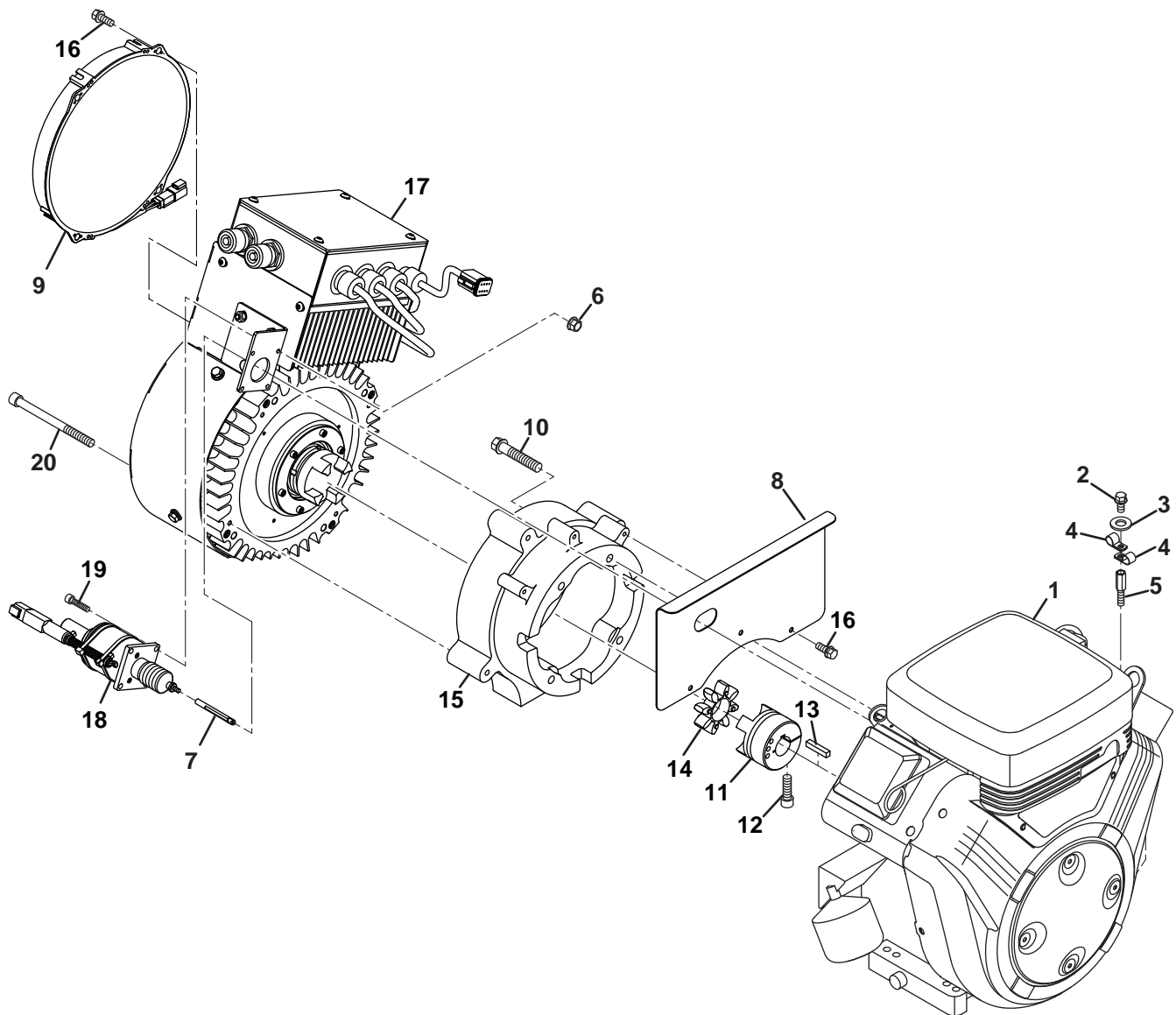
Item	Part No.	Qty.	Description	Serial Numbers/Notes	
	1	N/S	1	Gas Genset Assembly	See 26.1
>	2	450453	18	Nut, M8-1.25 Hex Flange	
>	3	452392	8	Screw, M8-1.25 x 50 mm Hex Flange	
>	4	452418	5	Nut, M6-1 Hex Flange	
>	5	4203800	1	Muffler, Gas Engine	
>	6	4208800	1	Bracket, Gas Genset Support	
>	7	452389	2	Screw, M8-1.25 x 25 mm Hex Flange	
>	8	4165583	1	Plate, Engine	
>	9	4255652	1	Left Side Gas Cradle	
>	10	4189901	1	Right Side Gas Cradle	
>	11	3006143	4	Mount, Isolation	
>	12	367559	4	Washer, Snubber	
>	13	452388	8	Screw, M8-1.25 x 20 mm Hex Flange	
>	14	4185781	1	Duct, Engine Intake	
>	15	4185782	1	Duct, Generator Intake	
>	16	813688	1	Clamp, Exhaust	
>	17	N/S	2	Gasket, Manifold	Included with Engine
>	18	N/S	4	Screw, M8-1.25 x 20 mm Hex Torx	Included with Engine
>	19	452378	9	Screw, M6-1 x 20 mm Hex Head	
>	20	4264310	1	Manifold, Exhaust	
>	21	452411	1	Screw, M12-1.75 x 40 mm Hex Flange	

> Change from previous revision

# ECLIPSE 322

## 26.1 Gas Genset Gas Power Module

Serial No. 62802 - All  
Serial No. 62803 - All



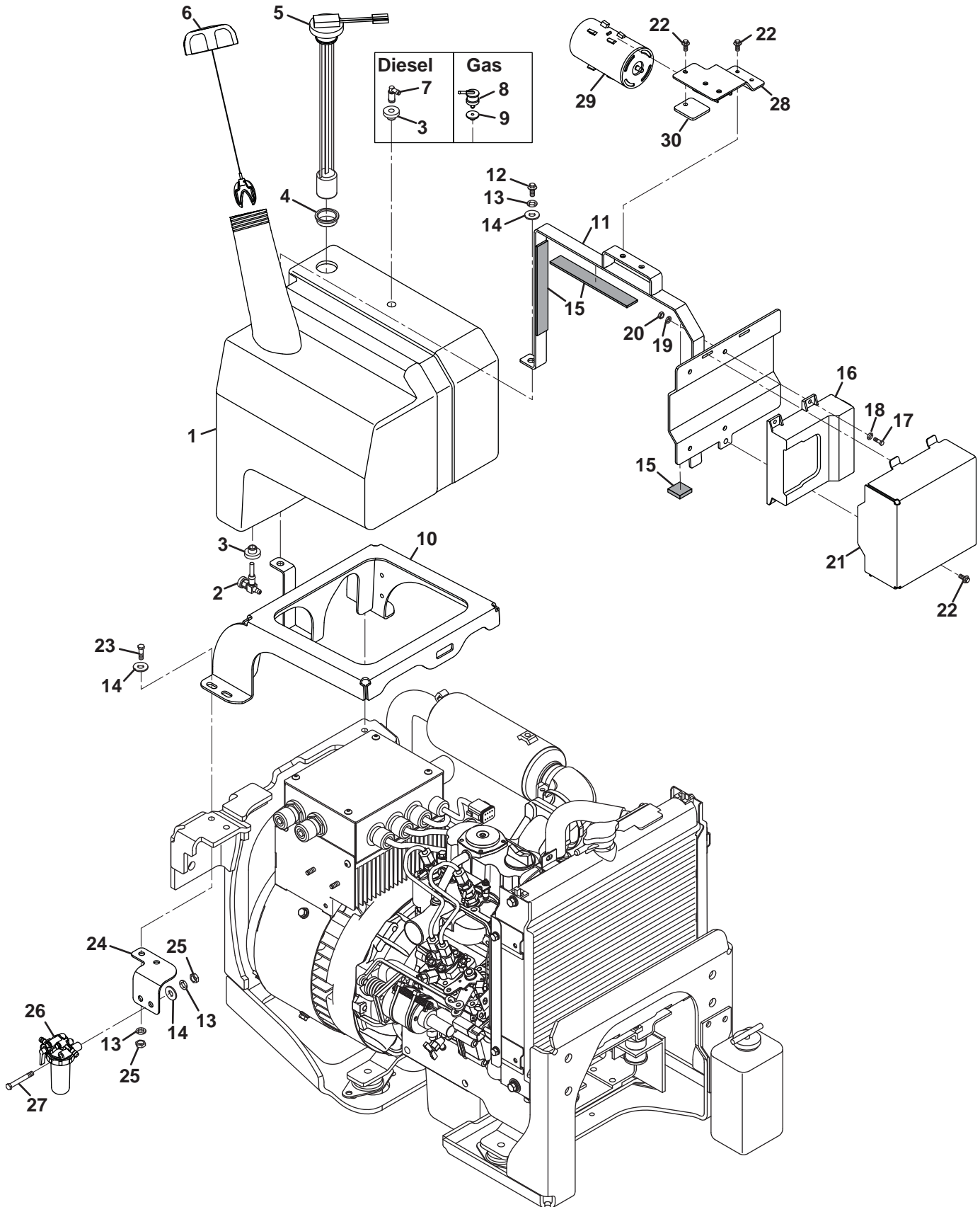
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4281391	1	Engine, 13 HP B&S Vanguard	
	5000436	1	• Engine Fuel Filter	
	5000440	1	• Engine Oil Filter	
	5000441	1	• Engine Air Filter	
2	N/S	1	• Screw, M6-1 x 14 mm Hex Flange	
3	453011	1	Flat Washer, 3/8	
4	366424	2	Clamp, Hose	Fuel Hoses
5	3008863	1	Stud, Air Cleaner	
>	6	450451	4 Nut, M5-0.80 Hex Flange	
>	7	4253750	1 Throttle Link, Gas	
>	8	4251050	1 Heat Shield	
>	9	4167983	1 Fan, 9" Low Profile 12 Volt	
>	10	64262-014	4 Screw, 3/8-16 x 2mm Hex Flange	
>	11	4208082	1 Coupler, Gas Engine	
>	12	N/S	• Screw, 5/16-24 x 1" Hex Socket	
>	13	4201788	1 Key, 1/4 Square x 1-3/8	
>	14	4208083	1 Element, Gas Engine Coupler	
>	15	4246410	1 Mounting Flange	
>	16	450465	7 Screw, M6-1.00 x 16 mm Hex Flange	
>	17	4208061	1 Gas Generator Assembly	See 40.1 for cable connections
		4216544	• Rectifier Repair Kit	See 49.1
>	18	4204002	1 Actuator, Gas Throttle	
>	19	450699	4 Screw, M5-0.80 x 25 mm Hex	
	20	400043	4 Screw, M8-1.25 x 100 mm Hex Scket	

> Change from previous revision

# ECLIPSE 322

## 27.1 Fuel Tank

Serial No. 62803 - 1601 ~ 1920  
Serial No. 62805 - 1601 ~ 2209



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4167033	1	Fuel Tank	Gas Power Modules
1	4168326	1	Fuel Tank	Diesel Power Modules
2	2810702	1	• Valve, Needle	
3	361117	1	• Bushing	Gas Power Modules
3	361117	2	• Bushing	Diesel Power Modules
4	4167029	1	• Grommet, Fuel Sensor	
5	4167030	1	• Sensor, Fuel	
6	4191780	1	• Cap, Unvented Fuel	Gas Power Modules
6	4211827	1	• Cap, Diesel Fuel	Diesel Power Modules
7	4166841	1	• Elbow, 90° Fuel	Diesel Power Modules
8	4170840	1	• Valve, Rollover	Gas Power Modules
9	4168131	1	• Grommet	Gas Power Modules
10	4188420	1	Bracket, Fuel Tank	
11	4166601	1	Strap	
12	452388	1	Screw, M8-1.25 x 20 mm Hex Flange	
13	450422	5	Lockwasher, M8	Gas Power Modules
13	450422	6	Lockwasher, M8	Diesel Power Modules
14	450400	5	Flat Washer, M8	Gas Power Modules
14	450400	6	Flat Washer, M8	Diesel Power Modules
15	558012	2	Pad, 8"	10 Foot Roll, Cut to Length
16	4185060	1	Controller, Gas APU	Gas Power Modules
16	4185484	1	Controller, Diesel APU	Diesel Power Modules
17	450135	4	Screw, M4-0.7 x 20 mm Hex Head	
18	450397	4	Flat Washer, M4	
19	450419	4	Lockwasher, M4	
20	450321	4	Nut, M4-0.7 Hex	
21	4210320	1	Shield, Power Module Controller	
22	450465	4	Screw, M6-1 x 14 mm Hex Flange	Gas Power Modules
22	450465	1	Screw, M6-1 x 14 mm Hex Flange	Diesel Power Modules
23	450193	4	Screw, M8-1.25 x 30 mm Hex Head	
24	4168221	1	Bracket, Diesel Fuel Filter	Diesel Power Modules
25	450324	4	Nut, M8-1.25 Hex	
25	450324	5	Nut, M8-1.25 Hex	
26	5001309	1	Diesel Fuel Filter	Diesel Power Modules
	4183591	1	• Element, Fuel Filter	Diesel Power Modules
27	450200	1	Screw, M8-1.25 x 60 mm Hex Head	Diesel Power Modules
28	4188423	1	Bracket, Canister	Gas Power Modules
29	4170802	1	Canister, Carbon	Gas Power Modules
30	4181881	1	Stop, Canister	Gas Power Modules
31	558012	1	Pad, 1"	10 Foot Roll, Cut to Length

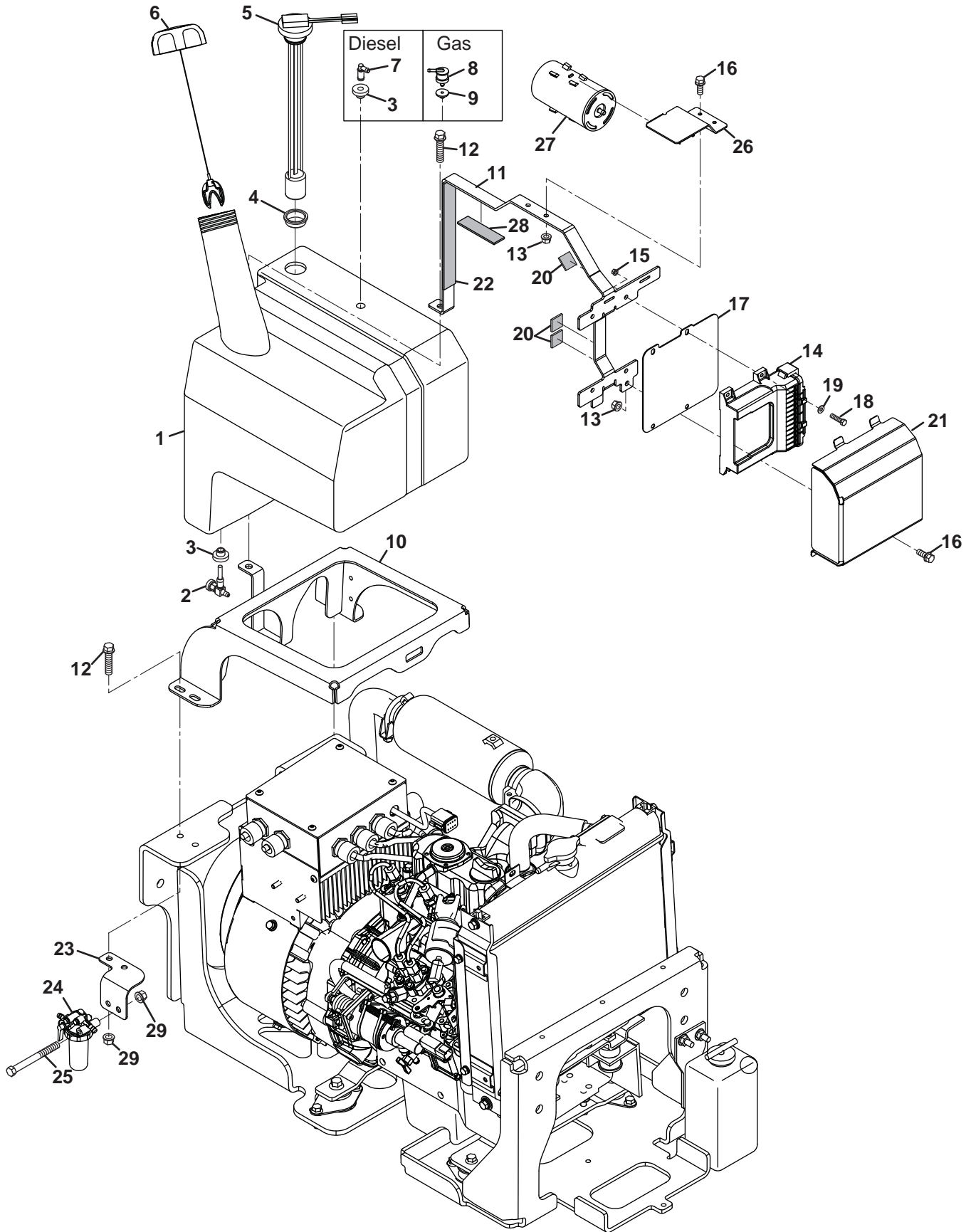
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# ECLIPSE 322

## 27.2 Fuel Tank

Serial No. 62802 - 1601 and Up  
Serial No. 62803 - 1921 and Up  
Serial No. 62804 - 1601 and Up  
Serial No. 62805 - 2210 and Up

Serial No. 62825 - 1601 and Up  
Serial No. 62826 - 1601 and Up





Item	Part No.	Qty.	Description	Serial Numbers/Notes	
1	4167033	1	Fuel Tank	Gas Power Modules	
1	4168326	1	Fuel Tank	Diesel Power Modules	
2	2810702	1	• Valve, Needle		
3	361117	1	• Bushing	Gas Power Modules	
3	361117	2	• Bushing	Diesel Power Modules	
4	4167029	1	• Grommet, Fuel Sensor		
5	4167030	1	• Sensor, Fuel		
6	4191780	1	• Cap, Unvented Fuel	Gas Power Modules	
6	4211827	1	• Cap, Diesel Fuel	Diesel Power Modules	
>	7	361748	1	• Elbow, 90° Fuel	Diesel Power Modules
	8	4170840	1	• Valve, Rollover	Gas Power Modules
	9	4168131	1	• Grommet	Gas Power Modules
	10	4188420	1	Bracket, Fuel Tank	
>	11	4249550	1	Strap	
>	12	452390	5	Screw, M8-1.25 x 30 mm Hex	
>	13	452418	3	Nut, M6-1.00 Hex Flange	Gas Power Modules
>	13	452418	1	Nut, M6-1.00 Hex Flange	Diesel Power Modules
>	14	4185060	1	Controller, Gas APU	Gas Power Modules
>	14	4185484	1	Controller, Diesel APU	Diesel Power Modules
>	15	452425	4	Hex, M4-0.70 Hex Flange	
>	16	450465	4	Screw, M6-1 x 14 mm Hex Flange	Gas Power Modules
>	16	450465	1	Screw, M6-1 x 14 mm Hex Flange	Diesel Power Modules
>	17	4249570	1	Shield	
>	18	450135	4	Screw, M4-0.70 x 20 mm Hex	
>	19	450397	4	Flat Washer, M4	
>	20	359603	3	Pad	
>	21	4210320	1	Shield, Power Module Controller	
>	22	361760		Pad, 8"	
>	23	4168221	1	Bracket, Diesel Fuel Filter	Diesel Power Modules
>	24	4216242	1	Diesel Fuel Filter	Diesel Power Modules
		4209366	1	• Element, Fuel Filter	Diesel Power Modules
>	25	452394	1	Screw, M8-1.25 x 70 mm Hex Head	Diesel Power Modules
>	26	4263370	1	Bracket, Canister	Gas Power Modules
>	27	4170802	1	Canister, Carbon	Gas Power Modules
>	28	361759	1	Pad	
>	29	450453	5	Nut, M8-1.25 Hex Flange	Diesel Power Modules
>	29	450453	4	Nut, M8-1.25 Hex Flange	Gas Power Modules
>					

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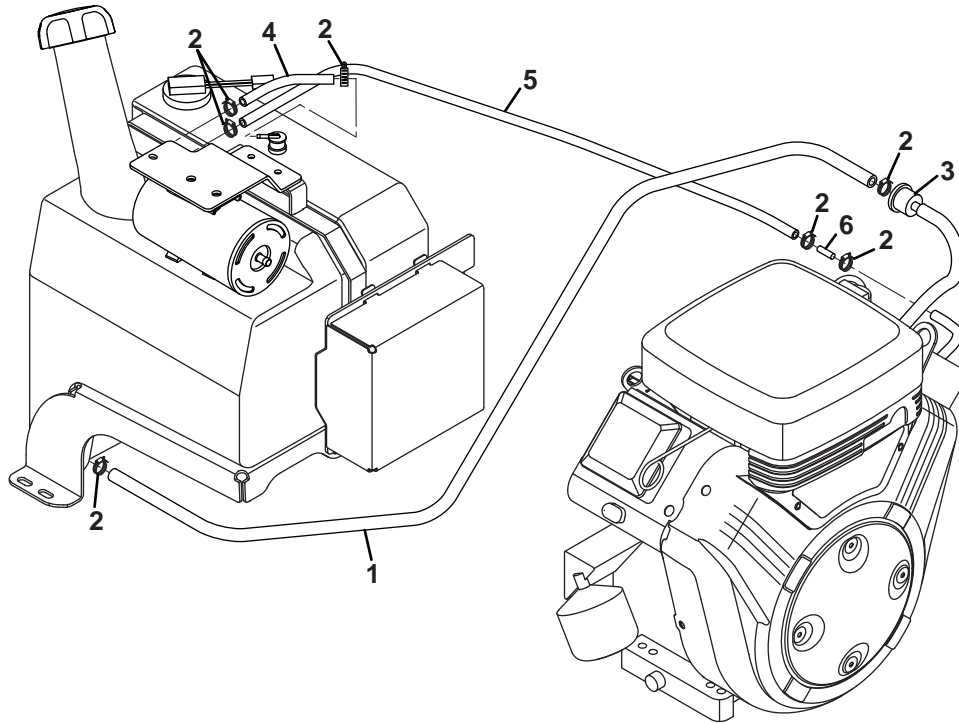
# ECLIPSE 322

## 28.1 Gas Engine Fuel Routing

### Gas Power Module

Serial No. 62802 - All

Serial No. 62803 - All

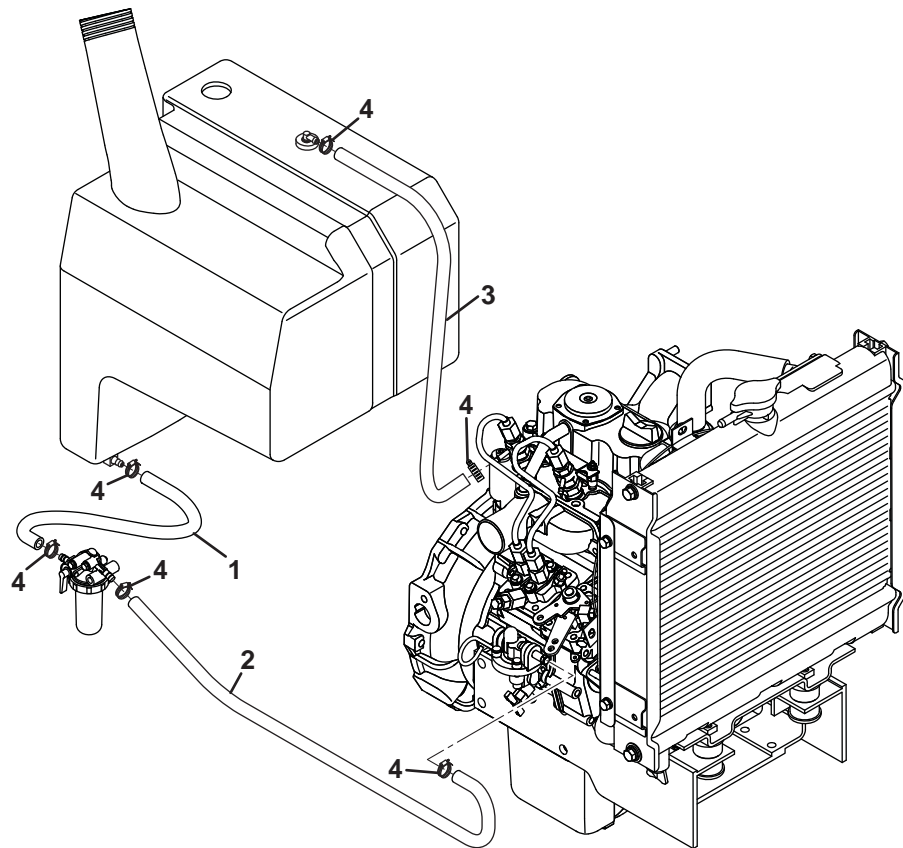


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4218620	1	Hose, Fuel Tank to Filter	5 foot length. Cut to 23"
2	48540-01	7	Clamp, Hose	
3	5000436	1	Fuel Filter	Included with Engine
4	831039	1	Hose, Tank to Canister	25 foot length. Cut to 8"
5	4218621	1	Hose, Canister to Manifold Hose	6 foot length. Cut to 34"
6	N/S	1	Splice, Hose	Included with Engine

> Change from previous revision

## 29.1 Diesel Engine Fuel Routing

### Diesel Power Module



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4218620	1	Hose, Tank to Fuel Filter	5 foot length. Cut to 18"
2	554752	1	Hose, Fuel Filter to Fuel Pump	5 foot length. Cut to 26-1/2"
3	4218621	1	Hose, Engine Overflow to Tank	6 foot length. Cut to 28-1/2"
4	48540-01	6	Clamp, Hose	

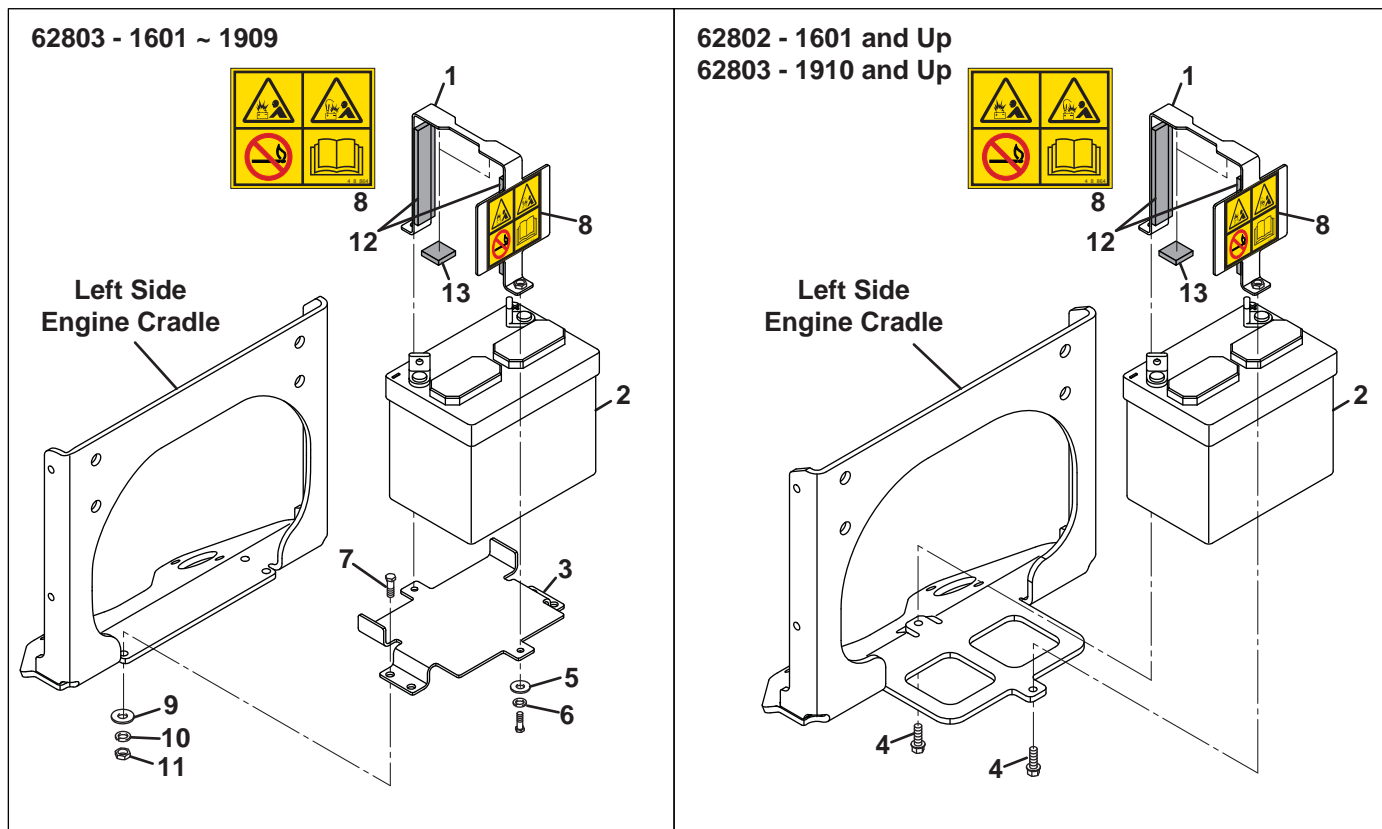
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# ECLIPSE 322

## 30.1 Gas Engine Starter Battery

### Gas Power Modules

Serial No. 62802 - All  
Serial No. 62803 - All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4181240	1	Battery Hold Down	
2	N/S	1	Battery, 12 Volt	
3	4168145	1	Tray, Gas Starter Battery	S/N 62803 - 1601 ~ 1909 Only
4	450172	2	Screw, M6-1 x 25 mm Hex Head	S/N 62803 - 1601 ~ 1909 Only
4	452378	2	Screw, M6-1.00 x 20 mm Hex Flange	S/N 62802 - All S/N 62803 - 1910 and Up
5	450421	2	Lockwasher, M6	S/N 62803 - 1601 ~ 1909 Only
6	450399	2	Flat Washer, M6	S/N 62803 - 1601 ~ 1909 Only
7	450193	4	Screw, M8-1.25 x 30 mm	S/N 62803 - 1601 ~ 1909 Only
8	4181864	1	Decal, Battery Warning	
9	450400	4	Flat Washer, M8	S/N 62803 - 1601 ~ 1909 Only
10	450422	4	Lockwasher, M8	S/N 62803 - 1601 ~ 1909 Only
11	450324	4	Nut, M8-1.25 Hex	S/N 62803 - 1601 ~ 1909 Only
12	558012	2	Pad, 5"	10 Foot Roll, Cut to Length
13	558012	2	Pad, 1"	10 Foot Roll, Cut to Length

