Genie
A TEREX BRAND

Service and Repair Manual

Serial Number Range

Refer to inside cover

GS™-1432m/1932m
GS™-1932
GS™-2632/3232
GS™-2646/3246/4046
GS™-4655

This manual includes:
Repair procedures
Fault Codes
Electrical and
Hydraulic Schematics

For detailed maintenance procedures, refer to the appropriate Maintenance Manual for your machine.

Original Instructions
Part No. 1321209GT
Rev B
July 2025

Introduction

Compliance

Machine Classification

Group A/Type 3 as defined by ISO 16368

Machine Design Life

Unrestricted with proper operation, inspection and scheduled maintenance.

Contact Us:

Internet: www.genielift.com
E-mail: awp.techpub@terex.com

Find a Manual for this Model

Go to http://www.genielift.com
https://www.genielift.com/en/support/manuals

Use the links to locate Service Manuals, Maintenance Manuals, Service and Repair Manuals, Parts Manuals and Operator's Manuals.

1321209GT Rev B, July 2025

Third Edition, Second Printing

Serial Number Range

Use the following chart to identify the specific serial number for models included in this manual.

Models	Serial number
GS-1432m, GS-1932m	from GS32MD-9201 from GS32MP-141 from GS32MT-101 from GS32MV-101
GS-1932, GS-2632, GS-3232	from GS32D-25101
	from GS32T-10001
GS-2646, GS-3246, GS-4046	from GS46D-40101
	from GS46T-10001
GS-4655	from GS55D-3201 from GS55F-201 from GS55V-101

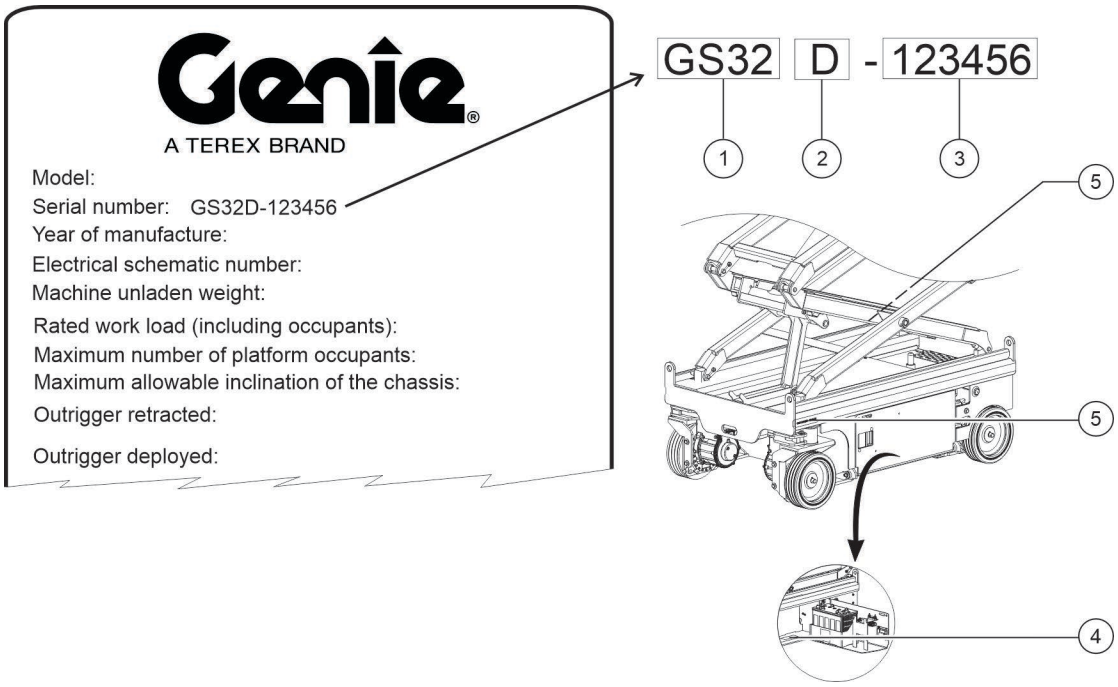
Revision History

Revision	Date	Section	Procedure / Page / Description
A	8/2024		Initial Release
B	7/2025	Specifications	Machine Specifications: - Update voltage & type of standard batteries for GS-4046 / 4655 - Remove maintenance free battery specs of GS-1932 - Add Trojan AGM & Leosch AGM battery specs of GS-1932 - Add Trojan AGM battery specs of GS-4046 / 4655 - Add Trojan AGM battery specs of all other models
		Specifications	Performance Specifications; - Update function speed of GS-2632
		Repair Procedures	4-2 Hydraulic Pump – GS4655 6-3 Steer Cylinder 7-10 Lift Cylinders 7-15 Outdoor Height Limiting 9-1 Battery Charger
		Diagnostics	Add E-Lift Fault Codes (PXXX), (FXXX) and (CXXX) 90AH Lithium Battery - Option
		Schematics	Updated Electrical Schematics for; - GS1932 (Std and Li Battery) - GS2632 (Std Battery) Electrical Schematic, Options

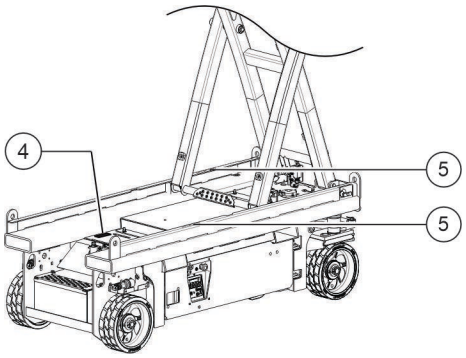
Reference Examples:	**Electronic Version** Click on any content or procedure in the Table of Contents to view the update.
Section – Repair Procedure, 4-2	
Section – Fault Codes, All charts	
Section – Schematics, Legends and schematics	

Introduction

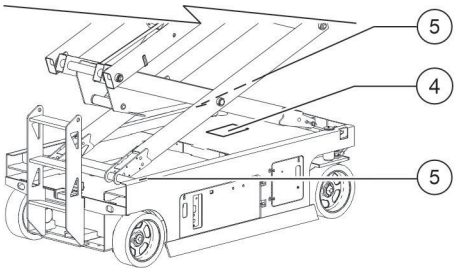
Serial Number Legend



GS-1432m, GS-1932m

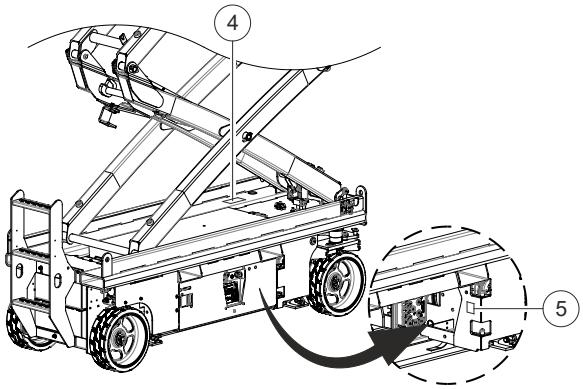


GS-1932, GS-2646, GS-3246, GS-4046



GS-4655

Introduction



GS-2632, GS-3232

1 Model
2 Facility code
3 Sequence number
4 Serial label located on chassis
5 Serial number (stamped on chassis)

Safety Rules

Danger

Failure to obey the instructions and safety rules in this manual and the appropriate Operator's Manual on your machine will result in death or serious injury.

Many of the hazards identified in the operator's manual are also safety hazards when maintenance and repair procedures are performed.

Do not modify or alter a MEWP without prior written permission from the manufacturer.

Do Not Perform Maintenance Unless:

☑ You are trained and qualified to perform maintenance on this machine.

☑ You read, understand and obey:

- manufacturer's instructions and safety rules
- employer's safety rules and worksite regulations
- applicable governmental regulations

☑ You have the appropriate tools, lifting equipment and a suitable workshop.

Safety Rules

Personal Safety

Any person working on or around a machine must be aware of all known safety hazards. Personal safety and the continued safe operation of the machine should be your top priority.

Read each procedure thoroughly. This manual and the decals on the machine, use signal words to identify the following:

Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER Indicates a 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 cause minor or moderate injury.

NOTICE Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Be sure to wear protective eye wear and other protective clothing if the situation warrants it.

Be aware of potential crushing hazards such as moving parts, free swinging or unsecured components when lifting or placing loads. Always wear approved steel-toed shoes.

Workplace Safety

Any person working on or around a machine must be aware of all known safety hazards. Personal safety and the continued safe operation of the machine should be your top priority.

Be sure to keep sparks, flames and lighted tobacco away from flammable and combustible materials like battery gases and engine fuels. Always have an approved fire extinguisher within easy reach.

Be sure that all tools and working areas are properly maintained and ready for use. Keep work surfaces clean and free of debris that could get into machine components and cause damage.

Be sure any forklift, overhead crane or other lifting or supporting device is fully capable of supporting and stabilizing the weight to be lifted. Use only chains or straps that are in good condition and of ample capacity.

Be sure that fasteners intended for one time use (i.e., cotter pins and self-locking nuts) are not reused. These components may fail if they are used a second time.

Be sure to properly dispose of old oil or other fluids. Use an approved container. Please be environmentally safe.

Be sure that your workshop or work area is properly ventilated and well lit.

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Specifications

Machine Specifications

For operational specifications, refer to the Operator's Manual.

Batteries, Standard GS-1432m / 1932m	
Voltage	12V DC
Group	24
Type	27TMH
Quantity	2
Battery capacity, maximum	115AH
Reserve capacity @ 25A rate	131 minutes
Weight, each	62 lbs 28 kg

Batteries, Standard GS-1432m / 1932m	
Voltage	12V DC
Group	GC12
Type	T1275
Quantity	2
Battery capacity, maximum	C20 = 150AH
Reserve capacity @ 25A rate	280 minutes
Weight, each	85 lbs 39 kg

Batteries, Standard GS-1932	
Voltage	12V DC
Group	GC12
Type	T1275+
Quantity	2
Battery capacity, maximum	C20 = 150AH
Reserve capacity @ 25A rate	280 minutes
Weight, each	85 lbs 39 kg

Batteries, Standard GS-4046 / 4655	
Voltage	12V DC
Group	GC12
Type	T1275+
Quantity	4
Battery capacity, maximum	C20 = 150AH
Reserve capacity @ 25A rate	280 minutes
Weight, each	85 lbs 39 kg

Batteries, Standard All other models	
Voltage	6V DC
Group	GC2
Type	T-605
Quantity	4
Battery capacity, maximum	C20 = 210AH
Reserve capacity @ 25A rate	383 minutes
Weight, each	58 lbs 26 kg

Batteries, Maintenance-free (option) GS-1432m / 1932m	
Voltage	12V DC
Type	6-EVH-100
Quantity	2
Battery capacity, maximum	110AH
Reserve capacity @ 75A rate	75 minutes
Weight, each	77 lbs 35 kg

Batteries, Maintenance-free (option) GS-1432m / 1932m	
Voltage	12V DC
Group	G31
Type	EV31A-B
Quantity	2
Battery capacity, maximum	115AH
Reserve capacity @ 25A rate	205 minutes
Weight, each	69 lbs 31.3 kg

Specifications

Batteries, Maintenance-free (option) GS-1932	
Voltage	12V DC
Group	GC12
Type	T1275AGM
Quantity	2
Battery capacity, maximum	132AH
Reserve capacity @ 25A rate	254 minutes
Weight, each	94.14 lbs 42.7 kg

Batteries, Maintenance-free (option) GS-1932	
Voltage	12V DC
Group	GS12
Type	LDC12-150-GC12
Quantity	2
Battery capacity, maximum	150AH
Reserve capacity @ 25A rate	323 minutes
Weight, each	93 lbs 42.18 kg

Batteries, Maintenance-free (option) GS-4046 / 4655	
Voltage	12V DC
Group	GC12
Type	DC150-12
Quantity	4
Battery capacity, maximum	150AH
Reserve capacity @ 25A rate	295 minutes
Weight, each	94 lbs 42.6 kg

Batteries, Maintenance-free (option) GS-4046 / 4655	
Voltage	12V DC
Group	GC12
Type	T1275AGM
Quantity	4
Battery capacity, maximum	132AH
Reserve capacity @ 25A rate	254 minutes
Weight, each	94.14 lbs 42.7 kg

Batteries, Maintenance-free (option) All other models	
Voltage	6V DC
Group	GC2
Type	DC224-6
Quantity	4
Battery capacity, maximum	224AH
Reserve capacity @ 25A rate	441 minutes
Weight, each	68.3 lbs 31 kg

Batteries, Maintenance-free (option) All other models	
Voltage	12V DC
Group	GC2
Type	T105AGM
Quantity	4
Battery capacity, maximum	228AH
Reserve capacity @ 25A rate	462 minutes
Weight, each	73.63 lbs 33.4 kg

Specifications

Battery, Lithium (option) GS-1932 / 2632 / 3232 / 2646 / 3246	
Voltage	24V DC
Type	Lithium iron phosphate
Quantity	1
Option 1	
Battery capacity, maximum	90AH
Weight, each	45 lbs 20.4 kg
Option 2	
Battery capacity, maximum	100AH
Weight, each	56 lbs 25.4 kg
Battery, Lithium (option) GS-4046	
Voltage	24V DC
Type	Lithium iron phosphate
Quantity	1
Battery capacity, maximum	150AH
Weight, each	89 lbs 40.4 kg
Platform Overload Pressure Transducer GS-4046 / 4655	
Input voltage	8 - 30V DC
Signal voltage	1 - 5V DC
Platform Overload Pressure Transducer GS-1932 / 2632 / 3232 / 2646 / 3246	
Input voltage	8 - 30V DC
Signal voltage	0.25 - 6.25V DC
Angle Sensor (if equipped)	
Input voltage	8 - 30V DC
Signal voltage	PWM output
Load Cell Module Models with electric lift	
Input voltage	9 - 36V DC
Signal voltage	CAN

Specifications

Fluid capacities	
Hydraulic tank GS-1432m, GS-1932m	1.06 gallons 4 liters
Hydraulic system (including tank) GS-1432m, GS-1932m	1.5 gallons 5.7 liters
Hydraulic tank GS-1932	1.5 gallons 5.7 liters
Hydraulic system (including tank) GS-1932	2.03 gallons 7.7 liters
Hydraulic tank GS-2632, GS-3232, GS-2646, GS-3246	4.0 gallons 15.1 liters
Hydraulic system (including tank) GS-2632, GS-3232, GS-2646, GS-3246	5.3 gallons 20 liters
Hydraulic tank GS-4046	5.3 gallons 20 liters
Hydraulic system (including tank) GS-4046	7.03 gallons 26.6 liters
Hydraulic tank GS-4655	5.9 gallons 22.4 liters
Hydraulic system (including tank) GS-4655	7.94 gallons 30 liters

Tires and wheels	
GS-1432m, GS-1932m	
Tire size (solid rubber)	10 x 3 in 25.4 x 7.6 cm
Tire contact area	6.5 sq in 42 cm^2
Castle nut torque, dry	200 ft-lbs 271.2 Nm
Castle nut torque, lubricated	150 ft-lbs 203.4 Nm
GS-1932	
Tire size (solid rubber)	12 x 4.5 in 30.5 x 11.4 cm
Tire contact area	9 sq in 58 cm^2
Castle nut torque, dry	300 ft-lbs 406.7 Nm
Castle nut torque, lubricated	225 ft-lbs 305 Nm
GS-2632, GS-3232, GS-2646, GS-3246	
Tire size (solid rubber)	15 x 5 in 38.1 x 12.7 cm
Tire contact area	17.22 sq in 117 cm^2
Castle nut torque, dry	300 ft-lbs 406.7 Nm
Castle nut torque, lubricated	225 ft-lbs 305 Nm
GS-3246 (AUS), GS-4046, GS-4655	
Tire size (solid rubber)	15 x 5 in 38.1 x 12.7 cm
Tire contact area	17.22 sq in 117 cm^2
Hex head cap screw, dry	90 ft-lbs 122 Nm
Hex head cap screw, lubricated	80 ft-lbs 108.5 Nm

Performance Specifications

For operational specifications, refer to the Operator's Manual.

Drive speed, maximum	
Platform stowed	2.5 mph 40 ft / 10.9 sec 4 km/h 12.2 m / 10.9 sec
Platform raised, GS-32	0.5 mph 40 ft / 55 sec 0.8 km/h 12.2 m / 55 sec
Platform raised, GS-46	0.3 mph 40 ft / 91 sec 0.5 km/h 12.2 m / 91 sec

Braking distance, maximum	
High range on paved surface	<1.3 ft <0.4 m

Gradeability	See Operator's Manual

Function speed, maximum from platform controls (with 1 person in platform)	
GS-1432m	
Platform up	17 - 21 seconds
Platform down	18 - 22 seconds
GS-1932m	
Platform up	24 - 28 seconds
Platform down	18 - 22 seconds
GS-1932	
Platform up	25 - 33 seconds
Platform down	24 - 30 seconds
GS-2632	
Platform up	36 - 43 seconds
Platform down	27 - 37 seconds
GS-3232	
Platform up	50 - 58 seconds
Platform down	26 - 33 seconds
GS-2646	
Platform up	40 - 48 seconds
Platform down	22 - 30 seconds
GS-3246	
Platform up	58 - 65 seconds
Platform down	26 - 34 seconds
GS-4046	
Platform up	71 - 79 seconds
Platform down	35 - 45 seconds
GS-4655	
Platform up	91 - 95 seconds
Platform down	56 - 60 seconds

GS-3232 Outrigger leveling capacity, maximum	
Side to side	5°
Front to rear	3°

Specifications

Hydraulic Oil Specifications

Hydraulic Fluid Specifications	
Genie specifications require hydraulic oils which are designed to give maximum protection to hydraulic systems, have the ability to perform over a wide temperature range, and the viscosity index should exceed 140. They should provide excellent antiwear, oxidation prevention, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.	
Cleanliness level, minimum	ISO 15/13
Water content, maximum	250 ppm
Recommended Hydraulic Fluid	
Hydraulic oil type	Chevron Rando HD Premium
ISO Grade	32
Viscosity index, maximum	200
Optional Hydraulic Fluids	
Mineral based	Shell Tellus S2 V 32 Shell Tellus S2 V 46 Shell Tellus S4 VX 32 Shell Donax TG (Dexron III) Chevron 5606A
Biodegradable	Petro Canada Environ MV 46
Fire resistant	UCON Hydrolube HP-5046

Note: Genie specifications require additional equipment and special installation instructions for the approved optional fluids. Consult Genie Product Support before use.

NOTICE

Optional fluids may not have the same hydraulic lifespan and may result in component damage.

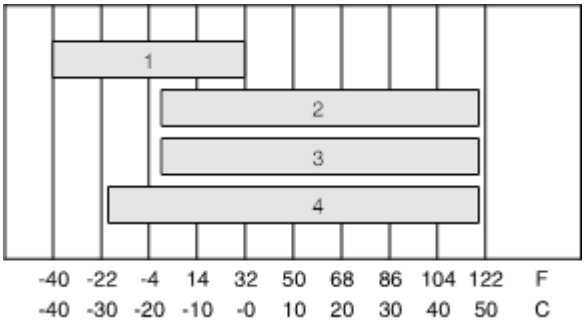
Note: Extended machine operation can cause the hydraulic fluid temperature to increase beyond its maximum allowable range. If the hydraulic fluid temperature consistently exceeds 200°F / 90°C an optional oil cooler may be required.

NOTICE

Do not top off with incompatible hydraulic fluids. Hydraulic fluids may be incompatible due to the differences in base additive chemistry. When incompatible fluids are mixed, insoluble materials may form and deposit in the hydraulic system, plugging hydraulic lines, filters, control valves and may result in component damage.

Note: Do not operate the machine when the ambient air temperature is consistently above 120°F / 49°C.

Hydraulic Fluid Temperature Range



Ambient air temperature

1 Chevron hydraulic oil 5606A
2 Petro-Canada Environ MV 46
3 UCON Hydrolube HP-5046D
4 Chevron Rando HD premium oil MV

Specifications

Chevron Rando HD Premium Oil MV Fluid Properties

ISO Grade	32
Viscosity index, maximum	200
Kinematic Viscosity, maximum cSt @ 200°F / 100°C cSt @ 104°F / 40°C	 7.5 33.5
Brookfield Viscosity, maximum cP @ -4°F / -20°C cP @ -22°F / -30°C	 1040 3310
Flash point	375°F / 190°C
Pour point	-58°F / -50°C
Maximum continuous operating temperature	171°F / 77°C

Note: A hydraulic oil heating system is recommended when the ambient temperature is consistently below 0°F / -18°C.

Note: Do not operate the machine when the ambient temperature is below -20°F / -29°C with Rando HD Premium MV.

Chevron 5606A Hydraulic Oil Fluid Properties

ISO Grade	15
Viscosity index, maximum	300
Kinematic Viscosity, maximum cSt @ 200°F / 100°C cSt @ 104°F / 40°C cSt @ -40°F / -40°C	 5.5 15.0 510
Flash point	180°F / 82°C
Pour point	-81°F / -63°C
Maximum continuous operating temperature	124°F / 51°C

Note: Use of Chevron 5606A hydraulic fluid, or equivalent, is required when ambient temperatures are consistently below 0°F / -17°C unless an oil heating system is used.

NOTICE

Continued use of Chevron 5606A hydraulic fluid, or equivalent, when ambient temperatures are consistently above 32°F / 0°C may result in component damage

Petro-Canada Environ MV 46 Fluid Properties

ISO Grade	46
Viscosity index, maximum	154
Kinematic Viscosity, maximum cSt @ 200°F / 100°C cSt @ 104°F / 40°C	 8.0 44.4
Flash point	482°F / 250°C
Pour point	-49°F / -45°C
Maximum continuous operating temperature	180°F / 82°C

Specifications

Shell Tellus S4 VX Fluid Properties

ISO Grade	32
Viscosity index, maximum	300
Kinematic Viscosity, maximum cSt @ 200°F / 100°C cSt @ 104°F / 40°C	 9 33.8
Brookfield Viscosity, maximum cSt @ -4°F / -20°C cSt @ -13°F / -25°C cSt @ -40°F / -40°C	 481 702.4 2624
Flash point	>100
Pour point	-76°F / -60°C
Maximum continuous operating temperature	103°F / 75°C

UCON Hydrolube HP-5046 Fluid Properties

ISO Grade	46
Viscosity index, maximum	192
Kinematic Viscosity, maximum cSt @ 149°F / 65°C cSt @ 104°F / 40°C cSt @ 0°F / -18°C	 22 46 1300
Flash point	None
Pour point	-81°F / -63°C
Maximum continuous operating temperature	189°F / 87°C

Hydraulic Component Specifications

GS-1432m, GS-1932m	
Function Pump	
Type	gear pump
Displacement per revolution	0.165 cu in 2.7 cc
Flow rate @ 2400 psi / 165 bar	1.7 gpm 6.5 L/min
Hydraulic tank return filter	10 micron 23 psi / 1.6 bar bypass
Function manifold	
System relief valve pressure, maximum	
GS-1432m	1800 psi 124 bar
GS-1932m	2400 psi 165 bar

GS-1932	
Function Pump	
Type	gear pump
Displacement per revolution	0.092 cu in 1.5 cc
Flow rate @ 3300 psi / 228 bar	1.1 gpm 4.2 L/min
Hydraulic tank return filter	10 micron 18 psi / 1.2 bar bypass
Function manifold	
System relief valve pressure, maximum	3300 psi 228 bar

GS-2632, GS-3232	
Function Pump	
Type	gear pump
Displacement per revolution	0.177 cu in 2.9 cc
Flow rate @ 2000 psi / 138 bar	2.1 gpm 8 L/min
Hydraulic tank return filter	10 micron 18 psi / 1.2 bar bypass
Function manifold	
System relief valve pressure, maximum	
GS-2632	2000 psi 138 bar
GS-3232	2300 psi 159 bar
Outrigger manifold GS-3232	
Relief valve pressure, maximum	2300 psi 159 bar

GS-2646, GS-3246	
Function Pump	
Type	gear pump
Displacement per revolution	0.177 cu in 2.9 cc
Flow rate @ 2200 psi / 152 bar	2 gpm 7.6 L/min
Hydraulic tank return filter	10 micron 18 psi / 1.2 bar bypass
Function manifold	
System relief valve pressure, maximum	
GS-2646	2700 psi 186 bar
GS-3246	2300 psi 159 bar

Specifications

GS-4046	
Function Pump	
Type	gear pump
Displacement per revolution	0.232 cu in 3.8 cc
Flow rate @ 2100 psi / 145 bar	2.8 gpm 10.6 L/min
Hydraulic tank return filter	10 micron 18 psi / 1.2 bar bypass
Function manifold	
System relief valve pressure, maximum	2100 psi 145 bar

GS-4655	
Function Pump	
Type	gear pump
Displacement per revolution	0.244 cu in 4 cc
Flow rate @ 2500 psi / 172 bar	3 gpm 11.4 L/min
Hydraulic tank return filter	10 micron 25 psi / 1.7 bar bypass
Function manifold	
System relief valve pressure, maximum	2900 psi 200 bar

Manifold Component Specifications

Plug torque	
SAE No. 2	50 in-lbs / 6 Nm
SAE No. 4	13 ft-lbs / 18 Nm
SAE No. 6	18 ft-lbs / 24 Nm
SAE No. 8	50 ft-lbs / 68 Nm
SAE No. 10	55 ft-lbs / 75 Nm
SAE No. 12	75 ft-lbs / 102 Nm

Hydraulic Hose and Fitting Torque Specifications

Your machine is equipped with Parker Seal-Lok™ ORFS or 37° JIC fittings and hose ends. Genie specifications require that fittings and hose ends be torqued to specification when they are removed and installed or when new hoses or fittings are installed.

Seal-Lok™ Fittings

(hose end - ORFS)

SAE Dash Size	Torque
-4	18 ft-lbs / 25 Nm
-6	30 ft-lbs / 41 Nm
-8	40 ft-lbs / 55 Nm
-10	60 ft-lbs / 81 Nm
-12	85 ft-lbs / 115 Nm
-16	110 ft-lbs / 150 Nm
-20	150 ft-lbs / 205 Nm
-24	230 ft-lbs / 315 Nm

JIC 37° Fittings

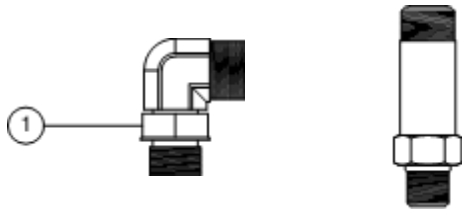
(swivel nut or hose connection)

SAE Dash Size	Thread Size	Flats
-4	7/16-20	2
-6	9/16-18	1 1/2
-8	3/4-16	1 1/2
-10	7/8-14	1 1/2
-12	1 1/16-12	1 1/4
-16	1 5/16-12	1
-20	1 5/8-12	1
-24	1 7/8-12	1

SAE O-ring Boss Port

(tube fitting - installed into Aluminum)
(all types)

SAE Dash Size	Torque
-4	14 ft-lbs / 19 Nm
-6	23 ft-lbs / 31.2 Nm
-8	36 ft-lbs / 49 Nm
-10	62 ft-lbs / 84 Nm
-12	84 ft-lbs / 114 Nm
-16	125 ft-lbs / 169.5 Nm
-20	151 ft-lbs / 204.7 Nm
-24	184 ft-lbs / 249.5 Nm



Adjustable Fitting

1 jam nut

Non-adjustable fitting

SAE O-ring Boss Port

(tube fitting - installed into Steel)

SAE Dash Size		Torque
-4	ORFS / 37° (Adj) ORFS (Non-adj) 37° (Non-adj)	15 ft-lbs / 20.3 Nm 26 ft-lbs / 35.3 Nm 22 ft-lbs / 30 Nm
-6	ORFS (Adj / Non-adj) 37° (Adj / Non-adj)	35 ft-lbs / 47.5 Nm 29 ft-lbs / 39.3 Nm
-8	ORFS (Adj / Non-adj) 37° (Adj / Non-adj)	60 ft-lbs / 81.3 Nm 52 ft-lbs / 70.5 Nm
-10	ORFS (Adj / Non-adj) 37° (Adj / Non-adj)	100 ft-lbs / 135.6 Nm 85 ft-lbs / 115.3 Nm
-12	(All types)	135 ft-lbs / 183 Nm
-16	(All types)	200 ft-lbs / 271.2 Nm
-20	(All types)	250 ft-lbs / 339 Nm
-24	(All types)	305 ft-lbs / 413.5 Nm

Specifications

Torque Procedure

Seal-Lok™ fittings

1 Replace the O-ring. The O-ring must be replaced anytime the seal has been broken. The O-ring cannot be re-used if the fitting or hose end has been tightened beyond finger tight.

Note: The O-ring in Parker Seal Lok™ fittings and hose end are custom-size O-rings. They are not standard size O-rings. They are available in the O-ring field service kit (Genie part number 49612).

2 Lubricate the O-ring before installation.

3 Be sure the O-ring face seal is seated and retained properly.

4 Position the tube and nut squarely on the face seal end of the fitting, and tighten the nut finger tight.

5 Tighten the nut or fitting to the appropriate torque. Refer to the appropriate torque chart in this section.

6 Operate all machine functions and inspect the hose, fittings and related components to confirm there are no leaks.

JIC 37° fittings

1 Align the tube flare (hex nut) against the nose of the fitting body (body hex fitting) and tighten the hex nut to the body hex fitting to hand tight, approximately 30 in-lbs / 3.4 Nm.

2 Using a permanent ink marker, make a reference mark on one the flats of the hex nut and continue the mark onto the body of the hex fitting. Refer to Illustration 1.

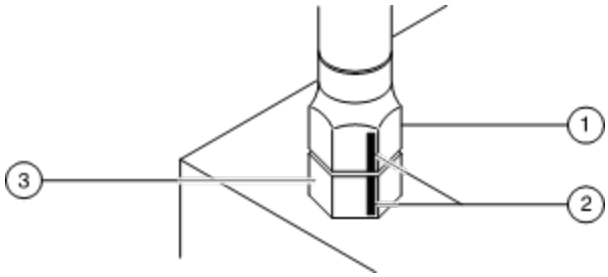


Illustration 1

1 hex nut
2 reference mark
3 body hex fitting

3 Working clockwise on the body hex fitting, make a second mark with a permanent ink marker to indicate the proper tightening position. Refer to Illustration 2.

Note: Use the JIC 37° Fitting table in this section to determine the correct number of flats, for the proper tightening position.

Note: The marks indicate the correct tightening positions have been determined. Use the second mark on the body hex fitting to properly tighten the joint after it has been loosened.

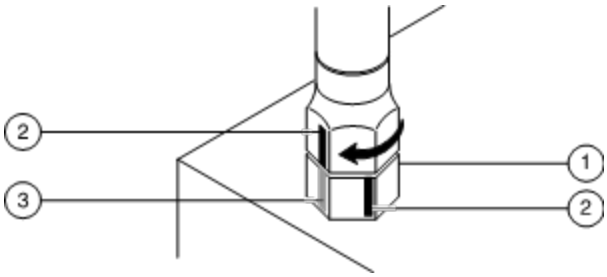


Illustration 2

1 body hex fitting
2 reference mark
3 second mark

4 Tighten the hex nut until the mark on the hex nut is aligned with the second mark on the body hex fitting.

5 Operate all machine functions and inspect the hose, fittings and related components to confirm there are no leaks.

Repair Procedures

Observe and Obey:

☑ Repair procedures shall be completed by a person trained and qualified on the repair of this machine.

☑ Immediately tag and remove from service a damaged or malfunctioning machine.

☑ Repair any machine damage or malfunction before operating the machine.

Before Repairs Start:

☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.

☑ Be sure that all necessary tools and parts are available and ready for use.

☑ Use only Genie approved replacement parts.

☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.

Machine Configuration:

☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:

- Machine parked on a firm, level surface
- Key switch in the off position with the key removed
- The red Emergency Stop button in the off position at both the ground and platform controls
- Wheels chocked
- All external AC power supply disconnected from the machine
- Platform in the stowed position

Repair Procedures

About This Section

Most of the procedures in this section should only be performed by trained service professional in a suitably equipped workshop. Select the appropriate repair procedure after troubleshooting the problem.

Perform disassembly procedures to the point where repairs can be completed. Then to re-assemble, perform the disassembly steps in reverse order.

Symbols Legend

Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER Indicates a 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 cause minor or moderate injury.

NOTICE Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

⊙ Indicates that a specific result is expected after performing a series of steps.

☒ Indicates that an incorrect result has occurred after performing a series of steps.

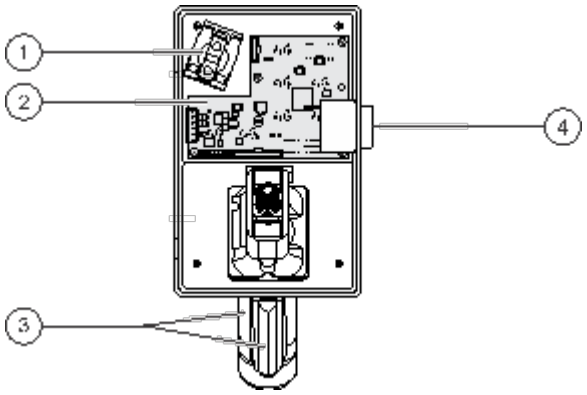
Platform Controls

The platform controls are used to operate the machine from the platform.

Activating a function button sends a signal to the Electronic Control Module (ECM). When the ECM is in the function mode, the platform controls are used to operate the various machine functions.

The platform controls consist of an Emergency Stop button, electronic circuit board, proportional control handle, drive/steer enable switch, alarm, function buttons and LED display.

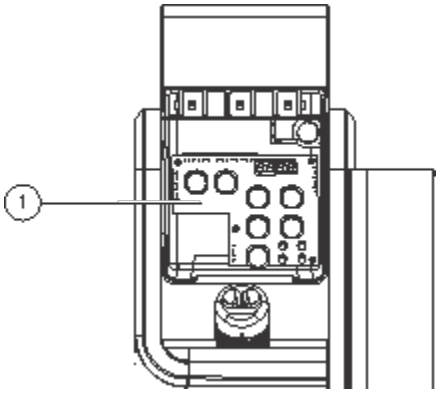
GS-1432m, GS-1932m, GS-4655



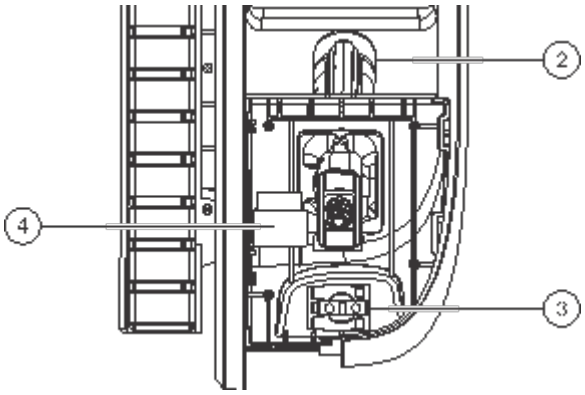
1 red Emergency Stop button
2 platform controls circuit board
3 joystick
4 alarm

All other models

Top view



Bottom view



1 platform controls circuit board
2 joystick
3 red Emergency Stop button
4 alarm

Operational Indicator Codes

These codes are generated by the electrical system to indicate machine operating status. During normal operation, a code will appear in the platform controls LED readout if a condition such as off-level, overload cutout, chassis mode operation or pothole guard stuck occurs.