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## 31.1 Diesel Engine Starter Battery

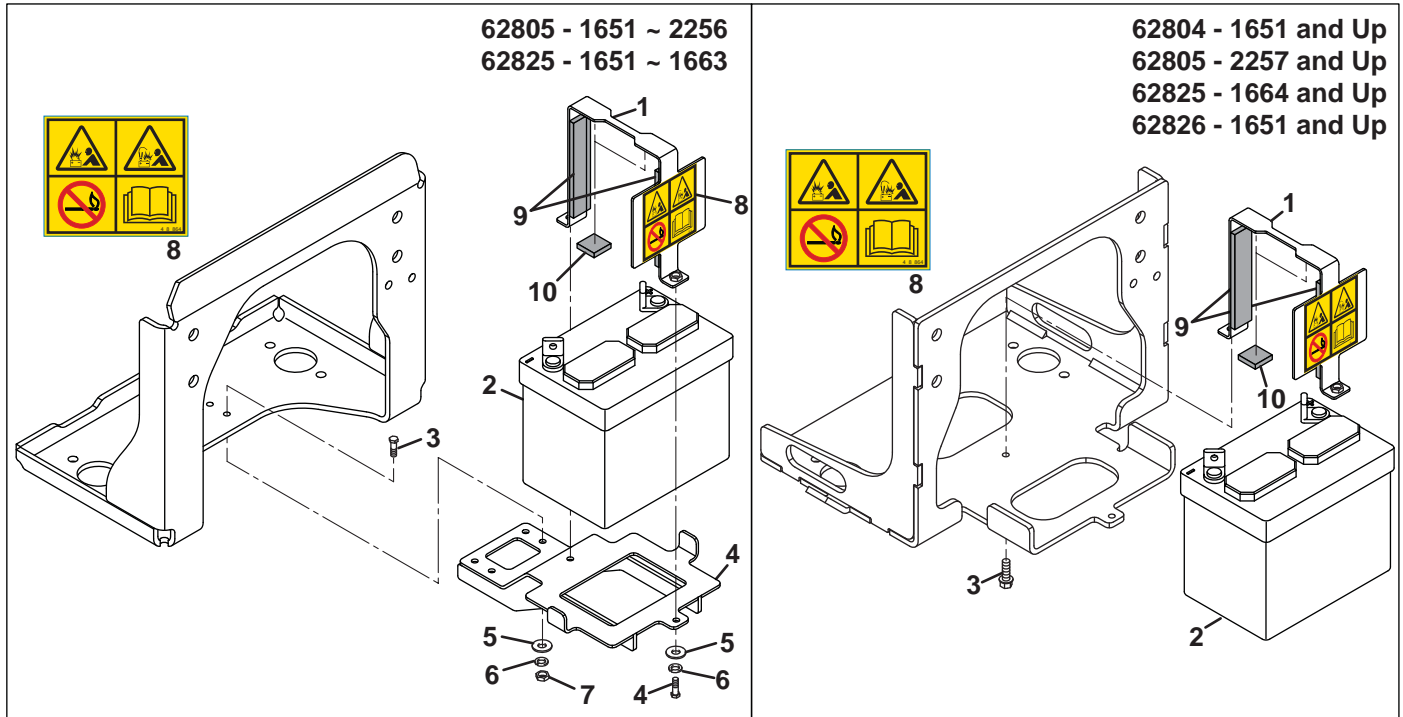
Diesel power Modules

Serial No. 62804 - All

Serial No. 62805 - All

Serial No. 62825 - All

Serial No. 62826 - All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4181240	1	Battery Hold Down	
2	N/S	1	Battery, 12 Volt	
3	450172	6	Screw, M6-1 x 25 mm Hex Head	S/N 62805 - 1651 ~ 2256 S/N 62825 - 1651 ~ 1663
3	452378	2	Screw, M6-1 x 20 mm Hex Flange	S/N 62804 - 1651 and Up S/N 62805 - 2257 and Up S/N 62825 - 1664 and Up S/N 62826 - 1651 and Up
4	4179444	1	Tray, Diesel Starter Battery	
5	450421	6	Lockwasher, M6	
6	450399	6	Flat Washer, M6	S/N 62805 - 1651 ~ 2256 Only S/N 62825 - 1651 ~ 1663 Only
7	450323	4	Nut, M6-1 Hex	
8	4181864	1	Decal, Battery Warning	
9	558012	2	Pad, 5"	10 Foot Roll, Cut to Length
10	558012	2	Pad, 1"	10 Foot Roll, Cut to Length

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# ECLIPSE 322

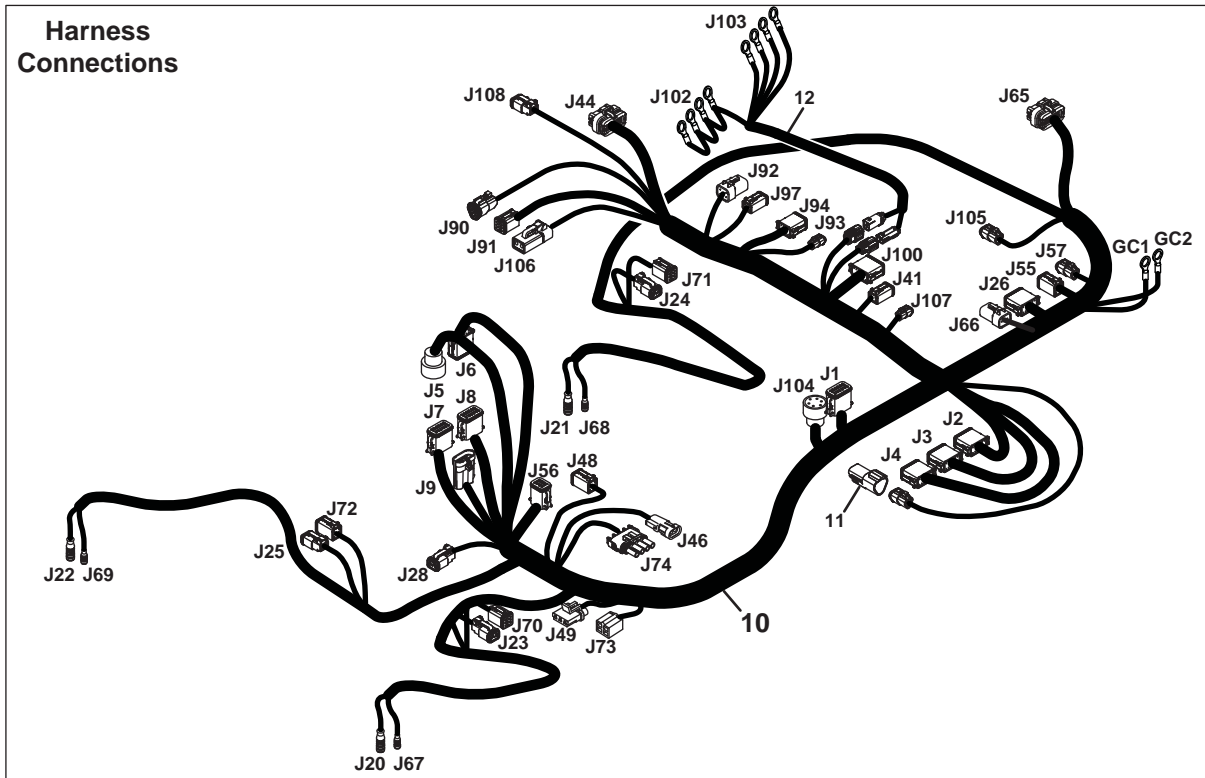
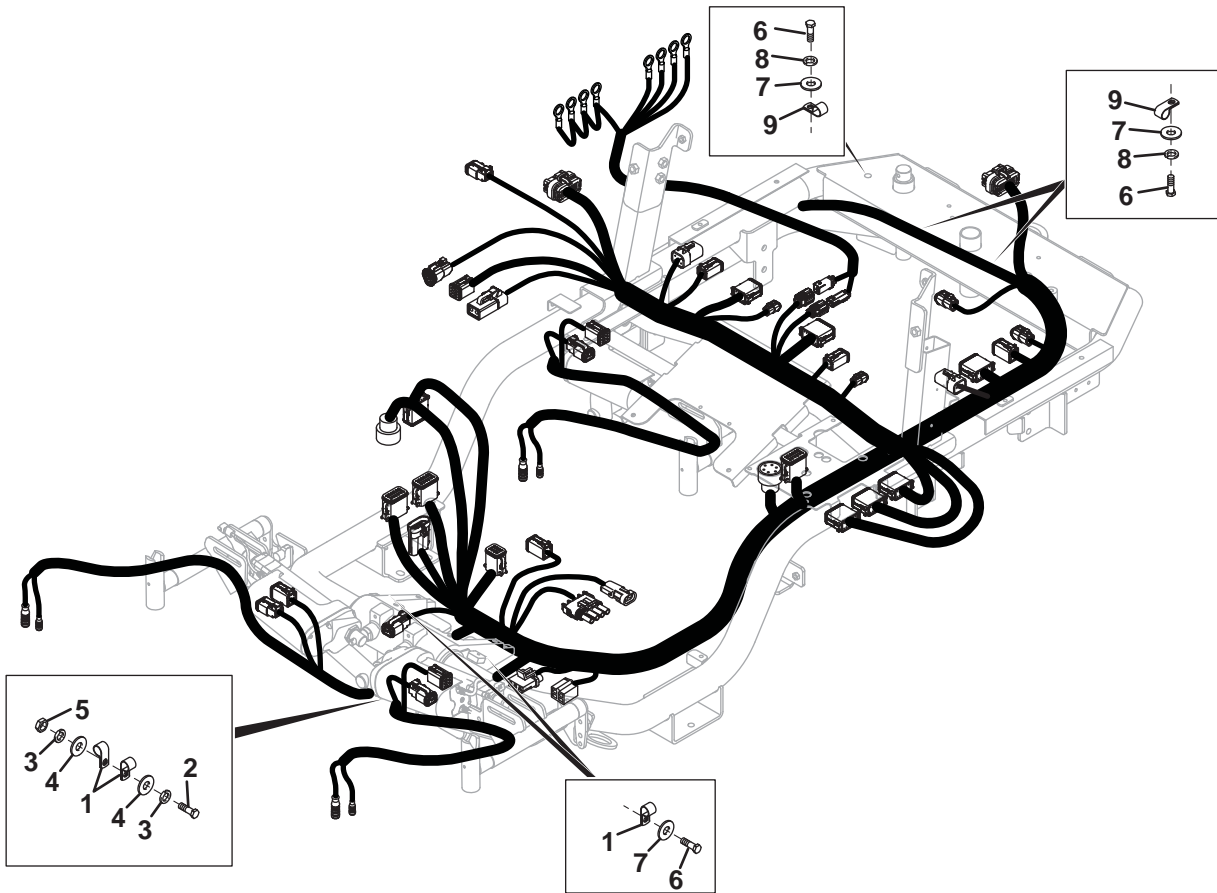
## 32.1 Main Harness Routing

Serial No. 62801 - 1601 ~ 2499

Serial No. 62803 - 1601 ~ 2499

Serial No. 62805 - 1601 ~ 2499

Serial No. 62825 - 1601 ~ 2499



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	345671	4	Clamp, 3/4" I.D.	
2	450017	1	Screw, M8-1.25 x 45 mm Hex Head	
3	450422	2	Lockwasher, M8	
4	450400	2	Flat Washer, M8	
5	450324	1	Nut, M8-1.25 Hex	
6	450172	5	Screw, M6-1 x 25 mm Hex Head	
7	450399	5	Flat Washer, M6	
8	450421	3	Lockwasher, M6	
9	363514	3	Clamp, 1-1/8" I.D.	
● 10	4167180	1	Harness, Main	
11	4222601	1	• CAN 120 Ohm Resistor	
	4221901	AR	Reel Motor 8 Pin Connector Kit	Repair Kit for Damaged Connector
	4221961	AR	Reel Motor 3 Pin Connector Kit	Repair Kit for Damaged Connector
● 12	4226820	1	Harness, Resistor Bank	
● Early mowers did not have a separate wire harness for the resistor bank, and only had the main wire harness. Both harnesses are required if replacing the main harness on an early mower.				

### Harness Connections

Connector	Component	Connector	Component
<b>J1</b>	PDU	<b>J66 ▲</b>	Diesel Engine Harness
<b>J2</b>	MCU Controller	<b>J67</b>	Left Reel Motor Control
<b>J3</b>	MCU Controller	<b>J68</b>	Center Reel Motor Control
<b>J4</b>	MCU Controller	<b>J69</b>	Right Reel Motor Control
<b>J5</b>	RCU Input	<b>J70</b>	Left Reel Actuator Control
<b>J6</b>	RCU Left Reel Output	<b>J71</b>	Center Reel Actuator Control
<b>J7</b>	RCU Center Reel Output	<b>J72</b>	Right Reel Actuator Control
<b>J8</b>	RCU Right Reel Output	<b>J73</b>	Brake Pedal Switch
<b>J9</b>	RCU Reel Power Output	<b>J74</b>	Traction Motor Control
<b>J20</b>	Left Reel Motor Power	<b>J90</b>	Armrest Harness CAN
<b>J21</b>	Center Reel Motor Power	<b>J91</b>	Armrest Harness
<b>J22</b>	Right Reel Motor Power	<b>J92 ■</b>	Genset
<b>J23</b>	Left Reel Actuator Power	<b>J93</b>	3WD Option Harness CAN
<b>J24</b>	Center Reel Actuator Power	<b>J94</b>	3WD Option Harness
<b>J25</b>	Right Reel Actuator Power	<b>J97 ■</b>	Genset
<b>J26 ■</b>	Engine Harness	<b>J100</b>	OLM Controller
<b>J28</b>	Front Headlight	<b>J102</b>	Resistor Ground
<b>J41</b>	Seat Switch Harness	<b>J103</b>	Resistor Power
<b>J44</b>	Traction Controller	<b>J104</b>	PDU
<b>J46</b>	Traction Motor Temperature	<b>J105</b>	Right Side Steering Sensor
<b>J48</b>	Traction Pedal Sensor	<b>J106</b>	Armrest Harness Power Outlet
<b>J49</b>	Brake Pedal Sensor	<b>J107 ■</b>	Dome Light
<b>J55</b>	Power Steering Motor Control	<b>J108</b>	Traction Controller Fan
<b>J56</b>	Steering LORD	<b>GC1</b>	Ground Stud 1
<b>J57</b>	Left Side Steering Sensor	<b>GC2</b>	Ground Stud 2
<b>J65</b>	Steering Controller		
<b>■ Not used on Battery Powered Mowers</b>		<b>▲ Used on Diesel Hybrid Powered Mowers Only</b>	

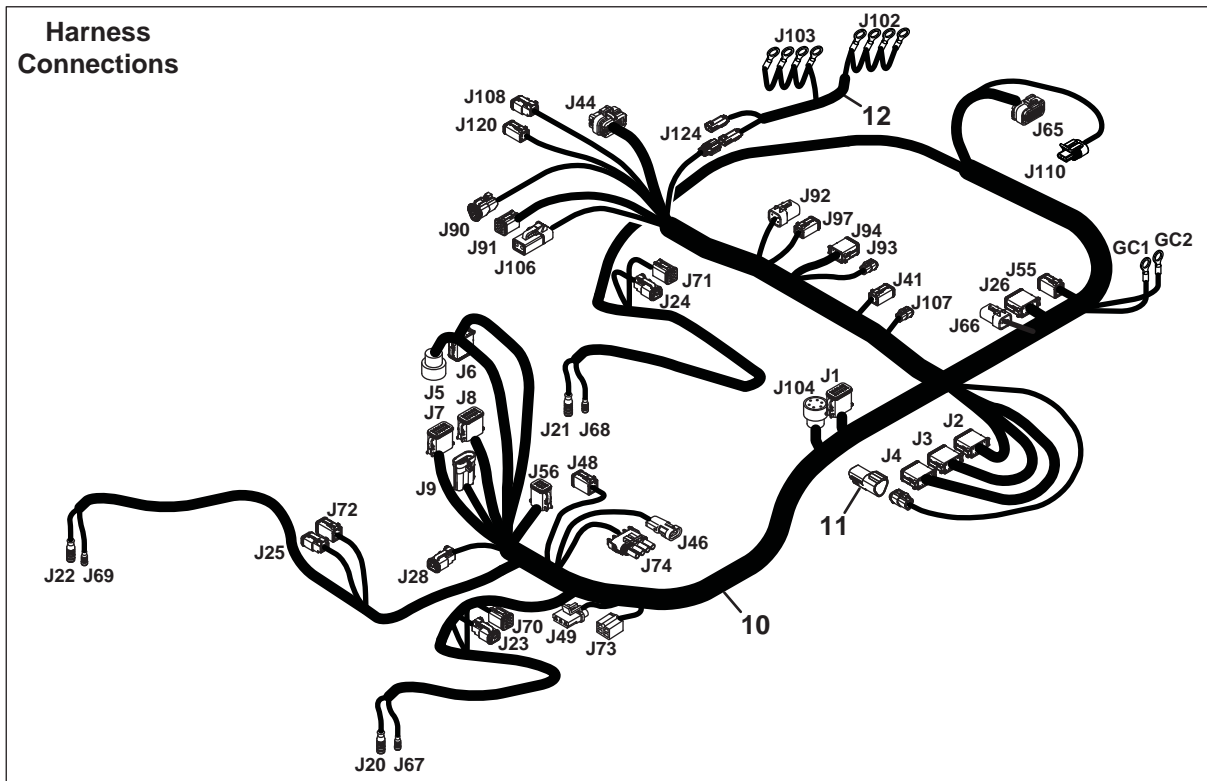
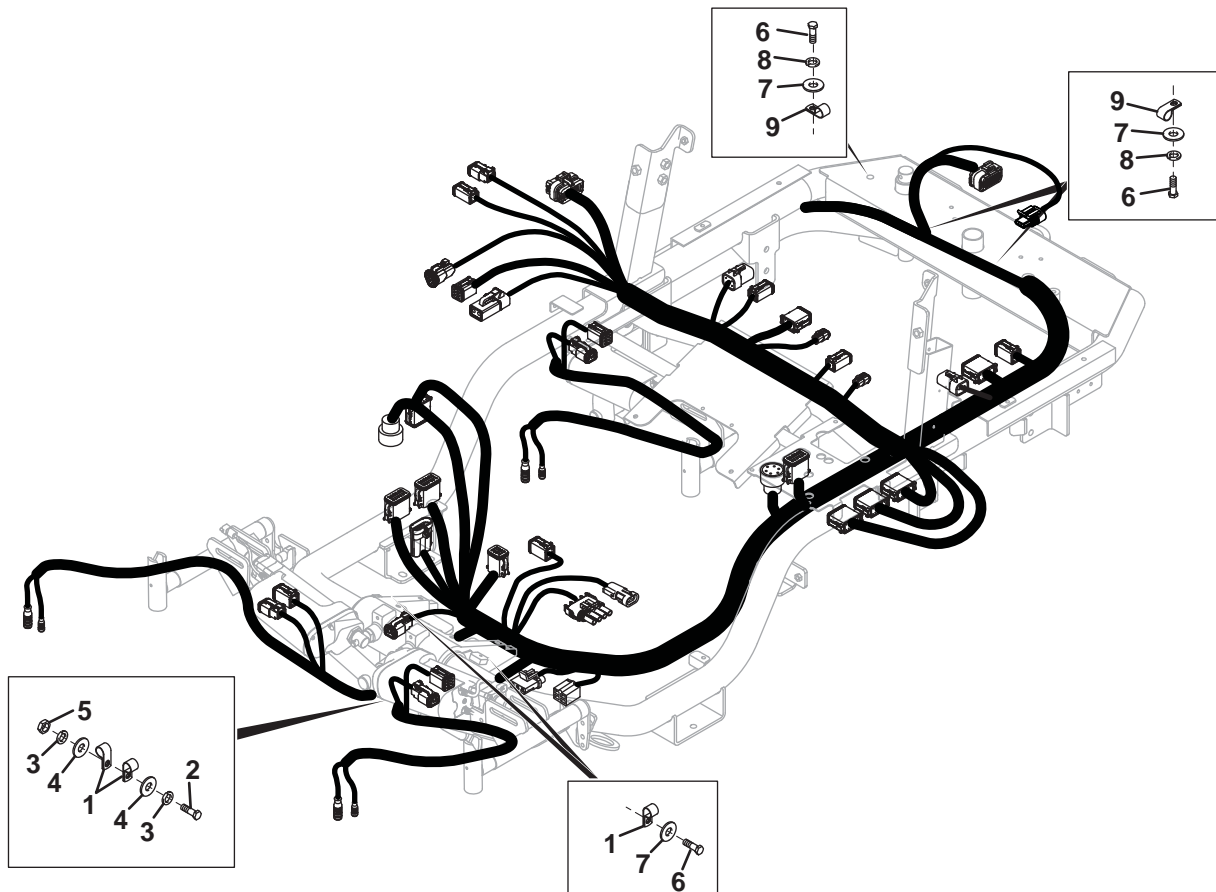
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# ECLIPSE 322

## 32.2 Main Harness Routing BRC Controller

Serial No. 62800 - 1601 ~ 2999  
 Serial No. 62801 - 2500 ~ 2999  
 Serial No. 62802 - 1601 ~ 2999  
 Serial No. 62803 - 2500 ~ 2999

Serial No. 62804 - 1601 ~ 2999  
 Serial No. 62805 - 2500 ~ 2999  
 Serial No. 62825 - 2500 ~ 2999  
 Serial No. 62826 - 1601 ~ 2999





Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	345671	4	Clamp, 3/4" I.D.	
2	450017	1	Screw, M8-1.25 x 45 mm Hex Head	
3	450422	2	Lockwasher, M8	
4	450400	2	Flat Washer, M8	
5	450324	1	Nut, M8-1.25 Hex	
6	450172	5	Screw, M6-1 x 25 mm Hex Head	
7	450399	5	Flat Washer, M6	
8	450421	3	Lockwasher, M6	
9	363514	3	Clamp, 1-1/8" I.D.	
10	4255230	1	Harness, Main	
11	4222601	1	• CAN 120 Ohm Resistor	
	4221901	AR	Reel Motor 8 Pin Connector Kit	Repair Kit for Damaged Connector
	4221961	AR	Reel Motor 3 Pin Connector Kit	Repair Kit for Damaged Connector
12	4263630	1	Harness, Resistor Bank	

### Harness Connections

Connector	Component	Connector	Component
<b>J1</b>	PDU	<b>J67</b>	Left Reel Motor Control
<b>J2</b>	MCU Controller	<b>J68</b>	Center Reel Motor Control
<b>J3</b>	MCU Controller	<b>J69</b>	Right Reel Motor Control
<b>J4</b>	MCU Controller	<b>J70</b>	Left Reel Actuator Control
<b>J5</b>	RCU Input	<b>J71</b>	Center Reel Actuator Control
<b>J6</b>	RCU Left Reel Output	<b>J72</b>	Right Reel Actuator Control
<b>J7</b>	RCU Center Reel Output	<b>J73</b>	Brake Pedal Switch
<b>J8</b>	RCU Right Reel Output	<b>J74</b>	Traction Motor Control
<b>J9</b>	RCU Reel Power Output	<b>J90</b>	Armrest Harness CAN
<b>J20</b>	Left Reel Motor Power	<b>J91</b>	Armrest Harness
<b>J21</b>	Center Reel Motor Power	<b>J92 ■</b>	Genset
<b>J22</b>	Right Reel Motor Power	<b>J93</b>	3WD Option Harness CAN
<b>J23</b>	Left Reel Actuator Power	<b>J94</b>	3WD Option Harness
<b>J24</b>	Center Reel Actuator Power	<b>J97 ■</b>	Genset
<b>J25</b>	Right Reel Actuator Power	<b>J102</b>	Resistor Ground
<b>J26 ■</b>	Engine Harness	<b>J103</b>	Resistor Power
<b>J28</b>	Front Headlight	<b>J104</b>	PDU
<b>J41</b>	Seat Switch Harness	<b>J106</b>	Armrest Harness Power Outlet
<b>J44</b>	Traction Controller	<b>J107 ■</b>	Dome Light
<b>J46</b>	Traction Motor Temperature	<b>J108</b>	Traction Controller Fan
<b>J48</b>	Traction Pedal Sensor	<b>J110</b>	Steering Yoke Sensor
<b>J49</b>	Brake Pedal Sensor	<b>J120</b>	BRC Controller
<b>J55</b>	Power Steering Motor Control	<b>J124</b>	BRC Resistor
<b>J56</b>	Steering LORD	<b>GC1</b>	Ground Stud 1
<b>J65</b>	Steering Controller	<b>GC2</b>	Ground Stud 2
<b>J66 ▲</b>	Diesel Engine Harness		
<b>■ Not used on Battery Powered Mowers</b>		<b>▲ Used on Diesel Hybrid Powered Mowers Only</b>	

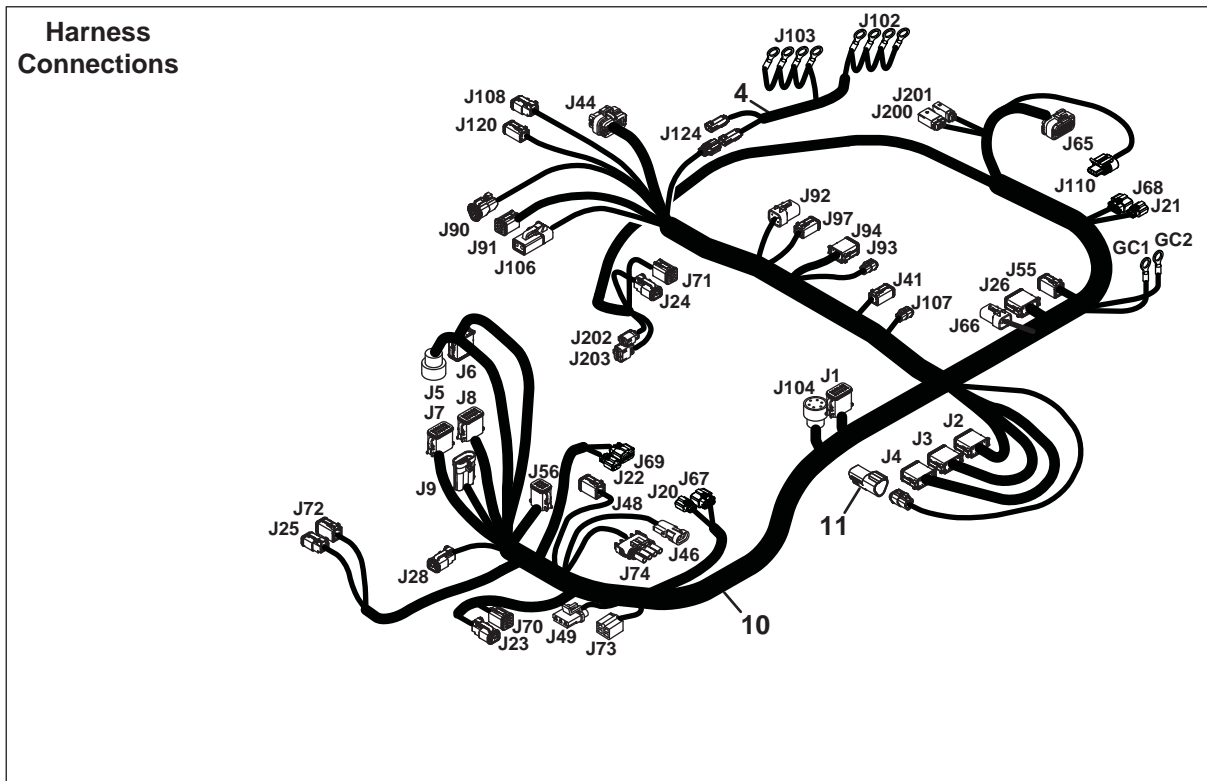
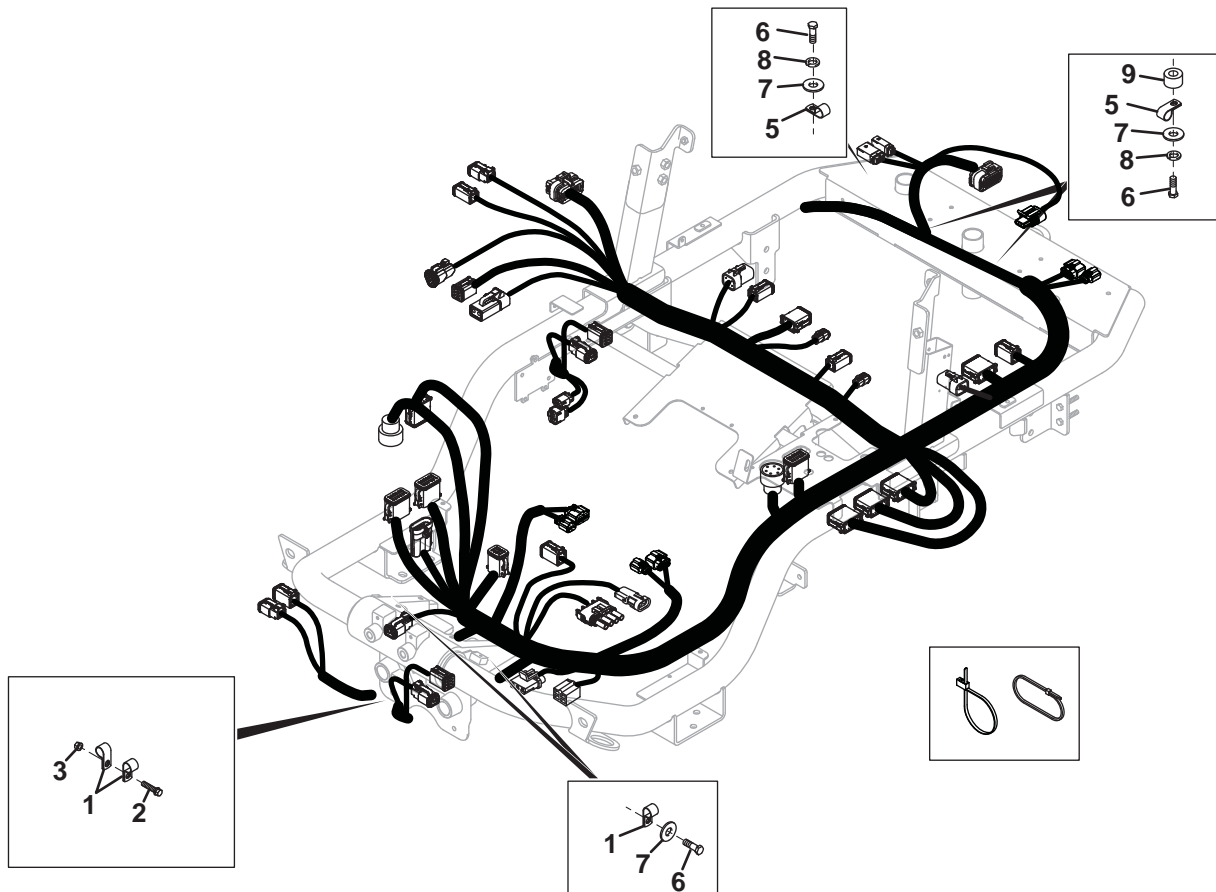
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## 32.3 Main Harness Routing Individual Motor Controllers

Serial No. 62800 - 3000 and Up  
 Serial No. 62801 - 3000 and Up  
 Serial No. 62802 - 3000 and Up  
 Serial No. 62803 - 3000 and Up

Serial No. 62804 - 3000 and Up  
 Serial No. 62805 - 3000 and Up  
 Serial No. 62825 - 3000 and Up  
 Serial No. 62826 - 3000 and Up



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	345671	4	Clamp, 3/4" I.D.	Repair Kit for Damaged Connector Repair Kit for Damaged Connector
2	452391	1	Screw, M8-1.25 x 40 mm Hex Flange	
3	450453	1	Nut, M8-1.25 Hex Flange	
4	4263630	1	Harness, Resistor Bank	
5	363514	3	Clamp, 1-1/8" I.D.	
6	450172	5	Screw, M6-1 x 25 mm Hex Head	
7	450399	5	Flat Washer, M6	
8	450421	3	Lockwasher, M6	
9	3004410	2	Spacer	
10	4249270	1	Harness, Main	
11	4222601	1	• CAN 120 Ohm Resistor	
	4221901	AR	Reel Motor 8 Pin Connector Kit	
	4221961	AR	Reel Motor 3 Pin Connector Kit	
12	4245911	AR	Cable Tie, 5/32 x 8" Double Headed	
13	473142	AR	Cable Tie, 3/16 x 14"	

### Harness Connections

Connector	Component	Connector	Component
<b>J1</b>	PDU	<b>J69</b>	Right Reel Controller Control
<b>J2</b>	MCU Controller	<b>J70</b>	Left Reel Actuator Control
<b>J3</b>	MCU Controller	<b>J71</b>	Center Reel Actuator Control
<b>J4</b>	MCU Controller	<b>J72</b>	Right Reel Actuator Control
<b>J5</b>	RCU Input	<b>J73</b>	Brake Pedal Switch
<b>J6</b>	RCU Left Reel Output	<b>J74</b>	Traction Motor Control
<b>J7</b>	RCU Center Reel Output	<b>J90</b>	Armrest Harness CAN
<b>J8</b>	RCU Right Reel Output	<b>J91</b>	Armrest Harness
<b>J9</b>	RCU Reel Power Output	<b>J92 ■</b>	Genset
<b>J20</b>	Left Reel Controller Power	<b>J93</b>	3WD Option Harness CAN
<b>J21</b>	Center Reel Controller Power	<b>J94</b>	3WD Option Harness
<b>J22</b>	Right Reel Controller Power	<b>J97 ■</b>	Genset
<b>J23</b>	Left Reel Actuator Power	<b>J102</b>	Resistor Ground
<b>J24</b>	Center Reel Actuator Power	<b>J103</b>	Resistor Power
<b>J25</b>	Right Reel Actuator Power	<b>J104</b>	PDU
<b>J26 ■</b>	Engine Harness	<b>J106</b>	Armrest Harness Power Outlet
<b>J28</b>	Front Headlight	<b>J107 ■</b>	Dome Light
<b>J41</b>	Seat Switch Harness	<b>J108</b>	Traction Controller Fan
<b>J44</b>	Traction Controller	<b>J110</b>	Steering Yoke Sensor
<b>J46</b>	Traction Motor Temperature	<b>J120</b>	BRC Controller
<b>J48</b>	Traction Pedal Sensor	<b>J124</b>	BRC Resistor
<b>J49</b>	Brake Pedal Sensor	<b>J200</b>	Center Reel Motor Power (Controller)
<b>J55</b>	Power Steering Motor Control	<b>J201</b>	Center Reel Motor Control (Controller)
<b>J56</b>	Steering LORD	<b>J202</b>	Center Reel Motor Power (Motor)
<b>J65</b>	Steering Controller	<b>J203</b>	Center Reel Motor Control (Motor)
<b>J66 ▲</b>	Diesel Engine Harness	<b>GC1</b>	Ground Stud 1
<b>J67</b>	Left Reel Controller Control	<b>GC2</b>	Ground Stud 2
<b>J68</b>	Center Reel Controller Control		
<b>■ Not used on Battery Powered Mowers</b>		<b>▲ Used on Diesel Hybrid Powered Mowers Only</b>	

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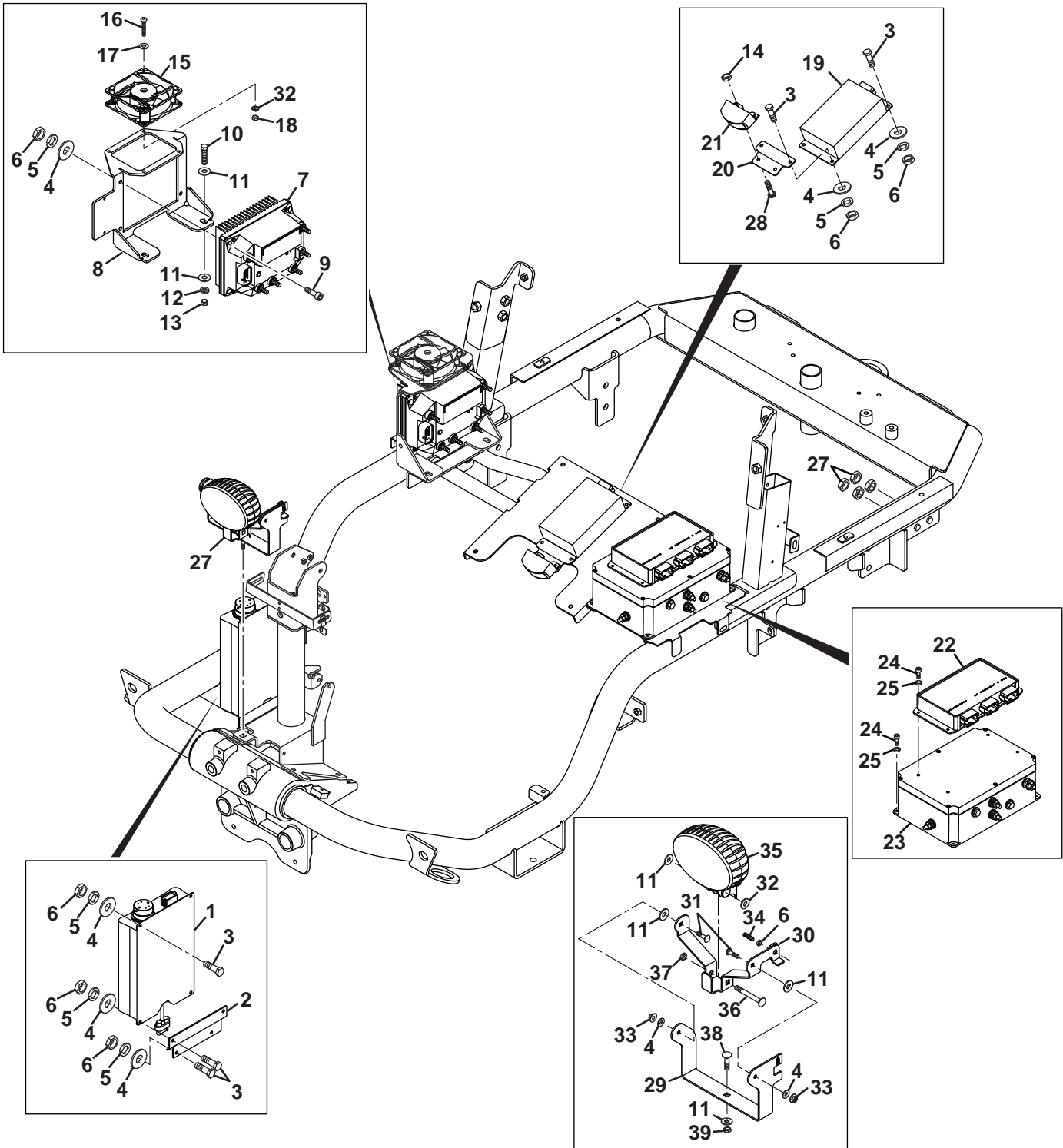
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## 33.1 Controller Installation

Serial No. 62801 - 1601 ~ 1875

Serial No. 62803 - 1601 ~ 1895

Serial No. 62805 - 1601 ~ 2207



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4163962	1	RCU Controller	
2	4166394	1	Bracket, RCU	
3	450172	9	Screw, M6-1 x 25 mm Hex Head	
4	450399	15	Flat Washer, M6	
5	450421	13	Lockwasher, M6	
6	450323	1	Nut, M6-1 Hex	
7	4233020	1	TCU Controller RoHS	
8	4191860	1	Bracket, TCU	
9	450714	4	Screw, M6-1 x 30 mm Hex Socket	
10	450193	2	Screw, M8-1.25 x 30 mm Hex Head	
11	450400	8	Flat Washer, M8	
12	450422	2	Lockwasher, M8	
13	450324	2	Nut, M8-1.25 Hex	
14	4208062	2	Nut, #10-32 Hex	Hybrid Power Modules Only
15	4193360	1	Fan, TCU	
16	4200800	4	Screw, M4-0.7 x 45 mm Hex Socket	
17	450387	8	Flat Washer, M4	
18	450321	4	Nut, M4-0.7 Hex	
19	4177600	1	OLM Controller	
20	4189800	1	Bracket, Running Light	Hybrid Power Modules Only
21	4187220	1	Dome Light	Hybrid Power Modules Only
22	4163961	1	MCU Controller	
23	4166395	1	PDU	See 48.1
24	450687	8	Screw, M4-0.7 x 12 mm Hex Socket	
25	450408	8	Lockwasher, M4	
26	REF	1	Headlight Assembly	
27	4188902	4	Locknut, M8-1.25 Hex	Ground Wires
28	4208067	2	Screw, #10-32 x 3/4" Socket	Hybrid Power Modules Only
29	4201261	1	Bracket, Headlight Outer Pivot	
30	4201262	1	Bracket, Headlight Inner Pivot	
31	452542	2	Carriage Bolt, M6-1 x 20 mm	
32	450401	1	Flat Washer, M10	
33	452435	2	Locknut, M6-1 Hex Flange	
34	4201480	1	Spring Plunger	
35	4187221	1	Headlight, 48V Oval LED	
36	441618	1	• Carriage Bolt, 5/16-18 x 2"	
37	443106	1	• Nut, 5/16-18 Hex	
38	441614	1	• Carriage Bolt, 5/16-18 x 1"	
39	445802	1	• Nut, 5/16-18 Nylon Insert Hex	

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# ECLIPSE 322

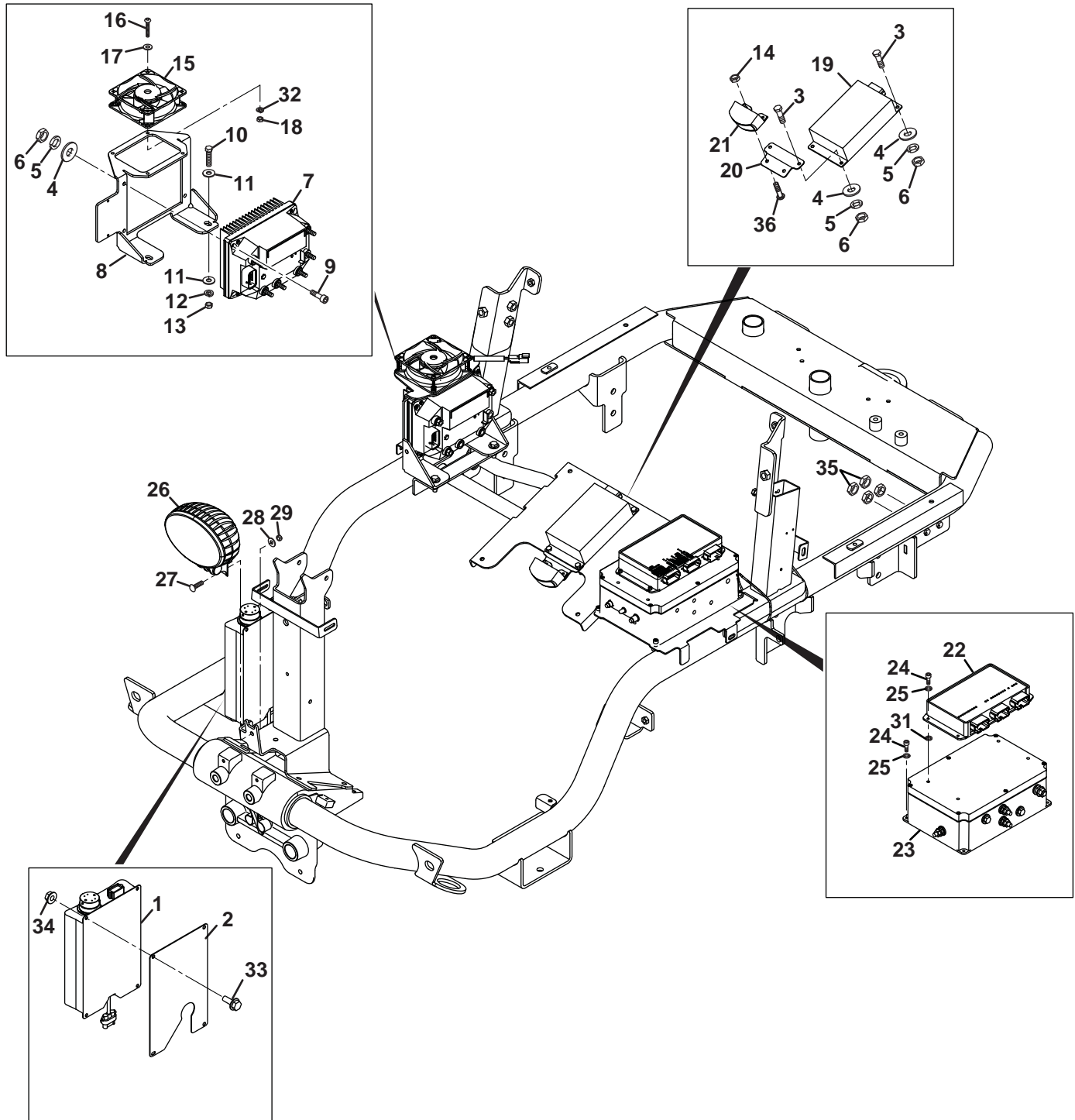
## 33.2 Controller Installation

Serial No. 62801 - 1876 ~ 2499

Serial No. 62803 - 1896 ~ 2499

Serial No. 62805 - 2208 ~ 2499

Serial No. 62825 - 1601 ~ 2499



Item	Part No.	Qty.	Description	Serial Numbers/Notes	
	1	4163962	1	RCU Controller	
>	2	4248490	1	Bracket, RCU	
	3	450172	9	Screw, M6-1 x 25 mm Hex Head	
>	4	450399	9	Flat Washer, M6	
	5	450421	13	Lockwasher, M6	
	6	450323	13	Nut, M6-1 Hex	
	7	4233020	1	TCU Controller RoHS	
	8	4191860	1	Bracket, TCU	
	9	450714	4	Screw, M6-1 x 30 mm Hex Socket	
	10	450193	2	Screw, M8-1.25 x 30 mm Hex Head	
	11	450400	4	Flat Washer, M8	
	12	450422	2	Lockwasher, M8	
	13	450324	2	Nut, M8-1.25 Hex	
>	14	4208062	2	Nut, #10-32 Hex	Hybrid Power Modules Only
	15	4193360	1	Fan, TCU	
	16	4200800	4	Screw, M4-0.7 x 45 mm Hex Socket	
>	17	450387	4	Flat Washer, M4	
	18	450321	4	Nut, M4-0.7 Hex	
	19	4177600	1	OLM Controller	
	20	4189800	1	Bracket, Running Light	Hybrid Power Modules Only
	21	4187220	1	Dome Light	Hybrid Power Modules Only
	22	4163961	1	MCU Controller	
	23	4166395	1	PDU	See 48.1
>	24	450687	4	Screw, M4-0.7 x 12 mm Hex Socket	
	25	450408	8	Lockwasher, M4	
>	26	4187221	1	Headlight, 48V Oval LED	
>	27	452564	1	Carriage Bolt, M8-1.25 x 25 mm	
>	28	450400	1	Flat Washer, M8	
>	29	450378	1	Nut, M8-1.25 Nylon Insert	
>	30	450710	4	Screw, M6-1.00 x 12 mm Hex Socket	
>	31	450387	4	Flat Washer, M4	
>	32	450408	4	Lockwasher, M4	
>	33	450465	4	Screw, M6-1.00 x 16 mm Hex Flange	
>	34	452418	4	Nut, M6-1.00 Hex	
>	35	4188902	4	Locknut, M8-1.25 Hex	Ground Wires
>	36	4208067	2	Screw, #10-32 x 3/4" Socket	Hybrid Power Modules Only

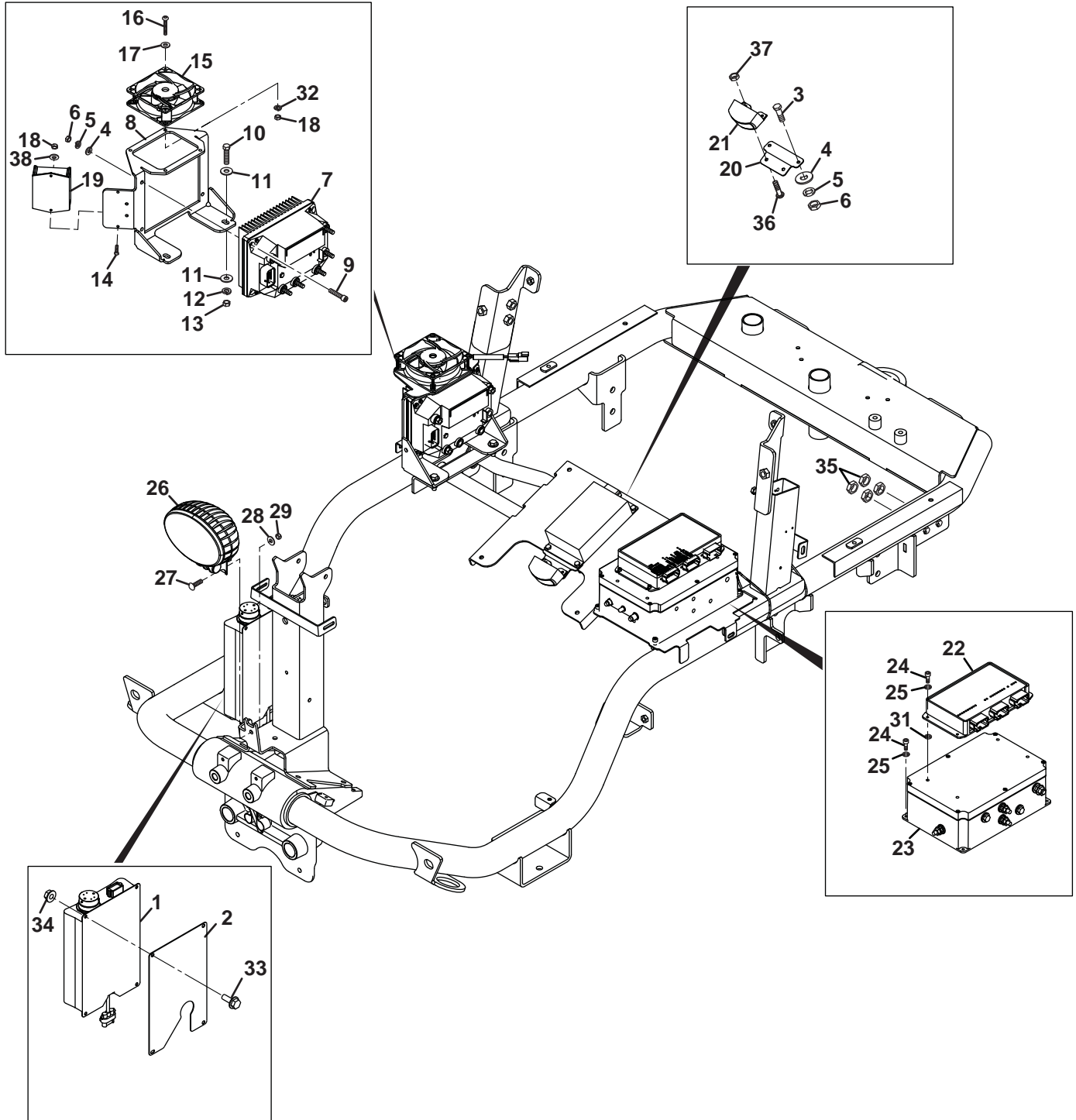
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# ECLIPSE 322

## 33.3 Controller Installation

Serial No. 62800 - 1601 and Up  
 Serial No. 62801 - 2500 and Up  
 Serial No. 62802 - 1601 and Up  
 Serial No. 62803 - 2500 and Up

Serial No. 62804 - 1601 and Up  
 Serial No. 62805 - 2500 and Up  
 Serial No. 62825 - 2500 and Up  
 Serial No. 62826 - 1601 and Up

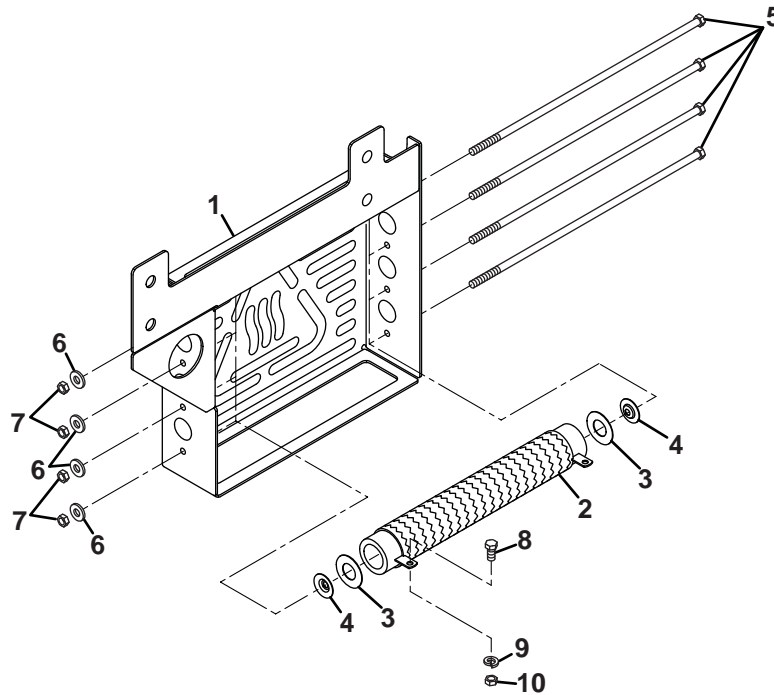




Item	Part No.	Qty.	Description	Serial Numbers/Notes	
	1	4163962	1	RCU Controller	
>	2	4248490	1	Bracket, RCU	
>	3	450172	7	Screw, M6-1 x 25 mm Hex Head	
>	4	450399	7	Flat Washer, M6	
>	5	450421	11	Lockwasher, M6	
>	6	450323	11	Nut, M6-1 Hex	
	7	4262752	1	TCU Controller RoHS	
	8	4191860	1	Bracket, TCU	
	9	450714	4	Screw, M6-1 x 30 mm Hex Socket	
	10	450193	2	Screw, M8-1.25 x 30 mm Hex Head	
	11	450400	4	Flat Washer, M8	
	12	450422	2	Lockwasher, M8	
	13	450324	2	Nut, M8-1.25 Hex	
>	14	450134	2	Screw, #4-0.7 x 16 mm Hex Head	
	15	4193360	1	Fan, TCU	
	16	4200800	4	Screw, M4-0.7 x 45 mm Hex Socket	
>	17	450387	4	Flat Washer, M4	
>	18	450321	6	Nut, M4-0.7 Hex	
>	19	4263693	1	BRC Controller	
	20	4189800	1	Bracket, Running Light	Hybrid Power Modules Only
	21	4187220	1	Dome Light	Hybrid Power Modules Only
	22	4262999	1	MCU Controller	
	23	4166395	1	PDU	See 48.1
>	24	450687	4	Screw, M4-0.7 x 12 mm Hex Socket	
	25	450408	8	Lockwasher, M4	
>	26	4187221	1	Headlight, 48V Oval LED	
>	27	452564	1	Carriage Bolt, M8-1.25 x 25 mm	
>	28	450400	1	Flat Washer, M8	
>	29	450378	1	Nut, M8-1.25 Nylon Insert	
>	30	450710	4	Screw, M6-1.00 x 12 mm Hex Socket	
>	31	450387	4	Flat Washer, M4	
>	32	450408	4	Lockwasher, M4	
>	33	450465	4	Screw, M6-1.00 x 16 mm Hex Flange	
>	34	452418	4	Nut, M6-1.00 Hex	
>	35	4188902	4	Locknut, M8-1.25 Hex	Ground Wires
>	36	4208067	2	Screw, #10-32 x 3/4" Socket	Hybrid Power Modules Only
>	37	4208062	2	Nut, #10-32 Hex	Hybrid Power Modules Only
>	38	450397	2	Flat Washer, M4	

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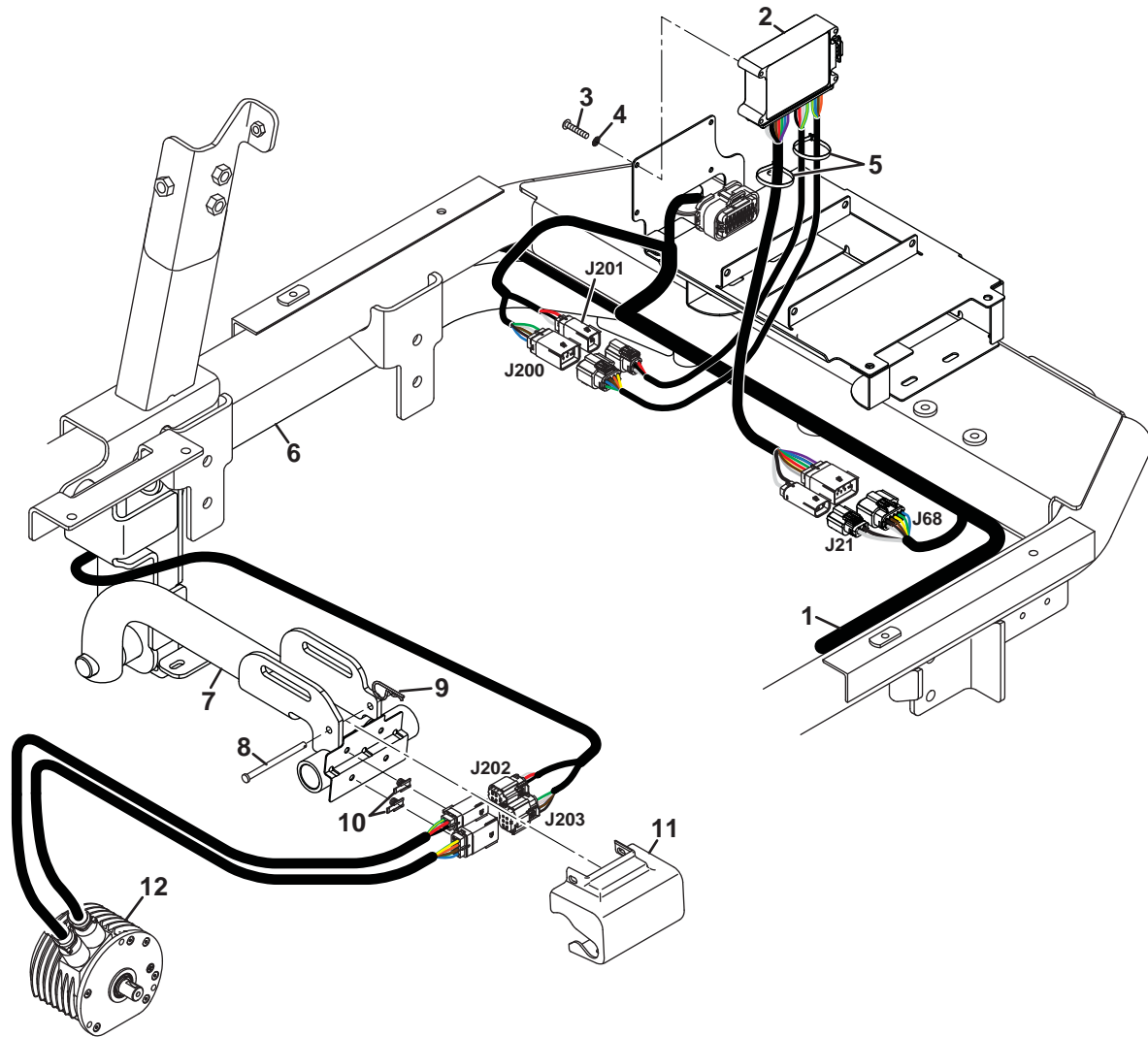
## 34.1 Resistor Bank



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4179064	1	Bracket, Resistor Bank	
2	4179066	4	Rib Wound Resistor Assembly	
	4230000	1	• Resistor Hardware Pack	
3	N/S	2	• • Mica Washer	
4	N/S	2	• • Center Washer	
5	N/S	1	• • Screw, 1/4-20 x 12-1/2" Hex Head	
6	453023	1	• Flat Washer, 1/4	
7	443102	1	• Nut, 1/4-20 Hex	
8	450168	8	Screw, M6-1 x 12 mm Hex Head	
9	450421	8	Lockwasher, M8	
10	450323	8	Nut, M6-1 Hex	