If the platform controls LED readout displays an operational indicator code such as **LL**, the fault condition must be repaired or removed before resuming machine operation. Push in and pull out the red Emergency Stop button to reset the system.

Platform Controls LED Readout

Code	Condition
LL	Off-Level
OL	Platform Overload
CH	Chassis Mode Operation
PHS	Pothole Guard Stuck
nd	No Drive (option)
HEAt	Battery Heating
Ld	Lifting Disabled (GS-3232)
CHrg	Charger Interlock (option)
LoHt	Lift Height Limited (CE / AS models)
FLHt	Limited Lift Height Cleared
ObS	Obstruction (option)
br	Brake release by manual (GS-1330m, GS-4655)
OHL	Outdoor Height Restriction

Note: The **Ld** Operation Indicator Code will appear when the outriggers are not fully retracted, the machine is not auto leveled, an outrigger has lost contact with the ground or either level sensor detects the machine is no longer level. When any of the above scenarios occur, the lift function is disabled.

The lift function will also be disabled while extending or retracting the outriggers and during the outrigger auto level procedure. While performing the above operations, the **Ld** Operation Indicator Code will appear.

Note: A code and a description of a code can also be viewed at the ground controls LCD display.

Battery Heating

When the temperature of the lithium battery is below its operational limit of -4°F/-20°C, the battery will require time to heat up, this is referred to as Battery Heating.

- The battery heating cycle requires that the machine remain ON (Emergency Stop button to the on position).
- The HEAt message will be displayed on the platform controls LED readout display, for 8 seconds.
- After 8 seconds the LED readout display will show the time remaining until the heating cycle is completed. The display will be in "minute.seconds".
- The display will toggle between the HEAt and time remaining messages for the duration of the heating cycle.
- When the heating cycle is completed, an audible alarm will sound and the machine will automatically transition to System Ready.

Platform Controls

1-1
Circuit Board

How to Remove the Platform Controls Circuit Board

1 Push in the red Emergency Stop button to the off position at both the ground and platform controls.

2 Disconnect the platform controls from the control cable at the platform.

3 Remove the fasteners securing the platform control box to the platform control bracket.

4 GS-1432m, GS-1932m, GS-4655: Remove the fasteners securing the bottom cover to the platform control box. Open the control box.

All other models: Remove the fasteners securing the top cover to the platform control box. Open the control box.

5 Remove the ties securing the wire harness.

6 Disconnect the red and black wires from the alarm.

7 Carefully remove the alarm from the platform control box.

8 Carefully disconnect all wire harness connectors from the platform controls circuit board.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

NOTICE Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. Maintain firm contact with a metal part of the machine that is grounded at all times when handling printed circuit boards OR use a grounded wrist strap.

9 Carefully remove the platform controls circuit board fasteners.

10 Carefully remove the platform controls circuit board from the platform control box.

11 Remove the transparent caps from the platform controls circuit board and save.

Circuit board fastener torque specifications	
Hand tighten until screws seat	< 5 in-lbs < 0.6 Nm

Note: Before installing a circuit board, place the transparent caps removed in step 11, over the circuit board buttons.

Note: After installing the circuit board, check for proper button operation. Excessive torque of the circuit board fasteners will cause the buttons to bind. Moderate torque of the circuit board fasteners will not allow the buttons to engage.

1-2 Joystick

How to Remove the Joystick

1 Push in the red Emergency Stop button to the off position at both the ground and platform controls.

2 Disconnect the platform controls from the control cable at the platform.

3 Remove the fasteners securing the platform control box to the platform control bracket.

4 GS-1432m, GS-1932m, GS-4655: Remove the fasteners securing the bottom cover to the platform control box. Open the control box.

All other models: Remove the fasteners securing the bottom cover to the joystick housing. Open the joystick housing.

5 Remove the ties securing the joystick wire harness.

6 Carefully disconnect the joystick wire harness from the platform controls circuit board.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

NOTICE Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. Maintain firm contact with a metal part of the machine that is grounded at all times when handling printed circuit boards OR use a grounded wrist strap.

7 Carefully remove the joystick fasteners.

8 Carefully remove the joystick from the platform control box.

Torque specifications	
Joystick fasteners	9 in-lbs 1 Nm

1-3 Platform Controls Alarm

How to Remove the Platform Controls Alarm

1 Push in the red Emergency Stop button to the off position at both the ground and platform controls.

2 Disconnect the platform controls from the control cable at the platform.

3 Remove the fasteners securing the platform control box to the platform control bracket.

4 GS-1432m, GS-1932m, GS-4655: Remove the fasteners securing the bottom cover to the platform control box. Open the control box.

All other models: Remove the fasteners securing the bottom cover to the joystick housing. Open the joystick housing.

5 Disconnect the red and black wires from the alarm.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

NOTICE Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. Maintain firm contact with a metal part of the machine that is grounded at all times when handling printed circuit boards OR use a grounded wrist strap.

6 Carefully remove the alarm from the platform control box.

Platform Controls

1-4 Platform Emergency Stop Button

How to Remove the Platform Controls Emergency Stop Button

1 Push in the red Emergency Stop button to the off position at both the ground and platform controls.

2 Disconnect the platform controls from the control cable at the platform.

3 Remove the fasteners securing the platform control box to the platform control bracket.

4 GS-1432m, GS-1932m, GS-4655: Remove the fasteners securing the bottom cover to the platform control box. Open the control box.

All other models: Remove the fasteners securing the bottom cover to the joystick housing. Open the joystick housing.

5 Disconnect the white wires from the Emergency Stop base.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

NOTICE Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. Maintain firm contact with a metal part of the machine that is grounded at all times when handling printed circuit boards OR use a grounded wrist strap.

6 Carefully remove the Emergency Stop base from the Emergency Stop button.

7 Carefully remove the retaining ring from the Emergency Stop button.

8 Carefully remove the Emergency Stop button from the platform control box.

Ground Controls

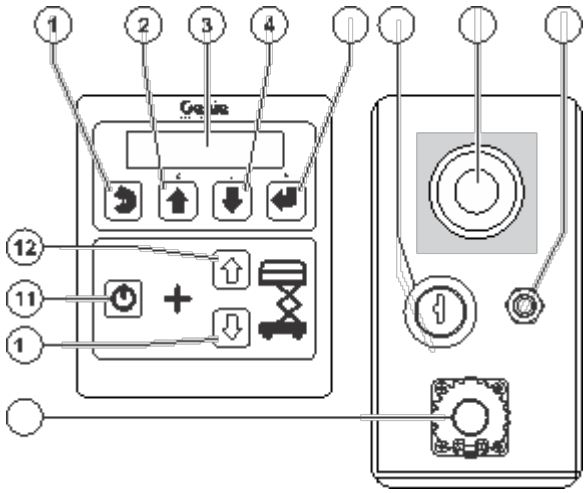
The ground controls, used to operate the machine from the ground, can also be used to tune the performance of the machine.

The ground controls consist of an Electronic Control Module (ECM), emergency stop button, key switch and circuit breaker.

Activating the function enable button and the up or down at the same time, sends a signal to the (ECM). This allows the platform to be raised or lowered at the ground controls.

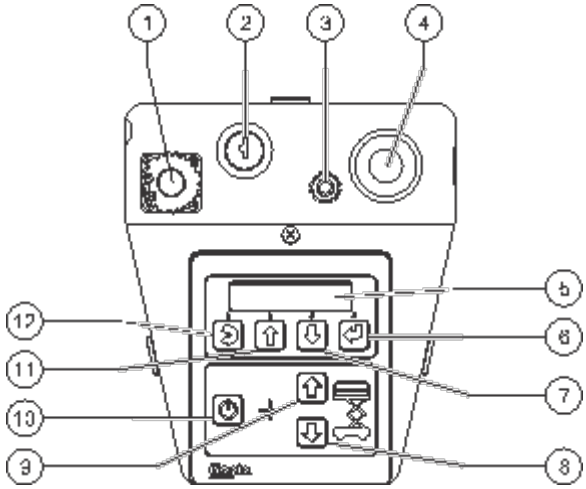
Note: Steer and drive functions are not available at the ground controls.

When the ECM is in the set up mode, the ground controls are used to adjust the function speed parameters, machine models, or machine options.



GS-4655

1 escape button
2 scroll up button
3 LCD display
4 scroll down button
5 enter button
6 Key switch
7 Red Emergency Stop button
8 circuit breaker
9 diagnostic port
10 platform down button
11 lift function enable button
12 platform up button



All other models

1 diagnostic port
2 Key switch
3 circuit breaker
4 Red Emergency Stop button
5 LCD display
6 enter button
7 scroll down button
8 platform down button
9 platform up button
10 lift function enable button
11 scroll up button
12 escape button

Ground Controls

2-1
Software Revision Level

How to Determine the Revision Level

The machine software revision level is displayed at the ground controls LCD display.

1 Turn the key switch to the ground controls or platform controls position. Pull out the red Emergency Stop button to the on position at both ground and platform controls.

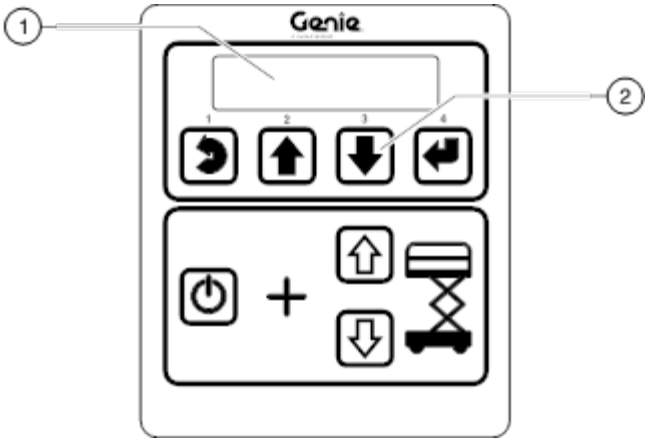
⊙ Result: The display at the platform controls will show "CH". See example below.

⊙ Result: The display at the ground controls will show SELECT IN/OUT and machine hours.

2 Press the scroll down button twice.

Result: The ground control LCD display will indicate the machine model, software part number and software revision.

3 Push in the red Emergency Stop button to the off position at both the ground and platform controls and turn the key switch to the off position.



1 LCD display
2 scroll down button

2-2
Machine Setup

How to Setup the Machine from Ground Controls

The ground controls can be used to setup the machine parameters from the ground. Features that can be adjusted from the ground controls include machine Model, Options and Speed setup. This menu can only be entered from ground controls with the key switch in the ground controls position.

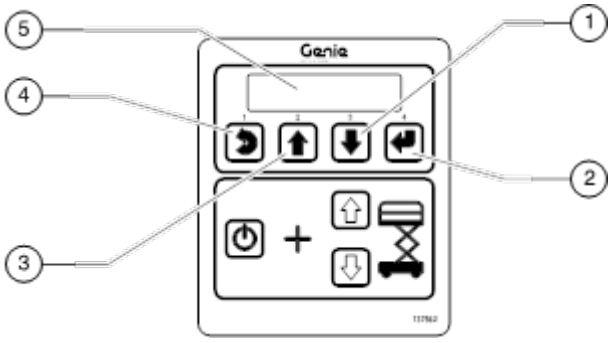
⚠ DANGER Tip-over hazard. Do not adjust function speeds higher than specified in this procedure. Setting the function speeds greater than specifications could cause the machine to tip over resulting in death or serious injury.

⚠ DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills could result in death or serious injury.

Note: Select a test area that is firm, level and free of obstructions.

1 Turn the key switch to ground controls.

2 Press and hold the ground control scroll up and scroll down buttons.



Ground Control Menu Buttons

1 scroll down button
2 enter button
3 scroll up button
4 escape button
5 LCD display

3 Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: The ground controls LCD display will show the following:

4 Use the ground control menu buttons to select machine Model, Options and Speed Setup parameters. Follow the menu structure indicated on the ground control LCD display.

Ground Controls

2-3 Loading or Updating Machine Software

Note: Before updating the machine software, open a web browser and navigate to the following location for the Genie Machine Software Download portal, http://firmware.genielift.com. Perform a search by applying the appropriate filters and download the machine software.

Note: There are two procedures available to update the machine software. These are **Bootloader Mode** and **Machine Application Mode**.

Bootloader Mode: The Bootloader mode is only available with the key switch in the GCON position. It allows the user to update or reinstall the machine software by directing the system into the Bootloader.

Choose this mode if the GCON ECM is not operating correctly.

Machine Application Mode: The machine Application mode is available with the key switch in the GCON or PCON position. This mode of machine software update requires the user to enter the Machine Service Tool.

Choose this mode if the machine is operating correctly and you are updating the machine software.

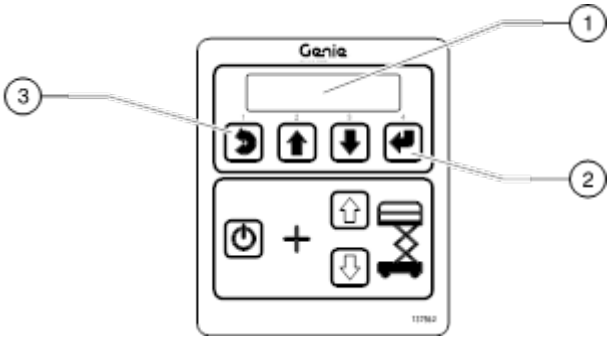
Bootloader Mode

1 Open the GCON compartment.

Note: Some models will require opening the ground control box to access the GCON.

2 Turn the key switch to the ground controls position and pull out the red Emergency Stop button to the on position at the platform controls.

3 At the ground controls, press and hold the Enter and Escape buttons.

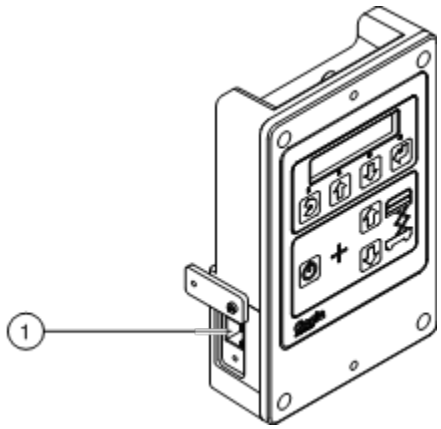


1 LCD display
2 enter button
3 escape button

4 Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: The ground controls LCD display will show the following:

5 Locate the diagnostic port on the side of the GCON. Remove one of the fasteners securing the cover and set aside. Loosen the other fastener. Do not remove it.



1 diagnostic port

6 Connect one end of a CAT5 Ethernet cable into the diagnostic port. Connect the other end into a PC or laptop.

⊙ Result: The ground controls LCD display will show the following:

7 Read and record the IP address.

8 Launch a web browser such as Internet Explorer ®, Chrome ® or Firefox ® on your PC or laptop. Type the IP address from step 7 into the web browser address bar and press enter.

⊙ Result: The following screen will be displayed.

9 Select the **Choose File** button and navigate to the downloaded Genie Flash file (.gff).

Note: Verify it is the correct flash file.

10 Select the **Load Flash File** button to verify the file is a .gff file.

⊙ Result: The following screen will be displayed.

Ground Controls

11 Select the **Reprogram Device**(s) button to start the ECM software update.

⊙ Result: The following screen will be displayed after the software update is complete.

Note: Do not turn off power while the ECM is being reprogrammed.

12 Select the **Run Application** button to exit the software update mode.

13 Push in the red Emergency Stop button and disconnect the CAT5 cable from the GCON.

14 Secure the diagnostic port cover using the retaining fasteners removed in step 5. Do not over tighten.

Note: Machines equipped with AGM batteries will need to select the AGM battery type using the GCON set parameters screen. Refer to the *Machine Setup* procedure in the Service and Repair manual that is appropriate for your machine.

⚠WARNING

Tip over hazard. Updating the SmartLink software may have impacted the machines default drive speeds. Tipping over the machine will result in death or serious injury.

Perform drive speed test. Refer to the *Maintenance Manual* that is appropriate for your machine.

15 Perform a function test. Refer to the Operator's Manual on your machine.

16 Return the machine to service.

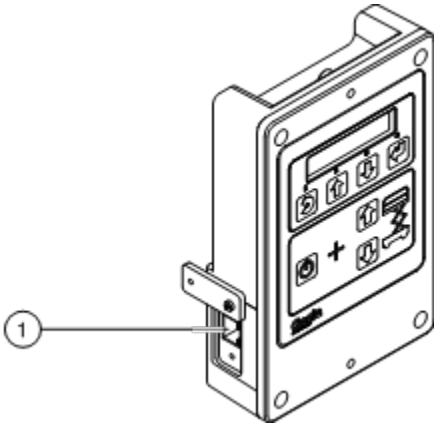
Machine Application Mode

1 Open the GCON compartment.

Note: Some models will require opening the ground control box to access the GCON.

2 Turn the key switch to ground controls or platform controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

3 Locate the diagnostic port on the side of the GCON. Remove one of the fasteners securing the cover and set aside. Loosen the other fastener. Do not remove it.



1 diagnostic port

4 Connect one end of a CAT5 Ethernet cable into the diagnostic port. Connect the other end into a PC or laptop.

⊙ Result: The ground controls LCD display will show the following:

5 Read and record the IP address.

Note: The display will only show the IP address for 3 seconds. Press the scroll up button to display the IP address for another 3 seconds.

6 Launch a web browser such as Internet Explorer ®, Chrome ® or Firefox ® on your PC or laptop. Type the IP address from step 5 into the web browser address bar and press enter.

⊙ Result: The following screen will be displayed.

7 Enter the following username and password then select **OK**.

Username: smart.link

Password: SL1000

Note: The username and password are case sensitive.

⊙ Result: The following screen will be displayed.

8 Select the **Software** tab at the header bar.

⊙ Result: The following screen will be displayed.

9 Select the **Update Machine Software** button.

⊙ Result: The following screen will be displayed.

10 Select the **Choose File** button and navigate to the downloaded Genie Flash file (.gff).

Note: Verify it is the correct flash file.

Ground Controls

11 Select the **Load Flash File** button to verify the file is a .gff file.

⊙ Result: The following screen will be displayed.

12 Select the **Reprogram Device**(s) button to start the ECM software update.

⊙ Result: The following screen will be displayed after the software update is complete.

Note: Do not turn off power while the ECM is being reprogrammed.

13 Select the **Run Application** button to exit the software update mode.

14 Push in the red Emergency Stop button and disconnect the CAT5 cable from the GCON.

15 Secure the diagnostic port cover using the retaining fasteners removed in step 5. Do not over tighten.

Note: Machines equipped with AGM batteries will need to select the AGM battery type using the GCON set parameters screen. Refer to the *Machine Setup* procedure in the Service and Repair manual that is appropriate for your machine.

⚠WARNING

Tip over hazard. Updating the SmartLink software may have impacted the machines default drive speeds. Tipping over the machine will result in death or serious injury.

Perform drive speed test. Refer to the *Maintenance Manual* that is appropriate for your machine.

16 Perform a function test. Refer to the Operator's Manual on your machine.

17 Return the machine to service.

2-4
Using a Wi-Fi Router to Connect to the SmartLink Web Service Tool

Note: Before using a portable wireless router to connect to the Smart Link Service Tool web site, the router must be configured to the type of connection desired. Refer to the portable wireless router users manual for set-up and configuration instructions.

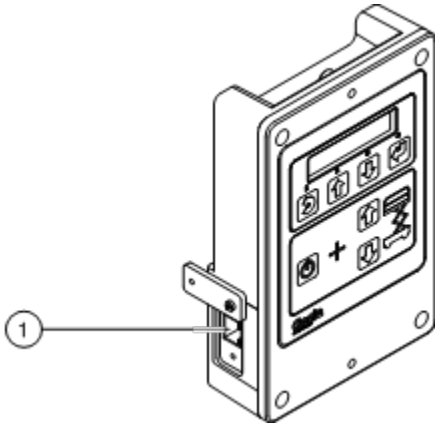
1 Open the GCON compartment.

Note: Some models will require opening the ground control box to access the GCON.

2 Turn the key switch to ground controls or platform controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

⊙ Result: The display at the platform controls will show "CH". See example below.

3 Locate the diagnostic port on the side of the GCON. Remove one of the fasteners securing the cover and set aside. Loosen the other fastener. Do not remove it.



1 diagnostic port

4 Connect one end of a CAT5 Ethernet cable into the diagnostic port. Connect the other end into the ethernet port of the portable wireless router.

⊙ Result: The ground controls LCD display will show the following:

Ground Controls

5 Read and record the IP address.

Note: The display will only show the IP address for 3 seconds. Press the scroll up button to display the IP address for another 3 seconds.

6 On a PC, laptop or mobile device, set up a wireless network for the portable router.

Note: Refer to the Operating System's procedure for connecting to a wireless network.

7 After establishing a new wireless network, select the appropriate network your portable wireless router.

Note: Refer to the Operating System's procedure for connecting to a wireless network.

8 Launch a web browser such as Internet Explorer ®, Chrome ® or Firefox ® on your PC, laptop or mobile device. Type the IP address from step 5 into the web browser address bar and press enter.

⊙ Result: The following screen will be displayed.

9 Enter the following username and password then select **OK**.

Username: smart.link

Password: SL1000

Note: The username and password are case sensitive.

⊙ Result: The following screen will be displayed.

10 After using the Smart Link Service Tool web site, push in the red Emergency Stop button and disconnect the CAT5 cable from the GCON.

11 Secure the diagnostic port cover using the retaining fasteners removed in step 3. Do not over tighten.

Note: Machines equipped with AGM batteries will need to select the AGM battery type using the GCON set parameters screen. Refer to the *Machine Setup* procedure in the Service and Repair manual that is appropriate for your machine.

⚠WARNING

Tip over hazard. Updating the SmartLink software may have impacted the machines default drive speeds. Tipping over the machine will result in death or serious injury.

Perform drive speed test. Refer to the *Maintenance Manual* that is appropriate for your machine.

12 Perform a function test. Refer to the Operator's Manual on your machine.

2-5
Service Override Mode

The Electronic Control Module (ECM) is programmed with a Service Override mode. Service Override mode is only indented for certain circumstances and is not part of the normal machine operation. Service Override mode should only be accessed by trained personal to repair faults and/ or a malfunctioning machine.

Note: Service Override mode can only be entered at the ground controls and is intended to allow the platform to be raised or lowered. Once the platform has reached the maximum allowable height, the system will exit Service Override mode. Repeat this procedure to lower the platform.

Note: When in Service Override mode, an audible alarm will sound.

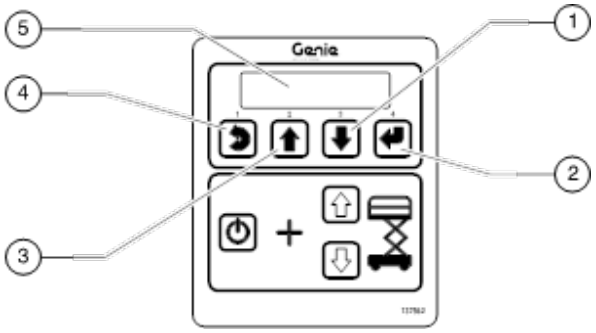
Note: Before entering Service Override mode, fault codes or the malfunction affecting the operation of the machine should be fully understood to ensure Service Override mode is required.

Note: Perform this operation on a firm, level surface and if equipped, with the outriggers auto leveled or fully retracted.

⚠ DANGER Tip-over hazard. Operating the machine on a surface that is not level while in Service Override mode will result in death or serious injury. Follow proper operating procedures and safety precautions. Do not use Service Override mode if you are not trained and familiar with the operation of the machine.

1 Turn the key switch to the ground controls position and pull out the red Emergency Stop button to the on position at the platform controls.

2 Press and hold the ground control scroll up and scroll down buttons.



Ground Control Menu Buttons

1 scroll down button
2 enter button
3 scroll up button
4 escape button
5 LCD display

Ground Controls

3 Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: The ground controls LCD display will show the following:

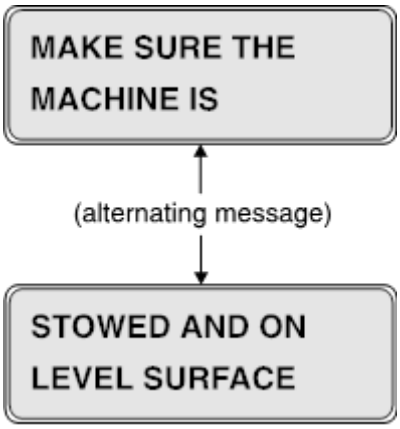
4 Release the Scroll Up and Scroll Down buttons after the ground controller powers up.

5 At the ground controls, use the Scroll Down button to scroll to **SVC Override**.

⊙ Result: The ground controls LCD display will show the following:

6 Press the **enter** button.

⊙ Result: The ground controls LCD display will show an alternating message every 1.5 seconds.



7 Press the **enter** button.

⊙ Result: The ground controls LCD display will show the following:

8 Press the **enter** button.

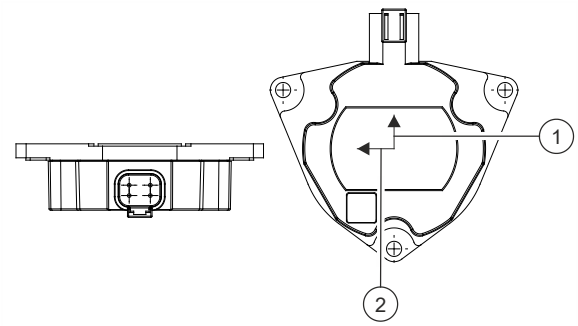
⊙ Result: The ground controls LCD display will show the following:

2-6
Level Sensors

The Electronic Control Module (ECM) is programmed to deactivate the lift and drive functions and activate an alarm when a signal is received from the level sensor.

The tilt alarm sounds when the incline of the chassis exceeds 1.5° to the side and 3° to the front or rear.

How to Install and Calibrate the Level Sensor



Level sensor

1 X axis
2 Y axis

⚠ DANGER Tip-over hazard. Failure to install the level sensor as instructed will compromise machine stability and cause the machine to tip over, resulting in death or serious injury. Do not install the level sensor other than specified in this procedure.

Note: If you are **not** installing a new level sensor, proceed to step 15.

1 Move the machine to an area that has a firm, level surface and is free of obstructions.

Note: Use a digital level to verify the surface is level.

2 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both ground and platform controls.

3 GS-4655: Raise the platform approximately 13 feet / 4 m.

All other models: Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

4 GS-1432m, GS-1932m: Raise the safety arm from the drive chassis to a vertical position.

All other models: Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

5 Lower the platform onto the safety arm.

⚠ WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

6 Turn the key switch to the off position and push in the red Emergency Stop button to the off position at the ground controls.

7 GS-1432m, GS-1932m, GS-4655: Open the ground control compartment.

All other models: Open the battery compartment.

8 Tag and disconnect the level sensor wire harness from the chassis wire harness.

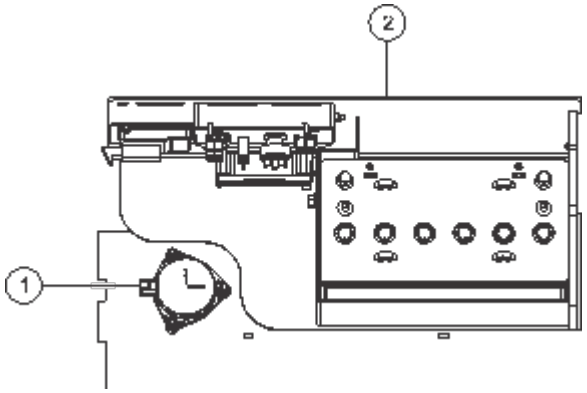
9 Remove the level sensor retaining fasteners and remove the level sensor from the machine.

Ground Controls

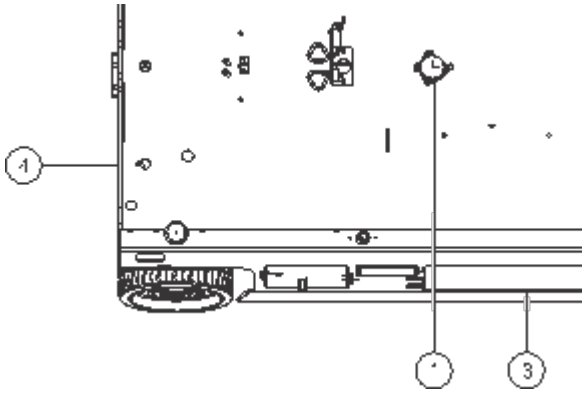
10 Securely install the wires of the new level sensor into the level sensor connector plug.

11 Install the new level sensor with the "Y" on the level sensor towards the ground controls side of the machine and the "X" on the level sensor towards the non-steer end of the machine.

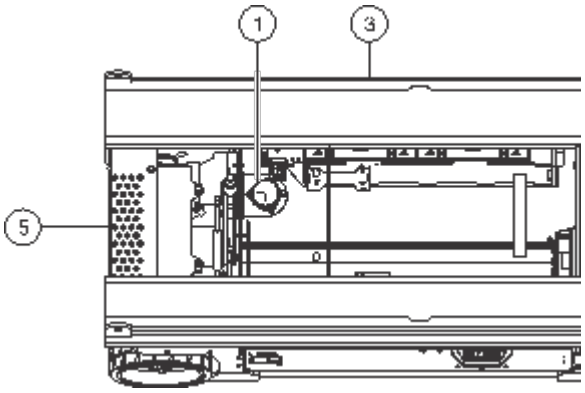
⚠ DANGER Tip-over hazard. Failure to install the level sensor as instructed, could result in the machine tipping over, causing death or serious injury.



GS-1432m, GS-1932m



GS-4655



All other models

1 level sensor
2 ground controls side
3 battery side
4 steer end
5 non-steer end

12 Install the level sensor onto the machine.

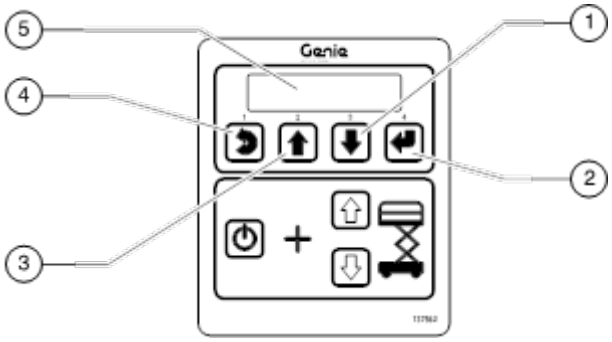
13 Connect the chassis wire harness to the level sensor.

14 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both ground and platform controls.

⊙ Result: GCON will display a ‘C051: SYSTEMFAULT, TILT:NoCal fault.

15 Push in the red Emergency Stop button to the off position at the ground controls.

16 Press and hold the ground control scroll up and scroll down buttons.



Ground Control Menu Buttons

1 scroll down button
2 enter button
3 scroll up button
4 escape button
5 LCD display

17 Pull out the red Emergency Stop button to the on position at the ground controls.

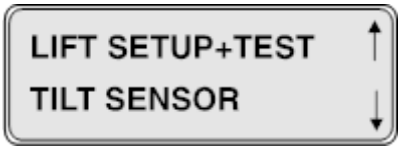
⊙ Result: The ground controls LCD display will show the following:

18 Release the Scroll Up and Scroll Down buttons after the ground controller powers up.

19 Use the Scroll Up or Scroll Down buttons to scroll to **Select Option**.

20 Press the **enter** button.

21 Use the Scroll Up or Scroll Down buttons to scroll to Tilt Sensor.



22 Press the **enter** button.

23 Press and hold the Enter button to start calibration.

⊙ Result: An audible alarm will sound when calibration is complete.

Note: The machine will not calibrate if it is on a slope of one degree or greater.

Note: If the level sensor has been replaced, continue with step 23. If the level sensor was not replaced skip to step 26.

24 GS-4655: Raise the platform approximately 13 feet / 4 m.

All other models: Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

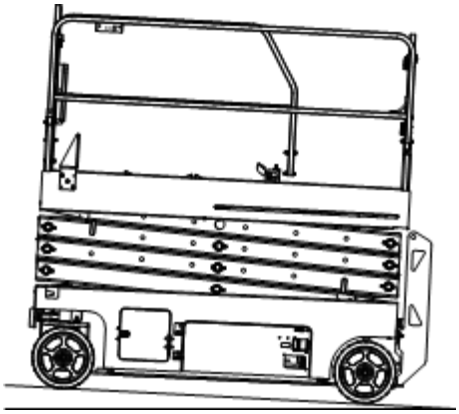
25 Return the safety arm to the stowed position.

26 Lower the platform to the stowed position.

27 Place a digital level on the ground control side of the drive chassis. Zero out the digital level.

Ground Controls

28 Drive the steer end of the machine up a ramp until it is just under 3°



29 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

⊙ Result: No audible alarm is heard.

⊠ Result: The platform stops, an audible alarm is heard and Fault LL is displayed. Repeat this procedure starting at step 15 on a firm level surface.

30 Lower the platform to the stowed position.

31 Drive the steer end of the machine up a ramp until it is just above 3°.

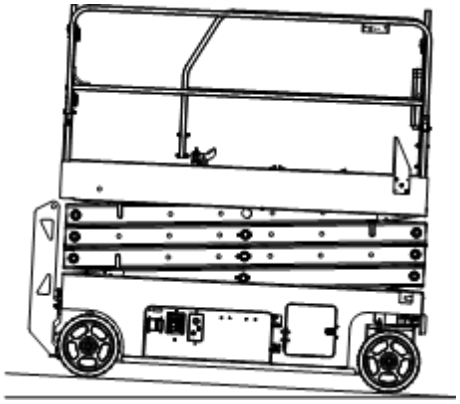
32 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

⊙ Result: The platform should stop, an alarm should sound and fault code LL appears in the diagnostic display.

⊠ Result: The platform does not stop or the level sensor alarm does not sound. Repeat this procedure starting at step 15 on a firm level surface.

33 Lower the platform to the stowed position.

34 Drive the non-steer end of the machine up a ramp until it is just under 3°.



35 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

⊙ Result: No audible alarm is heard.

⊠ Result: The platform stops, an audible alarm is heard and Fault LL is displayed. Repeat this procedure starting at step 15 on a firm level surface.