> Change from previous revision

**35.1 Center Reel Motor Controller**



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4249270	1	Harness, Main	<b>See 32.3</b>
2	4253190	1	Controller, Reel Motor	
3	800299	4	Screw, #10-24 x 1" Fillester Head	<b>See 16.1</b>
4	306998	4	Lockwasher, #10 Internal/External	
5	473142	2	Cable Tie, 3/16 x 14"	<b>See 16.1</b>
6	4156439	1	Center Reel Swing Arm	
7	4271531	1	Center Lift Arm	<b>See 16.1</b>
8	400067	1	Clevis Pin, 1/4 x 3"	
9	460312	1	Hairpin	<b>See 45.2</b>
10	4269211	2	Clip, Reel Motor Connector	
11	4269210	1	Cover, Motor Connector	<b>See 45.2</b>
12	4261470	1	Motor, Reel	

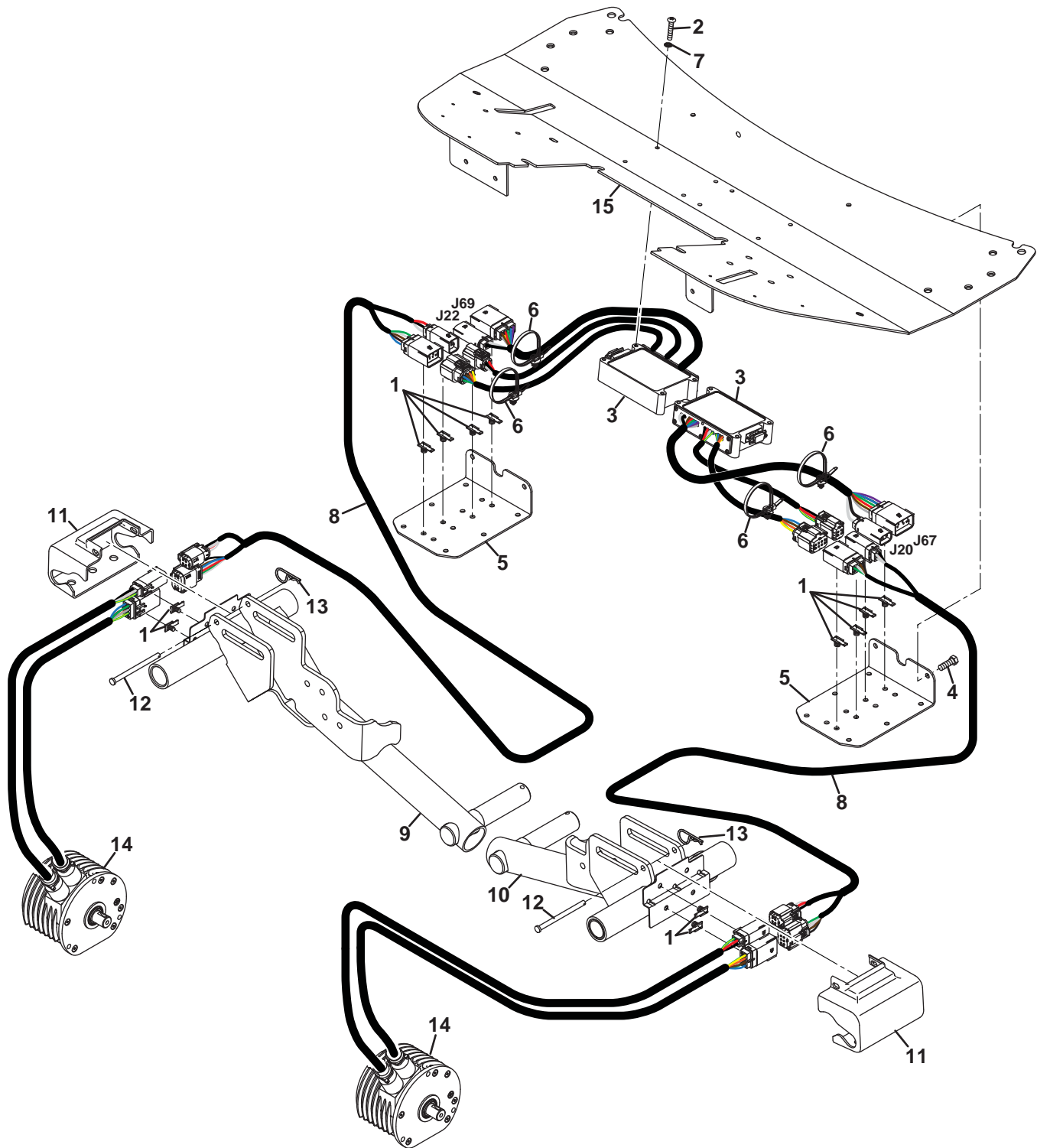
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# ECLIPSE 322

## 36.1 Front Reel Controllers

Serial No. 62800 - 3000 and Up  
Serial No. 62801 - 3000 and Up  
Serial No. 62802 - 3000 and Up  
Serial No. 62803 - 3000 and Up

Serial No. 62804 - 3000 and Up  
Serial No. 62805 - 3000 and Up  
Serial No. 62825 - 3000 and Up  
Serial No. 62826 - 3000 and Up



<b>Item</b>	<b>Part No.</b>	<b>Qty.</b>	<b>Description</b>	<b>Serial Numbers/Notes</b>
1	4269211	12	Clip, Reel Motor Connector	
2	800299	8	Screw, #10-24 x 1" Fillester Head	
3	4253190	2	Controller, Reel Motor	
4	452378	4	Screw, M6-1 x 20 mm Hex Flange	
5	4269191	2	Bracket, Controller Mounting	
6	4167640	4	Cable Tie, Fir Tree	
7	306998	8	Lockwasher, #10 Internal/External	
8	4270951	2	Harness, Reel Motor Jumper	
9	4271532	1	Right Front Lift Arm	<b>See 15.1</b>
10	4271533	1	Left Front Lift Arm	<b>See 15.1</b>
11	4269210	2	Cover, Motor Connector	
12	400067	2	Clevis Pin, 1/4 x 3"	
13	460312	2	Hairpin	
14	4261470	2	Motor, Reel	<b>See 45.2</b>
15	4269192	1	Floorboard	<b>See 8.1</b>

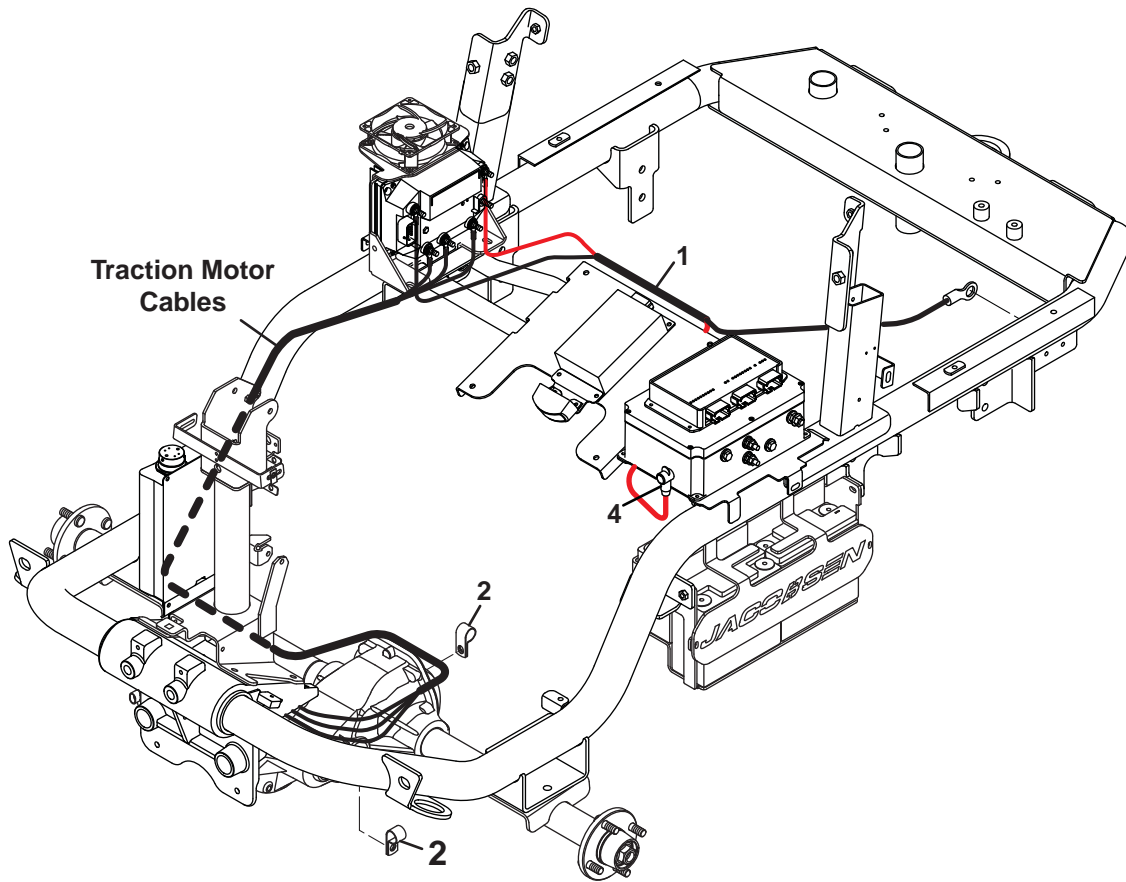
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# ECLIPSE 322

## 37.1 TCU Cables

Serial No. 62800 - 1601 ~ 2999  
 Serial No. 62801 - 1601 ~ 2999  
 Serial No. 62802 - 1601 ~ 2999  
 Serial No. 62803 - 1601 ~ 2999

Serial No. 62804 - 1601 ~ 2999  
 Serial No. 62805 - 1601 ~ 2999  
 Serial No. 62825 - 1601 ~ 2999  
 Serial No. 62826 - 1601 ~ 2999



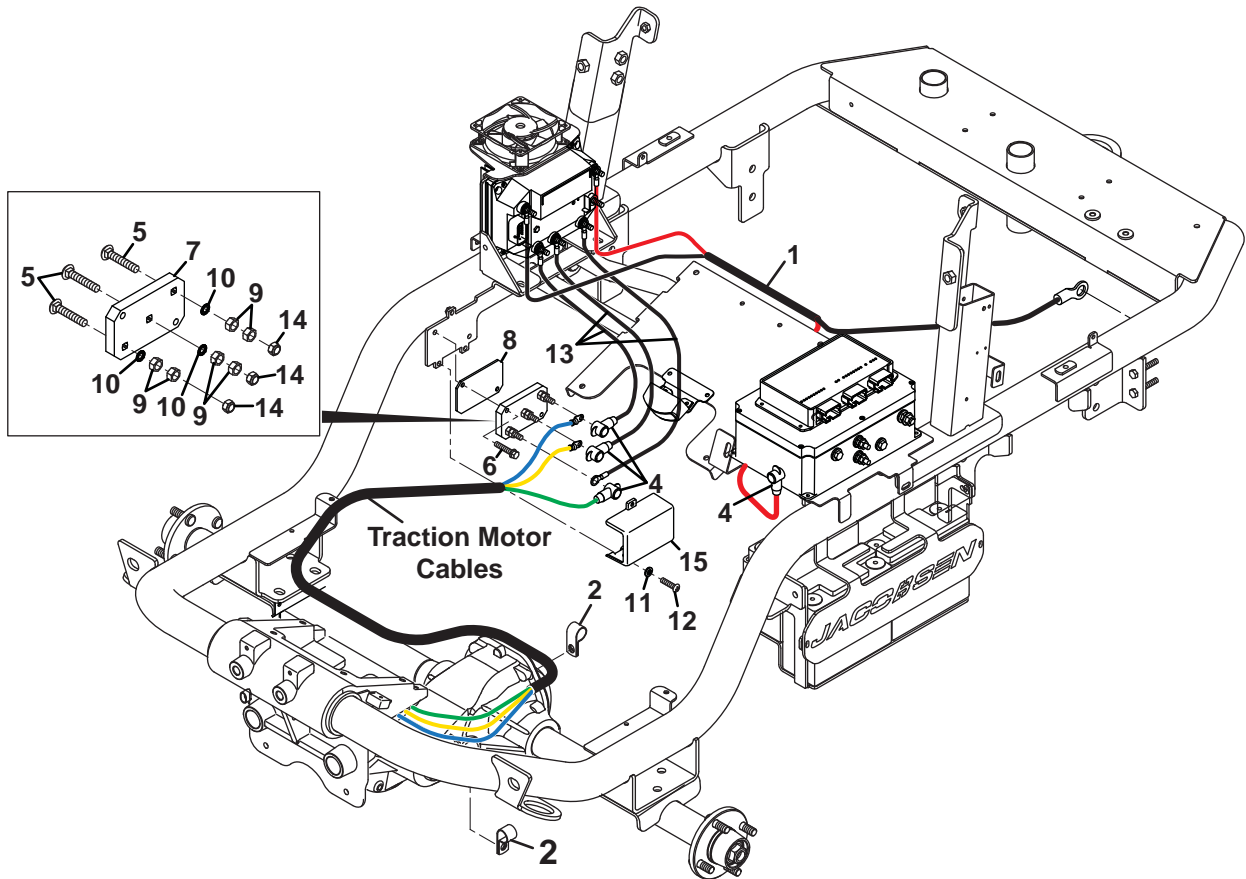
Item	Part No.	Qty.	Description	Serial Numbers/Notes	
>	1	4168020	1	Harness, Traction Power	
>		N/S	1	Positive (Red) Cable	Traction Contactor Output Stud to TCU B+
>		N/S	1	Negative (Black) Cable	TCU B- to Ground Stud
>	2	364190	2	Clamp	
>	3	473142	2	Cable Tie, 3/16 x 14"	Traction power harness to frame under seat support.
>	4	840177	1	Boot, Terminal	
>					
>					
>					
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>					
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## 37.2 TCU Cables

Serial No. 62800 - 3000 and Up  
 Serial No. 62801 - 3000 and Up  
 Serial No. 62802 - 3000 and Up  
 Serial No. 62803 - 3000 and Up

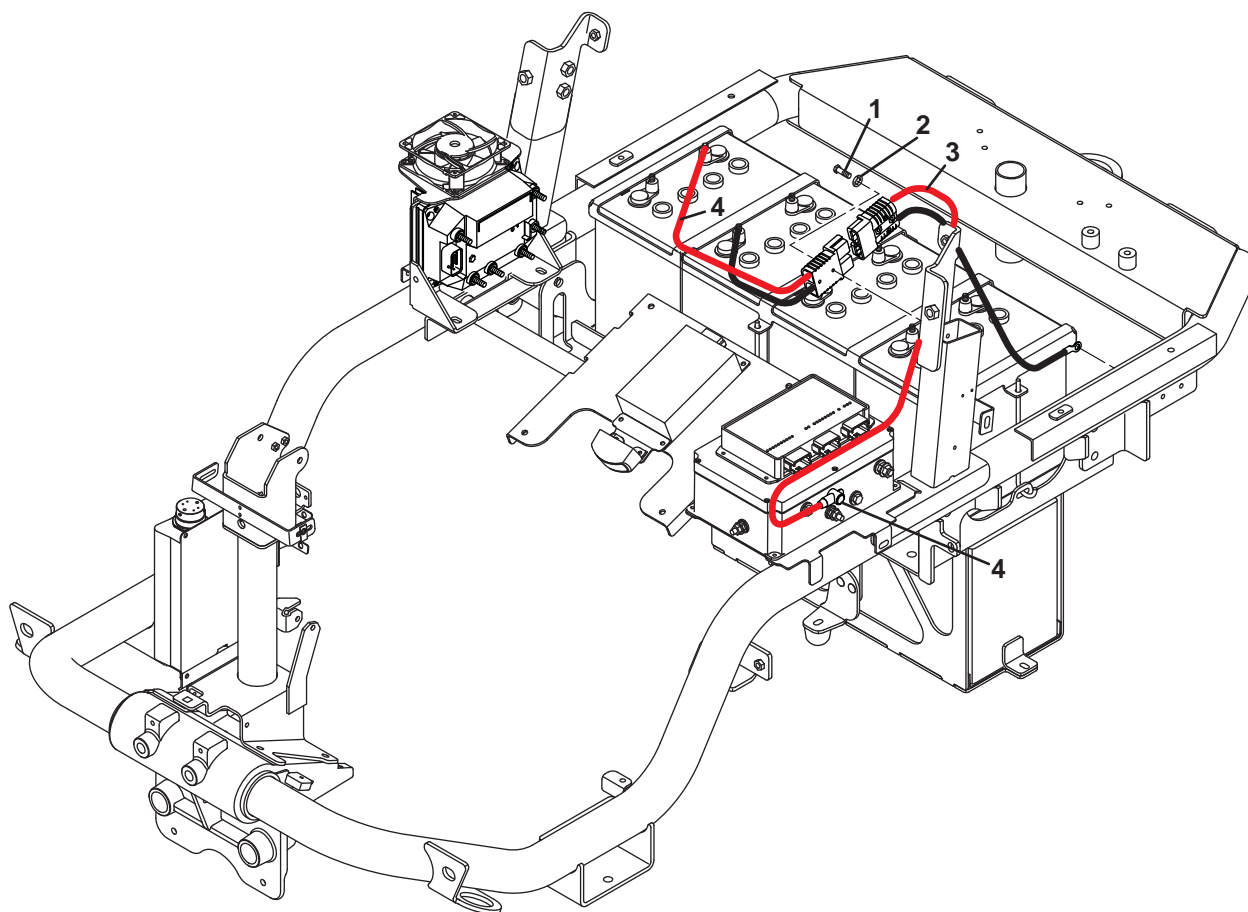
Serial No. 62804 - 3000 and Up  
 Serial No. 62805 - 3000 and Up  
 Serial No. 62825 - 3000 and Up  
 Serial No. 62826 - 3000 and Up



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4168020	1	Harness, Traction Power	Traction Contactor Stud to TCU B+ TCU B- to Ground Stud
	N/S	1	Positive (Red) Cable	
	N/S	1	Negative (Black) Cable	
2	364190	2	Clamp	Traction power harness to frame.  Stainless Steel
3	473142	2	Cable Tie, 3/16 x 14"	
4	840177	4	Boot, Terminal	
5	441668	3	Carriage Bolt, 1/4-20 x 1-1/4"	
6	452380	2	Screw, M6-1 x 30 mm Hex Flange	
7	4272213	1	Block, Terminal	
8	4272212	1	Plate, Blocking	
9	443802	6	Nut, 1/4-20 Hex Jam	
10	306448	3	Lockwasher, 1/4 External Tooth	
11	4194845	3	Washer, M6 Sealing	
12	64205-081	3	Screw, M6-1 x 25 mm Pan Head	
13	883078	3	Cable, Black	
14	445770	3	Nut, 1/4-20 Hex Nylon Insert	
15	4272211	1	Cover, Terminal Block	

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## 38.1 Battery Power Module Battery Cable



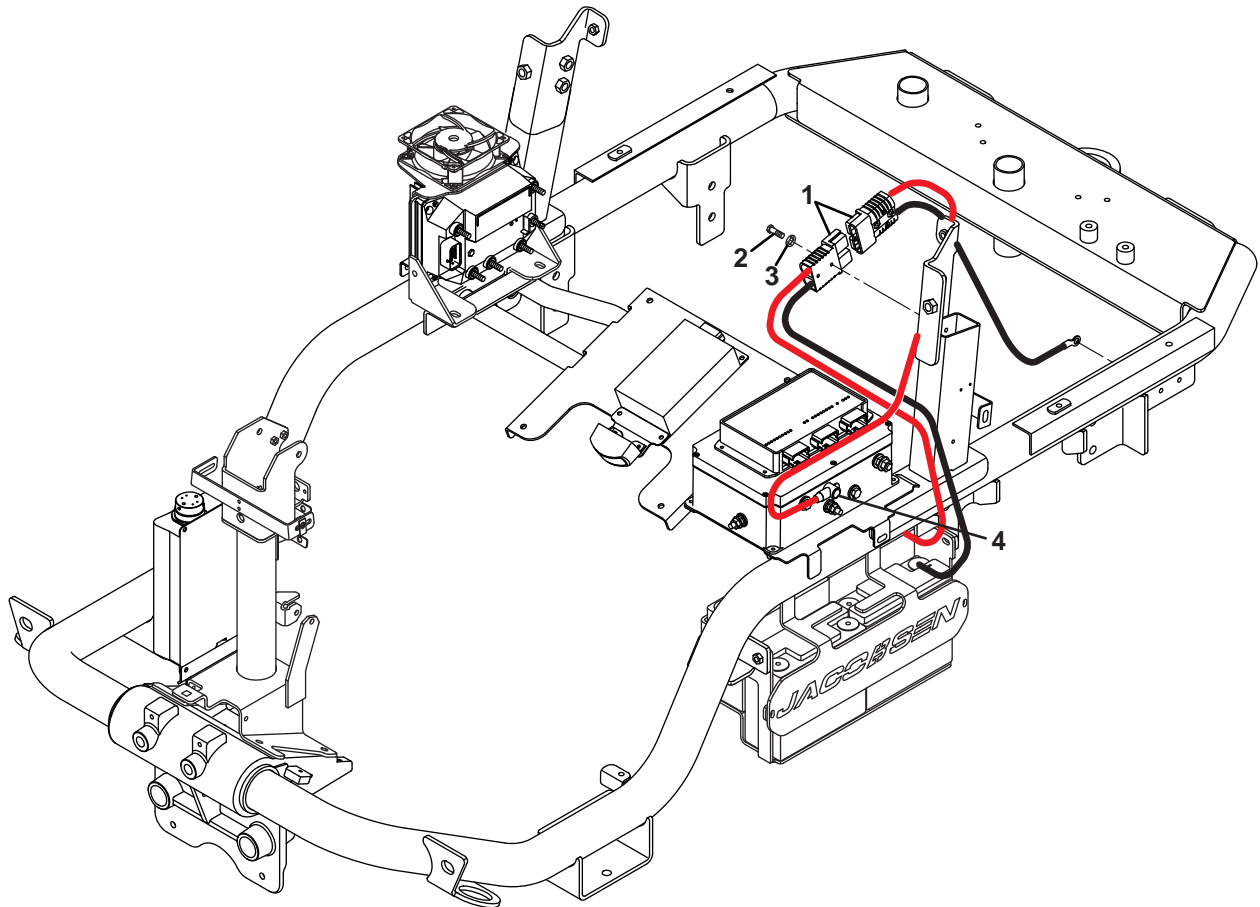
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	450003	2	Screw, M6-1 x 40 mm Hex Head	
2	446130	2	Lockwasher, 1/4 Heavy	
3	4168038	1	Battery Cable Assy	See 20.1 for Battery Connection
	840572	2	• Plug, 175 Amp Blue	
	N/S	1	• Positive (Red) Cable	Power Connector to 48V Stud
	N/S	1	• Negative (Black) Cable	Power Connector to Ground Stud
	N/S	1	• Positive (Red) Cable	Battery + to Power Connector
	N/S	1	• Negative (Black) Cable	Battery - to Power Connector
4	840177	1	Boot, Terminal	

> Change from previous revision



## 39.1 Buffer Battery Cables

### Hybrid Power Modules



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4168038	1	Buffer Battery Cables	See 21.1 for Battery Connection  Power Connector to 48V Stud Power Connector to Ground Stud Battery + to Power Connector Battery - to Power Connector
	840572	2	• Plug, 175 Amp Blue	
	N/S	1	• Positive (Red) Cable	
	N/S	1	• Negative (Black) Cable	
	N/S	1	• Positive (Red) Cable	
	N/S	1	• Negative (Black) Cable	
2	450003	2	Screw, M6-1 x 40 mm Hex Head	
3	446130	2	Lockwasher, 1/4 Heavy	
4	840177	1	Boot, Terminal	

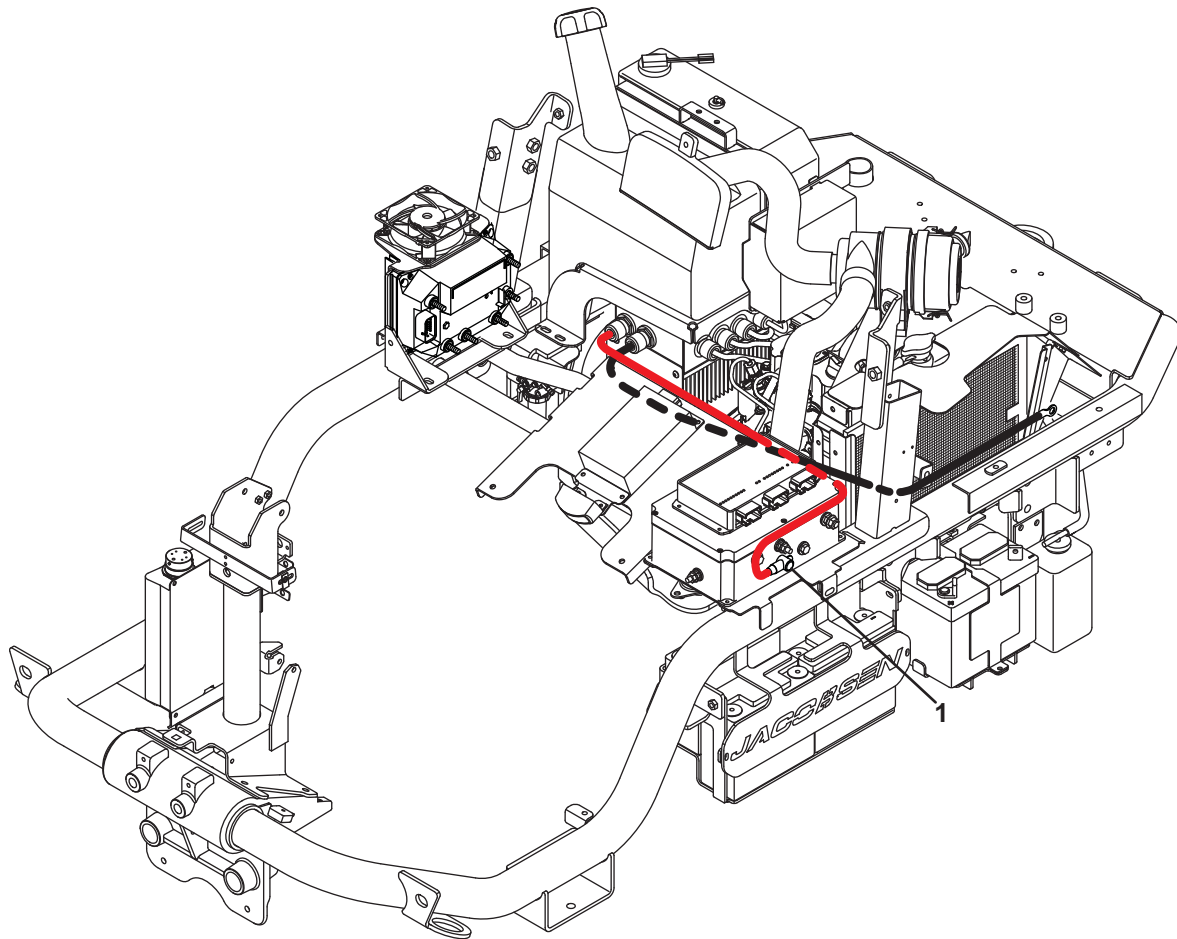
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## 40.1 Genset Power Cables

### Hybrid Power Modules

Serial No. 62803 - All

Serial No. 62805 - All

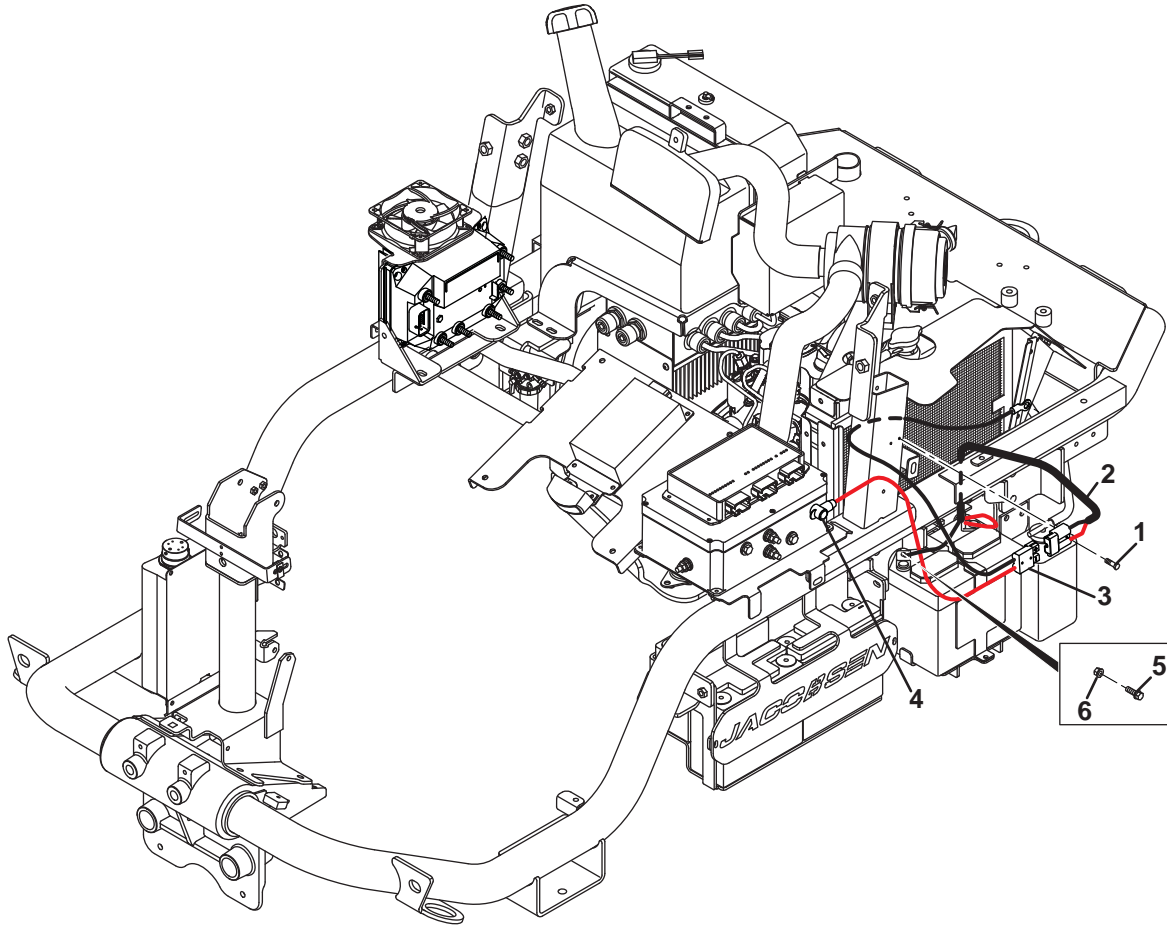


**Diesel Shown, Gas Similar**

Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	REF	1	Generator	Diesel: See 23.1 Gas: See 26.1
	N/S	1	• Positive (Red) Cable	Generator positive output to PDU Genset Stud
	N/S	1	• Negative (Black) Cable	Generator negative output to ground stud
	840177	1	Boot, Terminal	