36 Lower the platform to the stowed position.

37 Drive the non-steer end of the machine up a ramp until it is just above 3°.

38 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

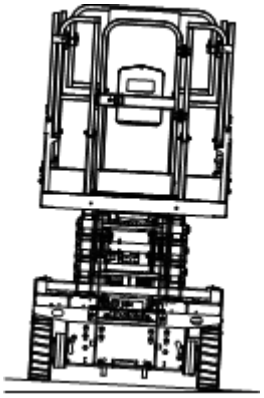
⊙ Result: The platform should stop, an alarm should sound and fault code LL appears in the diagnostic display.

⊠ Result: The platform does not stop or the level sensor alarm does not sound. Repeat this procedure starting at step 15 on a firm level surface.

39 Lower the platform to the stowed position.

40 Place a digital level on the steer end of the drive chassis. Zero out the digital level.

41 Drive the ground control side of the machine onto a ramp until it is just under 1.5°.



42 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

⊙ Result: No audible alarm is heard.

⊠ Result: The platform stops, an audible alarm is heard and Fault LL is displayed. Repeat this procedure starting at step 15 on a firm level surface.

43 Lower the platform to the stowed position.

44 Continue driving the machine onto the ramp until it is just over 1.5°.

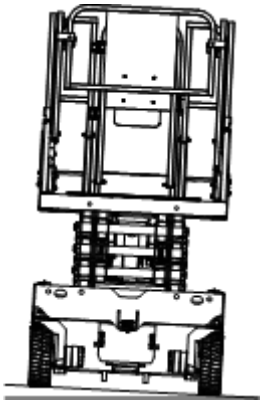
45 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

⊙ Result: The platform should stop, an alarm should sound and fault code LL appears in the diagnostic display.

⊠ Result: The platform does not stop or the level sensor alarm does not sound. Repeat this procedure starting at step 15 on a firm level surface.

46 Lower the platform to the stowed position.

47 Drive the battery compartment side of the machine onto a ramp until it is just under 1.5°.



48 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

⊙ Result: No audible alarm is heard.

⊠ Result: The platform stops, an audible alarm is heard and Fault LL is displayed. Repeat this procedure starting at step 15 on a firm level surface.

49 Lower the platform to the stowed position.

50 Continue driving the machine onto the ramp until it is just over 1.5°.

51 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

⊙ Result: The platform should stop, an alarm should sound and fault code LL appears in the diagnostic display.

⊠ Result: The platform does not stop or the level sensor alarm does not sound. Repeat this procedure starting at step 15 on a firm level surface.

52 Lower the platform to the stowed position.

Ground Controls

2-7
Manual Platform Lowering Cable

The manual platform lowering cable lowers the platform in the event of a main power failure. The manual platform lowering cable is attached to the barrel end of the lift cylinder and is activated at the drive chassis.

How to Adjust the Manual Platform Lowering Cable

1 GS-4655: Raise the platform approximately 13 feet / 4 m.

All other models: Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

2 GS-1432m, GS-1932m: Raise the safety arm from the drive chassis to a vertical position.

All other models: Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

3 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

4 Pull the handle of the manual platform lowering cable out until considerable resistance is felt. Release the handle.

5 Measure the distance between the base of the handle and cable mounting nut.

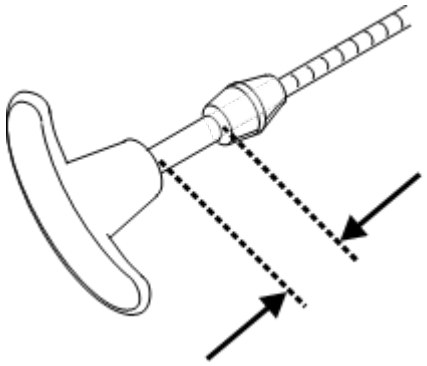
GS-1432m, GS-1932m, GS-4655:

⊙ Result: The measurement should be no greater than 0.125 inch / 3 mm.

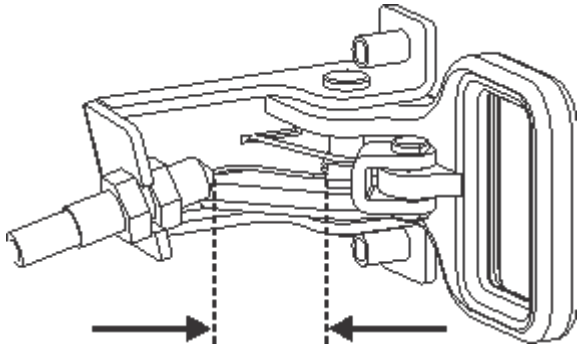
All other models:

⊙ Result: The measurement should be no greater than 1.125 inch / 28 mm.

Note: Proceed to step 8 if measurement is correct.

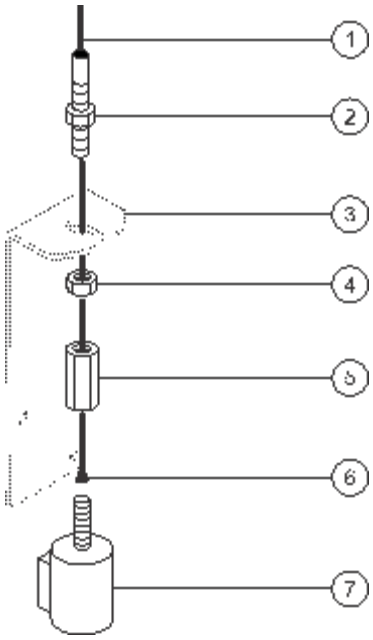


Platform manual lowering cable specification	
GS-1432m, GS-1932m, GS-4655	
Gap, lowering handle to mounting nut	0 - 0.125 in 0 - 3 mm



Platform manual lowering cable specification	
All other models	
Gap, lowering handle to mounting nut	1 - 1.125 in 25 - 28 mm

6 To adjust, loosen the upper lock nut on the cable mounting bracket at the cylinder. Turn the lower lock nut clockwise to decrease the distance or counterclockwise to increase the distance. Tighten the upper lock nut.



1 manual lowering cable sheath
2 upper lock nut
3 cable mounting bracket
4 lower lock nut
5 cable mounting nut
6 end of lowering cable
7 manual lowering valve

7 Repeat this procedure beginning with step 4.

8 Raise the platform and rotate the safety arm to the stowed position.

9 Pull the manual lowering handle at the ground controls 2 to 3 times to ensure it is functioning correctly.

2-8 Outrigger Calibration - GS-3232

The Electronic Control Module (ECM) is programmed to deactivate the drive and steer functions while the outriggers are deployed and activate an alarm when a signal is received from the outrigger level sensor, indicating the outriggers are not deployed or the machine is out of level.

The ECM is also used to calibrate the outrigger level sensor to achieve a levelness of 0° +/- 0.5° front to back and side to side, while the outriggers are deployed.

For further information or assistance, contact Genie Product Support.

How to Calibrate the Outrigger System

1 Move the machine to an area that has a firm, level surface and is free of obstructions.

2 Turn the key switch to ground controls.

3 At the ground controls, press and hold the Menu Up and Menu Down buttons.

4 While pressing both buttons down, pull out the red Emergency Stop Button.

5 Release the Menu Up and Menu Down buttons after the ground controller powers up.

6 Use the Menu Up or Menu Down buttons to scroll to Machine Options.

7 Press the Enter button to select Machine Options.

Ground Controls

8 Use the Menu Up or Menu Down buttons to scroll to Outriggers.

9 Press the Enter button to select Outriggers.

10 Use the Menu Up or Menu Down buttons to scroll to Calibrate Outriggers.

11 Press the Enter button to select Calibrate Outriggers.

12 Press and hold the Enter button while the system gathers data to calibrate the outrigger level sensor.

⚠WARNING Crushing hazard. Keep body parts away from outriggers during outrigger movement.

13 Continue holding the Enter button after the outrigger level sensor is calibrated. The outriggers will retract while the outrigger system gathers and saves data.

14 Continue holding the Enter button after the outriggers retract. The outriggers will now extend and the system will gather and save data to calibrate the outriggers.

15 Continue holding the Enter button after the outriggers extend. The outriggers will now retract while the outrigger system gathers and saves data.

⊙ Result: The alarms at the ground and platform controls should sound for 1 second. The outrigger system is calibrated.

Note: After installing a new outrigger level sensor, the new outrigger level sensor must be calibrated following this procedure.

3-1 Hydraulic Tank

The primary functions of the hydraulic tank are to cool and deaerate the hydraulic fluid during operation. It utilizes internal suction strainers for the pump supply lines and has an external return line filter.

How to Remove the Hydraulic Tank

NOTICE Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

Note: Perform this procedure on a firm, level surface with the machine in the stowed position.

GS-4655 models:

1 Disconnect the battery pack from the machine.

⚠ WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

2 Tag and disconnect the hydraulic tank return hard line from the filter. Remove the hard line from the machine. Cap the fitting on the filter head.

3 Tag and disconnect the hydraulic tank hard line from the pump. Remove the hard line from the machine. Cap the fitting on the pump.

4 Remove the hydraulic tank retaining fasteners and remove the hydraulic tank from the machine.

⚠ WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

5 Remove the hydraulic tank cap and drain the tank into a suitable container.

Torque specifications	
Hydraulic retaining fasteners, dry	35 in-lbs 4 Nm
Hydraulic retaining fasteners, lubricated	26 in-lbs 2.9 Nm

Hydraulic Tank

All other models:

1 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

2 Tag, disconnect and plug the hydraulic hoses from the power unit. Cap the fittings.

3 Tag and disconnect the electrical wires from the power unit.

4 Remove the power unit fasteners and remove the assembly from the machine.

5 Remove the hydraulic tank cap and drain the tank into a suitable container.

Torque specifications	
Hydraulic retaining fasteners, dry	26 in-lbs 2.9 Nm
Hydraulic retaining fasteners, lubricated	18 in-lbs 2 Nm

6 Remove the hydraulic tank retaining fasteners and remove the hydraulic tank from the power unit.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

4-1
Function Pump

The hydraulic pump is attached to the motor which makes up the hydraulic power unit.

How to Remove the Hydraulic Pump

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Disconnect the battery pack from the machine.

⚠ WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

2 Refer to Repair Procedure*, How to Remove the Hydraulic Tank*.

3 Tag, disconnect and plug the hoses from the power unit. Cap the fittings on the power unit.

4 Remove the hydraulic power unit mounting bolts, then remove the hydraulic power unit from the machine.

5 Tag and remove the hydraulic tank mounting bolts, then remove the hydraulic tank from the power unit.

6 Remove the pump mounting bolts.

7 Carefully remove the pump.

⚠ DANGER Tip-over hazard. After replacing the hydraulic pump, it is critical to return the function speed settings to original factory specifications. Failure to restore the machine to original factory specifications could cause the machine to tip over resulting in death or serious injury.

Hydraulic Pump

4-2
Function Pump - GS-4655

The hydraulic pump is attached to the motor which makes up the hydraulic power unit.

How to Remove the Hydraulic Pump

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Disconnect the battery pack from the machine.

⚠ WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

2 Remove the retaining fasteners securing the harness bracket and disconnect the pump motor terminals. Set the retaining fasteners, harness and bracket aside.

3 Tag, disconnect and plug the hoses from the power unit. Cap the fittings on the power unit.

4 Remove the hydraulic power unit mounting bolts, then remove the hydraulic power unit from the machine.

5 Tag, disconnect and cap fittings on the pump.

6 Remove the pump mounting bolts.

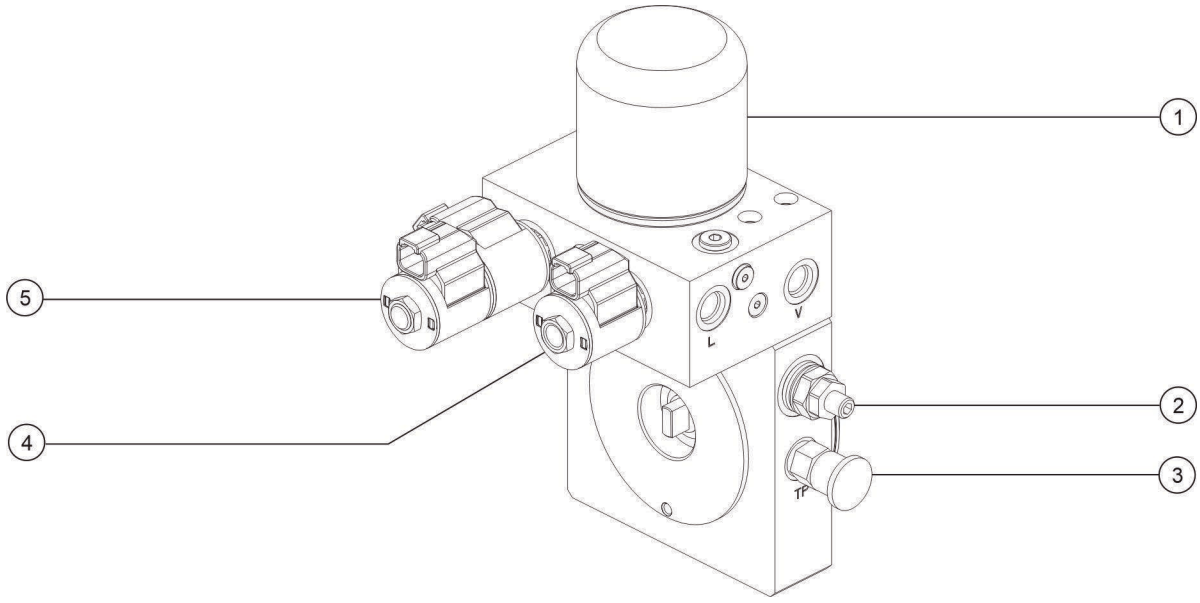
7 Carefully remove the pump.

⚠ DANGER Tip-over hazard. After replacing the hydraulic pump, it is critical to return the function speed settings to original factory specifications. Failure to restore the machine to original factory specifications could cause the machine to tip over resulting in death or serious injury.

5-1
Function Manifold Components – GS-1432m, GS-1932m

The function manifold is mounted on the hydraulic pump.

Index No.	Description	Schematic Item	Function	Torque
1	Hydraulic filter, 23 psi / 1.6 bar	HC	Filters hydraulic fluid	13-17 ft-lbs / 18-23 Nm
2	Relief valve, 1800 psi / 124 bar, GS-1432m	HA	System relief	22 ft-lbs / 30 Nm
2	Relief valve, 2400 psi / 165 bar, GS-1932m	HA	System relief	22 ft-lbs / 30 Nm
3	Diagnostic port		Test port	
4	Solenoid valve, 2 position 4 way	HD	Platform up	20 ft-lbs / 27 Nm
5	Solenoid valve, 3 position 4 way	HB	Steer left/right	20 ft-lbs / 27 Nm
-	Coil nut	HB, HD	-	4-5 ft-lbs / 5-7 Nm



How to Install a Valve Cartridge

1 Dip the cartridge in clean oil to lube the O-rings.

2 Screw the cartridge in by hand until the top O-ring is met, then torque to specifications.

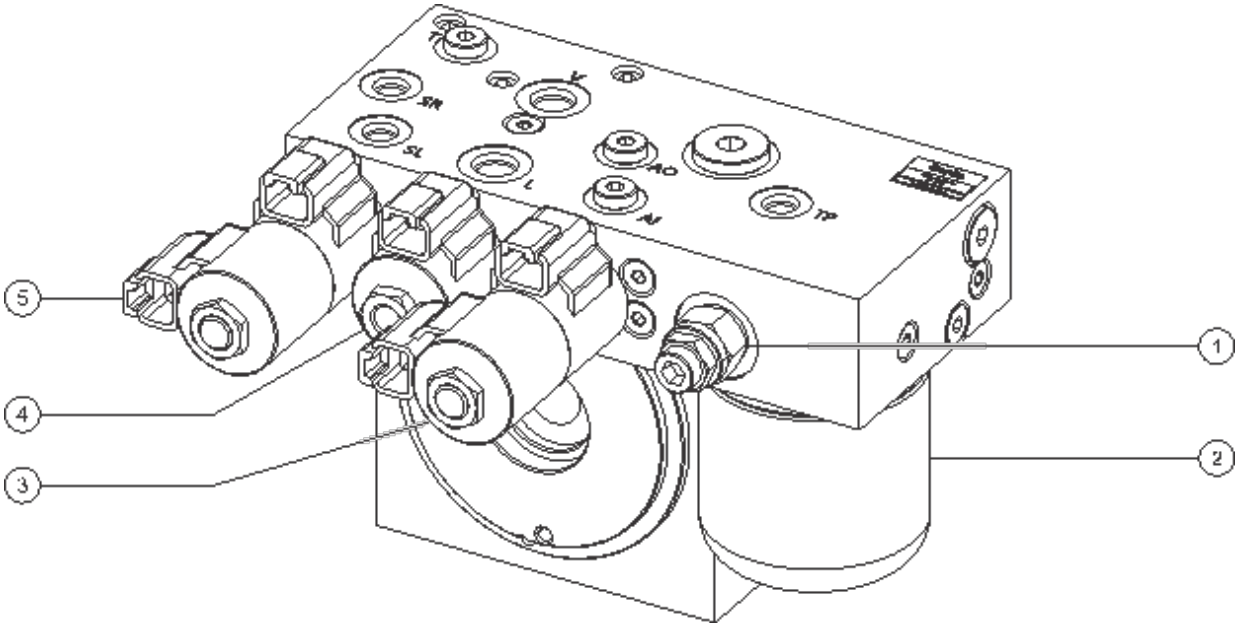
3 If required, install the valve coil(s) onto the valve stem. Install the coil nut onto the valve stem and torque to specifications.

Manifolds

5-2
Function Manifold Components – GS-3232

The function manifold is mounted on the hydraulic pump.

Index No.	Description	Schematic Item	Function	Torque
1	Relief valve, 2300 psi / 158 bar	HA	System relief	20 ft-lbs / 27 Nm
2	Hydraulic filter, 18 psi / 1.2 bar	HB	Filters hydraulic fluid	13-17 ft-lbs / 18-23 Nm
3	Solenoid valve, 3 position 4 way	HC	Outrigger Extend/Retract	20 ft-lbs / 27 Nm
4	Solenoid valve, 2 position 4 way	HD	Platform up	20 ft-lbs / 27 Nm
5	Solenoid valve, 3 position 4 way	HE	Steer left/right	20 ft-lbs / 27 Nm
---	Coil nut	HC, HD, HE	---	5-7 ft-lbs / 7-9 Nm



How to Install a Valve Cartridge

1 Dip the cartridge in clean oil to lube the O-rings.

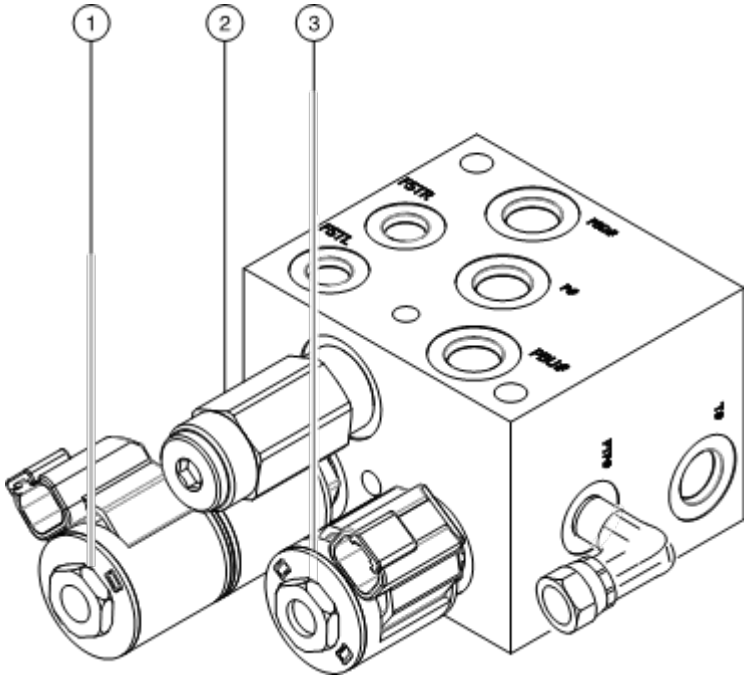
2 Screw the cartridge in by hand until the top O-ring is met, then torque to specifications.

3 If required, install the valve coil(s) onto the valve stem. Install the coil nut onto the valve stem and torque to specifications.

5-3
Function Manifold Components – GS-4655

The function manifold is mounted behind an inspection door, at the ground control side of the machine.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 3 position 4 way	GA	Steer left/right	20 ft-lbs / 27 Nm
2	Relief valve, 2900 psi / 200 bar	GB	System relief	20 ft-lbs / 27 Nm
3	Solenoid valve, 2 position 4 way	GC	Platform up	20 ft-lbs / 27 Nm
—	Coil nut	GA, GC	—	5-7 ft-lbs / 7-9 Nm



How to Install a Valve Cartridge

1 Dip the cartridge in clean oil to lube the O-rings.

2 Screw the cartridge in by hand until the top O-ring is met, then torque to specifications.

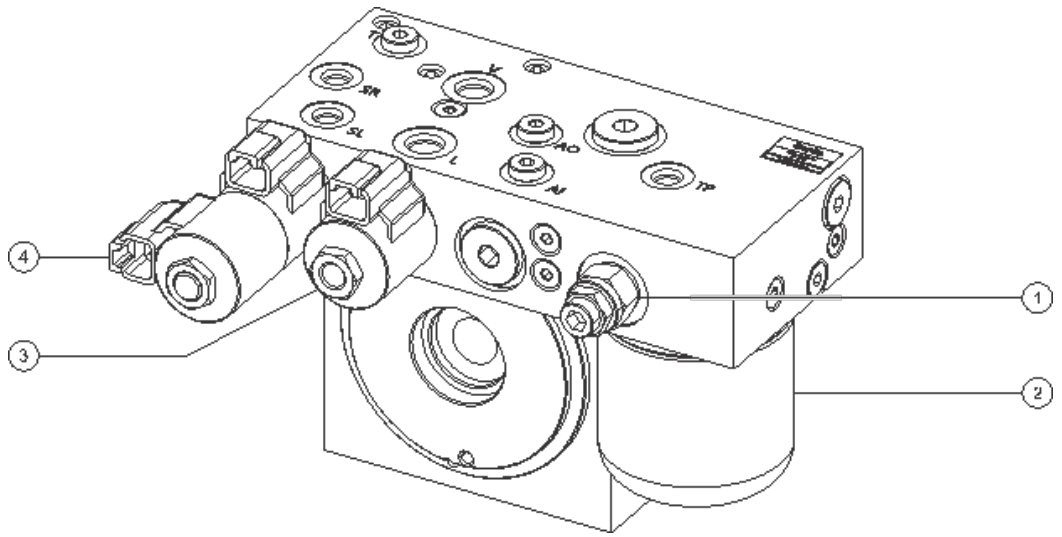
3 If required, install the valve coil(s) onto the valve stem. Install the coil nut onto the valve stem and torque to specifications.

Manifolds

5-4
Function Manifold Components – All other models

The function manifold is mounted on the hydraulic pump.

Index No.	Description	Schematic Item	Function	Torque
1	Relief valve	HA	System relief	20 ft-lbs / 27 Nm
---	GS-1932, 3300 psi / 228 bar	---	---	---
---	GS-2632, 2000 psi / 138 bar	---	---	---
---	GS-2646, 2700 psi / 186 bar	---	---	---
---	GS-3246, 2300 psi / 158 bar	---	---	---
---	GS-4046, 2100 psi / 145 bar	---	---	---
2	Hydraulic filter, 18 psi / 1.2 bar	HB	Filters hydraulic fluid	13-17 ft-lbs / 18-23 Nm
3	Solenoid valve, 2 position 4 way	HC	Platform up	20 ft-lbs / 27 Nm
4	Solenoid valve, 3 position 4 way	HD	Steer left/right	20 ft-lbs / 27 Nm
---	Coil nut	HC, HD	---	5-7 ft-lbs / 7-9 Nm



How to Install a Valve Cartridge

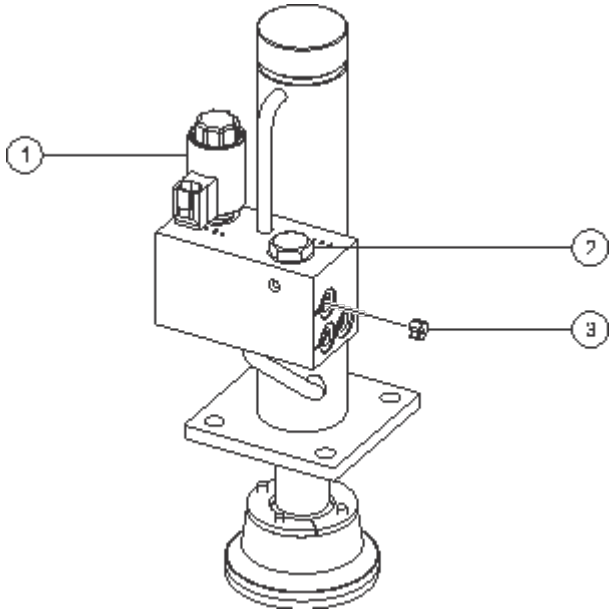
1 Dip the cartridge in clean oil to lube the O-rings.

2 Screw the cartridge in by hand until the top O-ring is met, then torque to specifications.

3 If required, install the valve coil(s) onto the valve stem. Install the coil nut onto the valve stem and torque to specifications.

5-5
Outrigger Cylinder Manifold Components – GS-3232

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 2 way	CA, CB, CC, CD	Outriggers extend / retract	20 ft-lbs / 27 Nm
2	Check Valve, pilot operated	CF	Retract flow control	20 ft-lbs / 27 Nm
3	Orifice Plug, 0.037 inch / 0.94 mm	CE	Outrigger retract	—
—	Coil nut	CA, CB, CC, CD	—	5 ft-lbs / 7 Nm



How to Install a Valve Cartridge

1 Dip the cartridge in clean oil to lube the O-rings.

2 Screw the cartridge in by hand until the top O-ring is met, then torque to specifications.

3 If required, install the valve coil(s) onto the valve stem. Install the coil nut onto the valve stem and torque to specifications.

Manifolds

5-6 Valve Adjustments - Function Manifold

Note: Verify the hydraulic oil level is at the FULL mark on the hydraulic tank.

How to Adjust the System Relief Valve

Note: Perform this procedure with the machine on a firm, level surface with all weight, tools and equipment removed from the platform.

Note: Perform this procedure in an area that is free of overhead obstructions.

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port on the function manifold.

2 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both ground and platform controls.

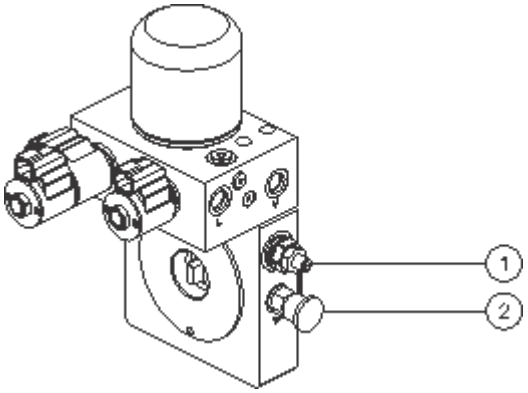
3 From the ground controls, fully elevate the platform. Continue holding platform up while observing the pressure reading on the pressure gauge. Note the pressure. Refer to Specifications, *Hydraulic Component Specifications*.

4 Turn the key switch to the off position.

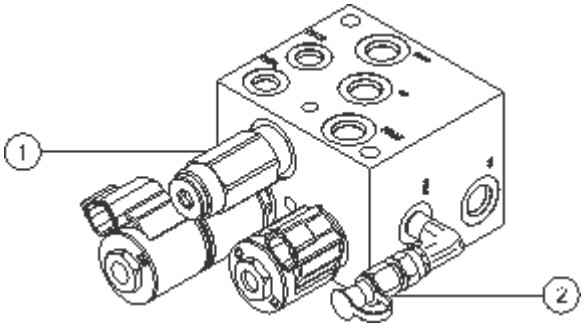
5 Hold the valve stem with a hex key and loosen the jam nut.

6 Adjust the valve stem. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Tighten the jam nut.

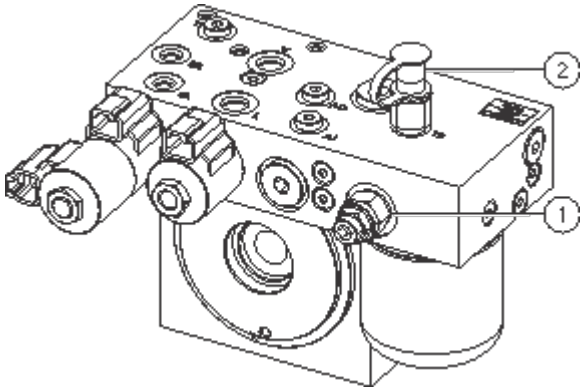
7 Repeat this procedure beginning with step 3 to confirm the relief valve pressure.



GS-1432m, GS-1932m



GS-4655



All other models

1 system relief valve
2 test port

5-7 Valve Coils

How to Test a Coil

A properly functioning coil provides an electromagnetic force which operates the solenoid valve. Critical to normal operation is continuity within the coil. Zero resistance or infinite resistance indicates the coil has failed.

Since coil resistance is sensitive to temperature, resistance values outside specification can produce erratic operation. When coil resistance decreases below specification, amperage increases. As resistance rises above specification, voltage increases.

While valves may operate when coil resistance is outside specification, maintaining coils within specification will help ensure proper valve function over a wide range of operating temperatures.

⚠ WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

Note: If the machine has been in operation, allow the coil to cool at least 3 hours before performing this test.

1 Tag and disconnect the wiring from the coil to be tested.

2 Test the coil resistance using a multimeter set to resistance (Ω). Refer to the Valve Coil Resistance Specification table.

⊙ Result: If the resistance is not within the adjusted specification, plus or minus 10%, replace the coil.

Valve Coil Resistance Specification

Note: The following coil resistance specifications are at an ambient temperature of 68°F / 20°C. As valve coil resistance is sensitive to changes in air temperature, the coil resistance will typically increase or decrease by 4% for each 18°F / 10°C that your air temperature increases or decreases from 68°F / 20°C.

Description	Specification
Solenoid valve, 3 position 4 way, 20V DC with diode (schematic item GA, SV2, SV3)	15.6Ω
Solenoid valve, 3 position 4 way, 24V DC with diode (schematic item SV4)	33.75Ω
Solenoid valve, 2 position 4 way, 20V DC with diode (schematic item GC, SV1)	15.6Ω
Solenoid valve, 2 position 4 way, 24V DC with diode (schematic item HB, HD)	33.75Ω
Solenoid valve, 2 position 2 way, 20V DC with diode (schematic item DK, DO, N, SV3)	25Ω
Solenoid valve, 2 position 2 way, 24V DC with diode (schematic item SV9)	29Ω
Proportional relief valve (schematic item PRV1)	28.5 - 29Ω

Manifolds

How to Test a Coil Diode

Genie incorporates spike suppressing diodes in all of its coils. Properly functioning coil diodes protect the electrical circuit by suppressing voltage spikes. Voltage spikes naturally occur within a function circuit following the interruption of electrical current to a coil. Faulty diodes can fail to protect the electrical system, resulting in a tripped circuit breaker or component damage.

⚠ WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

1 Test the coil resistance. Refer to Repair Procedure, *How to Test a Coil*.

2 Connect a 10Ω resistor to the negative terminal of a known good 9V DC battery. Connect the other end of the resistor to a terminal on the coil.

Note: The battery should read 9V DC or more when measured across the terminals.

Resistor, 10Ω

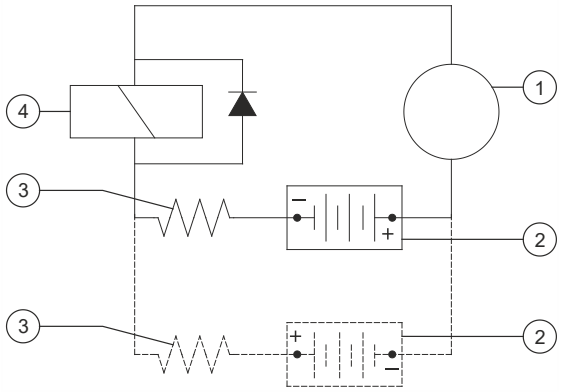
Genie part number	27287

3 Set a multimeter to read DC amperage.

Note: The multimeter, when set to read DC amperage, should be capable of reading up to 800 mA.

4 Connect the negative lead to the other terminal on the coil.

Note: If testing a single terminal coil, connect the negative lead to the internal metallic ring at either end of the coil.



1 multimeter
2 9V DC battery
3 10Ω resistor
4 coil

Note: Dotted lines in illustration indicate a reversed connection as specified in step 6.

5 Momentarily connect the positive lead from the multimeter to the positive terminal on the 9V battery. Note and record the reading.

6 At the battery or coil terminals, reverse the connections. Note and record the current reading.

⊙ Result: Both current readings are greater than 0 mA and are different by a minimum of 20%. The coil is good.

⊠ Result: if one or both current readings are greater than 0 mA, or if the two current readings do not differ by a minimum of 20%, the coil and/or its internal diode are faulty and the coil should be replaced.

6-1
Yoke Assembly

How to Remove the Yoke Assembly

1 Block the non-steer tires.

2 GS-32m/GS-32/GS-2646/GS-3246: Remove the cotter pin from the wheel castle nut.

Note: Always replace the cotter pin with a new one when removing the castle nut.

3 GS-32m/GS-32/GS-2646/GS-3246: Loosen the wheel castle nut. Do not remove it.

All other models: Loosen the retaining fasteners securing the wheel to the yoke. Do not remove them.

4 Center a lifting jack under the drive chassis at the steer end of the machine.

5 Raise the machine approximately 6 inches / 15 cm. Place blocks under the chassis for support.

⚠ WARNING Crushing hazard. The chassis will fall if not properly supported.

6 GS-32m/GS-32/GS-2646/GS-3246: Remove the wheel castle nut. Remove the wheel.

All other models: Remove the retaining fasteners. Remove the wheel.

7 Support and secure the yoke assembly to an appropriate lifting device.

⚠ CAUTION Bodily injury hazard. The yoke assembly may fall if not properly supported when it is removed from the machine.

8 Remove the retaining fastener from the steer link at the yoke assembly.

Note: While removing the retaining fasteners, take note of the quantity and location of the spacers when disconnecting the steer link from the yoke assembly.

9 Remove the retaining fastener from the yoke pivot shaft.

10 Lower the yoke assembly out of the chassis.

Steer Axle Components

6-2 Drive Motors

How to Remove a Drive Motor

1 Block the non-steer tires.

2 Remove the cotter pin from the wheel castle nut of the motor to be removed.

Note: Always replace the cotter pin with a new one when removing the castle nut.

3 Loosen the wheel castle nut. Do not remove it.

4 Center a lifting jack under the drive chassis at the steer end of the machine.

5 Raise the machine approximately 2 inches / 5 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis will fall if not properly supported.

6 Remove the wheel castle nut. Remove the wheel.

7 Tag and disconnect the electrical wiring from the drive motor.

8 Remove the drive motor mounting fasteners. Remove the motor.

Torque specifications	
GS-1432m, GS-1932m	
Drive motor mounting fasteners, dry	80 ft-lbs 108.5 Nm
Drive motor mounting fasteners, lubricated	63 ft-lbs 85.4 Nm
All other models	
Drive motor mounting fasteners, dry	43 ft-lbs 58.3 Nm
Drive motor mounting fasteners, lubricated	32 ft-lbs 43.4 Nm

6-3 Steer Cylinder

How to Remove the Steer Cylinder

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Block the non-steer tires.

2 GS-1932 with electric steering:

Raise the machine approximately 2 inches / 5 cm. Place blocks under the chassis for support.

Using hexagonal wrench, rotate and adjust the right turn to the limit position. Then, remove the pin retaining fasteners from the rod end pivot pin. Remove the pivot pin.

All other models:

Remove the pin retaining fasteners from the rod-end pivot pin. Remove the pivot pin.

Note: While removing the pin retaining fasteners, take note of the quantity and location of the spacers when removing the pivot pin.

3 Remove the pin retaining fasteners from the barrel-end pivot pin. Remove the pin.

Note: While removing the pin retaining fasteners, take note of the quantity and location of the spacers when removing the pivot pin.

4 Remove the steer cylinder from the machine.

5 GS-1932 with electric steering:

Tag and disconnect the cables and wires from the steer cylinder.

All other models:

Tag, disconnect and plug the hydraulic hoses from the steer cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

NOTICE Component damage hazard. Hoses can be damaged if they are kinked or pinched.

6-4 Steer Bellcrank

How to Remove the Steer Bellcrank

1 GS-1432m, GS-1932m:

Remove the steer cylinder. Refer to Repair Procedure, *How to Remove the Steer Cylinder.*

All other models:

Disconnect the rod end of the steer cylinder from the bellcrank.

2 GS-1432m, GS-1932m:

Remove the retaining fasteners from the steer links at each end of the bellcrank.

All other models:

Remove the pivot pins from the steer link at each end of the bellcrank.

Note: While removing the retaining fasteners, take note of the quantity and location of the spacers between the bellcrank and the steer links.

3 Center a lifting jack under the drive chassis at the steer end of the machine.

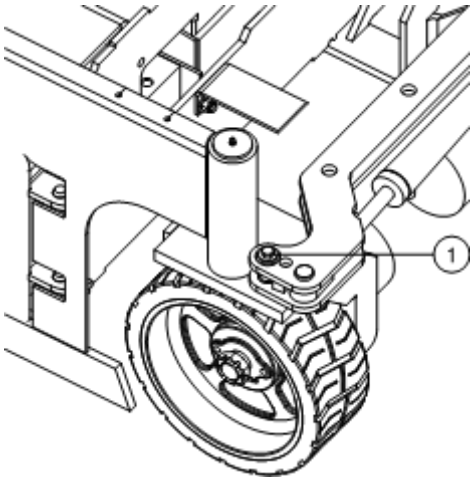
4 Raise the machine approximately 14 inches / 36 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis will fall if not properly supported.

5 Turn the yokes to the side so the bellcrank can be removed.

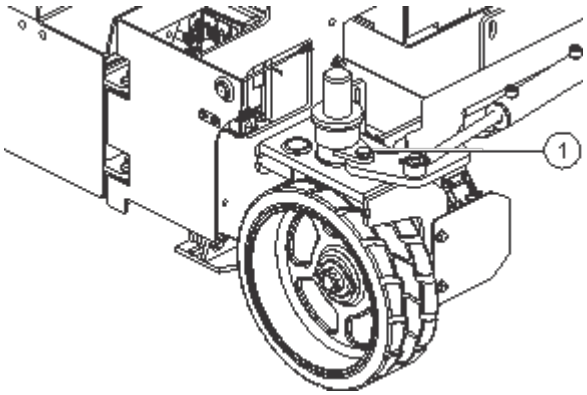
Steer Axle Components

6 Remove the bellcrank from the machine.



GS-1432m, GS-1932m

1 apply removable thread lock to fastener threads



All other models

1 pivot pin

Note: While removing the bellcrank from the machine, take note of the quantity and location of the spacers between the bellcrank and the steer links.

6-5
Manual Brake Release - Models with electric drive

How to Manually Release the Electric Brakes

⚠ This procedure should only be performed due to machine or battery failure.

⚠DANGER Bodily injury and crushing hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills could result in death or serious injury.

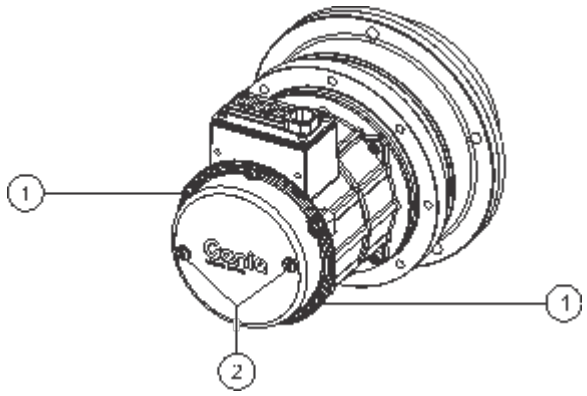
1 Chock the wheels at both ends of the machine.

Note: If the machine is on an incline it is recommended that a secondary device such as a forklift and towing strap be used to secure the machine from rolling after the brakes have been released.

⚠DANGER Bodily injury and crushing hazard. Failure to properly secure the machine from rolling could result in property damage, death or serious injury.

2 Locate and remove the two brake release access plugs on the front of the electric drive motors. Set the plugs aside.

Note: Do not misplace the plugs. Failure to not reinstalling the plugs will result in component damage.



1 retaining fasteners
2 brake release access plugs

3 Remove two of the retaining fasteners from opposite sides of the electric motor cover.

4 Install the retaining fasteners into the brake release access holes. Turn both fasteners in even increments until the brakes are released. Do not over tighten the fasteners.

5 Move the machine to an area that has a firm, level surface and is free of obstructions.

6 Chock the wheels at both ends of the machine.

7 Remove the retaining fasteners from the brake release access holes to reengage the brakes.

8 Install the retaining fasteners securing the motor cover and the brake release access plugs.

6-6 Thrust Washers

How to Remove a Thrust Washer

1 Remove the drive motor. Refer to Repair Procedure, *How to Remove a Drive Motor*.

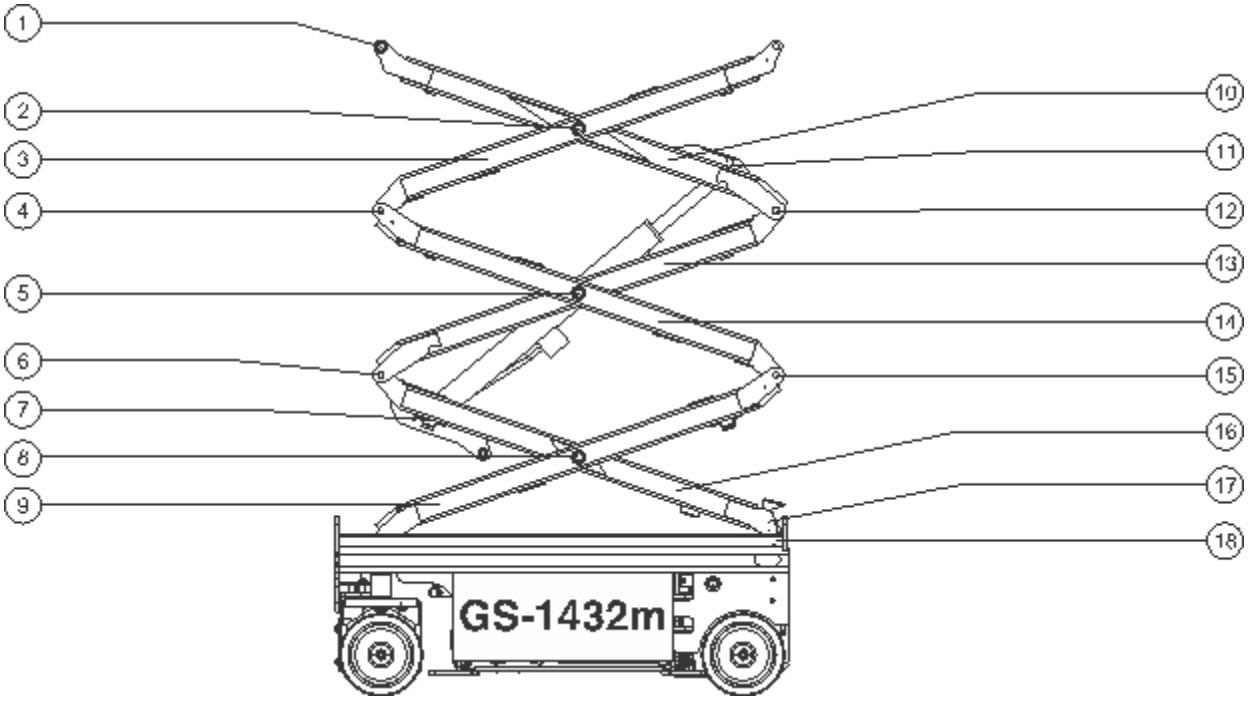
2 Remove the steer bellcrank. Refer to Repair Procedure, *How to Remove the Steer Bellcrank*.

3 Remove the snap rings and shims from the king pin.

4 Remove the yoke assembly from the machine.

5 Remove the thrust washer from the king pin.

Scissor Components



Steer End	Non-steer End
1 - Number 3 pivot pin (steer end)	10 - Number 1 inner arm
2 - Number 3 center pivot pin (Qty. 2)	11 - Lower lift cylinder rod-end pivot pin
3 - Number 3 outer arm	12 - Number 2 pivot pin (non-steer end)
4 - Number 2 pivot pin (steer end)	13 - Number 2 inner arm
5 - Number 2 center pivot pin (Qty. 2)	14 - Number 2 outer arm
6 - Number 1 pivot pin (steer end)	15 - Number 1 pivot pin (non-steer end)
7 - Lift cylinder barrel-end pivot pin	16 - Number 1 inner arm
8 - Number 1 center pivot pin (Qty. 2)	17 - platform height sensor
9 - Number 1 outer arm	18 - Number 1 pivot pin

7-1
Scissor Assembly - GS-1432m

How to Disassemble the Scissor Assembly

⚠WARNING Bodily injury hazard. The procedures in this section require specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

3 Raise the safety arm from the drive chassis to a vertical position.

4 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

6 Remove all cable ties securing the cable from the ground controls to the platform.

7 Remove the retaining fasteners and plates securing the lift cylinder barrel and rod end pivot pins.

8 Raise the platform slightly and return the safety arm to the stowed position.

9 Lower the platform to the stowed position.

10 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform.*

11 Remove the cables from the number 3 inner and outer arms.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

12 Attach a lifting strap from an overhead supporting device to the rod-end of the lift cylinder.

13 Using a soft metal drift, remove the rod end pivot pin and set aside.

14 Lower the lift cylinder and remove the strap.

15 Support the number 3 inner and outer arms with an overhead supporting device.

16 Remove the pivot pins securing the number 3 arm assembly to the scissor stack. Remove the arm assembly.

⚠WARNING Crushing hazard. The linkage assembly could become unbalanced and fall if not properly supported when removed from the machine.

17 Remove the cables from the number 2 inner arm.

18 Support the number 2 inner and outer arms with an overhead supporting device.

19 Remove the pivot pins securing the number 2 arm assembly to the scissor stack. Remove the arm assembly.

Scissor Components

20 Tag, disconnect and plug the hydraulic hoses from the lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

21 Remove the cables from the lift cylinder and number 1 inner arm.

22 Remove the fasteners securing the platform height sensor cover to the chassis.

23 Remove the platform height sensor cover.

24 Tag and disconnect the platform height sensor from the platform height sensor harness.

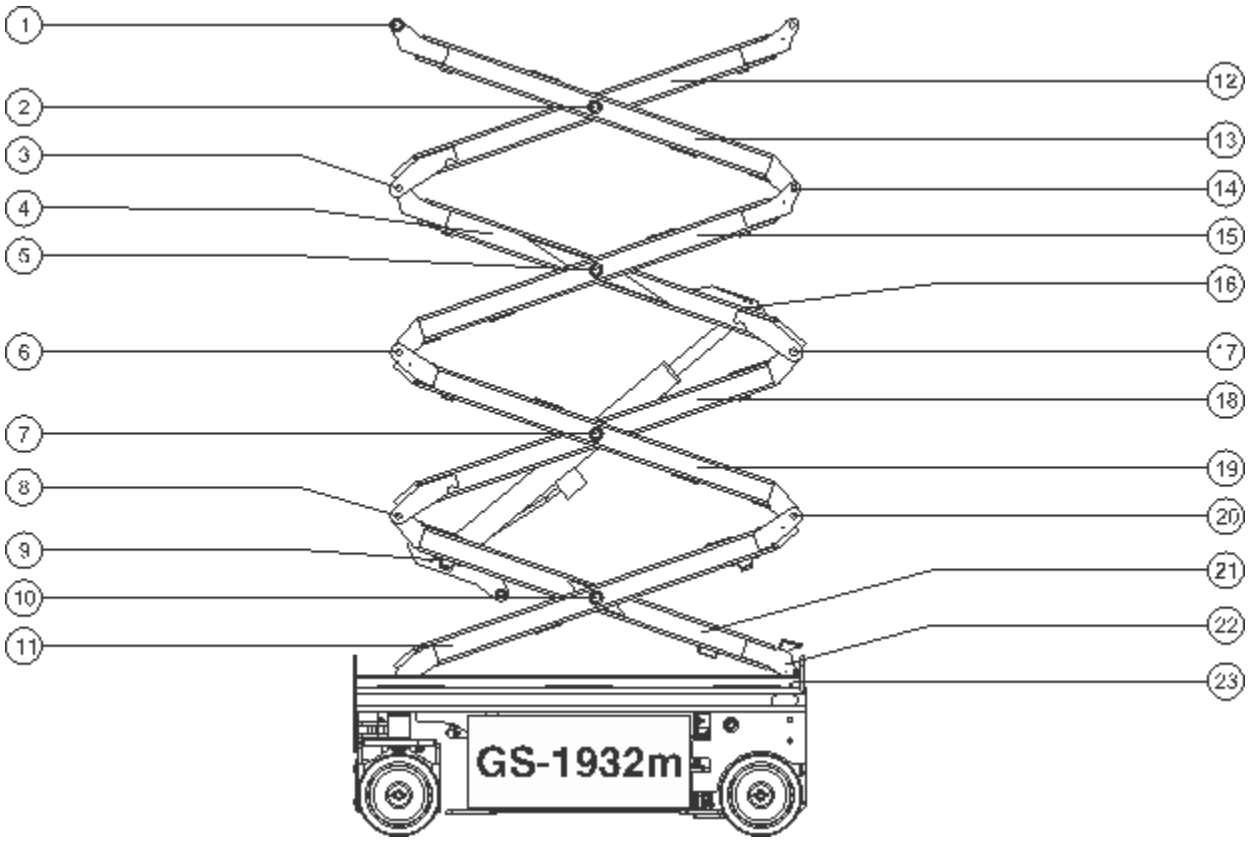
25 Remove the fasteners securing the platform height sensor short arm cover to the number 1 inner arm.

26 Remove the fasteners securing the platform height sensor to the chassis. Remove the sensor.

27 Support the number 1 inner and outer arms and lift cylinder with an overhead supporting device.

28 Remove the pivot pins securing the number 1 arm assembly to the chassis and slider blocks. Remove the arm assembly with the lift cylinder.

Scissor Components



Steer End	Non-steer End
1 - Number 4 pivot pin	12 - Number 4 inner arm
2 - Number 4 center pivot pin (Qty. 2)	13 - Number 4 outer arm
3 - Number 3 pivot pin (steer end)	14 - Number 3 pivot pin (non-steer end)
4 - Number 3 inner arm	15 - Number 3 outer arm
5 - Number 3 center pivot pin (Qty. 2)	16 - Lift cylinder rod-end pivot pin
6 - Number 2 pivot pin (steer end)	17 - Number 2 pivot pin (non-steer end)
7 - Number 2 center pivot pin (Qty. 2)	18 - Number 2 inner arm
8 - Number 1 pivot pin (steer end)	19 - Number 2 outer arm
9 - Lift cylinder barrel-end pivot pin	20 - Number 1 pivot pin (non-steer end)
10 - Number 1 center pivot pin (Qty. 2)	21 - Number 1 inner arm
11 - Number 1 outer arm	22 - platform height sensor
	23 - Number 1 pivot pin

Scissor Components

7-2
Scissor Assembly - GS-1932m

How to Disassemble the Scissor Assembly

⚠WARNING Bodily injury hazard. The procedures in this section require specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

3 Raise the safety arm from the drive chassis to a vertical position.

4 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

6 Remove all cable ties securing the cable from the ground controls to the platform.

7 Remove the retaining fasteners and plates securing the lift cylinder barrel and rod end pivot pins.

8 Raise the platform slightly and return the safety arm to the stowed position.

9 Lower the platform to the stowed position.

10 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform.*

11 Remove the cables from the number 4 inner arm.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

12 Support the number 4 inner and outer arms with an overhead supporting device.

13 Remove the pivot pins securing the number 4 arm assembly to the scissor stack. Remove the arm assembly.

⚠WARNING Crushing hazard. The linkage assembly could become unbalanced and fall if not properly supported when removed from the machine.

14 Remove the cables from the number 3 inner arm.

15 Attach a lifting strap from an overhead supporting device to the rod-end of the lift cylinder.

16 Using a soft metal drift, remove the rod end pivot pin and set aside.

17 Lower the lift cylinder and remove the strap.

18 Support the number 3 inner and outer arms with an overhead supporting device.

19 Remove the pivot pins securing the number 3 arm assembly to the scissor stack. Remove the arm assembly.

20 Remove the cables from the number 2 inner arm.

21 Support the number 2 inner and outer arms with an overhead supporting device.

22 Remove the pivot pins securing the number 2 arm assembly to the scissor stack. Remove the arm assembly.

23 Tag, disconnect and plug the hydraulic hoses from the lift cylinder. Cap the fittings on the cylinder.

⚠ WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

24 Remove the cables from the lift cylinder and number 1 inner arm.

25 Remove the fasteners securing the platform height sensor cover to the chassis.

26 Remove the platform height sensor cover.

27 Tag and disconnect the platform height sensor from the platform height sensor harness.

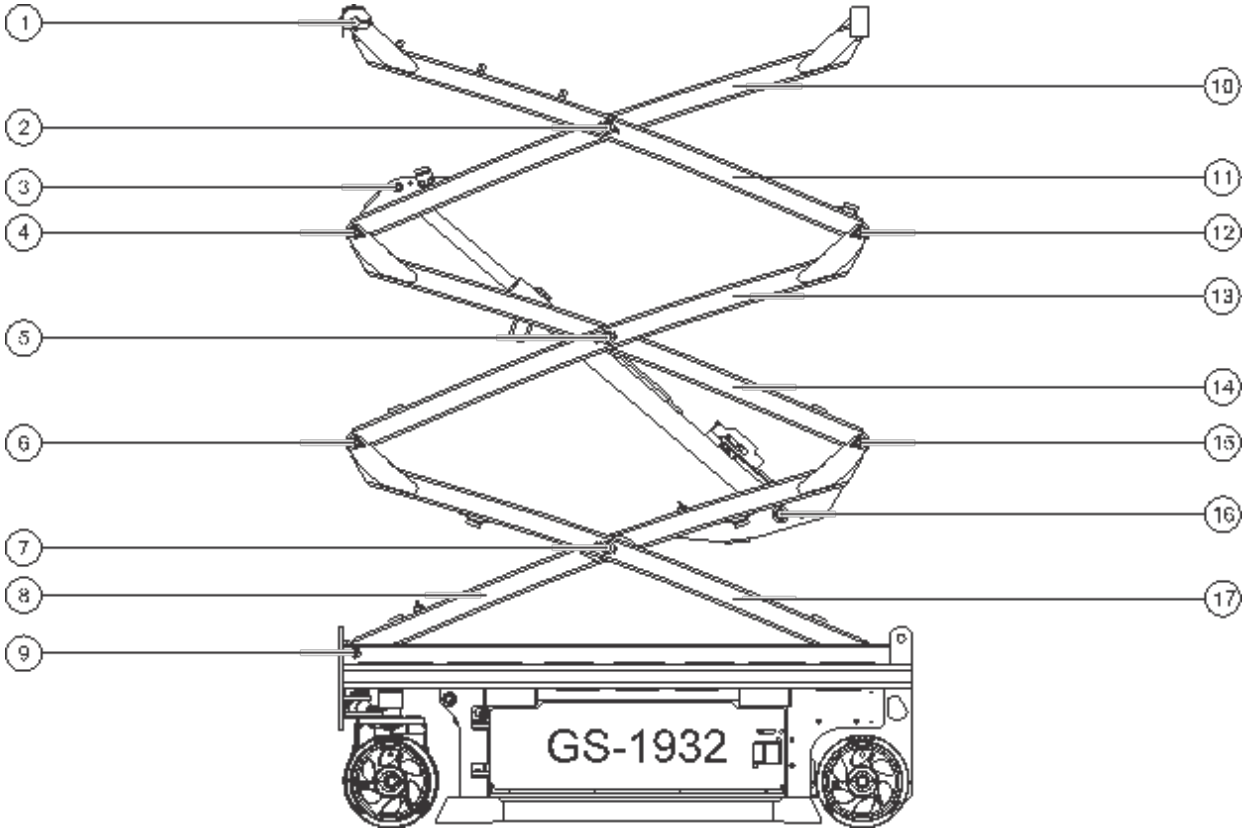
28 Remove the fasteners securing the platform height sensor short arm cover to the number 1 inner arm.

29 Remove the fasteners securing the platform height sensor to the chassis. Remove the sensor.

30 Support the number 1 inner and outer arms and lift cylinder with an overhead supporting device.

31 Remove the pivot pins securing the number 1 arm assembly to the chassis and slider blocks. Remove the arm assembly with the lift cylinder.

Scissor Components



Steer End	Non-steer End
1 - Number 4 pivot pin / Load cell pin	10 - Number 3 inner arm
2 - Number 3 center pivot pin (Qty. 2)	11 - Number 3 outer arm
3 - Lift cylinder rod-end pivot pin	12 - Number 3 pivot pin (non-steer end) (Qty. 2)
4 - Number 3 pivot pin (steer end) (Qty. 2)	13 - Number 2 outer arm
5 - Number 2 center pivot pin (Qty. 2)	14 - Number 2 inner arm
6 - Number 2 pivot pin (steer end) (Qty. 2)	15 - Number 2 pivot pin (non-steer end) (Qty. 2)
7 - Number 1 center pivot pin (Qty. 2)	16 - Lift cylinder barrel-end pivot pin (Qty. 2)
8 - Number 1 inner arm	17 - Number 1 outer arm
9 - Number 1 pivot pin (steer end) (Qty. 2)	

7-3
Scissor Assembly - GS-1932

How to Disassemble the Scissor Assembly

⚠WARNING Bodily injury hazard. The procedures in this section require specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

Note: After replacing the scissor assembly, the platform overload system must be calibrated. Refer to Repair Procedure, *How to Calibrate the Platform Overload System.*

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

3 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

4 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

6 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

7 Remove the fasteners securing the platform height sensor short arm to the number 1 inner arm (index #8).

8 Remove the fasteners securing the platform height sensor cover to the chassis.

9 Remove the platform height sensor cover.

10 Tag and disconnect the platform height sensor from the platform height sensor harness.

11 Remove the fasteners securing the platform height sensor to the platform height sensor bracket on the chassis, remove the platform height sensor.

12 Connect the battery pack to the machine.

13 Turn the key switch to ground controls.

14 Press and hold the ground control scroll up and scroll down buttons.

15 Pull out the red Emergency Stop button to the on position at the ground controls.

16 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

Note: The machine must be in Service Override Mode to raise the platform. While in Service Override Mode, only the GCON will operate with limited functionality. The platform will raise a predetermined amount of time and stop.

Scissor Components

17 Raise the platform and rotate the safety arm to the stowed position.

18 Fully lower the platform to the stowed position.

19 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform.*

20 Models with electric lift:

Tag and disconnect the wire harness from the load cell module at the steer end of the machine.

All models:

Remove the cables from the number 3 inner and outer arms and lay them off to the side (index items #10, #11).

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

21 Remove the external snap rings from the number 4 pivot pins (index #1).

22 Models with electric lift:

Use a soft metal drift to remove the number 4 load cell pins (Index #1). Remove the platform mount bracket from the machine.

Models with hydraulic lift:

Use a soft metal drift to remove the number 4 pivot pins (Index #1). Remove the platform mount bracket from the machine.

23 Attach a lifting strap from an overhead supporting device to the number 3 outer arm (index #11) at the ground controls side.

24 Remove the external snap rings and retaining fasteners from the number 3 center pivot pins (index #2).

25 Use a soft metal drift to remove the number 3 center pivot pin (index #2) at the ground control side.

26 Remove the retaining fasteners from the number 3 pivot pin (index #12) at the non-steer end of the machine.

27 Use a soft metal drift to tap the number 3 pivot pin (index #12) halfway out at the non-steer end of the machine. Remove the number 3 outer arm (index #11) at the ground controls side from the machine.

⚠ CAUTION Bodily injury hazard. The number 3 outer arm at the ground controls side may become unbalanced and fall if not properly supported when removed from the machine.

28 Attach a lifting strap from an overhead supporting device to the number 3 outer arm (index #11) at the battery pack side.

29 Remove the external snap rings and retaining fasteners from the number 3 center pivot pins (index #2).

30 Use a soft metal drift to remove the number 3 center pivot pin (index #2) at the battery pack side of the machine.

31 Remove the retaining fasteners from the number 3 pivot pin (index #12).

32 Use a soft metal drift to tap the number 3 pivot pin (index #12) halfway out in the other direction. Remove the number 3 outer arm (index #11) from the battery pack side of the machine.

⚠ CAUTION Bodily injury hazard. The number 3 outer arm at the battery pack side may become unbalanced and fall if not properly supported when removed from the machine.

Scissor Components

33 Remove the number 3 pivot pin (index #12) from the non-steer end of the machine.

34 Attach a lifting strap from an overhead supporting device to the lug on the rod end of the lift cylinder for support. Do not apply any lifting pressure.

35 Remove the pin retaining fasteners from the lift cylinder rod-end pivot pin (index #3). Use a soft metal drift to remove the pin.

⚠ CAUTION Bodily injury hazard. The cylinder may fall when the rod-end pivot pin is removed if not properly supported.

36 Place a 4 x 4 x 10 in / 10 x 10 x 25 cm block onto the number 1 inner arm cylinder plate (index #8). Lower the cylinder onto the block.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

37 Attach a lifting strap from an overhead supporting device to the number 3 inner arm (index #10).

38 Remove the retaining fasteners from the number 3 pivot pin (index #4) at the steer end.

39 Use a soft metal drift to remove the number 3 pivot pin (index #4). Remove the number 3 inner arm (index #10) from the machine.

⚠ CAUTION Bodily injury hazard. The number 3 inner arm may become unbalanced and fall if not properly supported when removed from the machine.

40 Remove the cables from the number 2 inner arm (index #14) and lay them off to the side.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

41 Attach a lifting strap from an overhead supporting device to the number 2 outer arm (index #13).

42 Remove the external snap rings and retaining fasteners from the number 2 center pivot pin (index #5).

43 Use a soft metal drift to remove the number 2 center pivot pin (index #5).

44 Remove the retaining fasteners from the number 2 pivot pin (index #6) at the steer end of the machine.

45 Use a soft metal drift to tap the number 2 pivot pin (index #6) in the other direction at the steer end of the machine. Remove the number 2 outer arm (index #13).

⚠ CAUTION Bodily injury hazard. The number 2 outer arm may become unbalanced and fall if not properly supported when removed from the machine.

46 Attach a lifting strap from an overhead supporting device to the number 2 inner arm (index #14).

47 Remove the retaining fasteners from the number 2 pivot pin (index #15).

48 Use a soft metal drift to remove the number 2 pivot pin (index #15) from the non-steer end of the machine.

49 Remove the number 2 inner arm (index #14) from the machine.

⚠ CAUTION Bodily injury hazard. The number 2 inner arm may become unbalanced and fall if not properly supported when removed from the machine.

Scissor Components

50 Attach a lifting strap from an overhead supporting device to the number 1 inner arm (index #8) at the non-steer end. Raise the inner arm approximately 2 ft / 60 cm.

51 Place a 4 x 4 x 48 in / 10 cm x 10 cm x 1.2 m long block across both sides of the chassis under the number 1 center pivot pin (index #7).

52 Lower the number 1 inner arm onto the block that was placed across the chassis.

53 Attach a lifting strap from an overhead supporting device to the lug on the rod end of the lift cylinder (index #3). Raise the lift cylinder approximately 3 ft / 1 m.

54 Models with electric lift:

Tag and disconnect the cables, wires and manual lowering cable from the lift cylinder.

Models with hydraulic lift:

Tag, disconnect and plug the hydraulic hoses on the lift cylinder. Cap the fittings on the cylinder.

⚠ WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

55 Tag and disconnect the wires and manual lowering cable from the solenoid valve on the cylinder.

56 Tag and disconnect the wire harness from the platform overload pressure transducer.

57 Raise the lift cylinder to a vertical position.

58 Remove the pin retaining fasteners from the lift cylinder barrel-end pin (index #16). Use a soft metal drift to remove the pin. Remove the lift cylinder from the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will become unbalanced and fall if not properly supported and secured to the lifting device.

NOTICE Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

59 Remove the cables from the number 1 inner arm (index #8) and lay them off to the side.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

60 Attach a lifting strap from an overhead supporting device to the number 1 inner arm (index #8).

61 Raise the arm slightly and remove the block.

62 Lower the arm to the stowed position.

63 Secure the ends of the scissor arms together at the steer end of the machine with a strap or other suitable device.

64 Secure the ends of the scissor arms together at the non-steer end of the machine with a strap or other suitable device.

65 Attach a lifting strap from an overhead supporting device to the number 1 outer arm (index #17). Do not apply any lifting pressure.

66 Remove the external snap rings and retaining fasteners from the number 1 center pivot pins (index #7).

67 Use a soft metal drift to remove the number 1 center pivot pins (index #7).

⚠ CAUTION Bodily injury hazard. The number 1 outer arm may become unbalanced and fall if not properly supported when the pin is removed.

68 Slide the number 1 outer arm (index #17) to the non-steer end and remove it from the machine.

⚠ CAUTION Bodily injury hazard. The number 1 outer arm may become unbalanced and fall if not properly supported when removed from the machine.

69 Attach the strap from an overhead supporting device to the number 1 inner arm (index #8). Do not lift it.

70 Remove the retaining fasteners from the number 1 pivot pins (index #8).

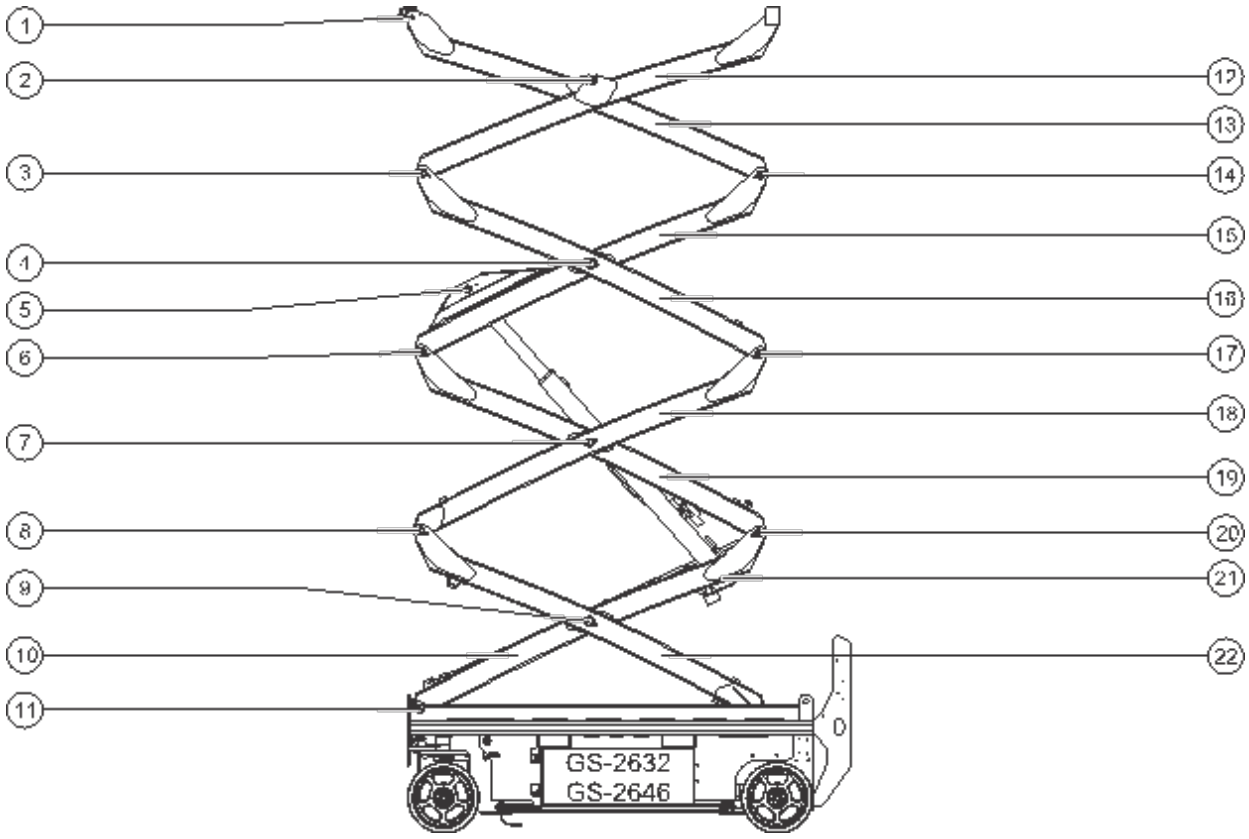
71 Use a soft metal drift to remove the number 1 pivot pins (index #8).

72 Remove the number 1 inner arm (index #8) from the machine.

⚠ CAUTION Bodily injury hazard. The number 1 inner arm may become unbalanced and fall if not properly supported when removed from the machine.

NOTICE Component damage hazard. Be sure not to damage the limit switch or level sensor components when the number 1 inner arm is removed from the machine.