> Change from previous revision

## 41.1 12 Volt Battery Cables Hybrid Power Modules

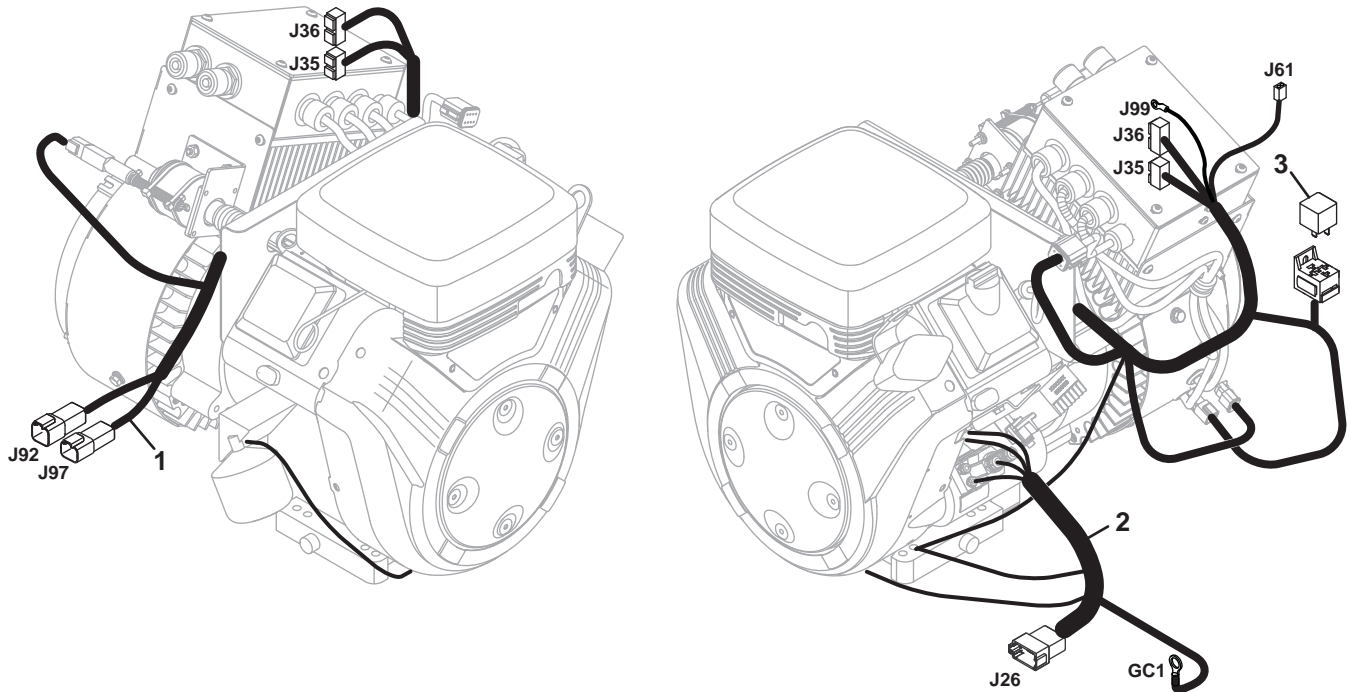


**Diesel Shown, Gas Similar**

Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4220560	2	Screw, M3.5-0.6 x 30 mm Hex Head	
2	4168042	1	12 Volt Cable - Battery Side	
	4140022	1	• 2 Pole Connector	
	N/S	1	• Positive (Red) Cable	Battery + to Power Connector
3	N/S	1	• Negative (Black) Cable	Battery - to Power Connector
	4174521	1	12 Volt Cable - PDU Side	
	4140022	1	• 2 Pole Connector	
4	N/S	1	• Positive (Red) Cable	Power Connector to 12V Stud
	N/S	1	• Negative (Black) Cable	Power Connector to Ground Stud
	840177	1	Boot, Terminal	
5	452378	2	Screw, M6-1 x 20 mm Hex Flange	
6	452418	2	Nut, M6-1 Hex Flange	

> Change from previous revision

## 42.1 Gas Hybrid Power Module Harness

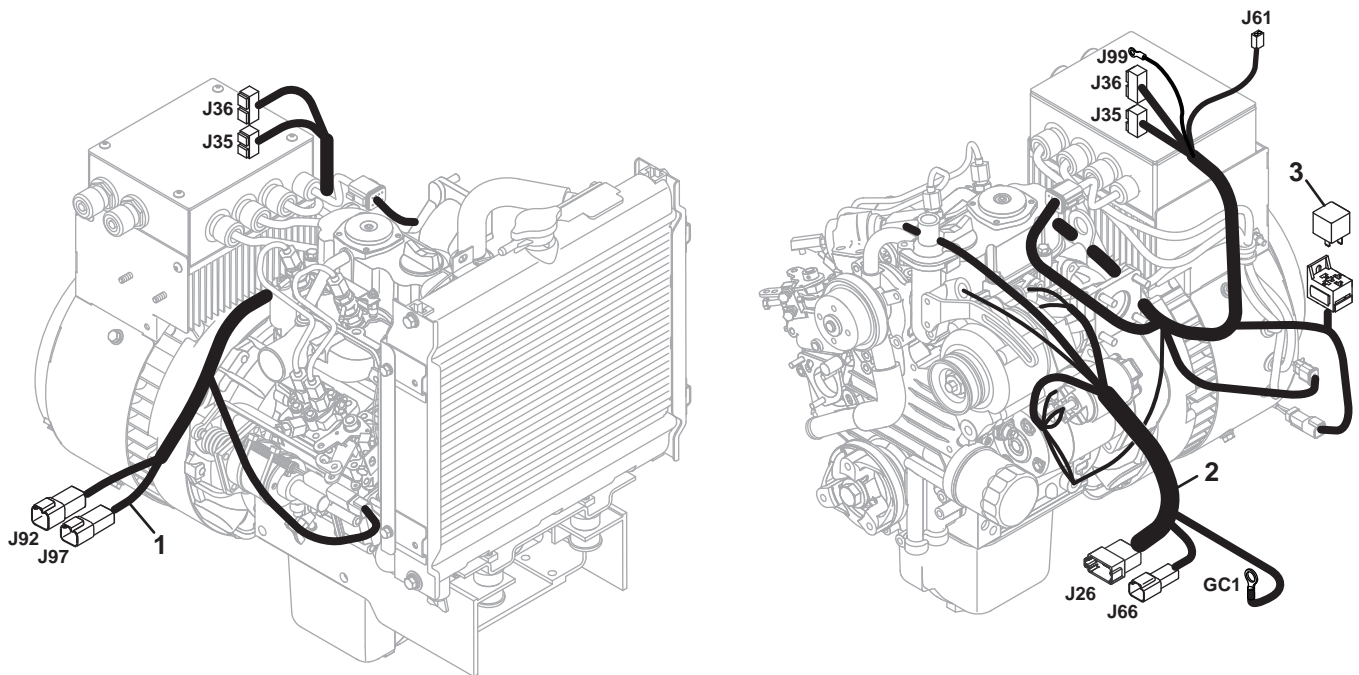


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4175122	1	Harness, Genset	
2	4167182	1	Harness, Gas Engine	
3	4193880	1	Relay, SPDT with Diode	

Connector	Component	Connector	Component
<b>J26</b>	Main Harness	<b>J92</b>	Main Harness
<b>J35</b>	Genset Controller	<b>J97</b>	Main Harness
<b>J36</b>	Genset Controller	<b>J99</b>	Controller Shield Mounting Screw
<b>J61</b>	Fuel Sender	<b>GC1</b>	Ground Stud 1

> Change from previous revision

## 43.1 Diesel Hybrid Power Module Harness

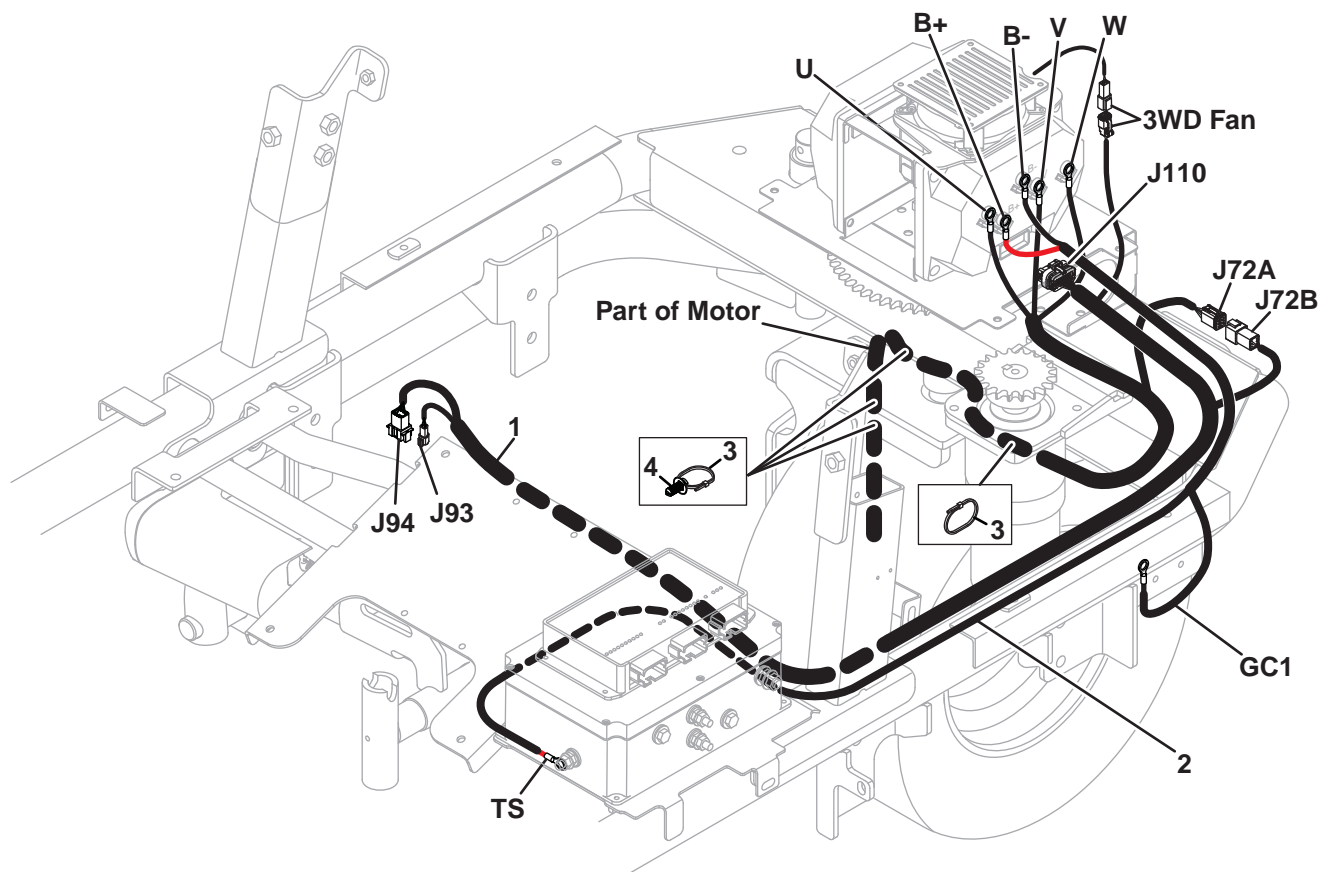


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4175122	1	Harness, Genset	
2	4167183	1	Harness, Diesel Engine	
3	4193880	1	Relay, SPDT with Diode	
4	473142	2	Cable Tie, 3/16 x 14"	Not Shown, Alt, Starter Wires

Connector	Component	Connector	Component
<b>J26</b>	Main Harness	<b>J66</b>	Main Harness
<b>J35</b>	Genset Controller	<b>J92</b>	Main Harness
<b>J36</b>	Genset Controller	<b>J97</b>	Main Harness
<b>J61</b>	Fuel Sender	<b>J99</b>	Controller Shield Mounting Screw
<b>GC1</b>	Ground Stud 1		

> Change from previous revision

## 44.1 3WD Harness Routing



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4233060	1	Harness, 3WD Motor Control	
2	4233040	1	Harness, 3WD Power	
3	473142	6	Cable Tie, 3/16 x 14"	
4	4257272	3	Mount, Tie Clip Push-In	

**Harness Connections**

Connector	Component	Connector	Component
<b>J72A</b>	Motor Harness (Motor Harness Side)	<b>J110</b>	3WD Controller
<b>J72B</b>	Motor Harness (Control Harness Side)	<b>GC1</b>	Ground Stud
<b>J93</b>	3WD Option Harness CAN	<b>TS</b>	Traction Stud on PDU
<b>J94</b>	3WD Option Harness		

> Change from previous revision

# ECLIPSE 322

## 45.1 Reel Motor

Serial No. 62800 - 1651 ~ 2999

Serial No. 62801 - 1651 ~ 2999

Serial No. 62802 - 1651 ~ 2999

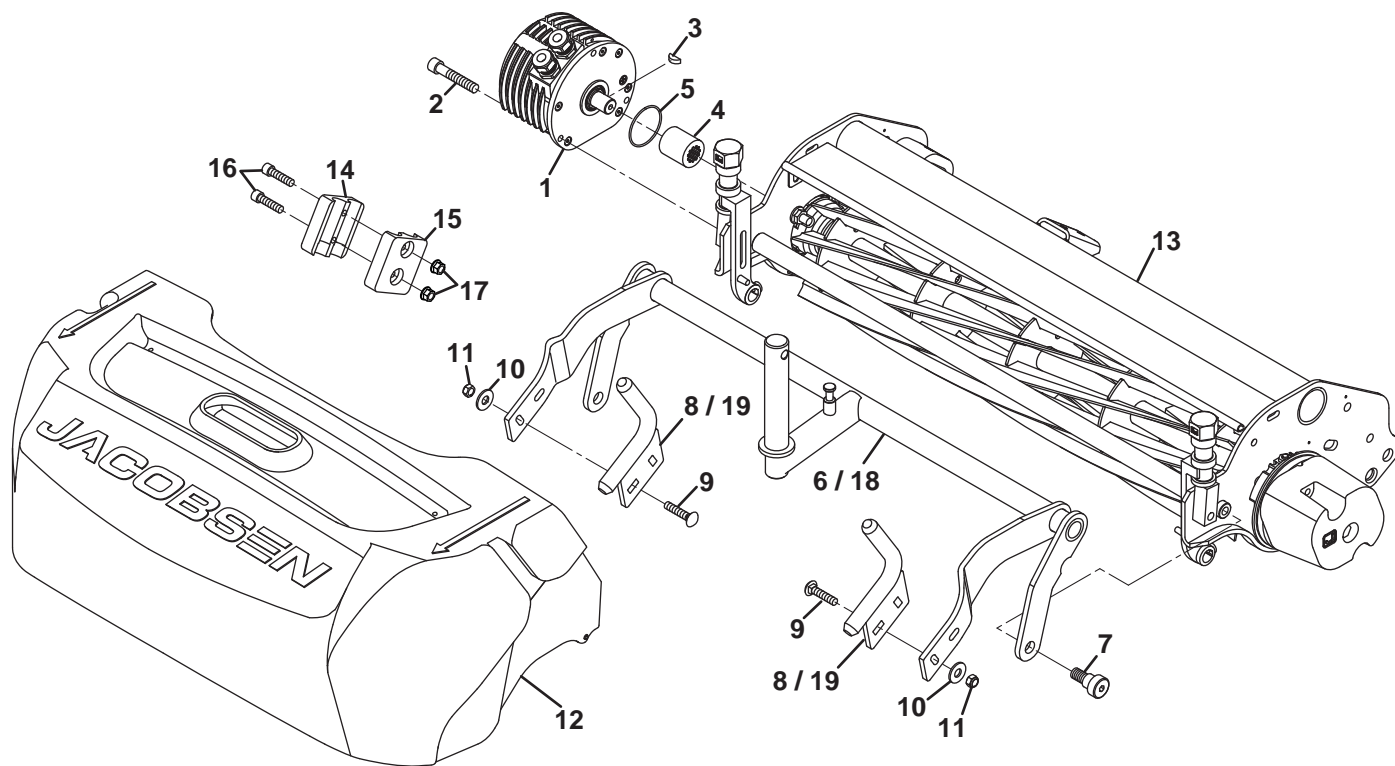
Serial No. 62803 - 1651 ~ 2999

Serial No. 62804 - 1651 ~ 2999

Serial No. 62805 - 1651 ~ 2999

Serial No. 62825 - 1651 ~ 2999

Serial No. 62826 - 1651 ~ 2999



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4221900	3	Motor, Bi-Directional Brushless	
2	434010	9	Screw, 1/4-20 x 1-3/4" Hex Socket	
3	463029	3	Key, 5/8 x 3/16" Woodruff	
4	2812384	3	Coupler, Reel	
5	4104720	3	O-Ring, 1-3/4" I.D.	
6	4197000	1	Lift Yoke	Used on Center Reel
7	365246	6	Bolt, Shoulder	Included with Reel Assembly
8	4197001	2	Yoke Pin, Center Reel	
9	452747	12	Carriage Bolt, M6-1 x 25 mm	
10	452004	12	Flat Washer, 1/4	
11	450377	12	Nut, M6-1 Nylock Hex	
12	4214180	3	Grass Catcher	
13	REF	3	Reel Assembly	See 46.1 for Inner Reel See 47.1 for Outer Reel
14	4244462	3	Clamp, Front Cordset Connector	
15	4244851	3	Clamp, Rear Cordset Connector	
16	434029	6	Screw, 1/4-20 x 1" Hex Socket	
17	445784	6	Nut, 1/4-20 Whizlock Flange	
18	4225300	2	Lift Yoke	Used on front reels
19	4238503	4	Yoke Pin, Front Reels	

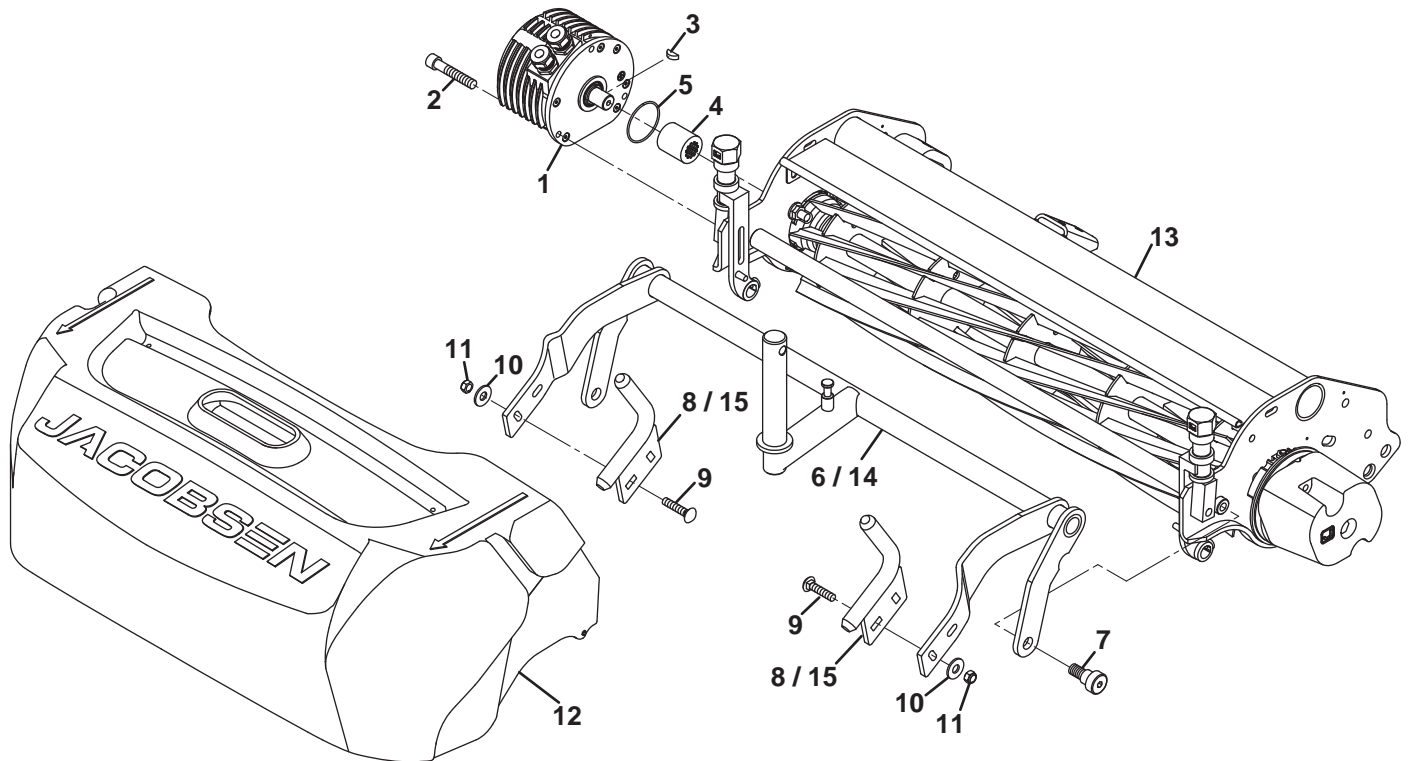
> Change from previous revision



## 45.2 Reel Motor

Serial No. 62800 - 3000 and Up  
 Serial No. 62801 - 3000 and Up  
 Serial No. 62802 - 3000 and Up  
 Serial No. 62803 - 3000 and Up

Serial No. 62804 - 3000 and Up  
 Serial No. 62805 - 3000 and Up  
 Serial No. 62825 - 3000 and Up  
 Serial No. 62826 - 3000 and Up



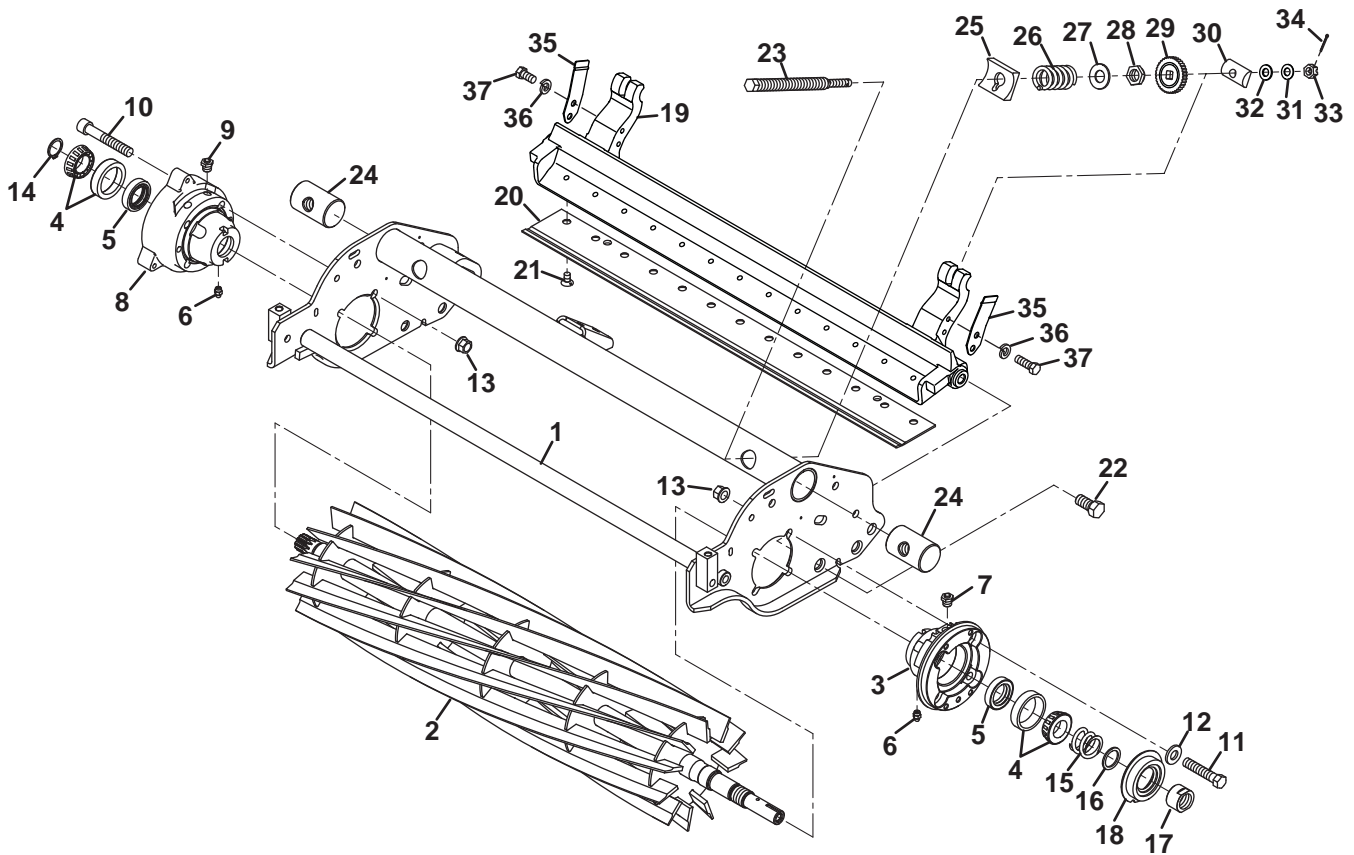
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4261470	3	Motor, Bi-Directional Brushless	
2	434010	9	Screw, 1/4-20 x 1-3/4" Hex Socket	
3	463029	3	Key, 5/8 x 3/16" Woodruff	
4	2812384	3	Coupler, Reel	
5	4104720	3	O-Ring, 1-3/4" I.D.	
6	4197000	1	Lift Yoke	Used on Center Reel
7	365246	6	Bolt, Shoulder	Included with Reel Assembly
8	4197001	2	Yoke Pin, Center Reel	
9	452747	12	Carriage Bolt, M6-1 x 25 mm	
10	452004	12	Flat Washer, 1/4	
11	450377	12	Nut, M6-1 Nylock Hex	
12	4214180	3	Grass Catcher	
13	REF	3	Reel Assembly	See 46.1 for Inner Reel See 47.1 for Outer Reel
14	4225300	2	Lift Yoke	Used on front reels
15	4238503	4	Yoke Pin, Front Reels	

> Change from previous revision

# ECLIPSE 322

## 46.1 Inner Reel

Serial No. 62830 - All  
 Serial No. 62831 - All  
 Serial No. 62832 - All  
 Serial No. 62833 - All



### Standard Style Bedknives (Secured with screws)

Part Number	Description
▲ 5003150	22" Medium Section
503477	22" High Profile
◆ 503478	22" Low Profile
503479	22" Tournament
● 5002887	22" Super Tournament
4234900	22" Championship

- ▲ Standard Bedknife (7 Blade)
- ◆ Standard Bedknife (9 Blade)
- Standard Bedknife (11 and 15 Blade)

### Optional MagKnife Bedknives

Part Number	Description
4131369	22" High Profile
4131001	22" Low Profile
4131370	22" Tournament
4131003	22" Super Tournament

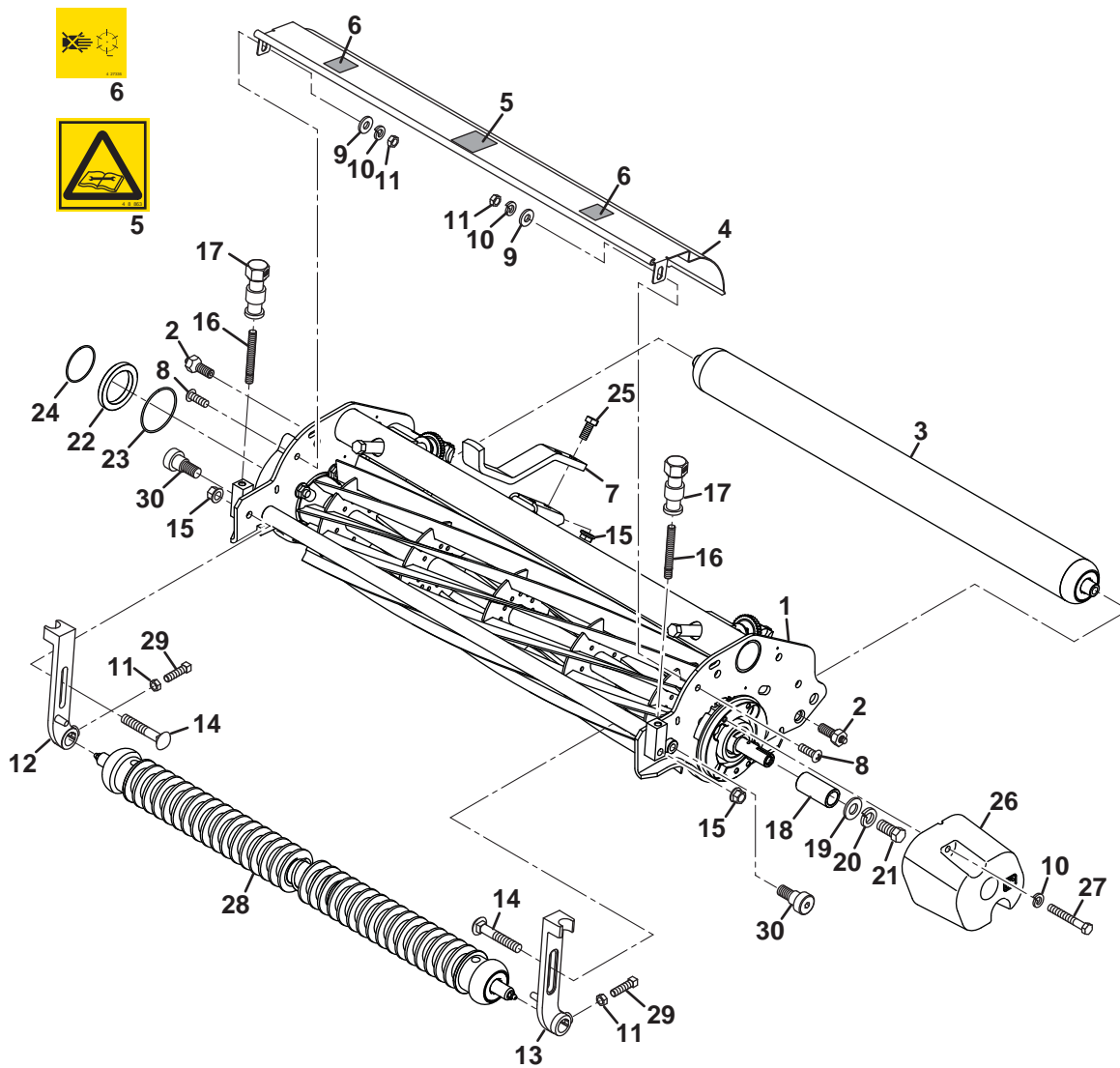
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4256225	1	22" Reel Frame	
2	5003053	1	Reel, 22" 7 Blade	
2	5001099	1	Reel, 22" 9 Blade	
2	5001101	1	Reel, 22" 11 Blade	
2	4225505	1	Reel, 22" 15 Blade	
3	1000480	1	Housing, Bearing	
4	500534	1	• Bearing, Cup and Cone	
5	336962	1	• Seal, Grease	
6	471214	1	• Grease Fitting	
7	471240	1	• Vent Fitting	
8	4268330	1	Housing, Bearing	Includes Items 4-6
9	471242	2	• Vent Fitting	
10	434049	4	Screw, 5/16-18 x 2" Socket Head	
11	400192	4	Screw, 5/16-18 x 1-1/2" Socket Head	
12	453009	4	Flat Washer, 5/16	
13	445795	8	Nut, 5/16-18 Spirallock Flange	
14	458013	1	Ring, Snap	
15	5002151	1	Spring, Compression	
16	304745	1	Washer, Reel Shaft	
17	364900	1	Nut, 3/4-16 Reel	
18	163892	1	Seal Assembly	
19	4255754	1	Backing, 22" Bedknife	
20	See Chart	1	Bedknife	
21	4252470	AR	Screw, Bedknife	Package of 100 Screws
22	315298	2	Bolt, 7/16-20 x 3/4" Wheel	
23	4256228	2	Rod, Bedknife Adjuster	
24	4256227	2	Trunnion, Internal	
25	4256229	2	Cradle, Tube Spring	
26	4256231	2	Spring, Compression	
27	400051	2	Washer, 1/2" Bellville	
28	400050	2	Nut, 1/2-20 Hex Jam Nylock	
29	4256233	2	Washer, Bedknife Adjustment	
30	4256232	2	Trunnion Half	
31	400052	2	Washer, 5/16 Bellville	
32	400065	AR	Washer, Shim	
33	400053	2	Nut, 5/16-24 Hex Slotted	
34	460008	2	Cotter Pin, 5/64 x 3/4"	
35	4256230	2	Spring, Detent	
36	446130	4	Lockwasher, 1/4 Heavy	
37	400104	4	Screw, 1/4-20 x 1/2" Hex Head	

> Change from previous revision

# ECLIPSE 322

## 47.1 Outer Reel

Serial No. 62830 - All  
Serial No. 62831 - All  
Serial No. 62832 - All  
Serial No. 62833 - All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	REF	1	Inner Reel	See 46.1
2	1002224	2	Zerk Bolt	
3	1004990	1	22" Rear Roller	See 51.1
4	2810043	1	Shield, Grass	
5	4181863	1	Decal, Read Manual for Service	
6	4127335	2	Decal, Danger	
7	3010293	1	Stop, Reel	
8	403782	2	Screw, 1/4-20 x 3/4" Truss Head	
9	453023	13	Flat Washer, 1/4	
10	446130	4	Lockwasher, 1/4 Heavy	
11	443102	2	Nut, 1/4-20 Hex	
12	3008438	1	Bracket, Right Side Front Roller	
13	3008439	1	Bracket, Left Side Front Roller	
14	441674	2	Carriage Bolt, 5/16-18 x 1-3/4"	
15	445795	4	Nut, 5/16-18 Spirallock Flange	
16	343616	2	Stud, Front Roller Adjuster	
17	3005692	2	Knob, Front Roller Adjuster	
18	367164	1	Spacer	
19	453011	1	Flat Washer, 3/8	
20	446142	1	Lockwasher, 3/8 Heavy	
21	400294	1	Screw, 3/8-24 x 1" Hex Head	
22	4265194	1	Adapter, Pilot	
23	4268910	1	O-Ring, 2-1/8 x 2"	
24	4104720	1	O-Ring, 1-7/8 x 1-3/4	Not Included with Reel.
25	400184	2	Screw, 5/16-18 x 3/4" Hex Head	
26	4171380	1	Casting, Counterweight	
27	400118	2	Screw, 1/4-20 x 1-3/4" Hex Head	
28	REF	1	Front Roller	Not included with reel.
29	352737	2	Set Screw, 1/4-20 x 7/8" Grade 8	
30	365247	2	Shoulder Bolt	

> Change from previous revision

# ECLIPSE 322

## 48.1 PDU

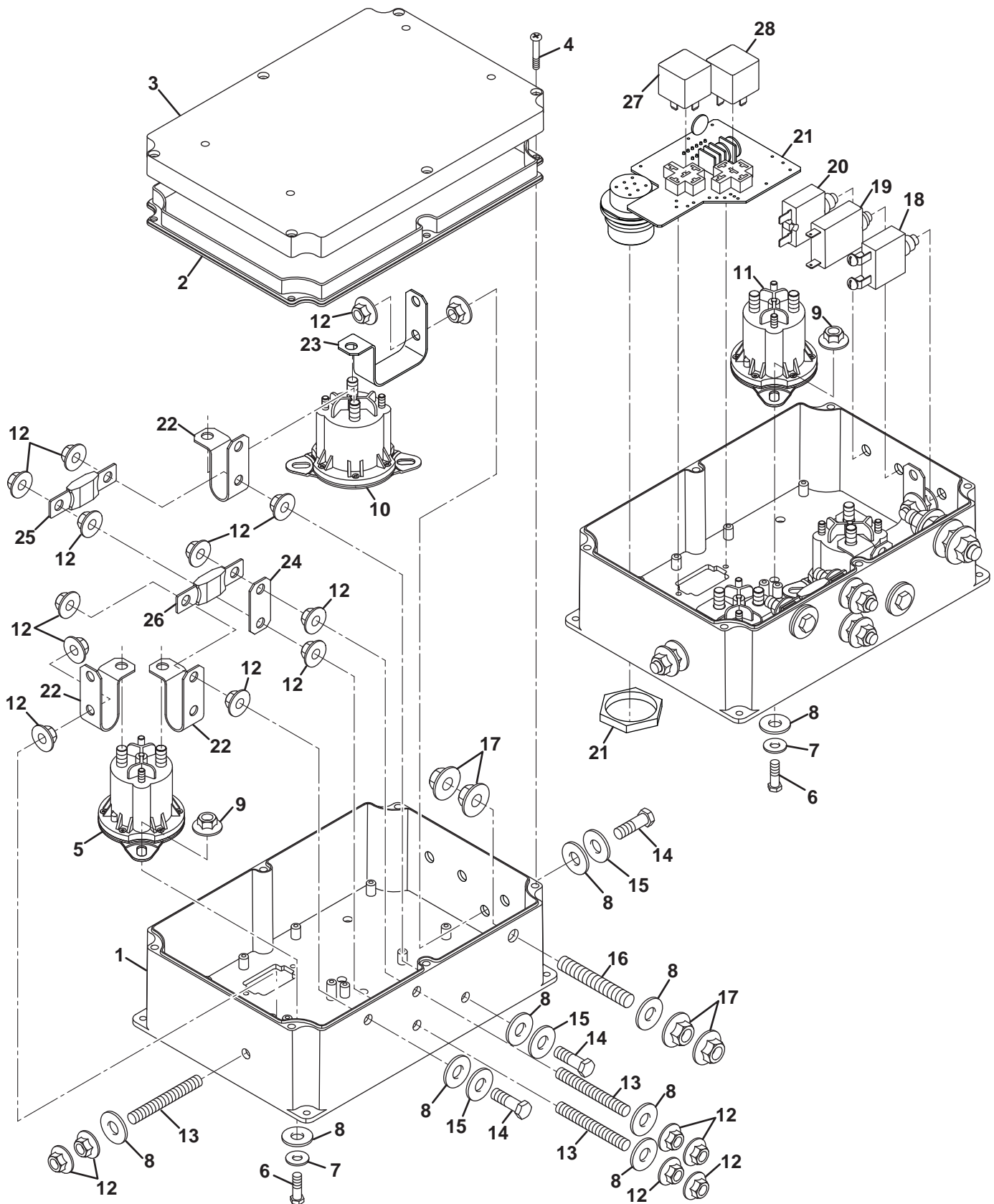
Part Number 4166395

Serial No. 62801 - 1601 ~ 1887

Serial No. 62803 - 1601 ~ 1936

Serial No. 62805 - 1601 ~ 2248

Serial No. 62525 - 1601 ~ 1663



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	N/S	1	Case, PDU	
2	N/S	1	Seal, PDU	
3	N/S	1	Cover, PDU	
4	N/S	6	Screw, PDU	
5	4165604	1	Contactora, Traction	
6	450171	6	Screw, M6-1 x 20 mm Hex Head	
7	450399	6	Flat Washer, M6	
8	4182006	13	Seal	
9	452418	6	Nut, M6-1 Hex Flange	
10	4165604	1	Contactora, 48 Volt System	
11	4165604	1	Contactora, 12 Volt System	
12	450453	19	Nut, M8-1.25 Hex Flange	
13	N/S	3	Stud, M8-1.25 x 50 mm	
14	450193	3	Screw, M8-1.25 x 30 mm Hex Head	
15	450400	3	Flat Washer, M6	
16	N/S	1	Stud, M10-1.5 x 50 mm	
17	452420	4	Nut, M10-1.5 Hex Flange	
18	3000359	1	Circuit Breaker, 12 Volt 50 Amp	
19	4168360	1	Circuit Breaker, 48 Volt 30 Amp	
20	4185800	1	Circuit Breaker, 48 Volt 12 Amp	
21	N/S	1	Printed Circuit Board	
22	N/S	3	Busbar, 48 Volt	
23	N/S	1	Busbar, 48 Volt	Reel Output
24	N/S	1	Busbar, 48 Volt Fuse	
25	4166396	1	Fuse, 150 Amp	
26	4166397	1	Fuse, 300 Amp	
> 27	2722325	1	Glow Plug Relay	
> 28	2722325	1	Start Relay	

> Change from previous revision

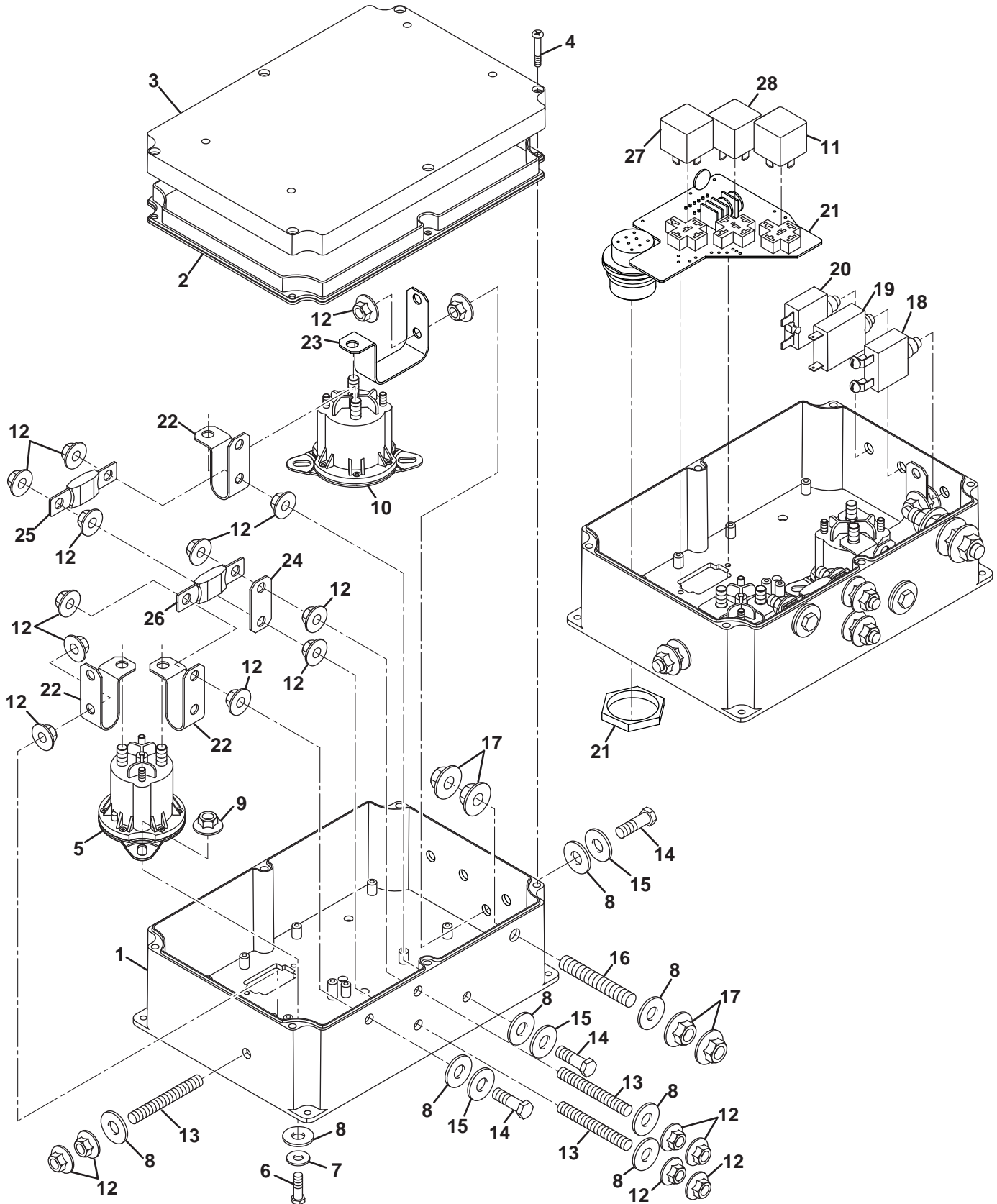
# ECLIPSE 322

## 48.2 PDU

Part Number 4166395

Serial No. 62800 - 1601 and Up  
Serial No. 62801 - 1888 and Up  
Serial No. 62802 - 1601 and Up  
Serial No. 62803 - 1937 and Up

Serial No. 62804 - 1601 and Up  
Serial No. 62805 - 2249 and Up  
Serial No. 62825 - 1664 and Up  
Serial No. 62826 - 1601 and Up





Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	N/S	1	Case, PDU	
2	N/S	1	Seal, PDU	
3	N/S	1	Cover, PDU	
4	N/S	6	Screw, PDU	
5	4165604	1	Contactor, Traction	
6	450171	4	Screw, M6-1 x 20 mm Hex Head	
7	450399	4	Flat Washer, M6	
8	4182006	11	Seal	
9	452418	4	Nut, M6-1 Hex Flange	
10	4165604	1	Contactor, 48 Volt System	
11	2722325	1	Relay, 12 Volt System	
12	450453	19	Nut, M8-1.25 Hex Flange	
13	N/S	3	Stud, M8-1.25 x 50 mm	
14	450193	3	Screw, M8-1.25 x 30 mm Hex Head	
15	450400	3	Flat Washer, M6	
16	N/S	1	Stud, M10-1.5 x 50 mm	
17	452420	4	Nut, M10-1.5 Hex Flange	
18	3000359	1	Circuit Breaker, 12 Volt 50 Amp	
19	4168360	1	Circuit Breaker, 48 Volt 30 Amp	
20	4185800	1	Circuit Breaker, 48 Volt 12 Amp	
21	N/S	1	Printed Circuit Board	
22	N/S	3	Busbar, 48 Volt	
23	N/S	1	Busbar, 48 Volt	Reel Output
24	N/S	1	Busbar, 48 Volt Fuse	
25	4166396	1	Fuse, 150 Amp	
26	4166397	1	Fuse, 300 Amp	
> 27	2722325	1	Glow Plug Relay	
> 28	2722325	1	Start Relay	

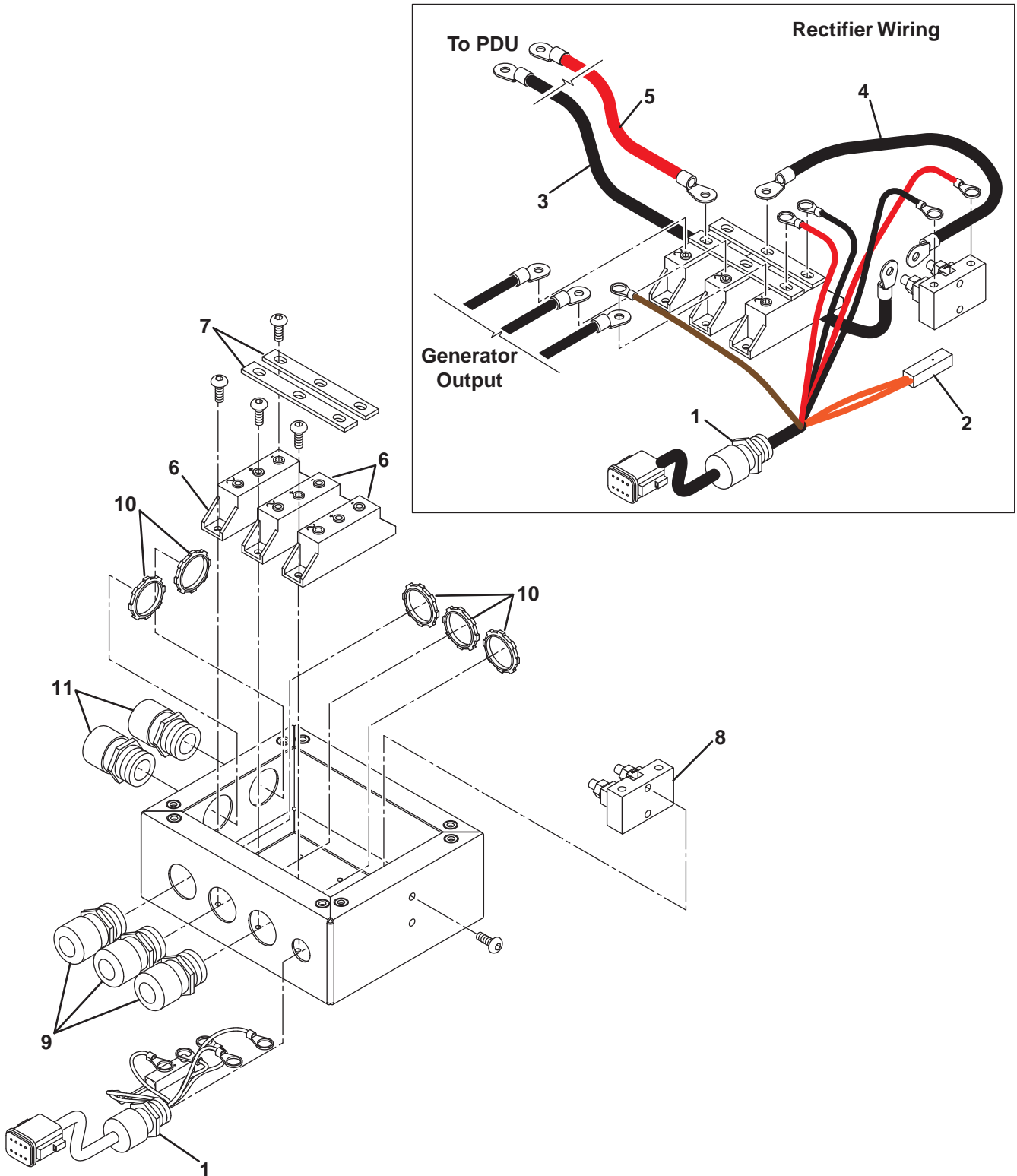
> Change from previous revision

# ECLIPSE 322

## 49.1 Rectifier Repair Kit

Part Number 4216544

Serial No. All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
	4216544	1	Rectifier Repair Kit	
1	N/S	1	• Harness, Rectifier	
2	N/S	1	• • Rectifier Temperature Sensor	
3	N/S	1	• Cable, 69" Black	To PDU
4	N/S	1	• Cable, Rectifier Shunt	
5	N/S	1	• Cable, 67-1/2" Red	To PDU
6	N/S	3	• Diode, Rectifier	
7	N/S	2	• Bus Bar	
8	N/S	1	• Shunt, 150 Amp	
9	N/S	3	• Cable Grip, 3/8"	
10	N/S	6	• Nut, 3/4 NPT Conduit	
11	N/S	2	• Cable Grip, 1/2"	

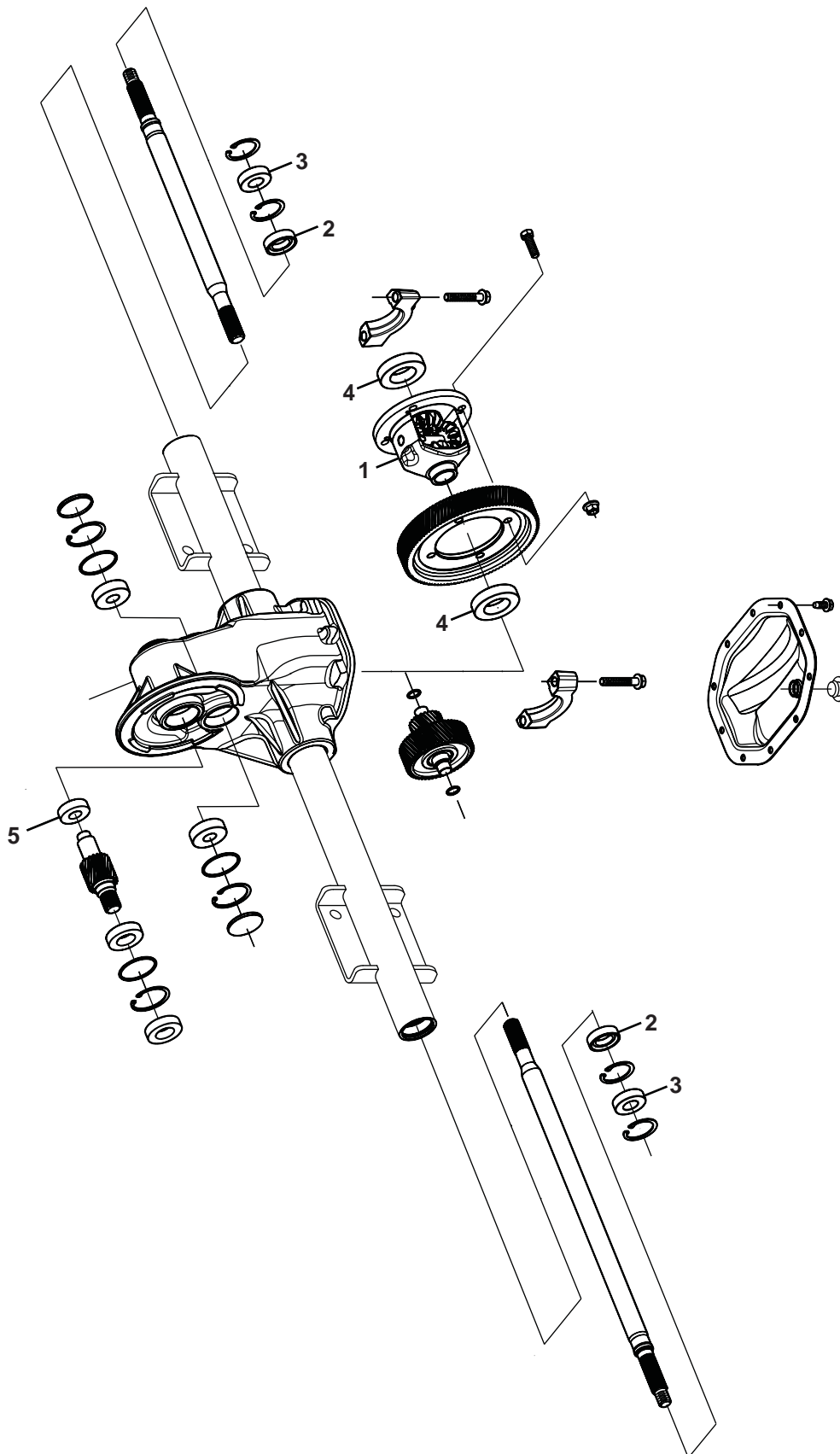
> Change from previous revision

# ECLIPSE 322

Serial No. All

## 50.1 Front Axle

Part Number 4165582



<b>Item</b>	<b>Part No.</b>	<b>Qty.</b>	<b>Description</b>	<b>Serial Numbers/Notes</b>
1	4215200	1	Differential Assembly, Open	
2	4215201	2	Seal, Axle Shaft	
3	4215202	2	Bearing, Axle Shaft	
4	5003008	2	Bearing, Differential	
5	5003006	1	Bearing, Ball	