Scissor Components



Steer End	Non-steer End
1 - Number 5 pivot pin	12 - Number 4 outer arm
2 - Number 4 center pivot pin (Qty. 2)	13 - Number 4 inner arm
3 - Number 4 pivot pin (steer end) (Qty. 2)	14 - Number 4 pivot pin (non-steer end) (Qty. 2)
4 - Number 3 center pivot pin (Qty. 2)	15 - Number 3 inner arm
5 - Lift cylinder rod-end pivot pin	16 - Number 3 outer arm
6 - Number 3 pivot pin (steer end) (Qty. 2)	17 - Number 3 pivot pin (non-steer end) (Qty. 2)
7 - Number 2 center pivot pin (Qty. 2)	18 - Number 2 outer arm
8 - Number 2 pivot pin (steer end) (Qty. 2)	19 - Number 2 inner arm
9 - Number 1 center pivot pin (Qty. 2)	20 - Number 2 pivot pin (non-steer end) (Qty. 2)
10 - Number 1 inner arm	21 - Lift cylinder barrel-end pivot pin
11 - Number 1 pivot pin	22 - Number 1 outer arm

7-4
Scissor Assembly - GS-2632, GS-2646

How to Disassemble the Scissor Assembly

⚠WARNING Bodily injury hazard. The procedures in this section require specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

Note: After replacing the scissor assembly, the platform overload system must be calibrated. Refer to Repair Procedure, *How to Calibrate the Platform Overload System.*

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 10.5 to 13 ft / 3.2 to 4 m.

3 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

4 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

6 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

7 Remove the fasteners securing the platform height sensor short arm to the number 1 inner arm (index #10).

8 Remove the fasteners securing the platform height sensor cover to the chassis, remove the platform height sensor cover.

9 Tag and disconnect the platform height sensor from the platform height sensor harness.

10 Remove the fasteners securing the platform height sensor to platform height sensor bracket on chassis, remove the platform height sensor.

11 Connect the battery pack to the machine.

12 Turn the key switch to ground controls.

13 Press and hold the ground control scroll up and scroll down buttons.

14 Pull out the red Emergency Stop button to the on position at the ground controls.

15 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

Note: The machine must be in Service Override Mode to raise the platform. While in Service Override Mode, only the GCON will operate with limited functionality. The platform will raise a predetermined amount of time and stop.

Scissor Components

16 Raise the platform and rotate the safety arm to the stowed position.

17 Fully lower the platform to the stowed position.

18 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform.*

19 Support and secure the entry ladder to an appropriate lifting device.

20 Remove the fasteners from the entry ladder and remove the entry ladder from the machine.

⚠ CAUTION Crushing hazard. The entry ladder will fall if not properly supported and secured to the lifting device.

21 Remove the cables from the number 4 inner arm (index #13) and lay them off to the side.

22 Remove the retaining fasteners from the number 5 pivot pin (index #1).

23 Use a soft metal drift to remove the number 5 pivot pin (index #1). Remove the platform mount bracket from the machine.

24 Attach a lifting strap from an overhead supporting device to the number 4 outer arm (index #12).

25 Remove the retaining fasteners from the number 4 center pivot pin (index #2).

26 Use a soft metal drift to remove the number 4 center pivot pins (index #2).

27 Remove the retaining fasteners from the number 4 pivot pin (index #3) at the steer end.

28 Use a soft metal drift to remove the number 4 pivot pin (index #3) from the steer end of the machine. Remove the number 4 outer arm (index #12) from the machine.

⚠ WARNING Crushing hazard. The number 4 outer arm may become unbalanced and fall if not properly supported when removed from the machine.

29 Attach a lifting strap from an overhead supporting device to the number 4 inner arm (index #13).

30 Remove the retaining fasteners from the number 4 pivot pin at the non-steer end of the machine (index #14).

31 Use a soft metal drift to remove the number 4 pivot pin (index #14) from the non-steer end of the machine. Remove the number 4 inner arm (index #13) from the machine.

⚠ CAUTION Crushing hazard. The number 4 inner arm may become unbalanced and fall if not properly supported when removed from the machine.

32 Remove the cables from the number 3 inner arm (index #15) and lay them off to the side.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

33 Attach a lifting strap from an overhead supporting device to the number 3 outer arm (index #16).

Scissor Components

34 Remove the retaining fasteners from the number 3 center pivot pin (index #4) at the ground control side.

35 Use a soft metal drift to remove the number 3 center pivot pin (index #4).

36 Remove the retaining fasteners from the number 3 pivot pin (index #17) at the non-steer end.

37 Use a soft metal drift to remove the number 3 pivot pin (index #17) from the non-steer end of the machine. Remove the number 3 outer arm (index #16) from the machine.

⚠ WARNING Crushing hazard. The number 3 outer arm may become unbalanced and fall if not properly supported when removed from the machine.

38 Attach a lifting strap from an overhead supporting device to the lug of the rod end of the lift cylinder.

39 Remove the retaining fasteners from the lift cylinder rod end pivot pin (index #5).

40 Use a soft metal drift to remove the lift cylinder rod end pivot pin (index #5) from the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

41 Place a 4 x 4 x 10 in / 10 x 10 x 25 cm block onto the number 1 inner arm cylinder plate (index #10).

42 Lower the cylinder onto the block.

⚠ CAUTION Bodily injury hazard. Keep hands clear of moving parts when lowering the cylinder.

43 Attach a lifting strap from an overhead supporting device to the number 3 inner arm (index #15).

44 Remove the retaining fasteners from the number 3 pivot pin at the steer end of the machine (index #6).

45 Use a soft metal drift to remove the number 3 pivot pin (index #6) from the steer end of the machine. Remove the number 3 inner arm (index #15) from the machine.

⚠ CAUTION Crushing hazard. The number 3 inner arm may become unbalanced and fall if not properly supported when the pivot pin is removed.

46 Remove the cables from the number 2 inner arm and cable bridge and lay them off to the side.

47 Disconnect the cable bridge from the scissor linkset and remove both cable bridges from the machine.

48 Attach a lifting strap from an overhead supporting device to the number 2 outer arm (index #18).

49 Remove the retaining fasteners from the number 2 center pivot pin (index #7).

50 Use a soft metal drift to remove the number 2 center pivot pin (index #7).

Scissor Components

51 Remove the retaining fasteners from the number 2 pivot pin (index #20) at the steer end.

52 Use a soft metal drift to remove the number 2 pivot pin (index #8) from the steer end of the machine. Remove the number 2 outer arm (index #18) from the machine.

⚠ CAUTION Crushing hazard. The number 2 outer arm may become unbalanced and fall if not properly supported when the pivot pin is removed.

53 Attach a lifting strap from an overhead supporting device to the number 2 inner arm (index #19).

54 Remove the retaining fasteners from the number 2 pivot pin at the non-steer end of the machine (index #20).

55 Use a soft metal drift to remove the number 2 pivot pin (index #20) from the steer end of the machine. Remove the number 2 inner arm (index #19) from the machine.

⚠ CAUTION Crushing hazard. The number 2 inner arm may become unbalanced and fall if not properly supported when the pivot pin is removed.

56 Attach a lifting strap from an overhead supporting device to the number 1 inner arm (index #10) at the non-steer end. Raise the inner arm approximately 2 ft / 60 cm.

57 Place a 4 x 4 x 48 in / 10 cm x 10 cm x 1.2 m long block across both sides of the chassis under the number 1 center pivot pin (index #9).

58 Lower the number 1 inner arm onto the block.

59 Attach a lifting strap from an overhead supporting device to the lug of the rod end of the lower lift cylinder (index #5).

60 Raise the lift cylinder approximately 3 ft / 1 m.

61 Tag, disconnect and plug the hydraulic hose on the lower lift cylinder. Cap the fittings on the cylinder.

⚠ WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

62 Tag and disconnect the wire harness from the solenoid valve on the cylinder.

63 Tag and disconnect the wires and manual lowering cable from the solenoid valve on the cylinder.

64 Tag and disconnect the wire harness from the platform overload pressure transducer.

65 Raise the lift cylinder to a vertical position.

66 Remove the cylinder barrel end pin retaining fasteners and clamps. Remove the lift cylinder with the pivot pin from the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

NOTICE Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

Scissor Components

67 Remove the cables from the number 1 inner arm (index #10) and lay them off to the side.

68 Attach a lifting strap from an overhead supporting device to the number 1 inner arm (index #10).

69 Raise the number 1 inner arm slightly and remove the block.

70 Lower the arm to the stowed position.

71 Secure the ends of the scissor arms together at the steer end of the machine with a strap or other suitable device.

72 Secure the ends of the scissor arms together at the non-steer end of the machine with a strap or other suitable device.

73 Attach a lifting strap from an overhead supporting device to the number 1 outer arm (index #22). Do not apply any lifting pressure.

74 Remove the external snap rings and retaining fasteners from the number 1 center pivot pins (index #9).

75 Use a soft metal drift to remove the number 1 center pivot pins (index #9). Remove the retaining fasteners securing the chassis mount bracket to the chassis.

76 Slide the number 1 outer arm (index #22) to the non-steer end and remove it from the machine.

77 Attach a lifting strap from an overhead supporting device to the number 1 inner arm (index #10).

78 Remove the retaining fasteners securing the chassis mount bracket to the chassis.

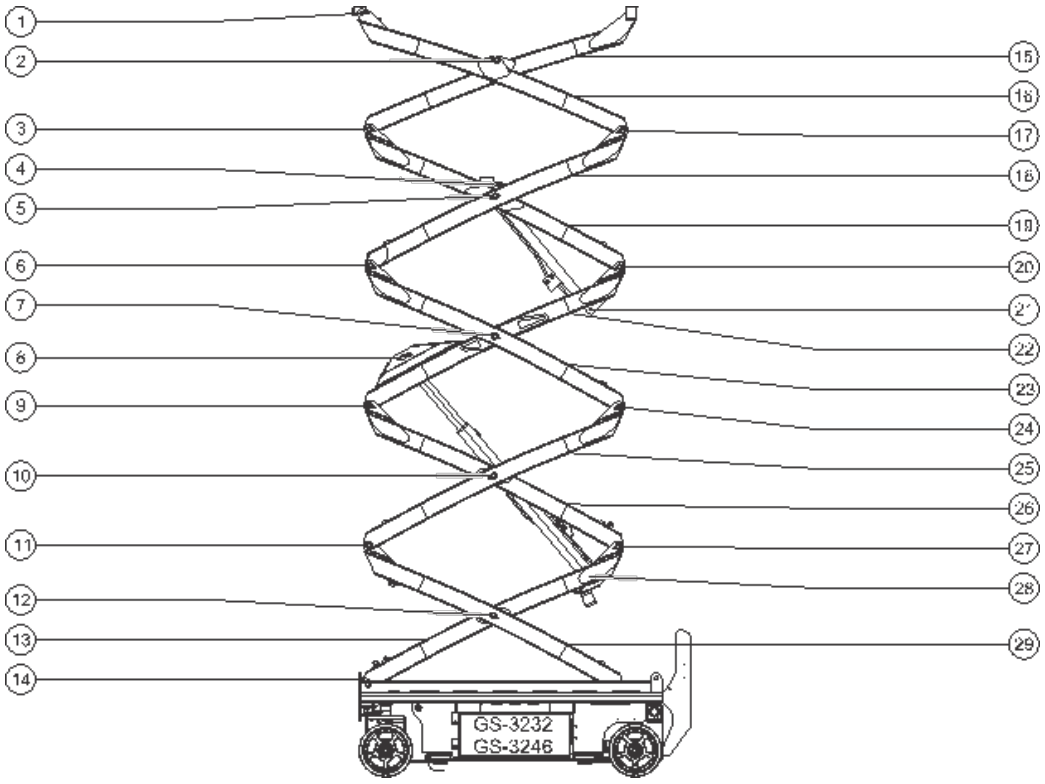
79 Remove the retaining fasteners from the number 1 pivot pins (index #11).

80 Use a soft metal drift to remove the number 1 pivot pins (index #11).

81 Remove the linkset from the machine.

⚠ CAUTION Bodily injury hazard. The number 1 inner and outer arms may become unbalanced and fall if not properly supported when removed from the machine.

Scissor Components



Steer End	Non-steer End
1 - Number 6 pivot pin	15 - Number 5 inner arm
2 - Number 5 center pivot pin (Qty. 2)	16 - Number 5 outer arm
3 - Number 5 pivot pin (steer end) (Qty. 2)	17 - Number 5 pivot pin (non-steer end) (Qty. 2)
4 - Damper rod-end pivot pin	18 - Number 4 outer arm
5 - Number 4 center pivot pin (Qty. 2)	19 - Number 4 inner arm
6 - Number 4 pivot pin (steer end) (Qty. 2)	20 - Number 4 pivot pin (non-steer end)
7 - Number 3 center pivot pin (Qty. 2)	21 - Damper barrel-end pivot pin
8 - Lift cylinder rod-end pivot pin	22 - Number 3 inner arm
9 - Number 3 pivot pin (steer end) (Qty. 2)	23 - Number 3 outer arm
10 - Number 2 center pivot pin (Qty. 2)	24 - Number 3 pivot pin (non-steer end) (Qty. 2)
11 - Number 2 pivot pin (steer end) (Qty. 2)	25 - Number 2 outer arm
12 - Number 1 center pivot pin (Qty. 2)	26 - Number 2 inner arm
13 - Number 1 inner arm	27 - Number 2 pivot pin (non-steer end) (Qty. 2)
14 - Number 1 pivot pin (steer end) (Qty. 2)	28 - Lift cylinder barrel-end pivot pin
	29 - Number 1 outer arm

7-5
Scissor Assembly - GS-3232, GS-3246

How to Disassemble the Scissor Assembly

⚠WARNING Bodily injury hazard. The procedures in this section require specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

Note: After replacing the scissor assembly, the platform overload system must be calibrated. Refer to Repair Procedure, *How to Calibrate the Platform Overload System.*

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 12 to 14.5 feet / 3.7 to 4.4 m.

3 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

4 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

6 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

7 Remove the fasteners securing the platform height sensor short arm to the number 1 inner arm (index #14).

8 Remove the fasteners securing the platform height sensor cover to the chassis, remove the platform height sensor cover.

9 Tag and disconnect the platform height sensor from the platform height sensor harness.

10 Remove the fasteners securing the platform height sensor to platform height sensor bracket on chassis, remove the platform height sensor.

11 Connect the battery pack to the machine.

12 Turn the key switch to ground controls.

13 Press and hold the ground control scroll up and scroll down buttons.

14 Pull out the red Emergency Stop button to the on position at the ground controls.

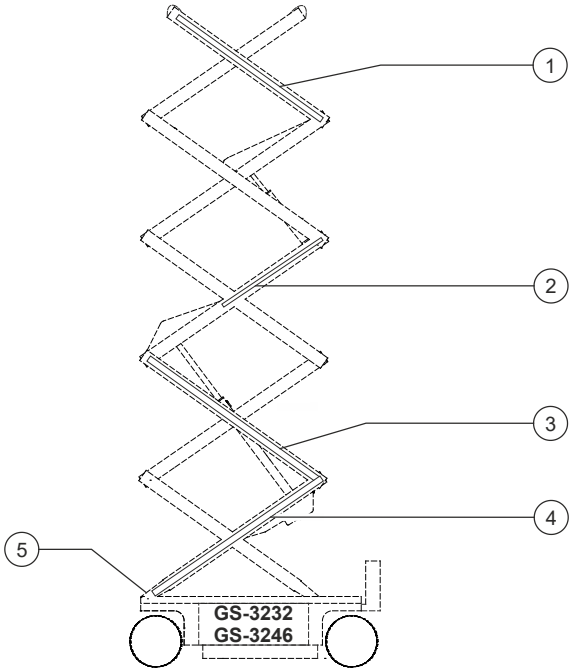
Scissor Components

15 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

Note: The machine must be in Service Override Mode to raise the platform. While in Service Override Mode, only the GCON will operate with limited functionality. The platform will raise a predetermined amount of time and stop.

16 Raise the platform and rotate the safety arm to the stowed position.

17 Fully lower the platform to the stowed position.



Cable bridge and platform height sensor

1 cable bridge 5
2 cable bridge 3
3 cable bridge 2
4 cable bridge 1
5 platform height sensor

18 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform.*

19 Support and secure the entry ladder to an appropriate lifting device.

20 Remove the fasteners from the entry ladder and remove the entry ladder from the machine.

⚠ CAUTION Crushing hazard. The entry ladder will fall if not properly supported and secured to the lifting device.

21 Remove the cables from the number 5 cable bridge and lay them off to the side.

22 Disconnect the number 5 cable bridge from the number 5 outer arm (index #16) and remove the cable bridge from the machine.

23 Remove the retaining fasteners from the number 6 pivot pin (index #1).

24 Use a soft metal drift to remove the number 6 pivot pin (index #1). Remove the platform mount bracket from the machine.

25 Attach a lifting strap from an overhead supporting device to the number 5 outer arm (index #16).

26 Remove the retaining fasteners from the number 5 center pivot pin (index #2).

27 Use a soft metal drift to remove the number 5 pivot pin (index #2).

28 Remove the retaining fasteners from the number 5 pivot pin (index #17) at the non-steer end.

29 Use a soft metal drift to remove the number 5 pivot pin (index #17) from the non-steer end of the machine. Remove the number 5 outer arm (index #16) from the machine.

⚠ CAUTION Crushing hazard. The number 5 outer arm may become unbalanced and fall if not properly supported when removed from the machine.

30 Attach a lifting strap from an overhead supporting device to the number 5 inner arm (index #16).

31 Remove the retaining fasteners from the number 5 pivot pin at the steer end of the machine (index #3).

32 Use a soft metal drift to remove the number 5 pivot pin (index #3) from the steer end of the machine. Remove the number 5 inner arm (index #15) from the machine.

⚠ CAUTION Crushing hazard. The number 5 inner arm may become unbalanced and fall if not properly supported when removed from the machine.

33 Tag, disconnect and plug the hydraulic hose on the damper cylinder. Cap the fittings on the cylinder.

⚠ WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

34 Tag and disconnect the wire harness from the solenoid valve on the cylinder.

35 Disconnect the cables from number 4 inner arm (index #19) and lay then off to aside.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

36 Attach a lifting strap from an overhead supporting device to the lug of the rod end of the damper cylinder.

37 Remove the retaining fasteners from the damper cylinder rod end pivot pin (index #4).

38 Use a soft metal drift to remove the damper cylinder rod end pivot pin (index #4).

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

39 Lower the cylinder onto the linkset.

40 Attach a lifting strap from an overhead supporting device to the number 4 outer arm (index #18).

41 Remove the retaining fasteners from the number 4 center pivot pin (index #5).

42 Use a soft metal drift to remove the number 4 center pivot pin (index #5).

43 Remove the retaining fasteners from the number 4 pivot pin (index #6) at the steer end.

44 Use a soft metal drift to remove the number 4 pivot pin (index #6) from the steer end of the machine. Remove the number 4 outer arm (index #18) from the machine.

⚠ WARNING Crushing hazard. The number 4 outer arm may become unbalanced and fall if not properly supported when removed from the machine.

45 Attach a lifting strap from an overhead supporting device to the number 4 inner arm (index #19).

46 Remove the retaining fasteners from the number 4 pivot pin at the non-steer end of the machine (index #20).

Scissor Components

47 Use a soft metal drift to remove the number 4 pivot pin (index #20) from the non-steer end of the machine. Remove the number 4 inner arm (index #19) from the machine.

⚠ CAUTION Crushing hazard. The number 4 inner arm may become unbalanced and fall if not properly supported when removed from the machine.

48 Remove the cables from the number 3 cable bridge and lay them off to the side.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

49 Disconnect the number 3 cable bridge from the scissor linkset and remove it from the machine.

50 Attach a lifting strap from an overhead supporting device to the number 3 outer arm (index #23).

51 Remove the retaining fasteners from the number 3 center pivot pin (index #7).

52 Use a soft metal drift to remove the number 3 center pivot pin (index #7).

53 Remove the retaining fasteners from the number 3 pivot pin (index #24) at the non-steer end.

54 Use a soft metal drift to remove the number 3 pivot pin (index #24) from the non-steer end of the machine. Remove the number 3 outer arm from the machine.

⚠ WARNING Crushing hazard. The number 3 outer arm may become unbalanced and fall if not properly supported when removed from the machine.

55 Attach a lifting strap from an overhead supporting device to the lug of the rod end of the damper cylinder (index #4).

56 Raise the cylinder to a vertical position.

57 Remove the pin retaining fasteners from the damper cylinder barrel-end pivot pin (index #21). Remove the cylinder from the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

NOTICE Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

58 Attach a lifting strap from an overhead supporting device to the lug of the rod end of the lift cylinder.

59 Remove the retaining fasteners from the lift cylinder rod end pivot pin (index #8).

60 Use a soft metal drift to remove the lift cylinder rod end pivot pin (index #8).

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

61 Place a 4 x 4 x 10 in / 10 x 10 x 25 cm block onto the number 1 inner arm cylinder plate (index #13).

62 Lower the cylinder onto the block.

⚠ CAUTION Bodily injury hazard. Keep hands clear of moving parts when lowering the cylinder.

63 Attach a lifting strap from an overhead supporting device to the number 3 inner arm (index #22). Raise the arm to a vertical position.

64 Remove the retaining fasteners from the number 3 pivot pin at the steer end of the machine (index #10).

Scissor Components

65 Use a soft metal drift to remove the number 3 pivot pin (index #9) from the steer end of the machine. Remove the number 3 inner arm (index #22) from the machine.

⚠ CAUTION Crushing hazard. The number 3 inner arm may become unbalanced and fall if not properly supported when the pivot pin is removed.

66 Remove the cables from the number 2 cable bridge and lay them off to the side.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

67 Disconnect the number 2 cable bridge from the scissor linkset and remove it from the machine.

68 Attach a lifting strap from an overhead supporting device to the number 2 outer arm at the ground control side (index #25).

69 Remove the retaining fasteners from the number 2 center pivot pin (index #10) at the ground control side.

70 Use a soft metal drift to remove the number 2 center pivot pin (index #10).

71 Remove the retaining fasteners from the number 2 pivot pin (index #11) at the steer end.

72 Use a soft metal drift to remove the number 2 pivot pin (index #11) from the steer end of the machine. Remove the number 2 outer arm (index #25) from the machine.

⚠ CAUTION Crushing hazard. The number 2 outer arm may become unbalanced and fall if not properly supported when the pivot pin is removed.

73 Attach a lifting strap from an overhead supporting device to the number 2 inner arm (index #26).

74 Remove the retaining fasteners from the number 2 pivot pin at the non-steer end of the machine (index #27).

75 Use a soft metal drift to remove the number 2 pivot pin (index #27) from the non-steer end of the machine. Remove the number 2 inner arm (index #26) from the machine.

⚠ CAUTION Crushing hazard. The number 2 inner arm may become unbalanced and fall if not properly supported when the pivot pin is removed.

76 Attach a lifting strap from an overhead supporting device to the number 1 inner arm (index #13) at the non-steer end. Raise the inner arm approximately 2 ft / 60 cm.

77 Place a 4 x 4 x 48 in / 10 cm x 10 cm x 1.2 m long block across both sides of the chassis under the number 1 center pivot pin (index #12).

78 Lower the number 1 inner arm onto the block that was placed across the chassis.

79 Attach a lifting strap from an overhead supporting device to the lug of the rod end of the lift cylinder (index #8).

80 Tag, disconnect and plug the hydraulic hose on the lower lift cylinder. Cap the fittings on the cylinder.

⚠ WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

Scissor Components

81 Tag and disconnect the wire harness from the solenoid valve on the cylinder.

82 Tag and disconnect the wires and manual lowering cable from the solenoid valve on the cylinder.

83 Tag and disconnect the wire harness from the platform overload pressure transducer.

84 Raise the lift cylinder to a vertical position.

85 Remove the cylinder barrel end pivot pin (index #28) retaining fasteners and clamps. Remove the lift cylinder with the pivot pin from the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

NOTICE Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

86 Disconnect the number 1 cable bridge from the number 1 outer arm (index #29) and remove the cable bridge from the machine.

87 Attach a lifting strap from an overhead supporting device to the number 1 inner arm (index #13).

88 Raise the arm slightly and remove the block.

89 Lower the arm to the stowed position.

⚠ CAUTION Bodily injury hazard. Keep hands clear of moving parts when lowering the scissor arms.

90 Secure the ends of the scissor arms together at the steer end of the machine with a strap or other suitable device.

91 Secure the ends of the scissor arms together at the non-steer end of the machine with a strap or other suitable device.

92 Attach a lifting strap from an overhead supporting device to the number 1 outer arm (index #29). Do not apply any lifting pressure.

93 Remove the external snap rings and retaining fasteners from the number 1 center pivot pins (index #12).

94 Use a soft metal drift to remove the number 1 center pivot pins (index #12).

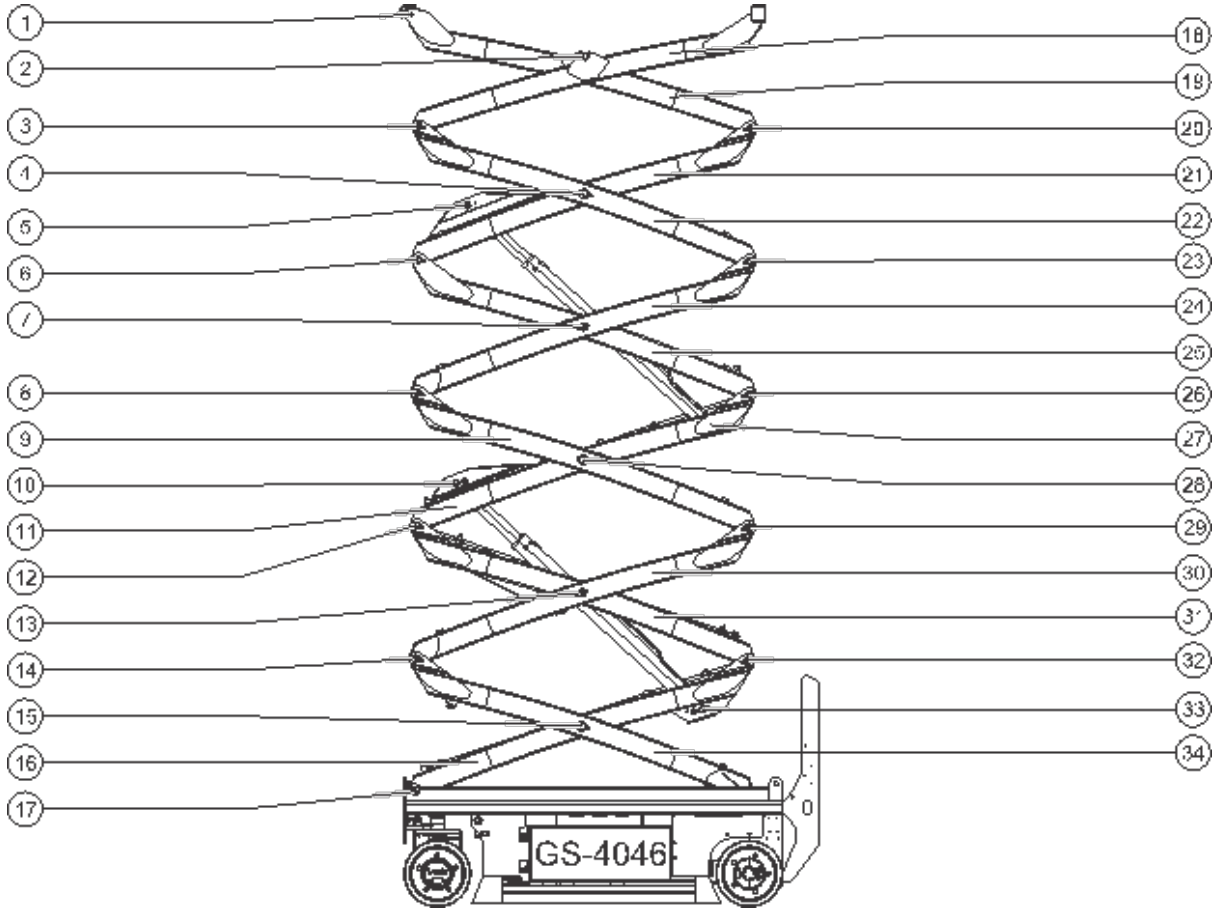
95 Slide the number 1 outer arm (index #29) to the non-steer end and remove it from the machine.

96 Attach a lifting strap from an overhead supporting device to the number 1 inner arm (index #13).

97 Remove the number 1 inner arm from the machine (index #13).

⚠ CAUTION Bodily injury hazard. The number 1 inner and outer arms may become unbalanced and fall if not properly supported when removed from the machine.

Scissor Components



Steer End		Non-steer End
1 - Number 7 pivot pin	13 - Number 2 center pivot pin (Qty. 2)	25 - Number 4 inner arm
2 - Number 6 center pivot pin (Qty. 2)	14 - Number 2 pivot pin (steer end) (Qty. 2)	26 - Number 4 pivot pin (non-steer end) (Qty. 2)
3 - Number 6 pivot pin (steer end) (Qty. 2)	15 - Number 1 center pivot pin (Qty. 2)	27 - Upper lift cylinder barrel-end pivot pin
4 - Number 5 center pivot pin (Qty. 2)	16 - Number 1 inner arm	28 - Number 3 center pivot pin (Qty. 2)
5 - Upper lift cylinder rod-end pivot pin	17 - Number 1 pivot pin (steer end) (Qty. 2)	29 - Number 3 pivot pin (non-steer end) (Qty. 2)
6 - Number 5 pivot pin (steer end) (Qty. 2)	18 - Number 6 outer arm	30 - Number 2 outer arm
7 - Number 4 center pivot pin (Qty. 2)	19 - Number 6 inner arm	31 - Number 2 inner arm
8 - Number 4 pivot pin (steer end) (Qty. 2)	20 - Number 6 pivot pin (non-steer end) (Qty. 2)	32 - Number 2 pivot pin (non-steer end) (Qty. 2)
9 - Number 3 outer arm	21 - Number 5 inner arm	33 - Lower lift cylinder barrel-end pivot pin
10 - Lower lift cylinder rod-end pivot pin	22 - Number 5 outer arm	34 - Number 1 outer arm
11 - Number 3 inner arm	23 - Number 5 pivot pin (non-steer end) (Qty. 2)	
12 - Number 3 pivot pin (steer end) (Qty. 2)	24 - Number 4 outer arm	

Scissor Components

7-6
Scissor Assembly - GS-4046

How to Disassemble the Scissor Assembly

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

Note: After replacing the scissor assembly, the platform overload system must be calibrated. Refer to Repair Procedure, *How to Calibrate the Platform Overload System.*

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 14 to 16.5 feet / 4.3 to 5 m.

3 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

4 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

6 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

7 Remove the fasteners securing the platform height sensor short arm to the number 1 inner arm (index #16).

8 Remove the fasteners securing the platform height sensor cover to the chassis, remove the platform height sensor cover.

9 Tag and disconnect the platform height sensor from the platform height sensor harness.

10 Remove the fasteners securing the platform height sensor to platform height sensor bracket on chassis, remove the platform height sensor.

11 Connect the battery pack to the machine.

12 Turn the key switch to ground controls.

13 Press and hold the ground control scroll up and scroll down buttons.

14 Pull out the red Emergency Stop button to the on position at the ground controls.

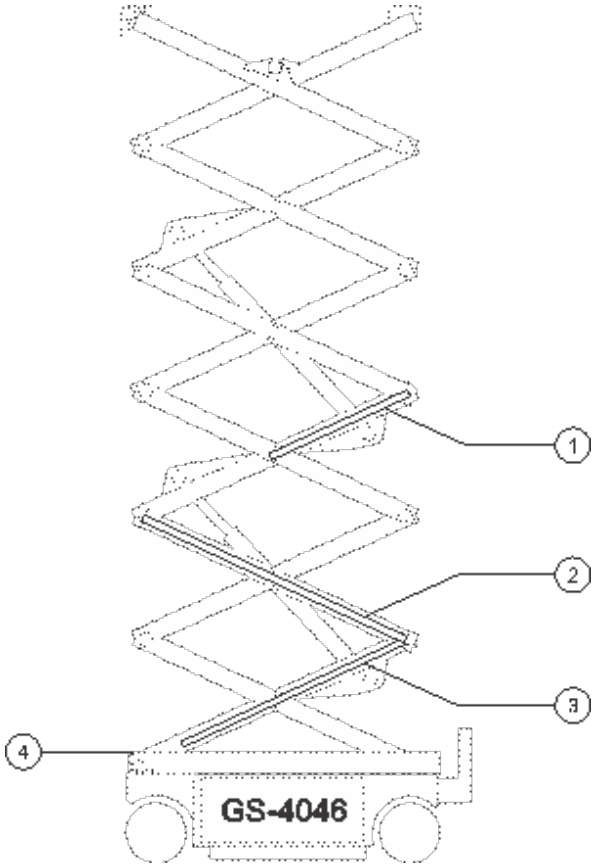
15 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

Note: The machine must be in Service Override Mode to raise the platform. While in Service Override Mode, only the GCON will operate with limited functionality. The platform will raise a predetermined amount of time and stop.

Scissor Components

16 Raise the platform and rotate the safety arm to the stowed position.

17 Fully lower the platform to the stowed position.



Cable bridge and platform height sensor

1 cable bridge 3
2 cable bridge 2
3 cable bridge 1
4 platform height sensor

18 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform.*

19 Support and secure the entry ladder to an appropriate lifting device.

20 Remove the entry ladder mounting fasteners. Remove the entry ladder from the machine.

⚠ CAUTION Crushing hazard. The entry ladder will fall if not properly supported and secured to the lifting device.

21 Remove the cables from the number 6 inner arm (index #19) and lay them off to the side.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

22 Remove the retaining fasteners from the number 7 pivot pin (index #1).

23 Use a soft metal drift to remove the number 7 pivot pin (index #1). Remove the platform mount bracket from the machine.

24 Attach a lifting strap from an overhead supporting device to the number 6 outer arm (index #18).

25 Remove the retaining fasteners from the number 6 center pivot pin (index #2).

26 Use a soft metal drift to remove the number 6 center pivot pin (Index #2).

27 Remove the retaining fasteners from the number 6 pivot pin (index #3) at the steer end.

Scissor Components

28 Use a soft metal drift to remove the number 6 pivot pin (index #3) from the steer end of the machine. Remove the number 6 outer arm (index #18) from the machine.

⚠ CAUTION Crushing hazard. The number 6 outer arm may become unbalanced and fall if not properly supported when removed from the machine.

29 Attach a lifting strap from an overhead supporting device to the number 6 inner arm (index #19).

30 Remove the retaining fasteners from the number 6 pivot pin at the non-steer end of the machine (index #20).

31 Use a soft metal drift to remove the number 6 pivot pin (index #20) from the non-steer end of the machine. Remove the number 6 inner arm (index #19) from the machine.

⚠ CAUTION Crushing hazard. The number 6 inner arm may become unbalanced and fall if not properly supported when removed from the machine.