> Change from previous revision

# ECLIPSE 322

## 51.1 RCU Schematic

### Combined Reel Motor/Controller

Serial No. 62800 - 1651 ~ 2999

Serial No. 62801 - 1651 ~ 2999

Serial No. 62802 - 1651 ~ 2999

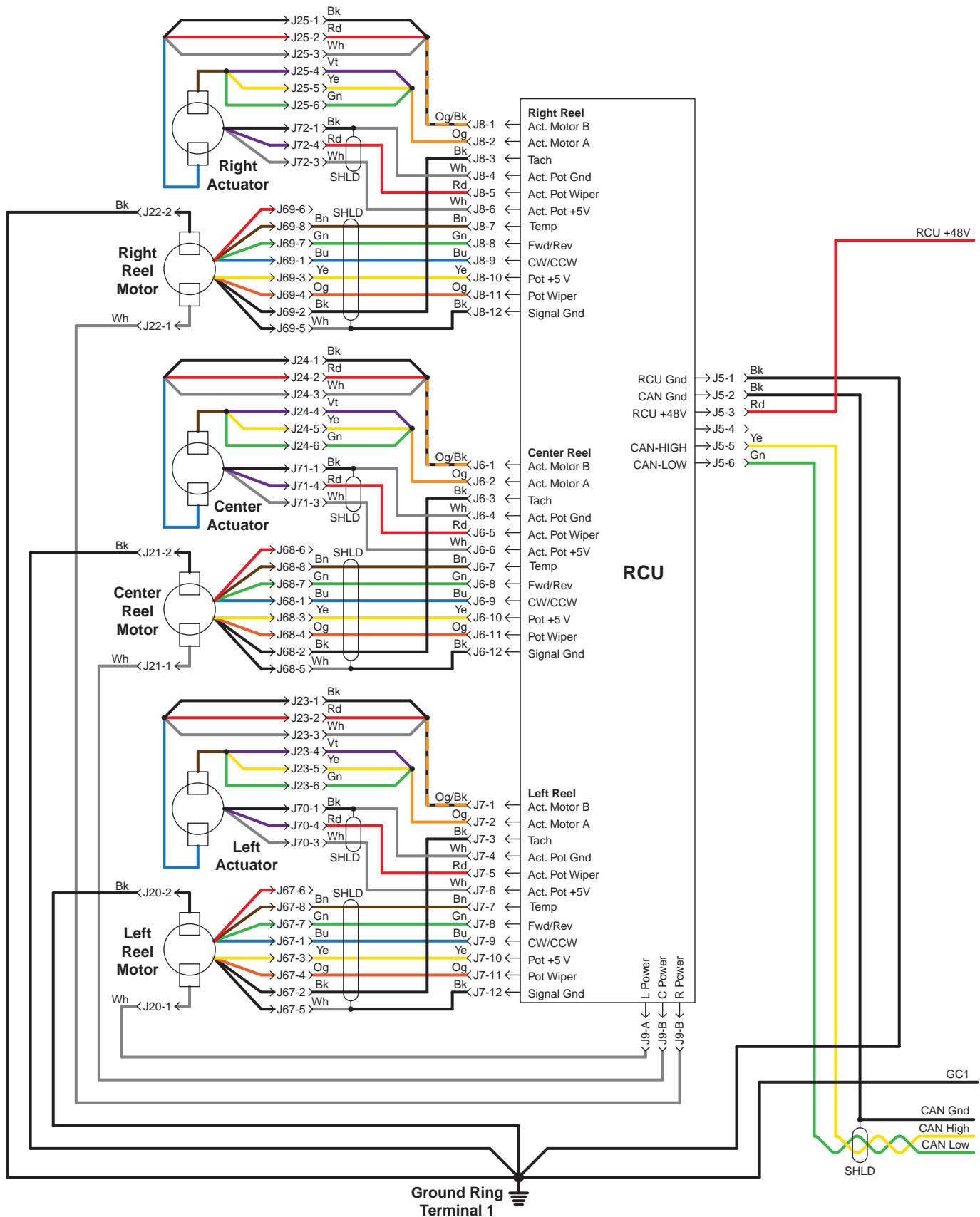
Serial No. 62803 - 1651 ~ 2999

Serial No. 62804 - 1651 ~ 2999

Serial No. 62805 - 1651 ~ 2999

Serial No. 62825 - 1651 ~ 2999

Serial No. 62826 - 1651 ~ 2999

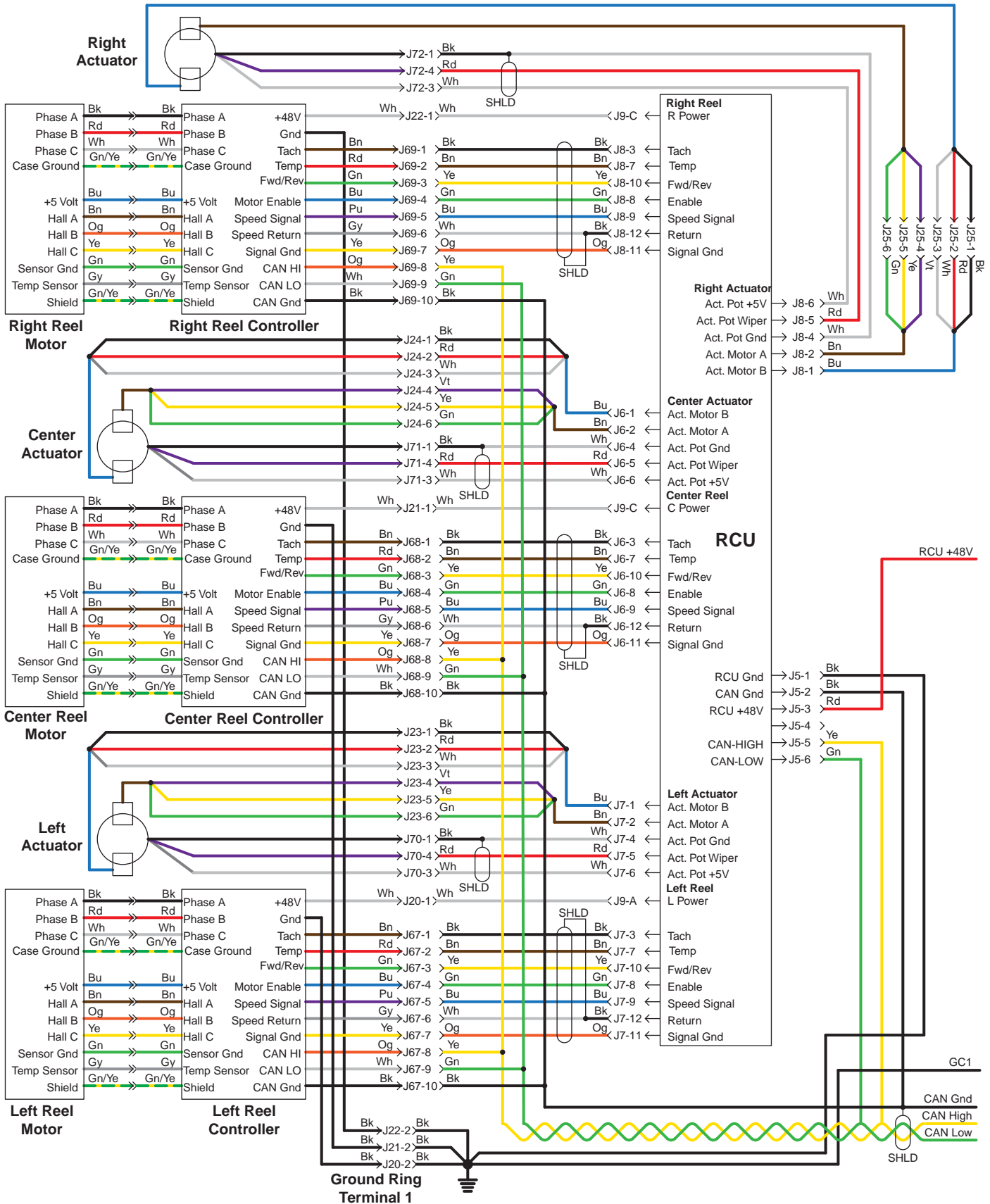


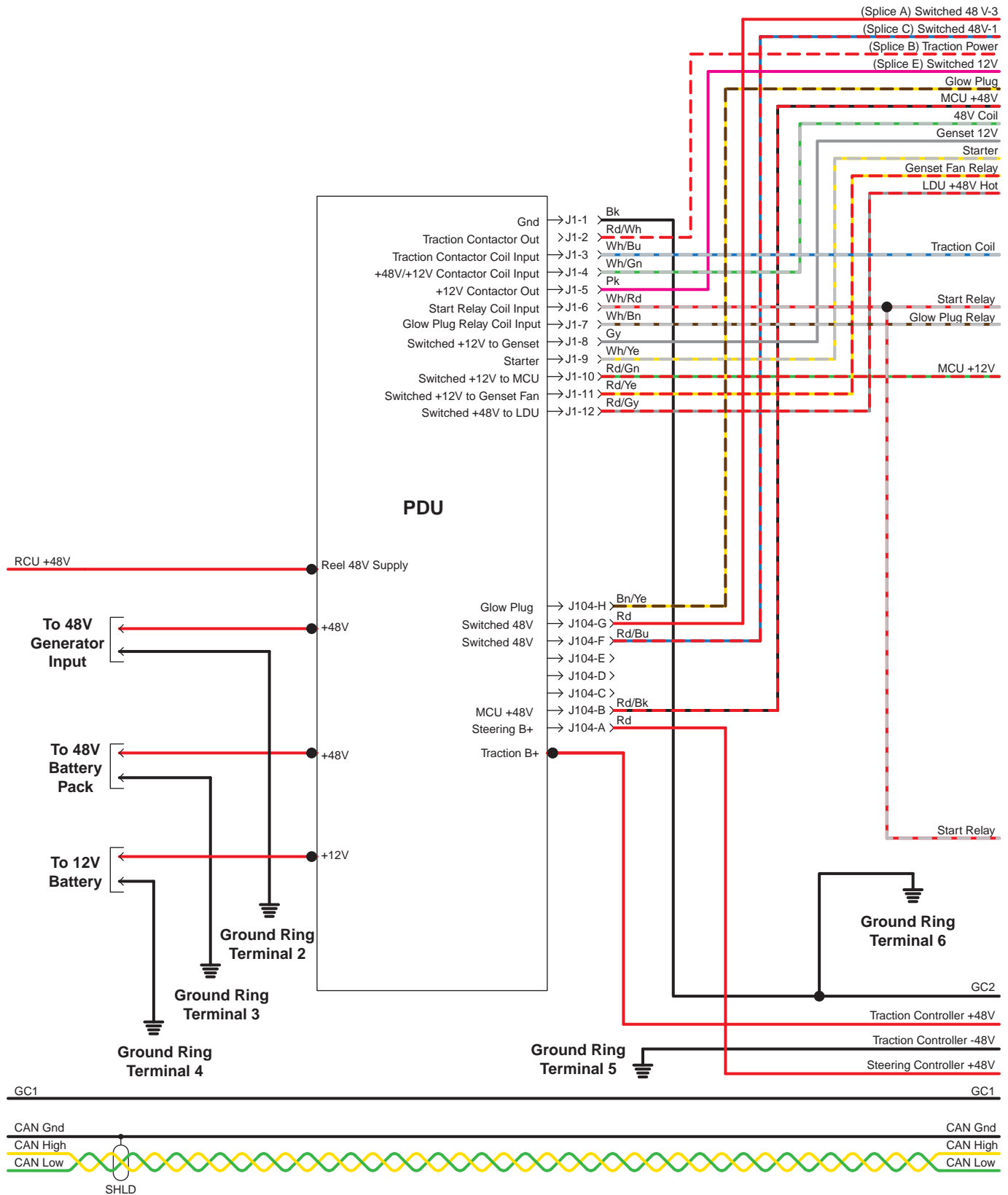
51.2 RCU Schematic

Split Reel Motor/Controller

Serial No. 62800 - 3000 and Up  
Serial No. 62801 - 3000 and Up  
Serial No. 62802 - 3000 and Up  
Serial No. 62803 - 3000 and Up

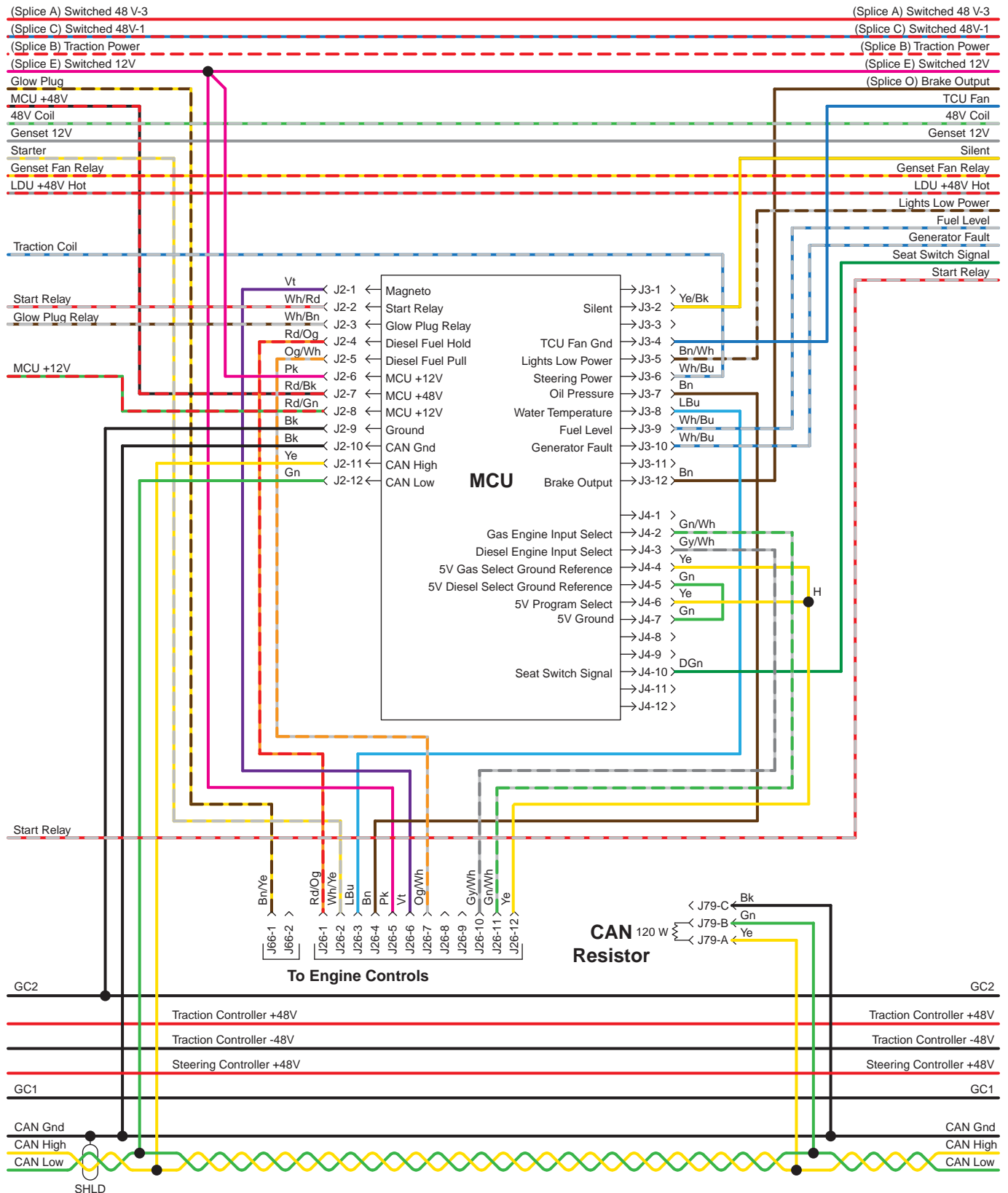
Serial No. 62804 - 3000 and Up  
Serial No. 62805 - 3000 and Up  
Serial No. 62825 - 3000 and Up  
Serial No. 62826 - 3000 and Up







## 53.1 MCU Schematic



# ECLIPSE 322

## 54.1 TCU Schematic

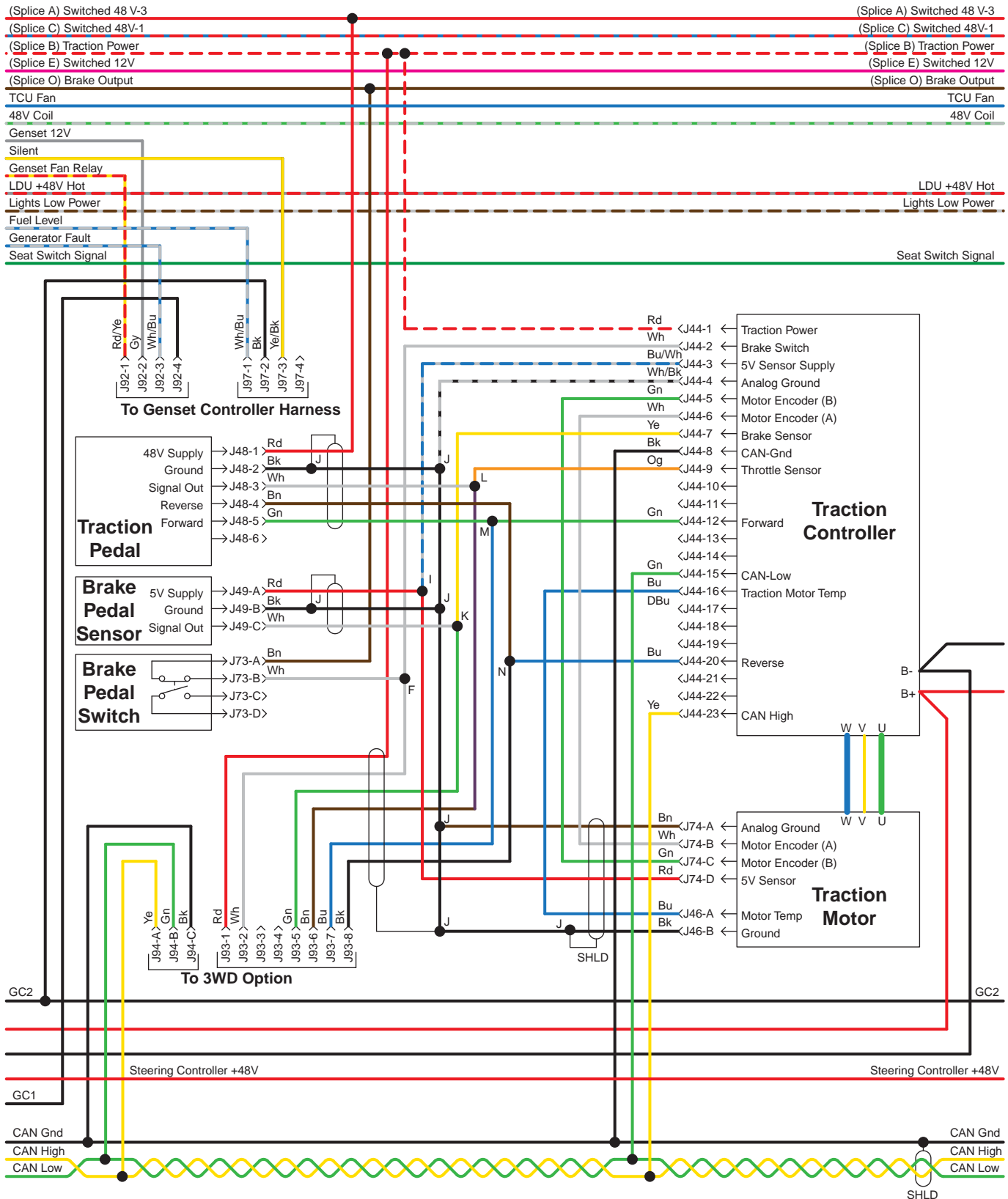
### OLM Controller

Serial No. 62801 - 1601 ~ 2499

Serial No. 62803 - 1601 ~ 2499

Serial No. 62805 - 1601 ~ 2499

Serial No. 62825 - 1601 ~ 2499

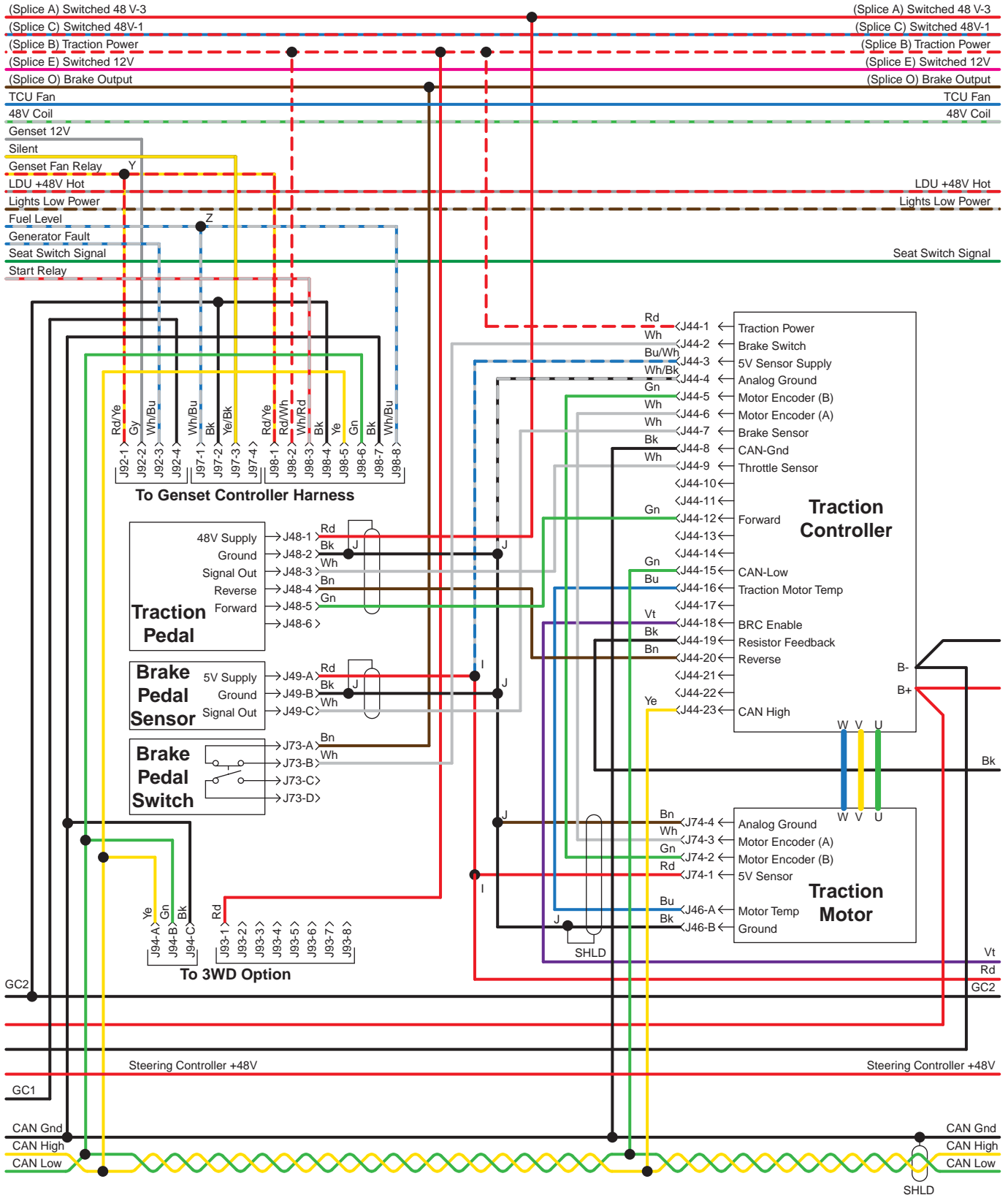


## 54.2 TCU Schematic

### BRC Controller

Serial No. 62800- 1601 and Up  
 Serial No. 62801 - 2500 and Up  
 Serial No. 62802 - 1601 and Up  
 Serial No. 62803 - 2500 and Up

Serial No. 62804 - 1601 and Up  
 Serial No. 62805 - 2500 and Up  
 Serial No. 62825 - 2500 and Up  
 Serial No. 62826 - 1601 and Up



# ECLIPSE 322

## 55.1 Brake / OLM Schematic

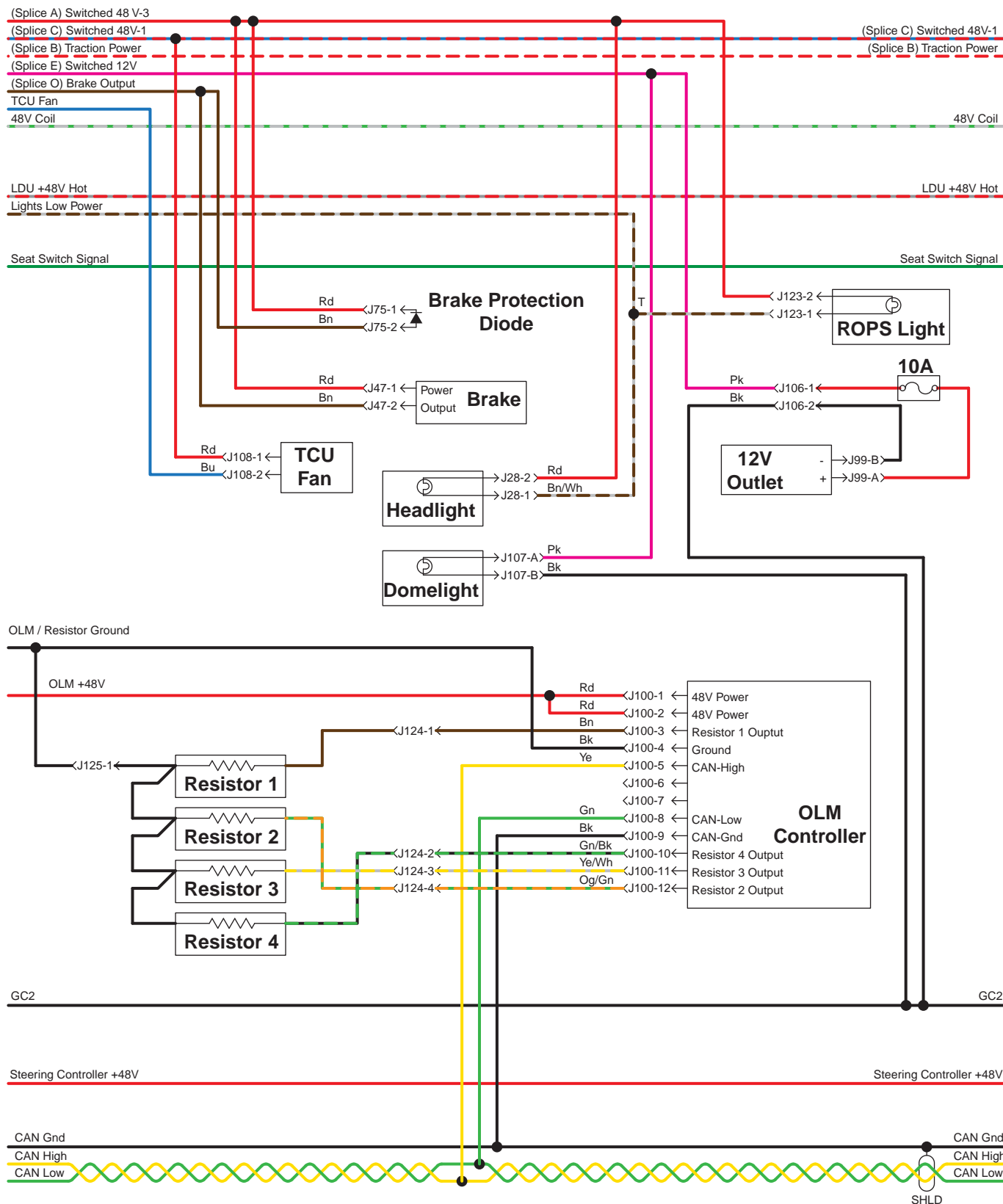
### OLM Controller

Serial No. 62801 - 1601 ~ 2499

Serial No. 62803 - 1601 ~ 2499

Serial No. 62805 - 1601 ~ 2499

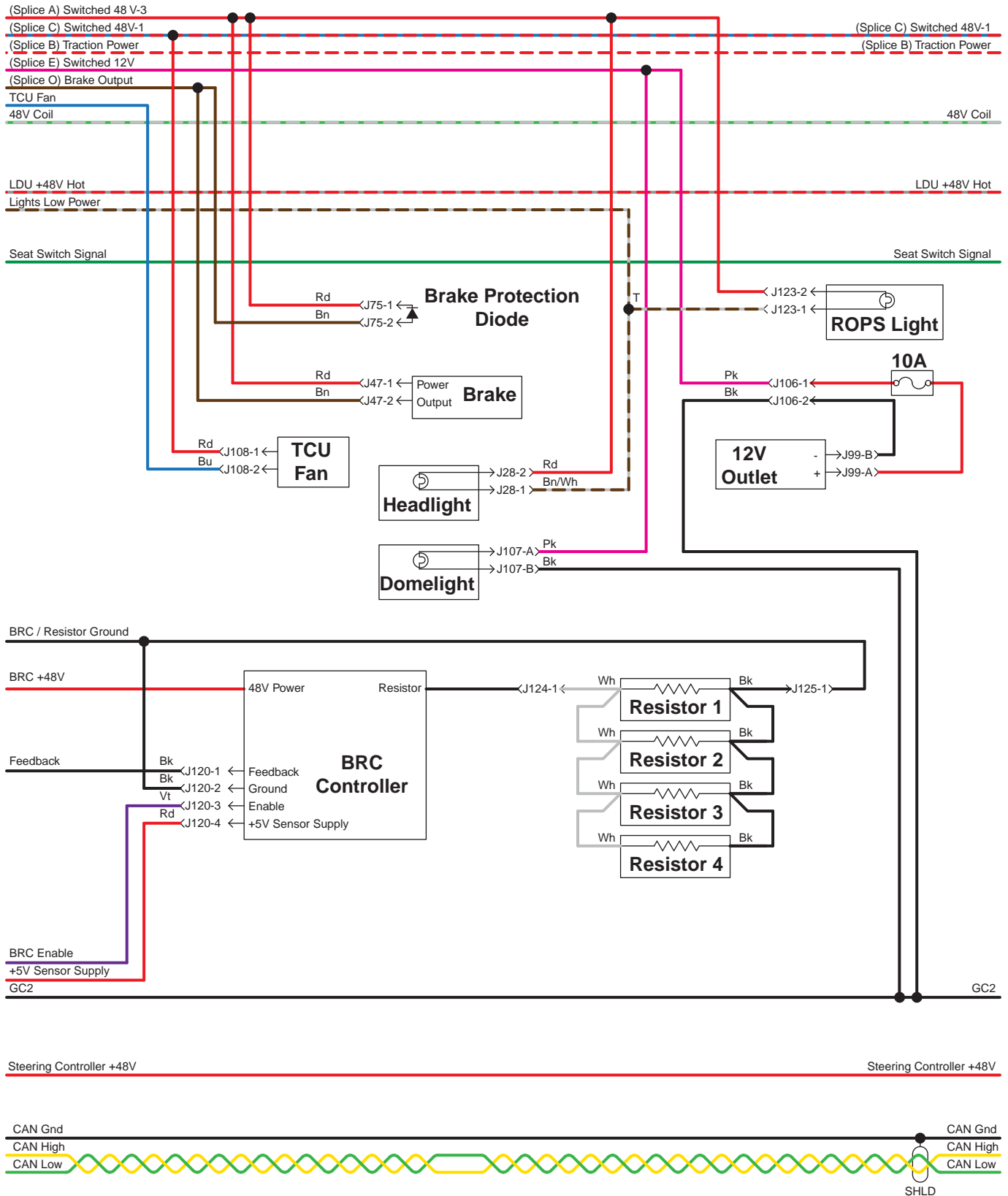
Serial No. 62825 - 1601 ~ 2499

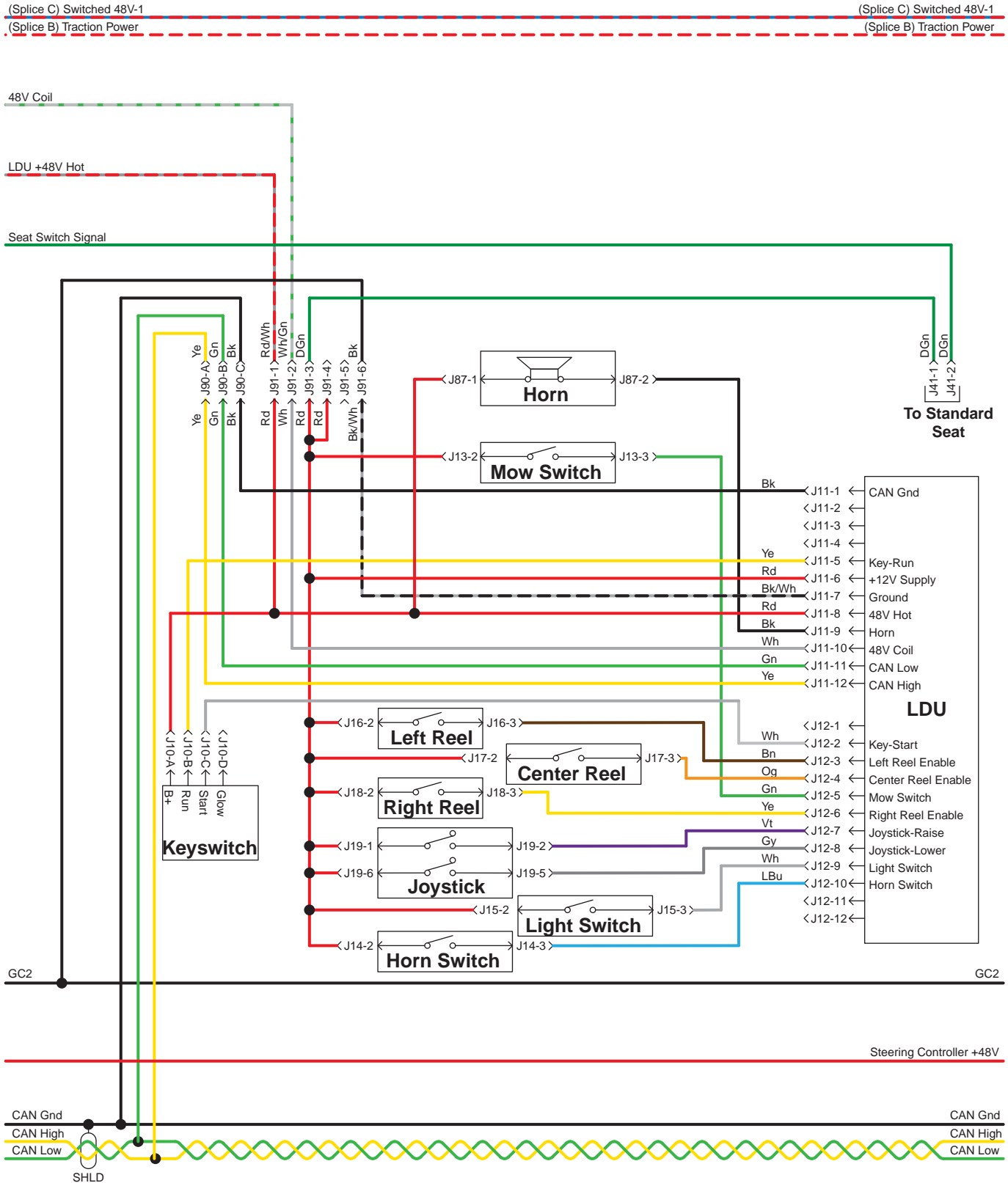


## 55.2 Brake / BRC Schematic BRC Controller

Serial No. 62800- 1601 and Up  
Serial No. 62801 - 2500 and Up  
Serial No. 62802 - 1601 and Up  
Serial No. 62803 - 2500 and Up

Serial No. 62804 - 1601 and Up  
Serial No. 62805 - 2500 and Up  
Serial No. 62825 - 2500 and Up  
Serial No. 62826 - 1601 and Up





## 57.1 SCU Schematic

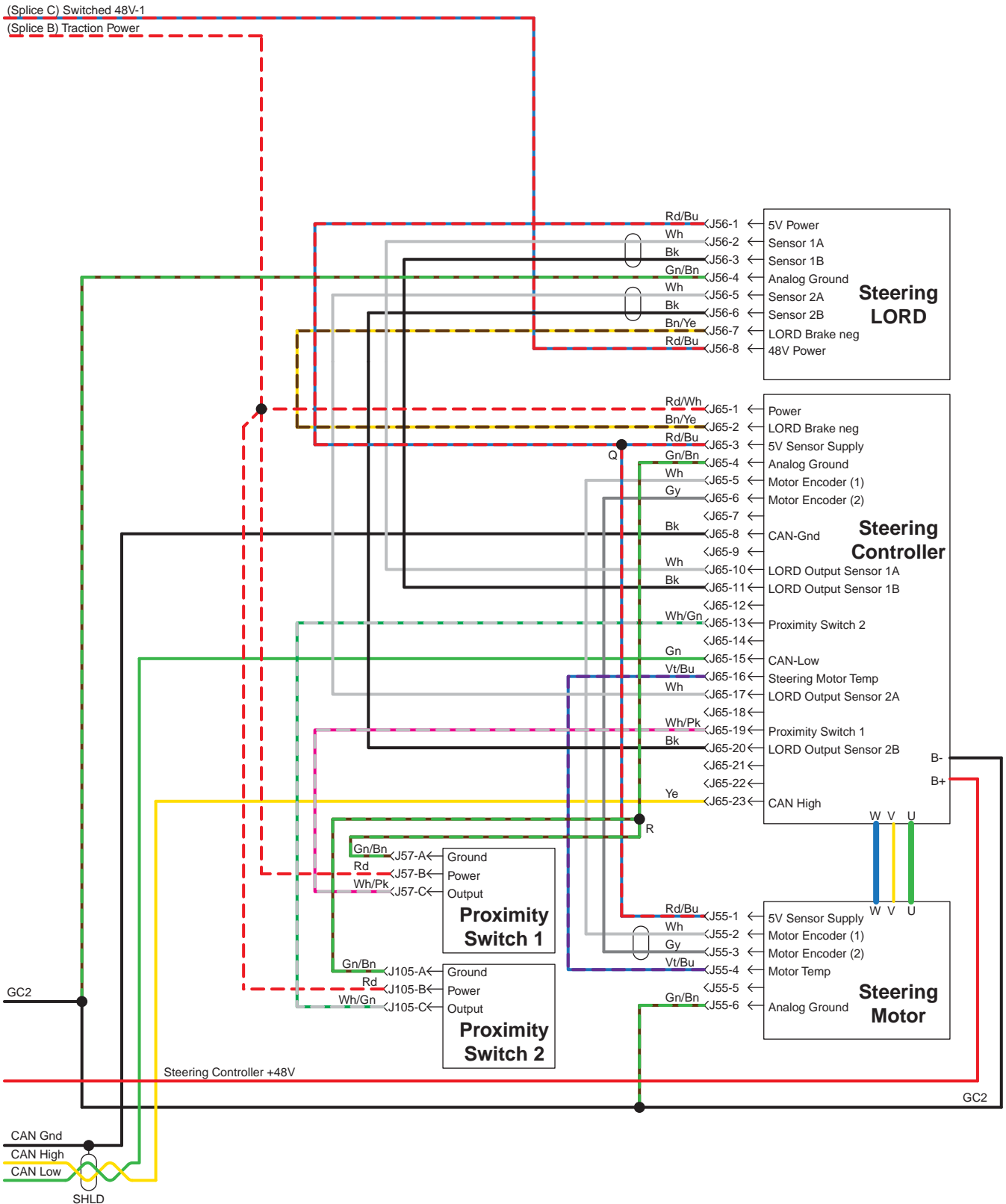
### Proximity Sensors

Serial No. 62801 - 1601 ~ 2499

Serial No. 62803 - 1601 ~ 2499

Serial No. 62805 - 1601 ~ 2499

Serial No. 62825 - 1601 ~ 2499



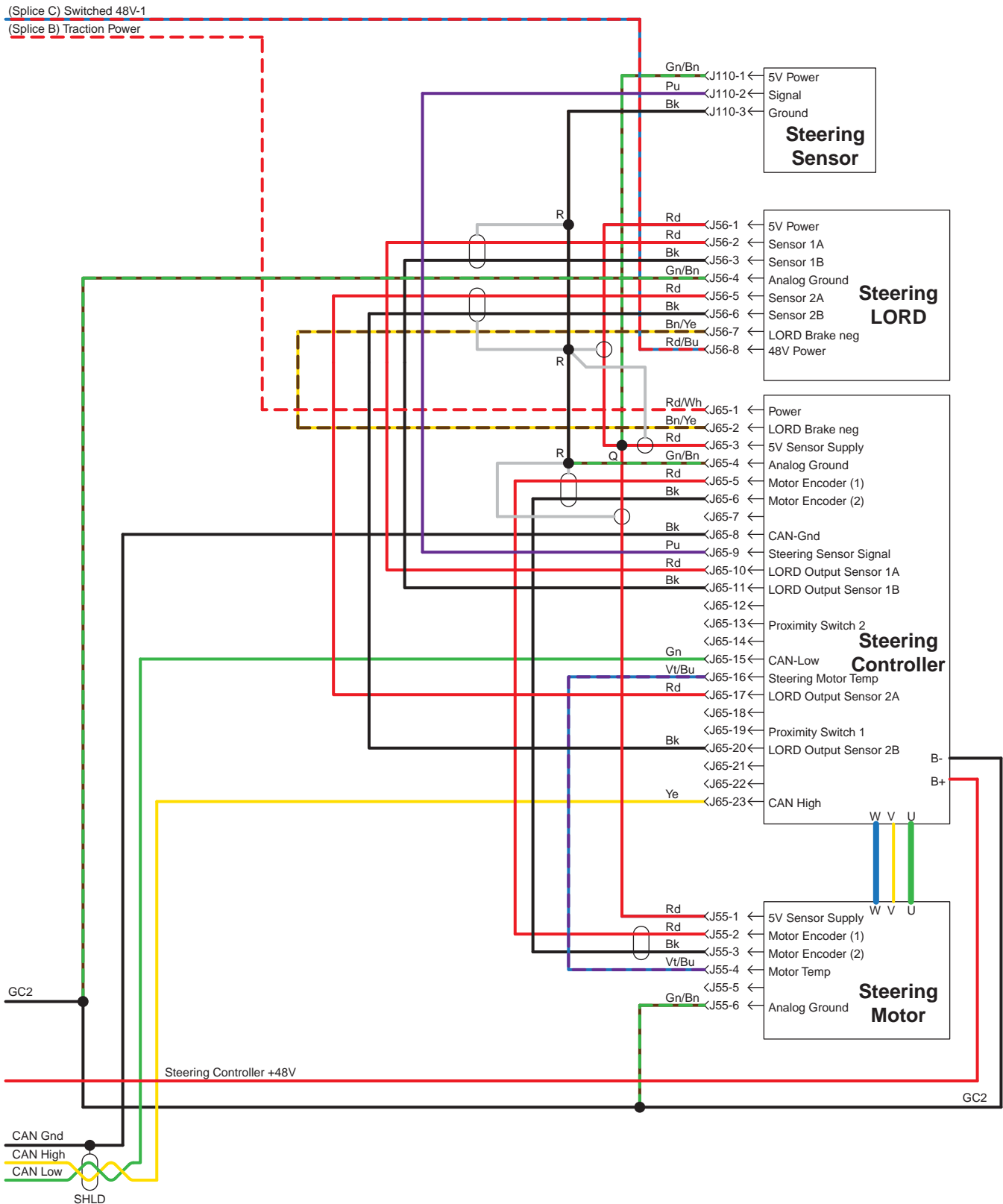
# ECLIPSE 322

## 57.2 SCU Schematic

### Steering Yoke Sensor

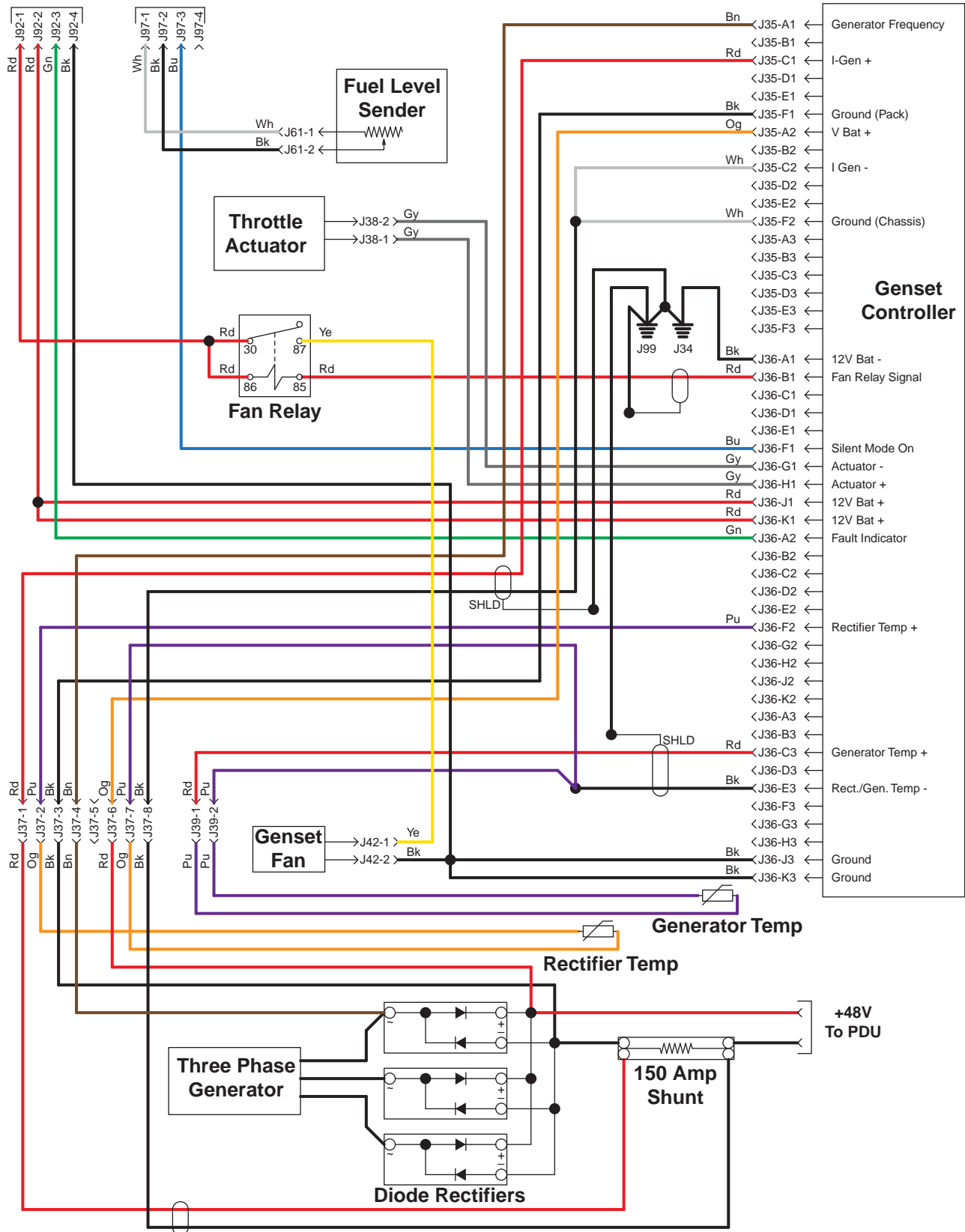
Serial No. 62800- 1601 and Up  
 Serial No. 62801 - 2500 and Up  
 Serial No. 62802 -1601 and Up  
 Serial No. 62803 - 2500 and Up

Serial No. 62804 - 1601 and Up  
 Serial No. 62805 - 2500 and Up  
 Serial No. 62825 - 2500 and Up  
 Serial No. 62826 - 1601 and Up





58.1 Genset Schematic

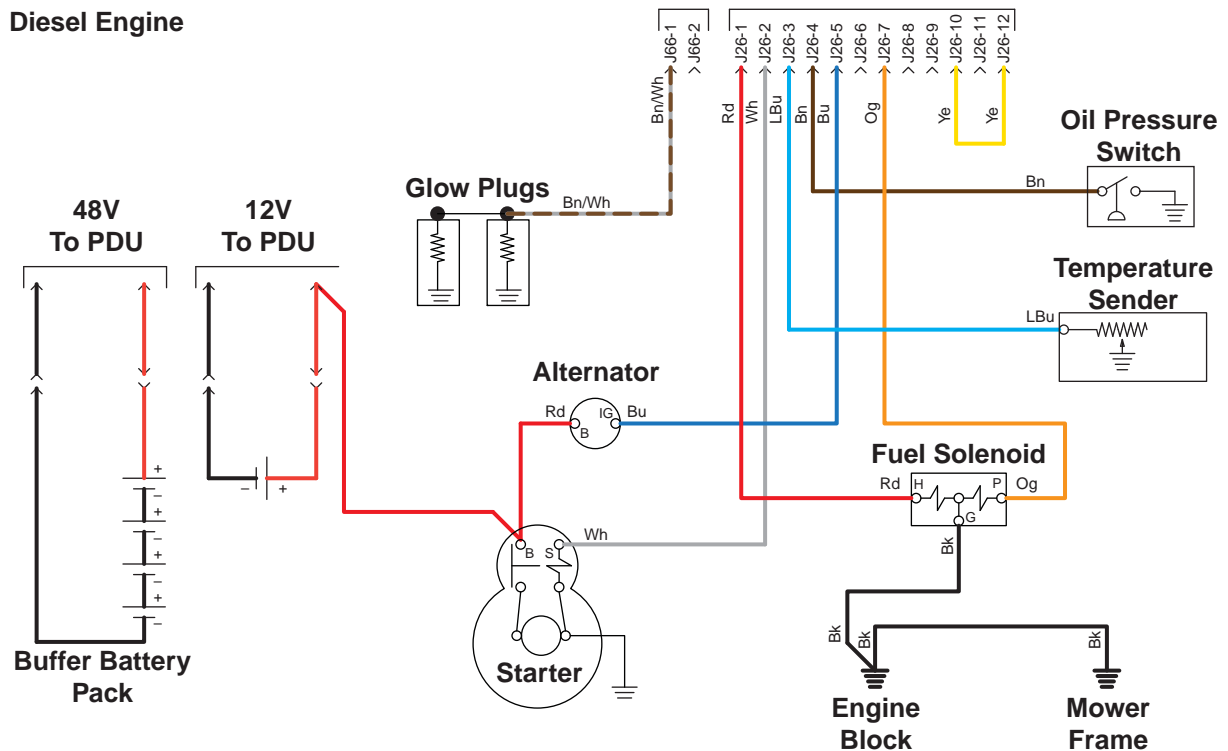
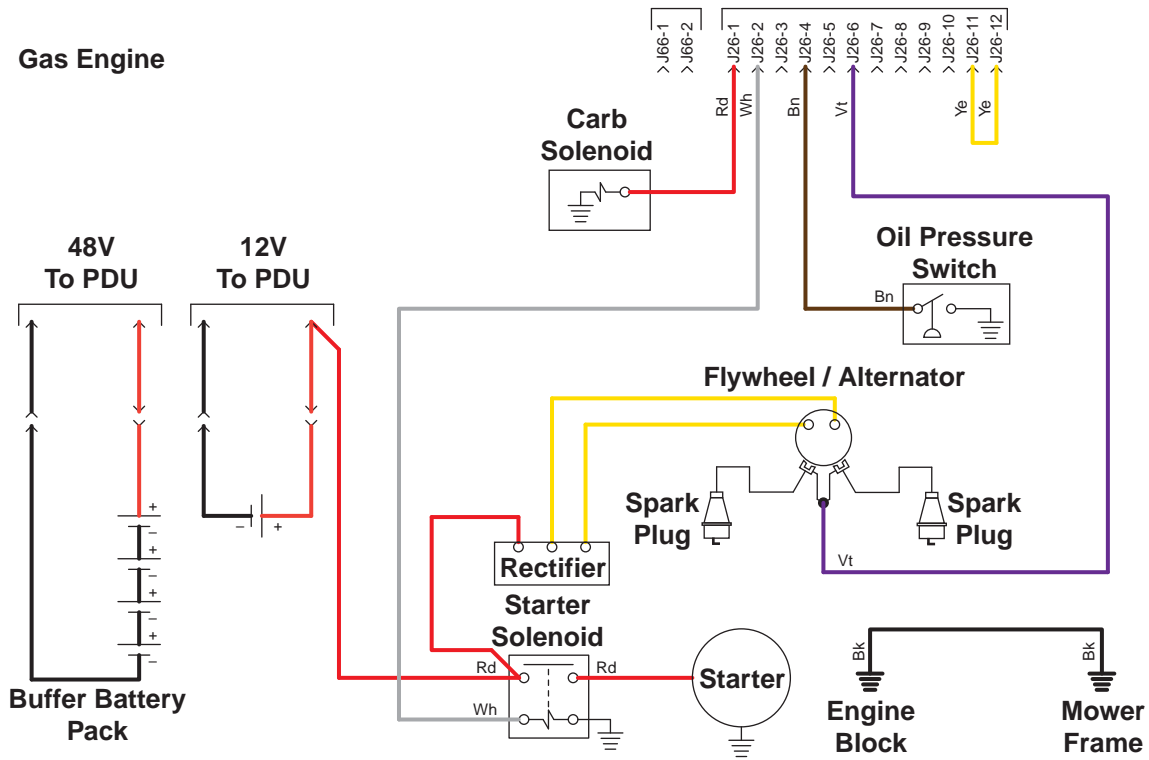


# ECLIPSE 322

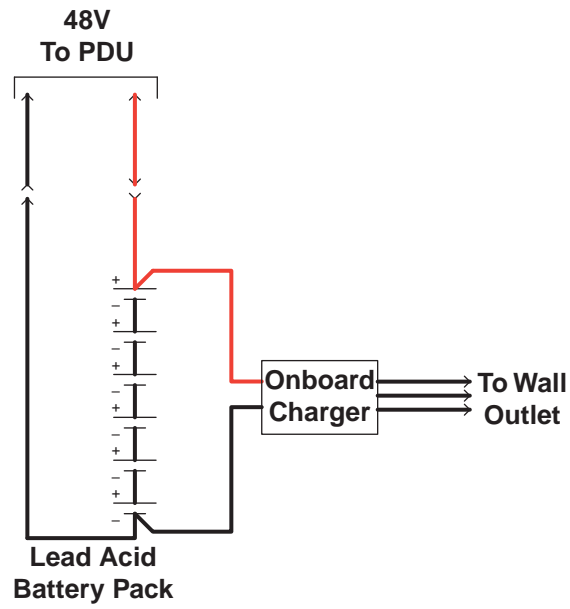
## 59.1 Engine Schematic

Serial No. 62802 - All  
Serial No. 62803 - All  
Serial No. 62804 - All  
Serial No. 62805 - All

Serial No. 62825 - All  
Serial No. 62826 - All

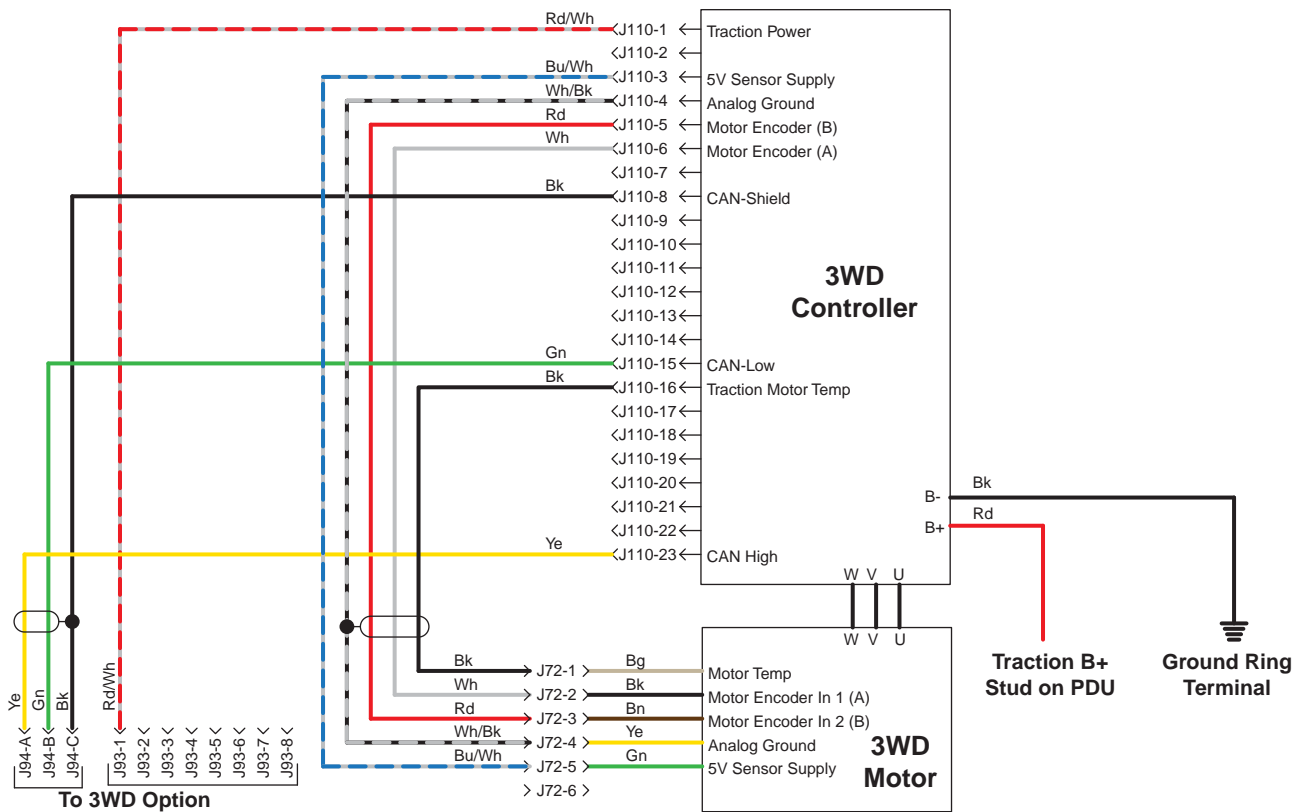


**60.1 Battery Power Module Schematic**



## 61.1 3WD Schematic

Serial No. 62800 - All  
 Serial No. 62802 - All  
 Serial No. 62804 - All  
 Serial No. 62826 - All



## 62.1 PDU Internal Schematic

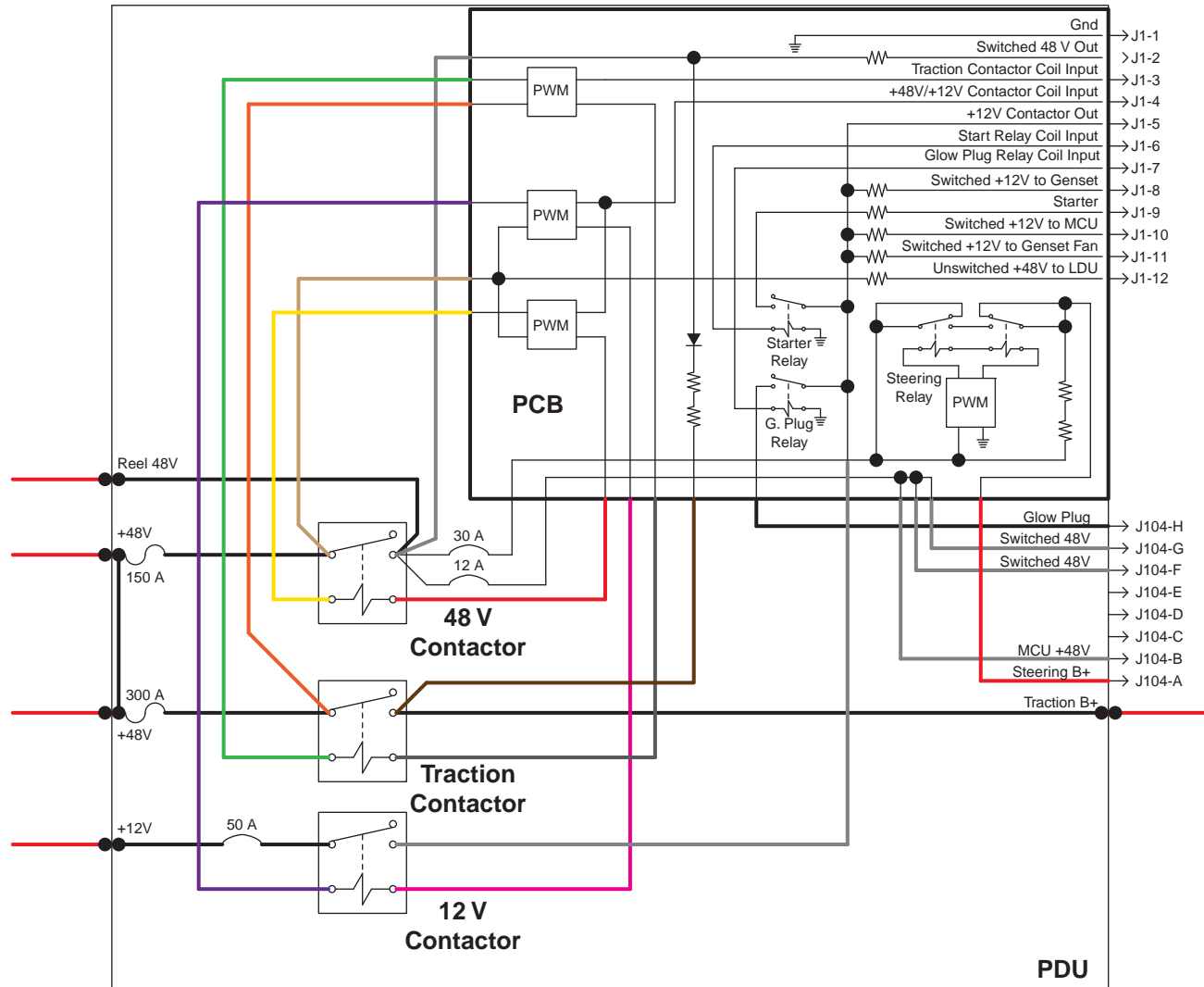
### 12 Volt Contactor

Serial No. 62801 - 1601 ~ 1887

Serial No. 62803 - 1601 ~ 1936

Serial No. 62805 - 1601 ~ 2248

Serial No. 62825 - 1601 ~ 1663



# ECLIPSE 322

## 62.2 PDU Internal Schematic

### 12 Volt Relay

Serial No. 62800 - 1601 and Up

Serial No. 62801 - 1888 and Up

Serial No. 62802 - 1601 and Up

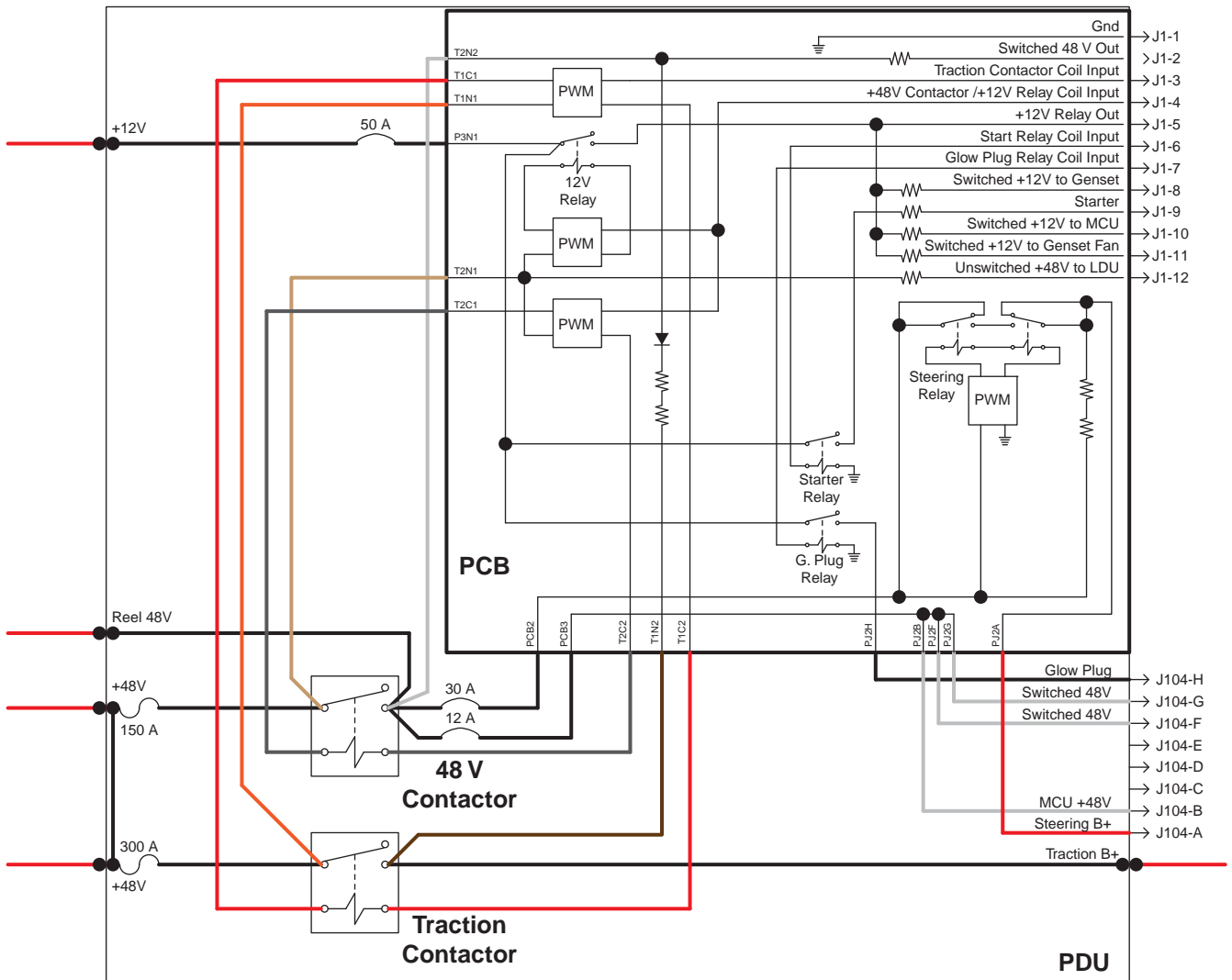
Serial No. 62803 - 1937 and Up

Serial No. 62804 - 1601 and Up

Serial No. 62805 - 2249 and Up

Serial No. 62825 - 1664 and Up

Serial No. 62826 - 1601 and Up



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