32 Remove the cables from the number 5 inner (index #21) arm and lay them off to the side.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

33 Tag, disconnect and plug the hydraulic hose on the upper lift cylinder. Cap the fittings on the cylinder.

⚠ WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

34 Attach a lifting strap from an overhead supporting device to the number 5 outer arm (index #22).

35 Remove the retaining fasteners from the number 5 center pivot pin (index #4).

36 Use a soft metal drift to remove the number 5 center pivot pin (Index #4).

37 Remove the retaining fasteners from the number 5 pivot pin (index #6) at the steer end.

38 Use a soft metal drift to remove the number 5 pivot pin (index #6) from the non-steer end of the machine. Remove the number 5 outer arm (index #22) from the machine.

⚠ CAUTION Crushing hazard. The number 5 outer arm may become unbalanced and fall if not properly supported when removed from the machine.

39 Tag and disconnect the wire harness from the solenoid valve on the upper lift cylinder.

40 Attach a lifting strap from an overhead supporting device to the lug of the rod end of the upper lift cylinder.

41 Remove the retaining fasteners from the upper lift cylinder rod end pivot pin (index #5).

Scissor Components

42 Use a soft metal drift to remove the upper lift cylinder rod end pivot pin (index #5) from the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

43 Lower the cylinder onto the linkset.

44 Attach a lifting strap from an overhead supporting device to the number 5 inner arm (index #21).

45 Remove the retaining fasteners from the number 5 pivot pin at the steer end of the machine (index #6).

46 Use a soft metal drift to remove the number 5 pivot pin (index #6) from the steer end of the machine. Remove the number 5 inner arm (index #21) from the machine.

47 Remove the cables from the number 4 inner arm (index #25) and lay them off to the side.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

48 Attach a lifting strap from an overhead supporting device to the number 4 outer arm (index #24).

49 Remove the retaining fasteners from the number 4 center pivot pin (index #7).

50 Use a soft metal drift to remove the number 4 center pivot pin (index #7).

51 Remove the retaining fasteners from the number 4 pivot pin (index #8) at the steer end.

52 Use a soft metal drift to remove the number 4 pivot pin (index #8) from the steer end of the machine. Remove the number 4 outer arm (index #24) from the machine.

⚠ CAUTION Crushing hazard. The number 4 outer arm may become unbalanced and fall if not properly supported when removed from the machine.

53 Attach a lifting strap from an overhead supporting device to the number 4 inner arm (index #25).

54 Remove the retaining fasteners from the number 4 pivot pin at the non-steer end of the machine (index #26).

55 Use a soft metal drift to remove the number 4 pivot pin (index #26) from the steer end of the machine. Remove the number 4 inner arm (index #25) from the machine.

⚠ CAUTION Crushing hazard. The number 4 inner arm may become unbalanced and fall if not properly supported when removed from the machine.

56 Attach a lifting strap from an overhead supporting device to the number 3 outer arm (index #9).

57 Remove the retaining fasteners from the number 3 center pivot pin (index #28).

58 Use a soft metal drift to remove the number 3 center pivot pin (index #28).

59 Remove the retaining fasteners from the number 3 pivot pin (index #29) at the non-steer end.

Scissor Components

60 Use a soft metal drift to remove the number 3 pivot pin (index #29) from the non-steer end of the machine. Remove the number 3 outer arm (index #9) from the machine.

⚠ WARNING Crushing hazard. The number 3 outer arm may become unbalanced and fall if not properly supported when removed from the machine.

61 Remove the cables from number 3 cable bridge and lay them off to aside.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

62 Disconnect the number 3 cable bridge from number 3 inner arm (index #11). Remove the number 3 cable bridge from machine.

63 Remove the retaining fasteners from the clamp plate of upper lift cylinder barrel end pivot pin (index #27). Remove the clamp plate.

64 Attach a lifting strap from an overhead supporting device to the lug of the rod end of the upper lift cylinder.

65 Raise and remove the lift cylinder from the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

NOTICE Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

66 Attach a lifting strap from an overhead supporting device to the lug of the rod end of the lower lift cylinder.

67 Remove the retaining fasteners from the lower lift cylinder rod end pivot pin (index #10).

68 Use a soft metal drift to remove the lower lift cylinder rod end pivot pin (index #10) from the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

69 Place a 4 x 4 x 10 in / 10 x 10 x 25 cm block onto the number 1 inner arm cylinder plate (index #16).

70 Lower the cylinder onto the block.

⚠ CAUTION Bodily injury hazard. Keep hands clear of moving parts when lowering the cylinder.

71 Attach a lifting strap from an overhead supporting device to the number 3 inner arm (index #11).

72 Remove the retaining fasteners from the number 3 pivot pin at the steer end of the machine (index #12).

73 Use a soft metal drift to remove the number 3 pivot pin (index #12) from the steer end of the machine. Remove the number 3 inner arm (index #11) from the machine.

⚠ CAUTION Crushing hazard. The number 3 inner arm may become unbalanced and fall if not properly supported when the pivot pin is removed.

74 Attach a lifting strap from an overhead supporting device to the number 2 outer arm (index #30).

75 Remove the retaining fasteners from the number 2 center pivot pin (index #13).

Scissor Components

76 Use a soft metal drift to remove the number 2 center pivot pin (index #13).

77 Remove the retaining fasteners from the number 2 pivot pin (index #14) at the steer end of the machine.

78 Use a soft metal drift to remove the number 2 pivot pin (index #14) from the steer end of the machine. Remove the number 2 outer arm (index #30) from the machine.

⚠ CAUTION Crushing hazard. The number 2 outer arm may become unbalanced and fall if not properly supported when the pivot pin is removed.

79 Remove the cables from the number 2 cable bridge and lay them off to aside.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

80 Disconnect the number 2 cable bridge from the number 2 inner arm (index #31). Remove the number 2 cable bridge.

81 Attach a lifting strap from an overhead supporting device to the number 2 inner arm (index #31).

82 Remove the retaining fasteners from the number 2 pivot pin at the non-steer end of the machine (index #32).

83 Use a soft metal drift to remove the number 2 pivot pin (index #32) from the non-steer end of the machine. Remove the number 2 inner arm (index #31) from the machine.

⚠ CAUTION Crushing hazard. The number 2 inner arm may become unbalanced and fall if not properly supported when the pivot pin is removed.

84 Attach a lifting strap from an overhead supporting device to the number 1 inner arm (index #16).

85 Raise the number 1 inner arm (index #16) approximately 2 ft / 60 cm.

86 Place a 8 x 4 x 48 in / 20 cm x 10 cm x 1.2 m long block across both sides of the chassis under the number 1 center pivot pin (index #15).

87 Lower the scissor arms onto the block that was placed across the chassis.

⚠ CAUTION Bodily injury hazard. Keep hands clear of moving parts when lowering the scissor arms.

88 Attach a lifting strap from an overhead supporting device to the lug of the rod end of the lower lift cylinder (index #10).

89 Tag, disconnect and plug the hydraulic hose on the lower lift cylinder. Cap the fittings on the cylinder.

⚠ WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

90 Tag and disconnect the wire harness from the solenoid valve on the cylinder.

91 Tag and disconnect the wires and manual lowering cable from the solenoid valve on the cylinder.

92 Tag and disconnect the wire harness from the platform overload pressure transducer.

93 Raise the lift cylinder to a vertical position.

Scissor Components

94 Remove the pin retaining fasteners from the lift cylinder barrel-end pivot pin (index #33). Use a soft metal drift to remove the pin. Remove the lift cylinder from the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

NOTICE Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

95 Remove the cables from the number 1 cable bridge and lay them off to the side.

NOTICE Component damage hazard. Cables can be damaged if they are kinked or pinched.

96 Disconnect the number 1 cable bridge from the number 1 inner arm (index #16) and remove the cable bridge from the machine.

97 Attach a lifting strap from an overhead supporting device to the number 1 inner arm (index #16).

98 Raise the arm slightly and remove the block.

99 Lower the arm to the stowed position.

⚠ CAUTION Bodily injury hazard. Keep hands clear of moving parts when lowering the scissor arms.

100 Secure the ends of the scissor arms together at the steer end of the machine with a strap or other suitable device.

101 Secure the ends of the scissor arms together at the non-steer end of the machine with a strap or other suitable device.

102 Attach a lifting strap from an overhead supporting device to the number 1 outer arm (index #34). Do not apply any lifting pressure.

103 Remove the external snap rings and retaining fasteners from the number 1 center pivot pin (index #15).

104 Use a soft metal drift to remove the number 1 center pivot pins (index #15).

105 Slide the number 1 outer arm (index #34) to the non-steer end and remove it from the machine.

106 Attach the strap from an overhead supporting device to the number 1 inner arm (index #16). Do not lift it.

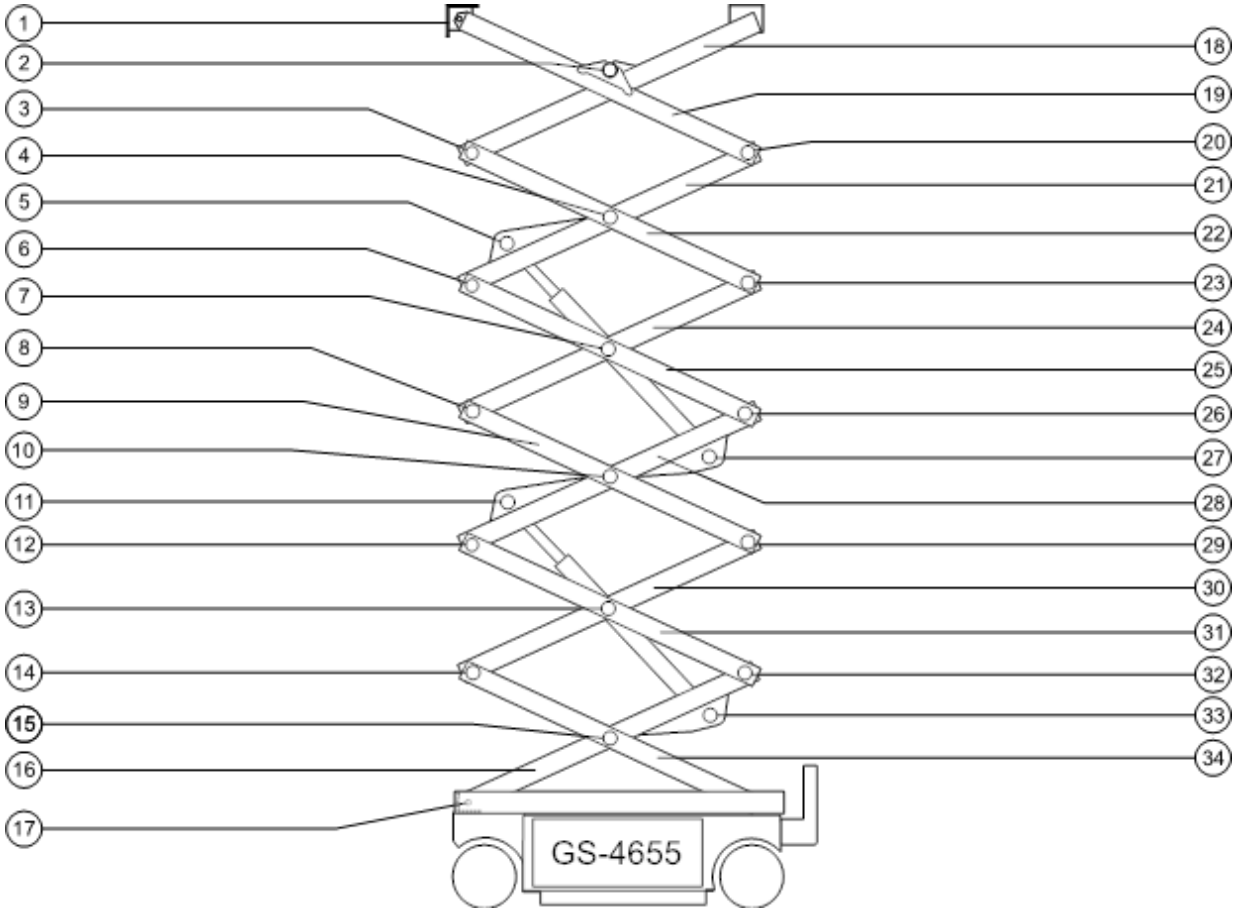
107 Remove the retaining fasteners from the number 1 pivot pin (index #17).

108 Use a soft metal drift to remove the number 1 pivot pins (index #17).

109 Remove the number 1 inner arm (index #16) from the machine.

⚠ CAUTION Bodily injury hazard. The number 1 inner and outer arms may become unbalanced and fall if not properly supported when removed from the machine.

Scissor Components



Steer End		Non-steer End
1 - Number 7 pivot pin	13 - Number 2 center pivot pin (Qty. 2)	25 - Number 4 outer arm
2 - Number 6 center pivot pin (Qty. 2)	14 - Number 2 pivot pin (steer end)	26 - Number 4 pivot pin (non-steer end)
3 - Number 6 pivot pin (steer end)	15 - Number 1 center pivot pin (Qty. 2)	27 - Upper lift cylinder barrel-end pivot pin
4 - Number 5 center pivot pin	16 - Number 1 inner arm	28 - Number 3 inner arm
5 - Upper lift cylinder rod-end pivot pin	17 - Number 1 pivot pin (steer end) (Qty. 2)	29 - Number 3 pivot pin (non-steer end)
6 - Number 5 pivot pin (steer end)	18 - Number 6 inner arm	30 - Number 2 inner arm
7 - Number 4 center pivot pin (Qty. 2)	19 - Number 6 outer arm	31 - Number 2 inner arm
8 - Number 4 pivot pin (steer end)	20 - Number 6 pivot pin (non-steer end)	32 - Number 2 pivot pin (non-steer end)
9 - Number 3 outer arm	21 - Number 5 inner arm	33 - Lower lift cylinder barrel-end pivot pin
10 - Number 3 center pivot pin (Qty. 2)	22 - Number 5 outer arm	34 - Number 1 outer arm
11 - Lower lift cylinder rod-end pivot pin	23 - Number 5 pivot pin (non-steer end)	
12 - Number 3 pivot pin (steer end)	24 - Number 4 inner arm	

Scissor Components

7-7
Scissor Assembly - GS-4655

How to Disassemble the Scissor Assembly

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

Note: This procedure will require an overhead supporting device capable of supporting 1000 lbs / 454 kg.

Note: After replacing the scissor assembly, the platform overload system must be calibrated. Refer to Repair Procedure, *How to Calibrate the Platform Overload System.*

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 16 to 17 feet / 4.9 to 5.2 m.

3 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

4 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

6 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

7 Remove the fasteners securing the large platform height sensor cover to the large platform height sensor bracket.

8 Remove the platform height sensor cover.

9 Tag and disconnect the platform height sensor from the platform height sensor harness.

10 Remove the fastener securing the platform height sensor assembly to the number 1 inner arm.

11 Remove the platform height sensor assembly from the number 1 pivot pin.

12 Remove the plastic nut securing the squeeze connector to the large platform height sensor bracket.

13 Remove the squeeze connector from the large platform height sensor bracket.

14 Remove the fasteners securing the large platform height sensor bracket to the number 1 inner arm pivot bracket.

15 Remove the large platform height sensor bracket from the number 1 inner arm pivot bracket.

16 Install the fasteners removed in 14 to the number 1 inner arm pivot bracket and chassis.

⚠ DANGER Tip-over hazard. Failure to install the fasteners securing the number 1 inner arm pivot bracket to the chassis, could result in the machine tipping over, causing death or serious injury.

17 Connect the battery pack to the machine.

18 Turn the key switch to ground controls.

19 Press and hold the ground control scroll up and scroll down buttons.

20 Pull out the red Emergency Stop button to the on position at the ground controls.

21 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

Note: The machine must be in Service Override Mode to raise the platform. While in Service Override Mode, only the GCON will operate with limited functionality. The platform will raise a predetermined amount of time and stop.

22 Raise the platform and rotate the safety arm to the stowed position.

23 Fully lower the platform to the stowed position.

24 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform.*

25 Remove the retaining fasteners that attach the ladder to the drive chassis. Remove the ladder and set aside.

26 Remove the cables from the linkage assembly.

27 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform*.

28 Remove the retaining fasteners that attach the ladder to the drive chassis. Remove the ladder and set aside.

29 Remove the cables from the linkage assembly.

NOTICE Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

30 Using an overhead supporting device attach a 4 hook sling chain to the ends of the number 6 inner arm. Make the chains tight but do not apply lifting pressure.

⚠ WARNING Crushing hazard. The linkage assembly could become unbalanced and fall if not properly supported when removed from the machine.

31 Remove the retaining fasteners from the number 6 pivot pins.

Note: Do not remove the external snap ring.

32 Using a soft metal drift, remove the pivot pins and set aside.

33 Carefully lift the linkage assembly off of the machine and place it on a structure capable of supporting it.

34 Using a suitable supporting device, attach a strap to the rod end of the upper lift cylinder. Do not apply pressure.

35 Remove the upper cylinder rod end pivot pin retaining fasteners.

Scissor Components

36 Using a soft metal drift, remove the pivot pin.

37 Lower the lift cylinder and remove the strap.

38 Using an overhead supporting device attach a 4 hook sling chain to the ends of the number 5 inner arm. Make the chains tight but do not apply lifting pressure.

⚠WARNING Crushing hazard. The linkage assembly could become unbalanced and fall if not properly supported when removed from the machine.

39 Remove the retaining fasteners from the number 5 pivot pins.

Note: Do not remove the external snap ring.

40 Using a soft metal drift, remove the pivot pins and set aside.

41 Carefully lift the linkage assembly off of the machine and place it on a structure capable of supporting it.

42 Using an overhead supporting device attach a 4 hook sling chain to the ends of the number 4 inner arm. Make the chains tight but do not apply lifting pressure.

⚠WARNING Crushing hazard. The linkage assembly could become unbalanced and fall if not properly supported when removed from the machine.

43 Remove the retaining fasteners from the number 4 pivot pins.

Note: Do not remove the external snap ring.

44 Using a soft metal drift, remove the pivot pins and set aside.

45 Carefully lift the linkage assembly off of the machine and place it on a structure capable of supporting it.

46 Tag and disconnect the harness from the upper lift cylinder valve block.

47 Tag and disconnect the hydraulic hoses from the upper lift cylinder. Plug the hoses and cap the fittings.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

48 Remove the cables and hoses from the linkage assembly.

NOTICE Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

49 Using a suitable supporting device remove the retaining fasteners from the upper lift cylinder. Remove the cylinder.

50 Using a suitable supporting device, attach a strap to the rod end of the lower lift cylinder. Do not apply pressure.

51 Remove the lower cylinder rod end pivot pin retaining fasteners.

52 Using a soft metal drift, remove the pivot pin.

53 Lower the lift cylinder and remove the strap.

54 Using an overhead supporting device attach a 4 hook sling chain to the ends of the number 3 inner arm. Make the chains tight but do not apply lifting pressure.

⚠WARNING Crushing hazard. The linkage assembly could become unbalanced and fall if not properly supported when removed from the machine.

Scissor Components

55 Remove the retaining fasteners from the number 3 pivot pins.

Note: Do not remove the external snap ring.

56 Using a soft metal drift, remove the pivot pins and set aside.

57 Carefully lift the linkage assembly off of the machine and place it on a structure capable of supporting it.

58 Using an overhead supporting device attach a 4 hook sling chain to the ends of the number 2 inner arm. Make the chains tight but do not apply lifting pressure.

⚠WARNING Crushing hazard. The linkage assembly could become unbalanced and fall if not properly supported when removed from the machine.

59 Remove the retaining fasteners from the number 2 pivot pins.

60 Using a soft metal drift, remove the pivot pins and set aside.

61 Carefully lift the linkage assembly off of the machine and place it on a structure capable of supporting it.

62 Tag and disconnect the harness from the lower lift cylinder valve block.

63 Tag and disconnect the hydraulic hoses from the lower lift cylinder. Plug the hoses and cap the fittings.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

64 Remove the hose clamps and hoses from the number 1 inner arm.

65 Using an overhead supporting device attach a 4 hook sling chain to the ends of the number 1 inner arm. Make the chains tight but do not apply lifting pressure.

⚠WARNING Crushing hazard. The linkage assembly could become unbalanced and fall if not properly supported when removed from the machine.

66 Remove the four carriage bolts that secure the inner arm and chassis pivot to the steer end of the drive chassis.

67 Move the linkage towards the non-steer end of the machine until the slider feet are clear of the slider channel.

68 Carefully lift the linkage assembly off of the machine and place it on a structure capable of supporting it.

Separate the link sets:

1 Using an overhead supporting device attach a 4 hook sling chain to the ends of the inner arm. Make the chains tight but do not apply lifting pressure.

⚠WARNING Crushing hazard. The linkage assembly could become unbalanced and fall if not properly supported when removed from the machine.

2 Remove the retaining fasteners from the center pivot pins.

Note: Do not remove the external snap ring.

3 Using a soft metal drift, remove the center pivot pins and set aside.

4 Carefully lift and separate the linkage assembly apart and place it on a structure capable of supporting it.

Scissor Components

7-8
Scissor Arm Wear Pads

How to Replace the Scissor Arm Wear Pad - GS-1432m, GS-1932m

1 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

3 Raise the safety arm from the drive chassis to a vertical position.

4 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

6 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

7 Remove the fasteners securing the platform height sensor cover to the chassis.

8 Remove the platform height sensor cover.

9 Tag and disconnect the platform height sensor from the platform height sensor harness.

10 Remove the fasteners securing the platform height sensor short arm cover to the number 1 inner arm.

11 Remove the fasteners securing the platform height sensor to the chassis. Remove the sensor.

12 Connect the battery pack to the machine.

13 Turn the key switch to ground controls.

14 Press and hold the ground control scroll up and scroll down buttons.

15 Pull out the red Emergency Stop button to the on position at the ground controls.

16 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

17 Raise the platform and rotate the safety arm to the stowed position.

18 Fully lower the platform to the stowed position.

19 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform.*

20 Remove the pins, shims and snap rings from the number 1 inner arm at the steer end of the machine.

21 Attach a lifting strap from an overhead supporting device to the steer end of scissor assembly.

⚠DANGER Crushing hazard. The scissor assembly will fall if not properly supported when removed from the drive chassis.

22 Replace the wear pads.

How to Replace the Scissor Arm Wear Pad - All other models

1 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 14 to 16.5 feet / 4.3 to 5 m.

3 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

4 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

6 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

7 Remove the fasteners securing the platform height sensor short arm to the number 1 inner arm.

8 Remove the fasteners securing the platform height sensor cover to the chassis, remove the platform height sensor cover.

9 Tag and disconnect the platform height sensor from the platform height sensor harness.

10 Remove the fasteners securing the platform height sensor to platform height sensor bracket on chassis, remove the platform height sensor.

11 Install the fasteners removed in 14 to the number 1 inner arm pivot bracket and chassis.

⚠DANGER Tip-over hazard. Failure to install the fasteners securing the number 1 inner arm pivot bracket to the chassis, could result in the machine tipping over, causing death or serious injury.

12 Connect the battery pack to the machine.

13 Turn the key switch to ground controls.

14 Press and hold the ground control scroll up and scroll down buttons.

15 Pull out the red Emergency Stop button to the on position at the ground controls.

16 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

Note: The machine must be in Service Override Mode to raise the platform. While in Service Override Mode, only the GCON will operate with limited functionality. The platform will raise a predetermined amount of time and stop.

17 Raise the platform and rotate the safety arm to the stowed position.

18 Fully lower the platform to the stowed position.

19 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform.*

20 Support and secure the entry ladder to an appropriate lifting device.

Note: Does not include GS-1932.

21 Remove the entry ladder mounting fasteners. Remove the entry ladder from the machine.

⚠CAUTION Crushing hazard. The entry ladder will fall if not properly supported and secured to the lifting device.

Scissor Components

22 Secure the ends of the scissor arms together at the steer end of the machine with a strap or other suitable device.

23 Secure the ends of the scissor arms together at the non-steer end of the machine with a strap or other suitable device.

24 Remove the retaining fasteners from the number 1 pivot pin at the steer end of the machine.

25 Attach a lifting strap from an overhead supporting device to the scissor arm assembly.

26 Remove the scissor assembly from the machine just enough to access both wear pads.

⚠ DANGER Crushing hazard. The scissor assembly will fall if not properly supported when removed from the drive chassis.

NOTICE Component damage hazard. Be careful not to damage the level sensor or limit switch while moving the scissor assembly.

27 Remove both old wear pads.

28 Install two new wear pads.

29 Slide the scissor assembly back into the drive chassis.

30 Lower the scissor assembly into position and install the chassis mount bracket onto the chassis. Securely install and tighten the fasteners. Do not over tighten.

NOTICE Component damage hazard. Be careful not to damage the level sensor or limit switch while moving the scissor assembly.

7-9 Platform Height Sensor

How to Disassemble the Platform Height Sensor Assembly - GS-1432m, GS-1932m

Note: When a Platform Height Sensor Assembly is removed or replaced, the platform overload system must be calibrated. Refer to Repair Procedure, *How to Calibrate the Platform Overload System* and perform the no load calibration procedure.

1 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

2 Raise the safety arm from the drive chassis to a vertical position.

3 Lower the platform onto the safety arm.

⚠ WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

4 Turn the key switch to the off position.

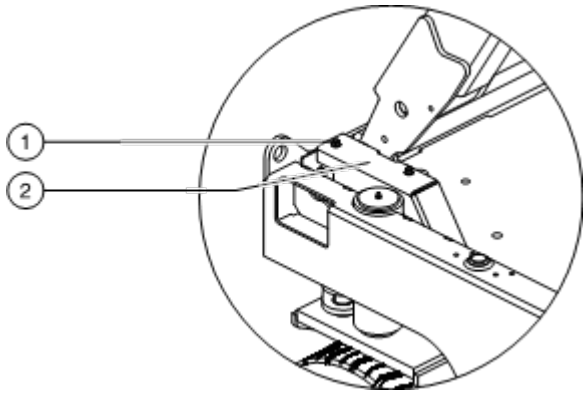
5 Disconnect the battery pack from the machine.

⚠ WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

6 Remove the fasteners securing the platform height sensor cover to the chassis.

Scissor Components

7 Remove the platform height sensor cover.



1 retaining fasteners
2 cover

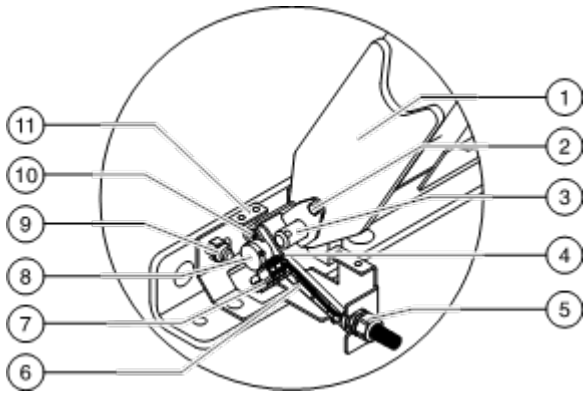
8 Tag and disconnect the platform height sensor from the platform height sensor harness.

9 Remove the fastener securing the platform height sensor assembly to the number 1 inner arm.

10 Remove the fasteners securing the platform height sensor assembly to the platform height sensor plate.

11 Remove the set screw securing the lever arm to the platform height sensor.

12 Remove the lever arm from the platform height sensor assembly.



1 number 1 inner arm
2 fastener (platform height sensor assembly)
3 number 1 pivot pin
4 lever arm retaining screw
5 squeeze connector
6 lever arm
7 platform height sensor harness connection
8 platform height sensor
9 fastener (platform height sensor bracket)
10 fastener (platform height sensor)
11 platform height sensor assembly

Scissor Components

How to Disassemble the Platform Height Sensor Assembly - GS-4655

Note: When a Platform Height Sensor Assembly is removed or replaced, the platform overload system must be calibrated. Refer to Repair Procedure, *How to Calibrate the Platform Overload System* and perform the no load calibration procedure.

1 Raise the platform approximately 13 feet / 4 m.

2 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

3 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

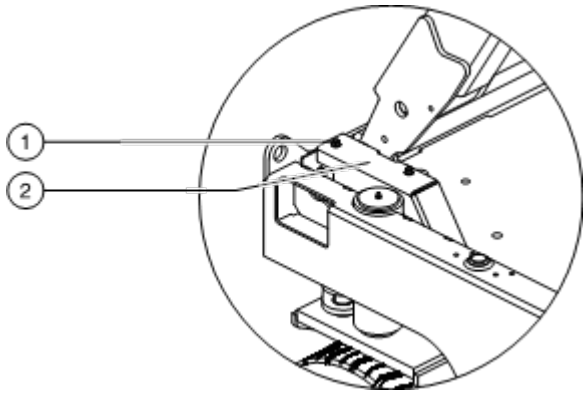
4 Turn the key switch to the off position.

5 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

6 Remove the fasteners securing the large platform height sensor cover to the large platform height sensor bracket.

7 Remove the platform height sensor cover.



1 retaining fasteners
2 cover

8 Tag and disconnect the platform height sensor from the platform height sensor harness.

9 Remove the fastener securing the platform height sensor assembly to the number 1 inner arm.

10 Remove the platform height sensor assembly from the number 1 pivot pin.

11 Remove the set screw securing the lever arm to the platform height sensor.

12 Remove the lever arm from the platform height sensor assembly.

13 Working with the platform height sensor assembly, remove the Deutsch connector from the plastic clip.

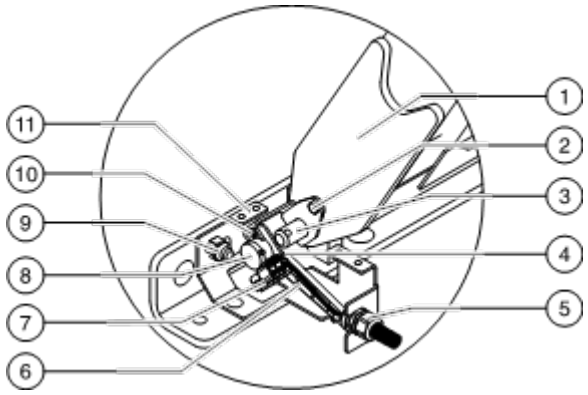
14 Remove the fasteners securing the platform height sensor to the small platform height sensor bracket.

Scissor Components

15 Remove the platform height sensor from the small angle sensor bracket.

16 Remove the plastic nut securing the squeeze connector to the large platform height sensor bracket.

17 Remove the squeeze connector from the large platform height sensor bracket.



1 number 1 inner arm
2 fastener (platform height sensor assembly)
3 number 1 pivot pin
4 lever arm retaining screw
5 squeeze connector
6 lever arm
7 platform height sensor harness connection
8 platform height sensor
9 fastener (large platform height sensor bracket)
10 fastener (platform height sensor)
11 platform height sensor assembly

18 Remove the fasteners securing the large platform height bracket to the number 1 inner arm pivot bracket.

19 Remove the large platform height sensor bracket from the number 1 inner arm pivot bracket.

⚠ DANGER Tip-over hazard. Failure to install the fasteners securing the large platform height sensor bracket and number 1 inner arm pivot bracket to the chassis, could result in the machine tipping over, causing death or serious injury.

Scissor Components

How to Disassemble the Platform Height Sensor Assembly - All other models

Note: When a Platform Height Sensor Assembly is removed or replaced, the platform overload system must be calibrated. Refer to Repair Procedure, *How to Calibrate the Platform Overload System* and perform the no load calibration procedure.

1 Raise the platform 14 to 16.5 feet / 4.3 to 5 m.

2 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

3 Lower the platform onto the safety arm.

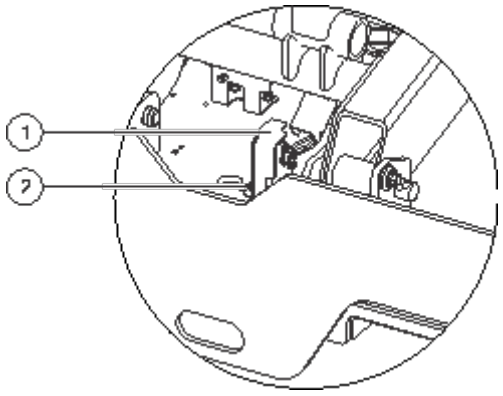
⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

4 Turn the key switch to the off position.

5 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

6 Remove the fasteners securing the platform height sensor cover to the platform height sensor bracket.

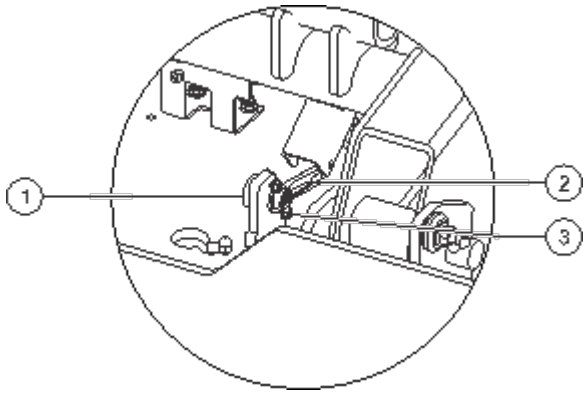


1 cover
2 retaining fasteners

7 Remove the platform height sensor cover.

8 Tag and disconnect the platform height sensor from the platform height sensor harness.

9 Remove the fasteners securing the platform height sensor short arm to the number 1 inner arm.



1 platform height sensor
2 short arm
3 retaining fasteners

10 Remove the fasteners securing the platform height sensor to the chassis mounting plate.

11 Remove the platform height sensor.

7-10 Lift Cylinders

How to Remove the Lift Cylinder

⚠WARNING Bodily injury hazard. The procedures in this section require specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

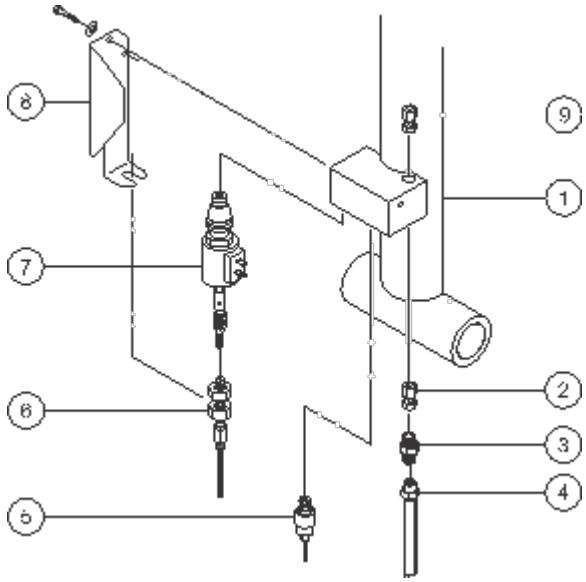
GS-1432m, GS-1932m, GS-1932

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

3 GS-1432m, GS-1932m: Raise the safety arm from the drive chassis to a vertical position.

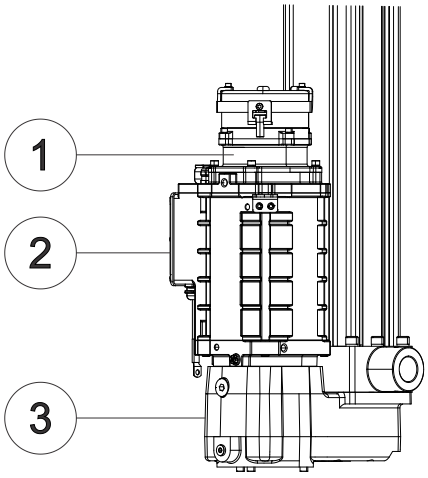
GS-1932: Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.



Models with hydraulic lift

1 lift cylinder
2 orifice, GS-1932
3 connector fitting
4 hydraulic hose
5 pressure transducer
6 manual lowering cable
7 solenoid valve
8 cable mount bracket
9 orifice, GS-1432m, GS-1932m

Scissor Components



Models with electric lift

1 centrifugal brake
2 motor
3 reducer

4 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 Using a suitable lifting device, support the link stack at the steer end of the machine.

6 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

7 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

8 Models with hydraulic lift:

Tag and disconnect the wiring from the solenoid valve coil and the pressure transducer at the barrel end of the lift cylinder.

9 Models with hydraulic lift:

Loosen the adjustment nuts on the solenoid valve and disconnect the manual lowering cable from the valve.

Note: During assembly, the manual platform lowering cable needs to be properly adjusted. Refer to Repair Procedure, *How to Adjust the Manual Platform Lowering Cable.*

10 Models with hydraulic lift:

Remove the fasteners securing the manual lowering cable mount bracket to the cylinder. Remove the bracket from the cylinder.

11 Models with hydraulic lift:

Tag, disconnect and plug the hydraulic hoses on the lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

Scissor Components

12 Models with electric lift:

Tag and disconnect the power cables and harness at the barrel end of the lift cylinder.

13 Models with electric lift:

Remove the fasteners securing the manual lowering cable to the cylinder. Remove the manual lowering cable from the cylinder.

14 Attach a lifting strap from an overhead supporting device to the rod-end of the lift cylinder.

15 Remove the fasteners from the lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

16 Lower the cylinder onto the lower scissor arm.

17 Attach a lifting strap from an overhead supporting device to the barrel-end of the lift cylinder.

18 Remove the fasteners from the lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the pin.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

19 Support and secure the lift cylinder to an appropriate lifting device.

20 Remove the lift cylinder through the scissor arms at the steer end of the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will become unbalanced and fall if not properly supported and secured to the lifting device.

NOTICE Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

21 Models with hydraulic lift:

Install new cylinder, fittings, hoses and pressure transducer.

Torque specifications	
Solenoid valve, 2 position 2 way, N.C.	20 ft-lbs 27 Nm
Coil nut	5 ft-lbs 7 Nm
Pressure transducer	27 ft-lbs 37 Nm

22 Models with electric lift:

Install new cylinder, cables and harness.

23 Remove the lifting device supporting the link stack at the steer end of the machine.

24 Connect the battery pack to the machine.

25 Press and hold the ground control scroll up and scroll down buttons.

26 Pull out the red Emergency Stop button to the on position at the ground controls.

Scissor Components

27 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

Note: The machine must be in Service Override Mode to raise the platform. While in Service Override Mode, only the GCON will operate with limited functionality. The platform will raise a predetermined amount of time and stop.

28 Raise the platform and rotate the safety arm to the stowed position.

29 Fully lower the platform to the stowed position.

30 Calibrate the platform overload system. Refer to Repair Procedure *How to Calibrate the Platform Overload System*.

GS-2632, GS-2646

⚠WARNING Bodily injury hazard. The procedures in this section require specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

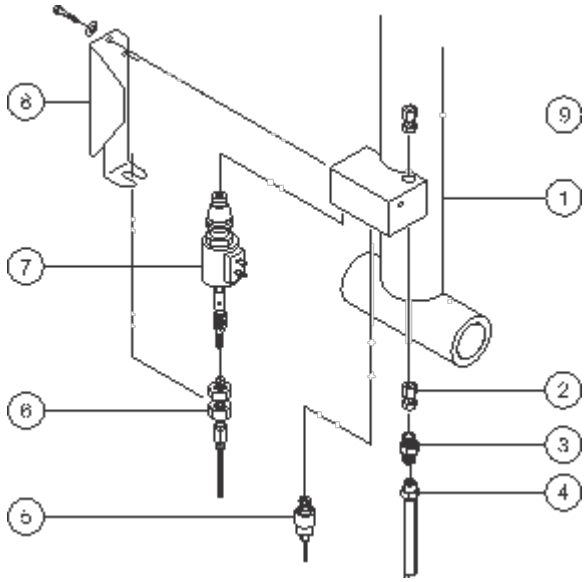
Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

Scissor Components

3 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.



1 lift cylinder
2 orifice
3 connector fitting
4 hydraulic hose
5 pressure transducer
6 manual lowering cable
7 solenoid valve
8 cable mount bracket
9 orifice

4 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 Using a suitable lifting device, support the link stack at the steer end of the machine.

6 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

7 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

8 Tag and disconnect the wiring from the solenoid valve coil and the pressure transducer at the barrel end of the lift cylinder.

9 Loosen the adjustment nuts on the solenoid valve and disconnect the manual lowering cable from the valve.

Note: During assembly, the manual platform lowering cable needs to be properly adjusted. Refer to Repair Procedure, *How to Adjust the Manual Platform Lowering Cable.*

10 Remove the fasteners securing the manual lowering cable mount bracket to the cylinder. Remove the bracket from the cylinder.

11 Tag, disconnect and plug the hydraulic hoses on the lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

12 Attach a lifting strap from an overhead supporting device to the rod-end of the lift cylinder.

Scissor Components

13 Remove the fasteners from the lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

14 Lower the cylinder onto the number 1 inner arm cylinder plate.

15 Attach a lifting strap from an overhead supporting device to the barrel-end of the lift cylinder.

16 Remove the fasteners and clamp plate from the lift cylinder barrel-end pivot pin.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

17 Support and secure the lift cylinder to an appropriate lifting device.

18 Remove the lift cylinder through the scissor arms at the steer end of the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will become unbalanced and fall if not properly supported and secured to the lifting device.

NOTICE Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

19 Install new cylinder, fittings, hoses and pressure transducer.

Torque specifications	
Solenoid valve, 2 position 2 way, N.C.	20 ft-lbs 27 Nm
Coil nut	5 ft-lbs 7 Nm
Pressure transducer (if equipped)	27 ft-lbs 37 Nm

20 Remove the lifting device supporting the link stack at the steer end of the machine.

21 Connect the battery pack to the machine.

22 Press and hold the ground control scroll up and scroll down buttons.

23 Pull out the red Emergency Stop button to the on position at the ground controls.

24 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

Note: The machine must be in Service Override Mode to raise the platform. While in Service Override Mode, only the GCON will operate with limited functionality. The platform will raise a predetermined amount of time and stop.

25 Raise the platform and rotate the safety arm to the stowed position.

26 Fully lower the platform to the stowed position.

27 Calibrate the platform overload system. Refer to Repair Procedure *How to Calibrate the Platform Overload System*.

Scissor Components

GS-3232, GS-3246

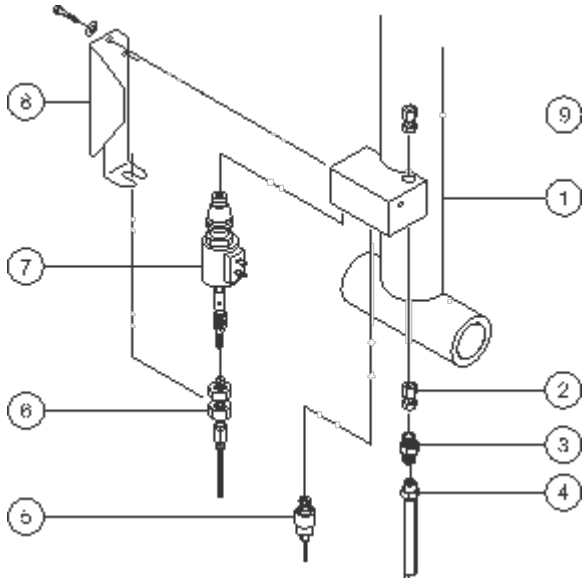
⚠WARNING Bodily injury hazard. The procedures in this section require specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

3 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.



1 lift cylinder
2 orifice
3 connector fitting
4 hydraulic hose
5 pressure transducer
6 manual lowering cable
7 solenoid valve
8 cable mount bracket
9 orifice

Scissor Components

4 Lower the platform onto the safety arm.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 Using a suitable lifting device, support the link stack at the steer end of the machine.

6 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

7 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

Note: At the lower lift cylinder, install the orifice fitting with the small opening of the orifice fitting closest to the supply hose.

8 Tag and disconnect the wiring from the solenoid valve coil and the pressure transducer at the barrel end of the lift cylinder.

Skip to step 11 if removing the damper cylinder.

9 Loosen the adjustment nuts on the solenoid valve and disconnect the manual lowering cable from the valve.

Note: During assembly, the manual platform lowering cable needs to be properly adjusted. Refer to Repair Procedure, *How to Adjust the Manual Platform Lowering Cable.*

10 Remove the fasteners securing the manual lowering cable mount bracket to the cylinder. Remove the bracket from the cylinder.

11 Tag, disconnect and plug the hydraulic hoses on the lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

12 Attach a lifting strap from an overhead supporting device to the rod-end of the lift cylinder.

13 Remove the fasteners from the lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

⚠CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

14 Lower the cylinder onto the inner arm cylinder plate.

15 Attach a lifting strap from an overhead supporting device to the barrel-end of the lift cylinder.

16 Remove the fasteners from the lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the pin.

⚠CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

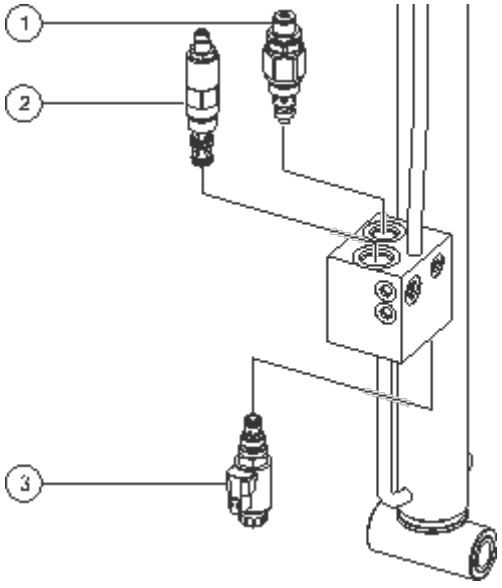
17 Support and secure the lift cylinder to an appropriate lifting device.

18 Remove the lift cylinder through the scissor arms at the steer end of the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will become unbalanced and fall if not properly supported and secured to the lifting device.

NOTICE Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

19 Install new cylinder, fittings, hoses and pressure transducer.



upper damper cylinder

1 relief valve
2 pressure reducing valve
3 solenoid valve

Torque specifications	
Solenoid valve, 2 position 2 way, N.C.	20 ft-lbs 27 Nm
Coil nut	5 ft-lbs 7 Nm
Pressure transducer (if equipped)	27 ft-lbs 37 Nm

20 Remove the lifting device supporting the link stack at the steer end of the machine.

21 Connect the battery pack to the machine.

22 Press and hold the ground control scroll up and scroll down buttons.

23 Pull out the red Emergency Stop button to the on position at the ground controls.

24 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

Note: The machine must be in Service Override Mode to raise the platform. While in Service Override Mode, only the GCON will operate with limited functionality. The platform will raise a predetermined amount of time and stop.

25 Raise the platform and rotate the safety arm to the stowed position.

26 Fully lower the platform to the stowed position.

27 Calibrate the platform overload system. Refer to Repair Procedure *How to Calibrate the Platform Overload System*.

Scissor Components

GS-4046, GS-4655

⚠WARNING Bodily injury hazard. The procedures in this section require specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

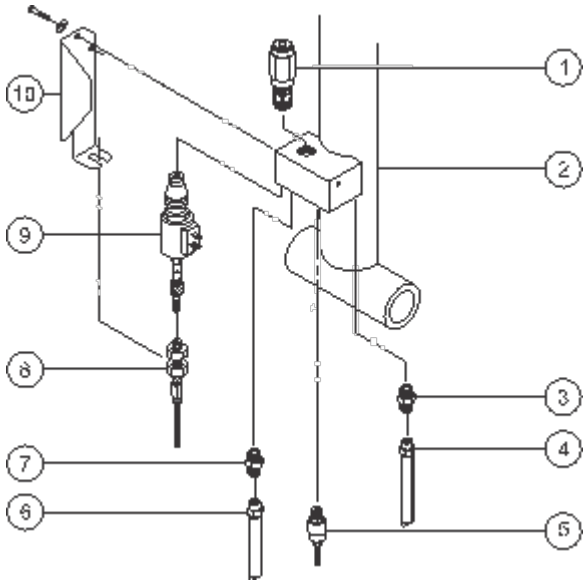
Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 GS-4046: Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

GS-4655: Raise the platform approximately 13 feet / 4 m.

3 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.



1 relief valve
2 lift cylinder
3 connector fitting
4 hydraulic hose
5 pressure transducer
6 hydraulic hose
7 connector fitting
8 manual lowering cable
9 solenoid valve
10 cable mount bracket

4 Lower the platform onto the safety arm.

⚠ WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 Using a suitable lifting device, support the link stack at the steer end of the machine.

6 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

7 Disconnect the battery pack from the machine.

⚠ WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

8 Tag and disconnect the wiring from the solenoid valve coil and the pressure transducer at the barrel end of the lift cylinder.

Skip to step 11 if removing the upper cylinder.

9 Loosen the adjustment nuts on the solenoid valve and disconnect the manual lowering cable from the valve.

Note: During assembly, the manual platform lowering cable needs to be properly adjusted. Refer to Repair Procedure, *How to Adjust the Manual Platform Lowering Cable.*

10 Remove the fasteners securing the manual lowering cable mount bracket to the cylinder. Remove the bracket from the cylinder.

11 Tag, disconnect and plug the hydraulic hoses on the lift cylinder. Cap the fittings on the cylinder.

⚠ WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

12 Attach a lifting strap from an overhead supporting device to the rod-end of the lift cylinder.

13 Remove the fasteners from the lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

14 Lower the cylinder onto the number 1 inner arm cylinder plate.

15 Attach a lifting strap from an overhead supporting device to the barrel-end of the lift cylinder.

16 Remove the fasteners from the lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the pin.

⚠ CAUTION Crushing hazard. The lift cylinder will fall if not properly supported when the pivot pin is removed.

17 Support and secure the lift cylinder to an appropriate lifting device.

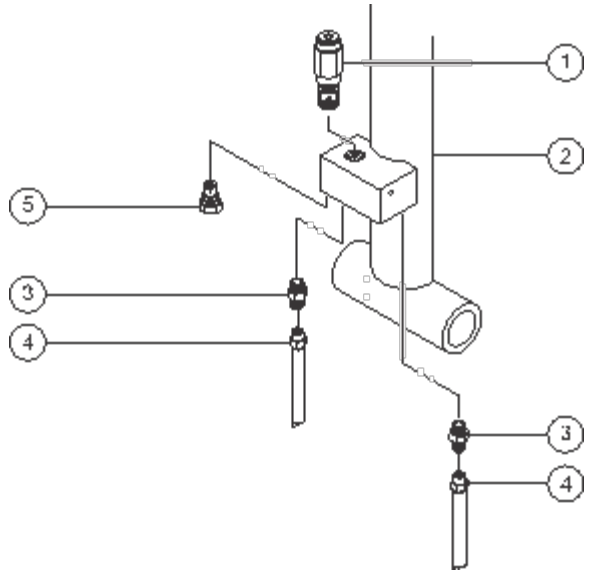
Scissor Components

18 Remove the lift cylinder through the scissor arms at the steer end of the machine.

⚠ CAUTION Crushing hazard. The lift cylinder will become unbalanced and fall if not properly supported and secured to the lifting device.

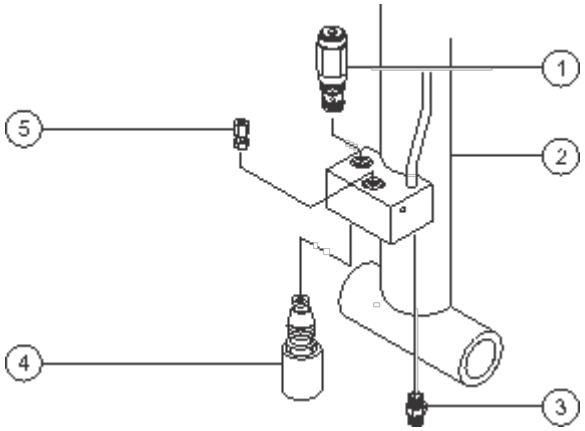
NOTICE Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

19 Install new cylinder, fittings, hoses and pressure transducer.



Upper Lift Cylinder GS-4046

1 relief valve
2 lift cylinder
3 connector fitting
4 hydraulic hose
5 check valve



Upper Lift Cylinder GS-4655

1 relief valve
2 lift cylinder
3 connector fitting
4 solenoid valve
5 orifice

Torque specifications	
Solenoid valve, 2 position 2 way, N.C.	20 ft-lbs 27 Nm
Relief valve	20 ft-lbs 27 Nm
Coil nut	5 ft-lbs 7 Nm

20 Remove the lifting device supporting the link stack at the steer end of the machine.

21 Connect the battery pack to the machine.

22 Turn the key switch to ground controls.

23 Press and hold the ground control scroll up and scroll down buttons.

24 Pull out the red Emergency Stop button to the on position at the ground controls.

25 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

Note: The machine must be in Service Override Mode to raise the platform. While in Service Override Mode, only the GCON will operate with limited functionality. The platform will raise a predetermined amount of time and stop.

26 Raise the platform and rotate the safety arm to the stowed position.

27 Fully lower the platform to the stowed position.

28 Calibrate the platform overload system. Refer to Repair Procedure *How to Calibrate the Platform Overload System*.

7-11 Pressure Transducer

How to Remove the Pressure Transducer

Note: Calibrating the platform overload system is not required if the pressure transducer is the only component replaced on the machine lift structure.

In the event of frequent nuisance trips occurring after a pressure transducer is replaced, a no load calibration is recommended. Refer to Repair Procedure, *How to Calibrate the Platform Overload System.*

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 GS-4655: Raise the platform approximately 13 feet / 4 m.

All other models: Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

3 GS-1432m, GS-1932m: Raise the safety arm from the drive chassis to a vertical position.

All other models: Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

4 Lower the platform onto the safety arm.

5 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

6 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

Scissor Components

7 Pull the manual lowering cable and hold for 3 seconds.

8 Tag and disconnect the three-pin connector from the pressure transducer harness.

9 Slowly loosen the pressure transducer from the lift cylinder and remove. Discard the pressure transducer.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

10 Connect the battery pack to the machine.

11 Turn the key switch to ground controls.

12 Press and hold the ground control scroll up and scroll down buttons.

13 Pull out the red Emergency Stop button to the on position at the ground controls.

14 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

Note: The machine must be in Service Override Mode to raise the platform. While in Service Override Mode, only the GCON will operate with limited functionality. The platform will raise a predetermined amount of time and stop.

15 Raise the platform and rotate the safety arm to the stowed position.

16 Fully lower the platform to the stowed position.

Torque specifications	
Pressure transducer	27 ft-lbs 37 Nm

7-12 Load Cell Module - GS-32, GS-46 Models

How to Remove the Load Cell Module

Note: Calibrating the platform overload system is not required if the pressure transducer is the only component replaced on the machine lift structure. Refer to Repair Procedure, *How to Calibrate the Platform Overload System*.

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both ground and platform controls.

2 Raise the platform 7 to 9 feet / 2.1 to 2.8 m.

3 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

4 Lower the platform onto the safety arm.

5 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

6 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

7 Pull the manual lowering cable and hold for 3 seconds.

8 Tag and disconnect the four-pin connector from the load cell module harness.

9 Tag and disconnect the wires from the load cell module.

10 Remove the fasteners securing the load cell module to number 3 inner arm. Remove the load cell module from the machine.

11 Connect the battery pack to the machine.

12 Turn the key switch to ground controls.

13 Press and hold the ground control scroll up and scroll down buttons.

14 Pull out the red Emergency Stop button to the on position at the ground controls.

15 Using the ground control menu buttons, navigate to Service Override Mode. Select Service Override Mode.

Note: The machine must be in Service Override Mode to raise the platform. While in Service Override Mode, only the GCON will operate with limited functionality. The platform will raise a predetermined amount of time and stop.

16 Raise the platform and rotate the safety arm to the stowed position.

17 Fully lower the platform to the stowed position.

7-13 Platform Overload System - Models with Hydraulic Lift

How to Calibrate the Platform Overload System

Note: Perform this procedure with the machine on a firm, level surface that is free of overhead obstructions.

Note: Perform this procedure with all weight, tools, equipment and personnel removed from the platform.

Note: Perform this procedure after confirming that the platform height sensor is not damaged and functions correctly.

Perform this procedure in an environment that allows the platform to be fully raised. Models rated for indoor use only, should be calibrated inside a facility with enough ceiling height to fully raise the platform. If the facility height is not suitable to fully raise the platform, then an indoor only rated model may be calibrated outdoors only under the following conditions.

- Wind speeds are less then 28 mph / 12.5 m/s.
- Extension deck is fully retracted.
- Only use flat weights secured to the platform while calibrating indoor only rated machines outdoors.

⚠ DANGER Tip-over hazard. Calibrating the machine outdoors with full height rated for indoor use selected will result in death or serious injury if proper operating procedures and safety precautions are not followed. Do not use this mode if you are not trained and familiar with the operating envelope of the machine for outdoor calibration.

Scissor Components

If a new Ground Controller is installed on a machine, the Full Load Calibration procedure is required to maintain rated load platform capacity. If a No Load Calibration is performed, machine lifting performance will be significantly reduced.

The ambient temperature must be above 32°F / 0°C before calibrating the Platform Overload System.

GS-1432m, GS-1932m, GS-4655:

There are two options to the platform overload calibration procedure, Full Load Calibration and No Load Calibration.

GS-1932, GS-2632, GS-3232, GS-2646, GS-3246, GS-4046:

There are three options to the platform overload calibration procedure, Full Load Calibration. No Load Calibration and No Lift Calibration.

Full Load Calibration has two steps requiring calibration with and without rated load in the platform. No Load Calibration does not require rated load in the platform.

Note: No Load Calibration can be completed stand alone to fulfill the C-2 overload calibration requirements, if the machine has completed the Full Load Calibration procedure.

Note: To calibrate the platform overload system, follow the menu structure indicated on the ground control LCD display.

Full Load Calibration: Part 1

1 Fully charge the batteries and check the hydraulic fluid level.

Note: The hydraulic fluid level must be between the FULL and ADD marks on the hydraulic tank.

2 Apply a thin layer of dry film lubricant to the area of the chassis where the scissor arm wear pads make contact.

3 Chock both sides of the wheels at the steer end of the machine.

4 Place the maximum rated load in the platform. Secure the load to the platform.

GS-1432m, GS-1932m, GS-1932, GS-2632, GS-3232	500 lbs / 227 kg
GS-2646	1000 lbs / 454 kg
GS-3246, GS-4046	700 lbs / 317 kg
GS-4655	770 lbs / 350 kg

Note: In the event of frequent nuisance trips occurring after calibrating a GS-3232 machine, it is recommended to recalibrate the machine, full load and no load, with 250 kg of weight in the platform.

5 Turn the key switch to ground controls.

6 At the ground controls, press and hold the Menu Up and Menu Down buttons.

7 While pressing both buttons down, pull out the red Emergency Stop Button.

8 Release the Menu Up and Menu Down buttons after the ground controller powers up.

9 Press the Menu Up or Menu Down buttons to scroll to, Select Option. Press the Enter button.

10 Press the Menu Up or Menu Down buttons to scroll to Platform Overload. Press the Enter button.

11 Press the Menu Up or Menu Down buttons to scroll to Platform Overload Calibrate. Press the Enter button.

12 Confirm the Platform Overload Calibrate selection by pressing the Enter button again.

13 Press the Menu Up or Menu Down buttons to select Full Load calibration. Press the Enter button.

14 Press the Enter button to confirm rated load is in the platform.

15 At the ground controls, press and hold the Function Enable and Platform Up buttons until the platform reaches maximum height.

16 GS-4046: Press and hold the Menu Enter button to determine the maximum height. The machine will lower for 1.2 seconds and then raise in 1.2 second durations, until maximum height is reached. When the platform reaches the maximum height, a message will appear on the LCD screen to release the Menu Enter button.

Note: Do not release the Menu Enter button before the message appears on the LCD screen.

All other models: When the platform reaches maximum height, press the ground controls Enter button. Allow the ground controls to gather data.

17 When prompted, press and hold the Function Enable and Platform Down buttons. The platform will lower, then automatically stop at a predetermined point to gather data. Allow the ground controls to gather data.

18 Continue pressing the Function Enable and Platform Down buttons throughout the lowering and data gathering sequence. The machine will stop to gather data and lower several times before the machine reaches the stowed position. When the platform reaches the stowed position. Press the enter button.

Note: GS-2632, GS-2646, GS-4046 models, continue to step 21.

Note: All other models, continue with step 19.

19 When prompted, press and hold the Function Enable and Platform Up buttons until the platform reaches full height. When the platform reaches full height, press the enter button.

Note: If the Function Enable or Platform Up buttons are released while the machine is collecting data, the GCON LCD will prompt the user to lower the platform for 5 seconds before prompting to raise the platform to full height again.

20 When prompted, press and hold the Function Enable and Platform Down buttons until the platform is fully stowed. When the platform reaches the stowed position, press the enter button.

Note: If the Function Enable or Platform Down buttons are released while the machine is collecting data, the GCON LCD will prompt the user to raise the platform for 5 seconds before prompting to lower the platform to the stowed position again.

Note: If the machine is switched to PCON mode to drive the machine to an area for weight removal, step 3 and steps 5 through 14 will have to be repeated before Full Load Calibration: Part 2 is performed. Additionally, the CO25 fault will appear. This is expected and the data collected in Full Load Calibration: Part 1 has not been lost.

21 Using a suitable lifting device, remove all test weights from the platform.

22 After the weight is removed from the platform deck, press the Enter button to confirm the weight has been removed.

Scissor Components

Full Load Calibration: Part 2

23 At the ground controls, press and hold the Function Enable and Platform Up buttons until the platform reaches maximum height.

24 GS-4046: Press and hold the Menu Enter button to determine the maximum height. The machine will lower for 1.2 seconds and then raise in 1.2 second durations, until maximum height is reached. When the platform reaches the maximum height, a message will appear on the LCD screen to release the Menu Enter button.

All other models: When the platform reaches maximum height, press the Enter button. Allow the ground controls to gather data.

Note: If at any point the Menu Enter button is released before the message appears on the LCD screen, the calibration procedure will restart at step 26.

25 When prompted, press and hold the Function Enable and Platform Down buttons to lower the platform. The platform will move down, then automatically stop at a predetermined point to gather data. Allow the ground controls to gather data.

26 Continue pressing the Function Enable and Platform Down buttons throughout the lowering and data gathering sequence. The machine will stop to gather data and lower several times before the machine reaches the stowed position. When the platform reaches the stowed position, press the Enter button.

Note: GS-2646, GS-4046 models, continue to step 32.

Note: All other models, continue with step 30.

27 When prompted, press and hold the Function Enable and Platform Up buttons until the platform reaches full height. When the platform reaches full height, press the enter button.

Note: If the Function Enable or Platform Up buttons are released while the machine is collecting data, the GCON LCD will prompt the user to lower the platform for 5 seconds before prompting to raise the platform to full height again.

28 When prompted, press and hold the Function Enable and Platform Down buttons until the platform is fully stowed. When the platform reaches the stowed position, press the enter button.

Note: If the Function Enable or Platform Down buttons are released while the machine is collecting data, the GCON LCD will prompt the user to raise the platform for 5 seconds before prompting to lower the platform to the stowed position again.

29 When prompted, push the red Emergency Stop button in to complete the Platform Overload Calibration procedure.

No Load Calibration

30 Fully charge the batteries and check the hydraulic fluid level.

Note: The hydraulic fluid level must be between the FULL and ADD marks on the hydraulic tank.

31 Apply a thin layer of dry film lubricant to the area of the chassis where the scissor arm wear pads make contact.

32 Chock both sides of the wheels at the steer end of the machine.

33 Turn the key switch to ground controls.

34 At the ground controls, press and hold the Menu Up and Menu Down buttons.

35 While pressing both buttons down, pull out the red Emergency Stop Button.

36 Release the Menu Up and Menu Down buttons after the ground controller powers up.

37 Press the Menu Up or Menu Down buttons to scroll to, Select Option. Press the Enter button.

38 Press the Menu Up or Menu Down buttons to scroll to Platform Overload. Press the Enter button.

39 Press the Menu Up or Menu Down buttons to scroll to Platform Overload Calibrate. Press the Enter button.

40 Confirm the Platform Overload Calibrate selection by pressing the Enter button again.

41 Press the Menu Up or Menu Down buttons to select No Load calibration. Press the Enter button.

42 Press the Enter button to confirm no load is in the platform.

43 At the ground controls, press and hold the Function Enable and Platform Up buttons until the platform reaches maximum height.

44 GS-4046: Press and hold the Menu Enter button to determine the maximum height. The machine will lower for 1.2 seconds and then raise in 1.2 second durations, until maximum height is reached. When the platform reaches the maximum height, a message will appear on the LCD screen to release the Menu Enter button.

Note: Do not release the Menu Enter button before the message appears on the LCD screen.

All other models: When the platform reaches maximum height, press the ground controls Enter button. Allow the ground controls to gather data.

45 When prompted, press and hold the Function Enable and Platform Down buttons. The platform will lower, then automatically stop at a predetermined point to gather data. Allow the ground controls to gather data.

46 Continue pressing the Function Enable and Platform Down buttons throughout the lowering and data gathering sequence. The machine will stop to gather data and lower several times before the machine reaches the stowed position. When the platform reaches the stowed position. Press the enter button.

Note: GS-2646, GS-4046 models, continue to step 49.

Note: All other models, continue with step 47.

Scissor Components

47 When prompted, press and hold the Function Enable and Platform Up buttons until the platform reaches full height. When the platform reaches full height, press the enter button.

Note: If the Function Enable or Platform Up buttons are released while the machine is collecting data, the GCON LCD will prompt the user to lower the platform for 5 seconds before prompting to raise the platform to full height again.

48 When prompted, press and hold the Function Enable and Platform Down buttons until the platform is fully stowed. When the platform reaches the stowed position, press the enter button.

Note: If the Function Enable or Platform Down buttons are released while the machine is collecting data, the GCON LCD will prompt the user to raise the platform for 5 seconds before prompting to lower the platform to the stowed position again.

49 When prompted, push the red Emergency Stop button in to complete the No Load Calibration procedure.

No Lift Calibration

50 Fully charge the batteries and check the hydraulic fluid level.

Note: The hydraulic fluid level must be between the FULL and ADD marks on the hydraulic tank.

51 Turn the key switch to ground controls.

52 At the ground controls, press and hold the Menu Up and Menu Down buttons.

53 While pressing both buttons down, pull out the red Emergency Stop Button.

54 Release the Menu Up and Menu Down buttons after the ground controller powers up.

55 Press the Menu Up or Menu Down buttons to scroll to, Select Option. Press the Enter button.

56 Press the Menu Up or Menu Down buttons to scroll to Platform Overload. Press the Enter button.

57 Press the Menu Up or Menu Down buttons to scroll to Platform Overload Calibrate. Press the Enter button.

58 Confirm the Platform Overload Calibrate selection by pressing the Enter button again.

59 Press the Menu Up or Menu Down buttons to select No Lift calibration. Press the Enter button.

60 Press the Enter button to confirm no load is in the platform.

61 Press the Enter button again and cycle the red Emergency Stop Button off and back on to complete calibration.

7-14 Platform Overload System - Models with Electric Lift

How to Calibrate the Platform Overload System

Note: Perform this procedure with the machine on a firm, level surface that is free of overhead obstructions.

Note: Perform this procedure with all weight, tools, equipment and personnel removed from the platform.

Note: Perform this procedure after confirming that the platform height sensor is not damaged and functions correctly.

Perform this procedure in an environment that allows the platform to be fully raised. Models rated for indoor use only, should be calibrated inside a facility with enough ceiling height to fully raise the platform. If the facility height is not suitable to fully raise the platform, then an indoor only rated model may be calibrated outdoors only under the following conditions.

- Wind speeds are less then 28 mph / 12.5 m/s.
- Extension deck is fully retracted.
- Only use flat weights secured to the platform while calibrating indoor only rated machines outdoors.

⚠ DANGER Tip-over hazard. Calibrating the machine outdoors with full height rated for indoor use selected will result in death or serious injury if proper operating procedures and safety precautions are not followed. Do not use this mode if you are not trained and familiar with the operating envelope of the machine for outdoor calibration.

If a new Ground Controller is installed on a machine, the Full Load Calibration procedure is required to maintain rated load platform capacity. If a No Load Calibration is performed, machine lifting performance will be significantly reduced.

The ambient temperature must be above 32°F / 0°C before calibrating the Platform Overload System.

There are two options to the platform overload calibration procedure in this section, Full Load Calibration and No Load Calibration. Full Load Calibration has two steps requiring calibration with and without rated load in the platform. No Load Calibration does not require rated load in the platform.

Note: No Load Calibration can be completed stand alone to fulfill the C-2 overload calibration requirements, if the machine has completed the Full Load Calibration procedure.

Note: To calibrate the platform overload system, follow the menu structure indicated on the ground control LCD display.

Scissor Components

7-15 Outdoor Height Limiting

How to Calibrate the Outdoor Height Limiting

Note: This procedure does not apply to the following Australian models: GS-1932m, GS-1932, GS-2646, GS-3246

Note: Perform this procedure with the machine on a firm, level surface.

Note: Perform this procedure in an area that is free of overhead obstructions.

Note: Use the following chart to identify the description of each LCD screen control button used in this procedure.

escape button | scroll up button | scroll down button | enter button

All Models:

1 Attach the end of a 50 ft / 15 m measuring tape to the side of the platform deck.

2 Turn the key switch to the ground controls position and pull out the red Emergency Stop button to the on position at the platform controls.

3 Press and hold the ground control scroll up and scroll down buttons.

4 Pull out the red Emergency Stop button to the on position at the ground controls.

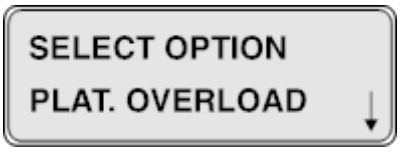
⊙ Result: The ground control LCD display will show the following.

5 Press the **scroll down** button.

⊙ Result: The ground control LCD display will show the following.

6 Press the **enter** button.

⊙ Result: The ground control LCD display will show the following.



7 Use the scroll down button to scroll to **OHL CALIBRATION**. Press the **enter** button.

8 **GS-3232 with hydraulic lift:**

When the LCD displays **Raise to Outdoor on Wheel Limit**, press the **enter** button.

When the LCD displays **Raise to Outrigger OHL**, press the **enter** button.

When the LCD displays **Raise to Indoor on Wheel Limit**, press the **enter** button.

All other models with hydraulic lift:

When the LCD displays **RAISE TO OUTDOOR HEIGHT LIMIT**, press the **enter** button.

Scissor Components

Models with electric lift:

Note: Perform this procedure on a firm, level surface with the machine in the stowed position.

Note: The weight in the platform must be less than 23 kg.

Scroll up and down button then cycle the red Emergency Stop button on.

When the LCD displays **GCON** menu, press the **enter** button.

When the LCD displays **OPTION**, press the **enter** button.

When the LCD displays **Max Height Calibration**, press the **enter** button.

When the LCD displays **OUTDOOR HEIGHT LIMIT**, press the **enter** button.

When the LCD displays **MAX HEIGHT LIMIT**, press the **enter** button.

When the LCD displays **Cal Complete**, cycle the red Emergency Stop button off, then back on.

Lower the platform to the stowed position.

All Models:

9 Verify the distance from the surface to the platform deck is appropriate for your machine.

10 When the LCD displays **Cal Complete**, cycle the red Emergency Stop button off, then back on.

11 Lower the platform to the stowed position.

Model	Height, platform maximum	Model	Height, platform maximum
GS-1432m	12 ft 3.66 m	**GS-2646**	19 ft 8 in 5.99 m
GS-1932m	15 ft 4.57 m	**GS-3246**	22 ft 6.71 m
GS-1932	14 ft 8 in 4.47 m	**GS-4046**	23 ft 7 m
GS-2632	19 ft 5.79 m	**GS-4655**	21 ft 6 in 6.55 m
GS-3232			
Outdoor height on wheels			15 ft 9 in 4.8 m
Outdoor height, outriggers extended			18 ft 5.5 m
Indoor height on wheels			22 ft 6.71 m

Platform Components

8-1 Platform

How to Remove the Platform - GS-1432m, GS-1932m

Perform this procedure with the platform extension fully retracted and locked in position.

Note: Perform this procedure with all external AC power disconnected from the machine.

1 Raise the platform to approximately 3 ft / 1 m.

2 Remove the retaining fasteners securing the platform to the platform mount at the steer end of the machine.

3 Lower the platform to the stowed position.

4 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

5 Disconnect the platform controls from the control cable at the platform.

6 Remove the cover from the AC outlet. Tag and disconnect the wiring from the outlet.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

7 Disconnect the wiring from the platform and pull the wiring free of the platform.

Models with air line to platform option: Disconnect the air line from the platform. Pull the air line free of the platform.

8 Attach straps from an overhead supporting device to the lanyard anchorage points on the platform railings at the non-steer end of the machine. Apply slight lifting pressure.

9 Remove the pivot pins securing the platform to the scissor assembly.

10 Attach straps from an overhead supporting device to the lanyard anchorage points on the platform railings at the steer end of the machine.

⚠WARNING Crushing hazard. The platform will fall if not properly supported.

11 Apply just enough lifting pressure to separate the slide wear pads from the platform.

12 Carefully rotate the platform approximately 30° in either direction.

13 Carefully lift the platform off of the machine and place it on a structure capable of supporting it.

Note: Take notice of the wear pad position before the platform is removed. Correct wear pad position is essential for proper platform functionality.

How to Remove the Platform - All other models

Perform this procedure with the platform extension fully retracted and locked in position.

1 Raise the platform to approximately 3 ft / 1 m.

2 Remove the retaining fasteners securing the platform to the platform mount at the steer end of the machine.

3 Lower the platform to the stowed position.

4 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

5 Disconnect the platform controls from the control cable at the platform.

6 Remove the cover from the AC outlet. Tag and disconnect the wiring from the outlet.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

7 Disconnect the wiring from the platform and pull the wiring free of the platform.

8 Models with air line to platform option: Disconnect the air line from the platform. Pull the air line free of the platform.

9 Support the platform with a forklift at the non-steer end. Do not apply any lifting pressure.

10 Attach a strap from the lanyard anchorage point on the platform railings to the carriage on the forklift to help support the platform.

11 **GS-4655:** Lift the steer end of the platform slightly to clear the platform mount and slide the platform towards the steer end of the machine until the platform slide blocks at the non-steer end of the machine are visible through the access holes in the bottom of the platform.

All other models: Lift the steer end of the platform slightly to clear the platform mount and slide the platform towards the non-steer end of the machine until the platform slide blocks at the non-steer end of the machine are visible through the access holes in the bottom of the platform.

⚠WARNING Crushing hazard. The platform will fall if not properly supported.

12 Carefully lift the platform off of the machine and place it on a structure capable of supporting it.

Note: Take notice of the wear pad position before the platform is removed. Correct wear pad position is essential for proper platform functionality.

Platform Components

8-2
Platform Extension Deck

How to Remove the Platform Extension Deck

1 Lower the platform to the stowed position.

2 GS-4655: Fully extend the platform extension deck.

All other models: Extend the platform approximately 3 ft / 1 m.

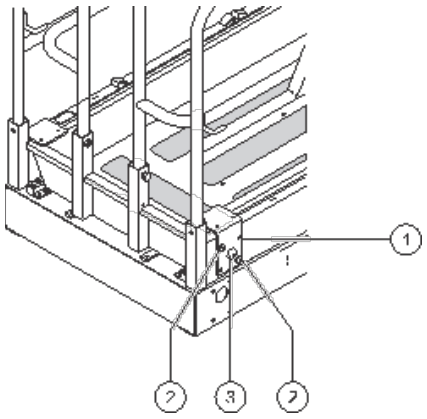
3 Remove the platform controls from the platform.

4 Support the platform extension with a forklift at the steer end of the machine. Do not apply any lifting pressure.

5 Attach a strap from the platform extension railings to the carriage on the forklift to help support the platform extension.

6 GS-1432m / 1932m / 4655: Remove the fasteners from each platform extension roller bracket assembly at the non-steer end of the machine. Remove each assembly from the machine.

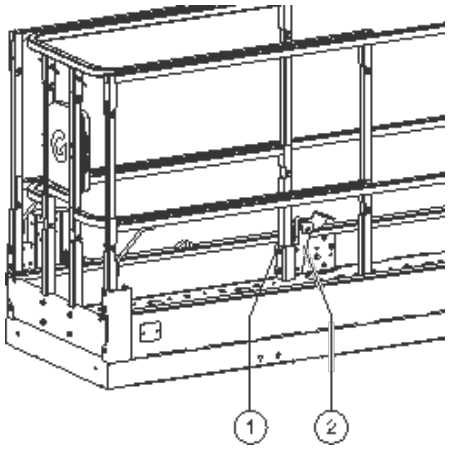
Note: Do not remove the platform roller bolt.



GS-1432m, GS-1932m, GS-4655

1 roller bracket assembly
2 retaining fasteners
3 platform roller bolt

All other models: Remove the fasteners securing the foot pedal assembly. Remove the foot switch assembly.



All other models

1 retaining fasteners
2 foot pedal assembly

7 Carefully slide the platform extension out from the platform and place it on a structure capable of supporting it.

How to Replace the Platform Extension Deck Wear Pads

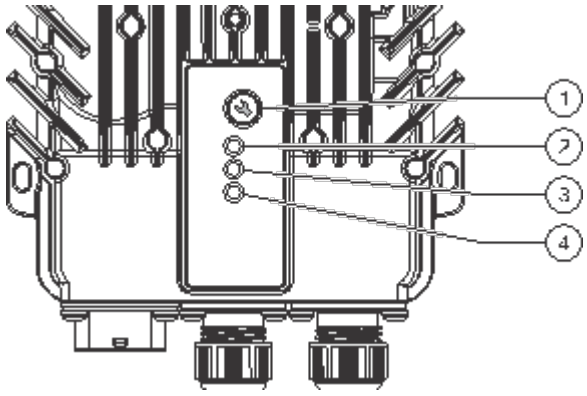
1 Remove the Platform Extension Deck. Refer to Repair Procedure, *How to Remove the Platform Extension*.

2 Drill out the rivets which hold the wear pads in place.

3 Install the new wear pads using new rivets. When installing the new rivets, make sure the rivet heads are not above the surface of the wear pad.

9-1
Battery Charger

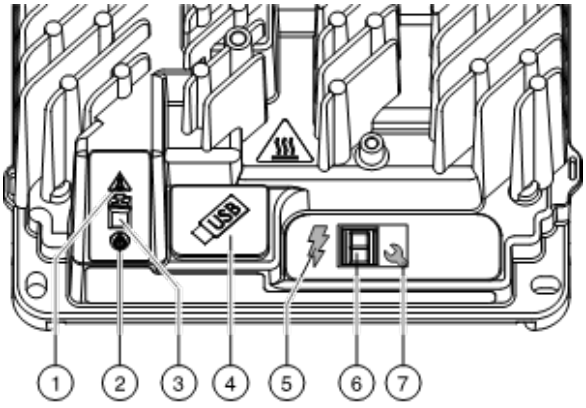
The charger contains selectable charging profiles stored in its internal memory to charge batteries. These profiles are specific to each battery type. The charging profile must be programmed to match the specific battery type on the machine.



Charger status indicators

GS-1432m, GS-1932m

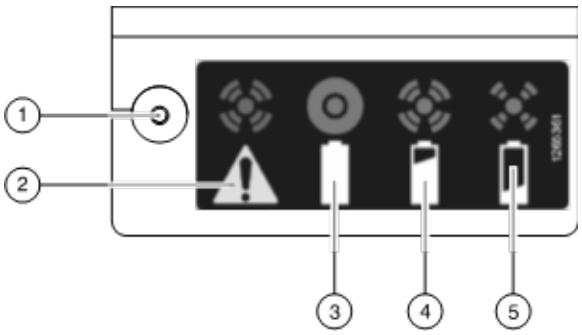
1 Charge profile selection button
2 Battery charging indicator
3 Error / Fault indicator
4 AC power indicator



Charger status indicators

All other models

1 Error / Fault / USB indicator
2 AC power indicator
3 Battery charging indicator
4 USB port
5 Charging output indicator
6 Charger profile / Error display
7 Charge profile selection button



Remote charger status indicators

1 Error / Fault / USB indicator
2 Error / Fault
3 Charge complete
4 Charging, high state of charge
5 Charging, low state of charge

Battery Charger

Selecting a Charge Profile

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

1 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

2 Open the battery compartment.

3 Press and hold the charge profile selection button and plug the battery charger into an AC power source. Continue to hold the button until the amber error indicator is on and the green charging indicator light is flashing. Release the button.

4 Press and release the charge profile selection button to navigate to the charge profile appropriate for your machine and battery type. Refer to the chart below.

Profile	Description
P001	Flooded lead acid batteries - Temperature compensated * (does not include GS-4046, GS-4655)
P003	Flooded lead acid batteries - Not temperature compensated ** (does not include GS-4046, GS-4655)
P007	GS-4046, GS-4655 Flooded lead acid batteries - Not temperature compensated **
P316	GS32 / GS46 models AGM batteries Temperature compensated*
P341	GS32 / GS46 models Lithium battery Not temperature compensated

* Temperature compensated: Battery temperature sensor has been installed on the machine.

** Not temperature compensated: Battery temperature sensor has not been installed on the machine.

5 Press and hold the charge profile selection button until the error indicator and charging indicator lights turn off and the AC status indicator light turns on to confirm selection and exit charge profile mode. Release the button.

Note: Charge profile mode will time out and exit if there is 15 seconds of inactivity, the charge profile number has been displayed three times or the AC power source had been disconnected.

6 Press and release the charge profile selection button to confirm the correct charge profile has been selected.

10-1
Drive Motor Power Cables

How to Replace a Drive Motor Power Cable

Note: Perform this procedure on a firm, level surface with the machine in the stowed position.

Note: Perform this procedure with all external AC power disconnected from the machine.

1 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

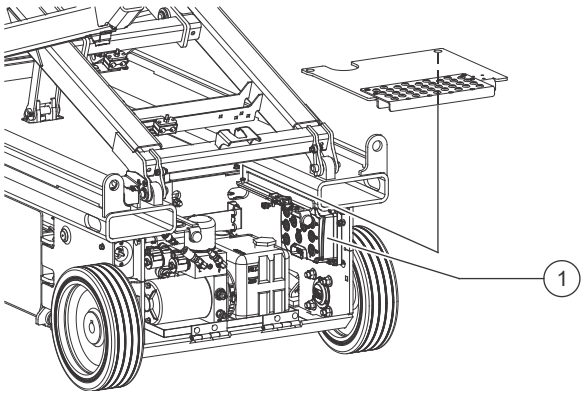
2 Steer the machine in the direction of the drive motor power cable to be replaced.

3 At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position.

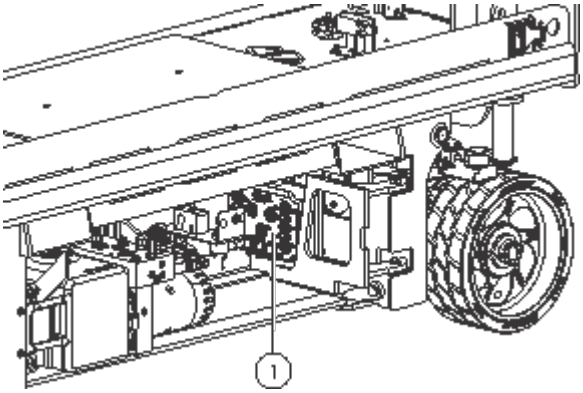
4 Disconnect the battery pack from the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

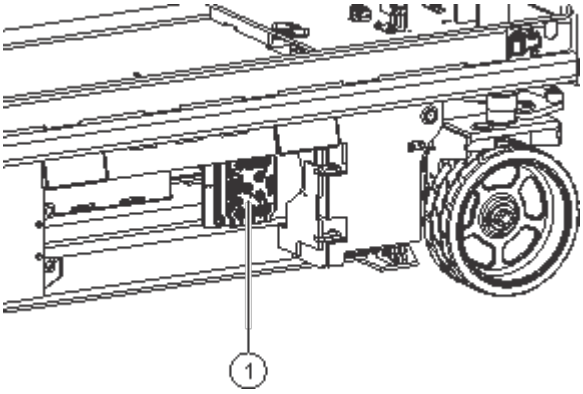
5 Locate the motor controller on the machine.



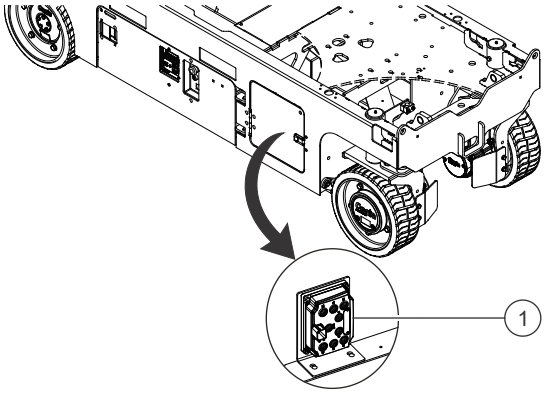
GS-1432m, GS-1932m



GS-1932



GS-2632/3232, GS-2646/3246/4046



GS-4655

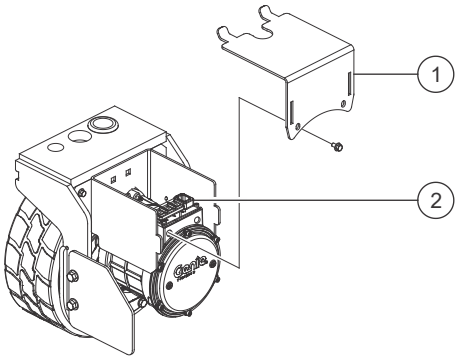
1 motor controller

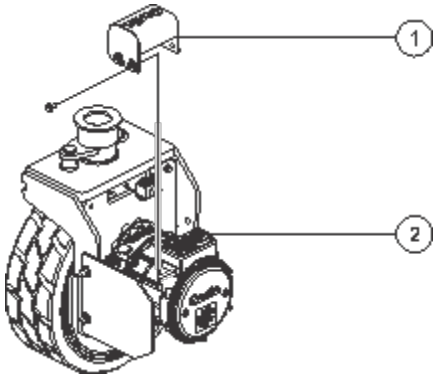
Power Cables

6 Disconnect the power cable to be replaced from the motor controller.

7 Remove all cable ties and clamps securing the power cable between the motor controller and drive motor. Note the location of the cable ties.

8 Remove the terminal cover from the drive motor.





1 terminal cover
2 drive motor cable terminal

9 Disconnect the power cable from the drive motor.

10 Remove the power cable from the machine.

11 Lay the replacement power cable on the surface in a straight line at the steer end of the machine so there are no bends or twist.

12 Route the power cable into the chassis to the motor controller.

Note: Verify the cable is not being twisted while routing through the chassis.

13 Connect the power cable to the drive motor.

14 Install the terminal cover to the drive motor.

15 Install all cable clamps securing the power cable to the chassis.

Note: The routing line on the power cable must be aligned with the top center of the cable clamp during installation.

Note: Refer to, *Cable Routing Diagram*.

16 Secure the power cable using cable ties.

Note: Verify the cable is straight and does not rub on any metal edges.

17 Connect the power cable to the motor controller.

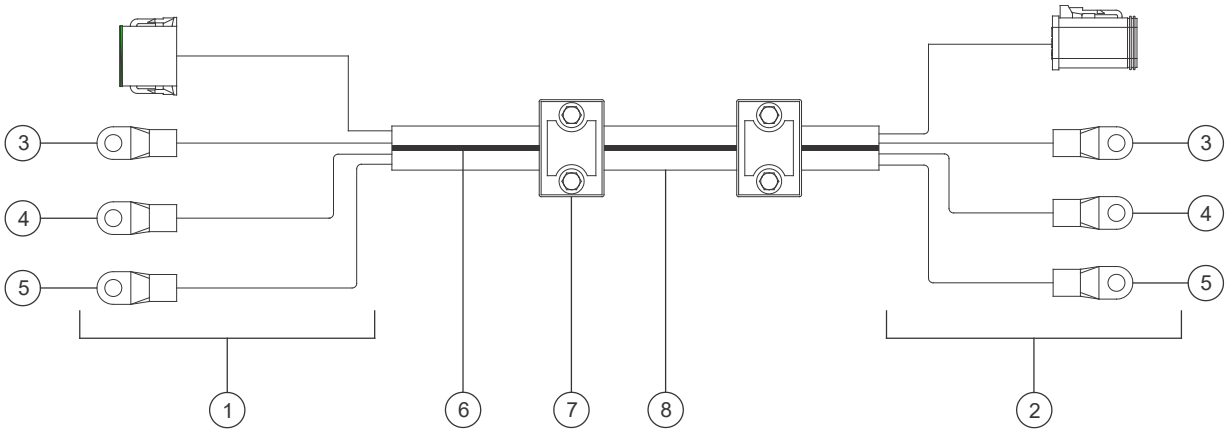
18 Connect the battery pack to the machine.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

19 Fully steer the machine in both directions and verify the power cable does not get pinched or rub.

Note: Repeat this procedure if the other power cable is being replaced.

Power Cable Diagram



1 motor controller
2 drive motor
3 terminal "U", green
4 terminal "V", black
5 terminal "W", white
6 routing line
7 clamp
8 power cable

Diagnostics

Observe and Obey:

☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine

☑ Immediately tag and remove from service a damaged or malfunctioning machine.

☑ Repair any machine damage or malfunction before operating the machine.

☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:

- Machine parked on a firm, level surface
- Platform in the stowed position
- Key switch in the off position with the key removed
- The red Emergency Stop button in the off position at both ground and platform controls
- Wheels chocked
- All external AC power supply disconnected from the machine

Before Troubleshooting:

☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.

☑ Be sure that all necessary tools and test equipment are available and ready for use.

☑ Read each appropriate fault code thoroughly. Attempting short cuts may produce hazardous conditions.

☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

⚠DANGER Crushing hazard. When testing or replacing any hydraulic component, always support the structure and secure it from movement

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

About This Section

When a malfunction is discovered, the fault code charts in this section will help a service professional pinpoint the cause of the problem. To use this section, basic hand tools and certain pieces of test equipment are required — voltmeter, ohmmeter, pressure gauges.

Definitions

GSDS – Genie SmartLink™ Diagnostic System

ECM – Electronic Control Module

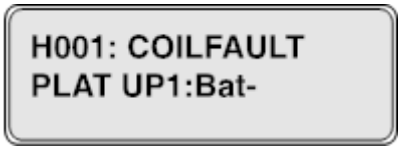
GCON – Ground Controls

PCON – Platform Controls

OIC – Operational Indicator Codes

DTC – Diagnostic Trouble Codes

GCON LCD Diagnostic Readout



The diagnostic readout displays alpha numeric codes that provide information about the machine operating status and about malfunctions.

The codes listed in the Diagnostic Trouble Code Charts describe malfunctions and can aid in troubleshooting the machine by pinpointing the area or component affected.

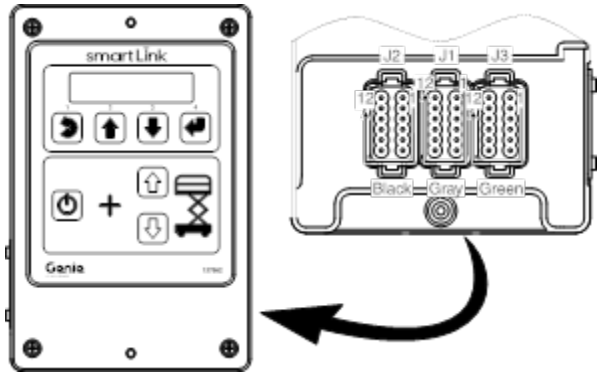
Models are listed below each code to assist in the troubleshooting codes for a specific model.

Genie® SmartLink™ Diagnostic System

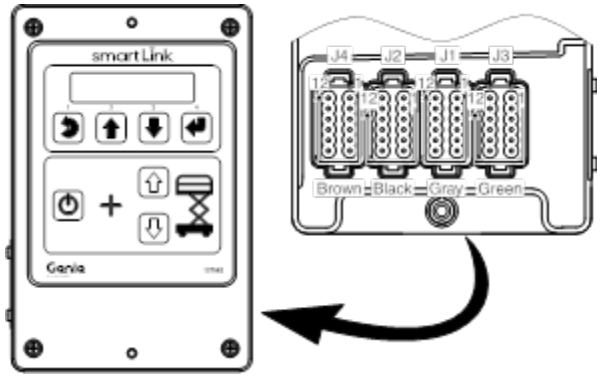
This machine is equipped with the Genie SmartLink™ Diagnostic System (GSDS). The GSDS indicates a machine malfunction has happened by displaying Operational Indicator Codes (OIC) and Diagnostic Trouble Codes (DTC). These codes are displayed at the Platform Controls and the Ground Controls. The Ground Controls will display a brief description of the code at the LCD display as well. Refer to the GCON I/O Maps, Operational Indicator Codes (OIC) and Diagnostic Trouble Codes (DTC) in this section, to assist in troubleshooting faults.

Diagnostics

GCON ECM Connector Layout



Rear of Ground Controls ECM (models without outriggers)



Rear of Ground Controls ECM (models with outriggers)

GCON I/O Map - Models without outriggers			
Pin number	**Circuit function**	**I/O Type**	**Wire color**
J1 – Grey			
J1-01	Power, ECM	Power Input	Red
J1-02	Power, PCON	Power Output	Red
J1-03	Emergency stop, PCON	Power Input	White
J1-04	CAN High, PCON	Data Bus	Yellow
J1-05	CAN Low, PCON	Data Bus	Green
J1-06	Ground, PCON	Ground Output	Brown
J1-07	Ground, ECM	Ground Input	Brown
J1-08	Key switch, PCON	Digital Input	Black
J1-09	Key switch, GCON	Digital Input	White
J1-10	Emergency stop, GCON	Digital Input	White / Black
J1-11	Contact Alarm	Digital Input	Black
J1-12	Power, ECM Driver	Power Input	Red
J2 – Black			
J2-01	Platform up coil	Digital Output	Orange
J2-02	Platform down coil	Digital Output	Orange / Black
J2-03	Steer left coil	Digital Output	Blue / Black
J2-04	Steer right coil	Digital Output	Blue
J2-05	Damper cylinder coil	Digital Output	Red
J2-06	BMS discharge	Digital Output	Red
J2-07	Not used	---	---
J2-08	Telematics function enable	Digital Output	Green / White
J2-09	Not used	---	---
J2-10	Not used	---	---
J2-11	Not used	---	---
J2-12	Not used	---	---
J3 – Green			
J3-01	Flashing beacon, PWM	Digital Output	Red / Black
J3-02	Alarm, GCON	Digital Output	Blue
J3-03	Sensor power	Digital Output	Red
J3-04	Automotive horn	Digital Output	White
J3-05	Pothole limit switch	Digital Input	Orange / Red
J3-06	Ground - GS32 models	Ground Input	Brown
J3-06	Sensor power - GS46 models	Digital Output	Red
J3-07	Down limit switch	Digital Input	Orange
J3-08	Brake release	Digital Input	White / Red
J3-09	Pressure transducer	Ground Input	Blue / White
J3-10	Platform height sensor	Ground Input	Orange / White
J3-11	Not used	---	---
J3-12	Sensor ground	Ground Input	Black

Diagnostics

GCON I/O Map - Models with outriggers			
Pin number	**Circuit function**	**I/O Type**	**Wire color**
J1 – Grey			
J1-01	Power, ECM	Power Input	Red
J1-02	Power, PCON	Power Output	Red
J1-03	Emergency stop, PCON	Power Input	White
J1-04	CAN High, PCON	Data Bus	Yellow
J1-05	CAN Low, PCON	Data Bus	Green
J1-06	Ground, PCON	Ground Output	Brown
J1-07	Ground, GCON	Ground Input	Brown
J1-08	Key switch, PCON	Digital Input	Black
J1-09	Key switch, GCON	Digital Input	White
J1-10	Emergency stop, GCON	Digital Input	White / Black
J1-11	Contact Alarm	Digital Input	Black
J1-12	Power, ECM Driver	Power Input	Red
J2 – Black			
J2-01	Platform up coil	Digital Output	Orange
J2-02	Platform down coil	Digital Output	Orange / Black
J2-03	Steer left coil	Digital Output	Blue / Black
J2-04	Steer right coil	Digital Output	Blue
J2-05	Damper cylinder coil	Digital Output	White
J2-06	Lithium discharge	Digital Output	White / Red
J2-07	Not used	---	---
J2-08	Motor controller enable	Digital Output	Green / White
J2-09	Enable coil	Digital Output	Green
J2-10	Not used	---	---
J2-11	Not used	---	---
J2-12	Not used	---	---

GCON I/O Map - Models with outriggers, (continued)			
Pin number	**Circuit function**	**I/O Type**	**Wire color**
J3 – Green			
J3-01	Flashing beacon. PWM	Digital Output	Red / Black
J3-02	Alarm, GCON	Digital Output	Blue
J3-03	Sensor power	Digital Output	Red
J3-04	Ground	Ground Output	Brown
J3-05	Pothole limit switch	Digital Input	Orange / Red
J3-06	Not used	---	---
J3-07	Down limit switch	Digital Input	Orange
J3-08	Brake release	Digital Input	White / Red
J3-09	Pressure transducer	Ground Input	Blue / White
J3-10	Platform height sensor	Ground Input	Orange / White
J3-11	Not used	---	---
J3-12	Sensor ground	Ground Input	Black
J4 – Brown			
J4-01	Left front outrigger limit switch	Digital Input	White
J4-02	Right front outrigger limit switch	Digital Input	Orange
J4-03	Left rear outrigger limit switch	Digital Input	Blue
J4-04	Right rear outrigger limit switch	Digital Input	Green
J4-05	Not used	---	---
J4-06	Not used	---	---
J4-07	Left front outrigger coil	Digital Output	Red / White
J4-08	Right front outrigger coil	Digital Output	Orange / White
J4-09	Left rear outrigger coil	Digital Output	Blue / White
J4-10	Right rear outrigger coil	Digital Output	Green / White
J4-11	Outrigger extend coil	Digital Output	Green
J4-12	Outrigger retract coil	Digital Output	Green / Black

Diagnostics

Operational Indicator Codes (OIC)

These codes are generated by the electrical system to indicate machine operating status. During normal operation a code will appear in the platform controls LED readout if a condition such as off-level, overload cutout, chassis mode operation or pothole guards stuck occurs. These codes are not indicators of a device malfunction in the electrical system.

Code	Condition
LL	Off-Level
OL	Platform Overload
CH	Chassis Mode Operation
PHS	Pothole Guard Stuck
nd	No Drive (option)
HEAt	Battery Heating
Ld	Lifting Disabled
CHrg	Charger Interlock (option)
LoHt	Lift Height Limited (CE / AS models)
FLHt	Limited Lift Height Cleared
ObS	Obstruction (option)
br	Brake release by manual
OHL	Outdoor Height Restriction

Note: The **Ld** Operation Indicator Code will appear when the outriggers are not fully retracted, the machine is not auto leveled, an outrigger has lost contact with the ground or either level sensor detects the machine is no longer level. When any of the above scenarios occur, the lift function is disabled.

The lift function will also be disabled while extending or retracting the outriggers and during the outrigger auto level procedure. While performing the above operations, the **Ld** Operation Indicator Code will appear.

Note: The CHrgr code indicates the charger is connected to an AC power source and functionality is limited. To clear the code, disconnect the charger from the AC power source.

Note: The LoHt code indicates the platform has reached the maximum working height or a maximum working height has been activated by the operator.

Note: The FLHt code indicates the operator has deactivated the maximum working height LoHt code.

Note: The ObS code indicates the contact alarm has been actuated by an obstruction. Move the machine away from the obstruction to clear the code.

Note: The br operation indicator code will appear when the drive brake was release by manual. When the code appears, drive and lift functions are disabled.

Battery Heating

When the temperature of the lithium battery is below its operational limit of -4°F/-20°C, the battery will require time to heat up, this is referred to as Battery Heating.

- The battery heating cycle requires that the machine remain ON (Emergency Stop button to the on position).
- The HEAt message will be displayed on the platform controls LED readout display, for 8 seconds.
- After 8 seconds the LED readout display will show the time remaining until the heating cycle is completed. The display will be in "minute.seconds".
- The display will toggle between the HEAt and time remaining messages for the duration of the heating cycle.
- When the heating cycle is completed, an audible alarm will sound and the machine will automatically transition to System Ready.

Diagnostic Trouble Codes (DTC)

These codes are generated by the system to indicate that a device or circuit malfunction has been detected in the electrical system.
The types of Diagnostic Trouble Codes that may occur are explained below.

Type "HXXX" – Indicate a malfunction associated with devices that control hydraulic functions in the electrical system. The "HXXX" faults are divided into short circuit battery negative, short circuit to battery positive, open circuit and generic shorts. Examples of these devices are solenoid controlled hydraulic valves and motor controller.

Type "PXXX" – Indicate a malfunction associated with power type devices in the electrical system. The "PXXX" faults are divided into short circuit to battery negative, short circuit to battery positive, open circuit and generic shorts. Examples of these devices are horns, sensor power and alarms.

Type "UXXX" – Indicate a malfunction associated with user interface devices in the electrical system. The "UXXX" faults are divided into short circuit to battery negative, short circuit to battery positive, open circuit and generic shorts. Examples of these devices are GCON up and down switches and PCON drive joystick.

Type "FXXX" – Indicate a malfunction associated with machine feedback devices in the electrical system. The "FXXX" faults are divided into short circuit to battery negative, short circuit to battery positive, open circuit and generic shorts. Examples of these devices are limit switches, height sensors and pressure transducers.

Type "CXXX" – Indicate a malfunction associated with controls devices in the electrical system. Examples of these devices are platform controls and ground controls ECM.

Troubleshooting "HXXX" and "PXXX" Faults

Troubleshooting "HXXX" and "PXXX" Faults

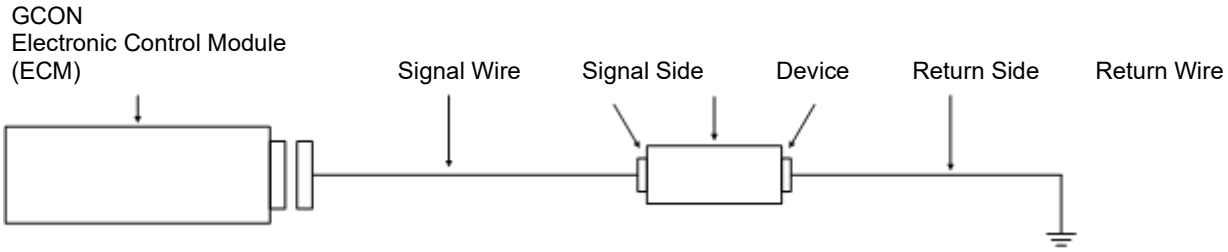
The procedure below illustrates typical steps for diagnosing and fixing faults of type "HXXX" and "PXXX".

Diagnostic Chart

1	Check the faulted device for a short or open circuit.	**No Good ➔**	Replace faulted device.
	Good ↓		
2	Check short or open circuit of the harness or connector between Ground Controls and faulted device.	**No Good ➔**	Repair or replace harness an/or connector.
	Good ↓		
3	Check GCON Electronic Control Module (ECM).	**No Good ➔**	Replace ECM.

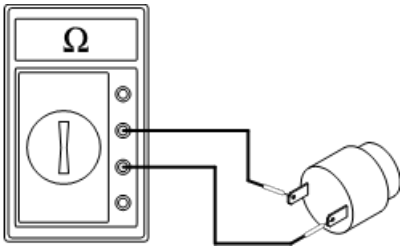
Wiring Diagram

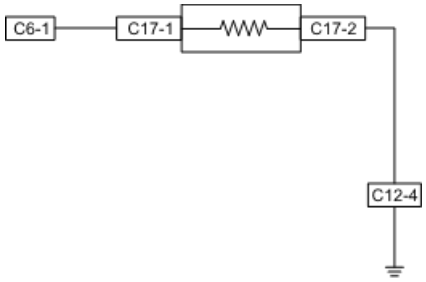
The wiring diagram shown below illustrates how fault type "HXXX" and "PXXX" devices are typically wired.
The signal of these types of devices originates at the Ground Controls and terminates at system ground.



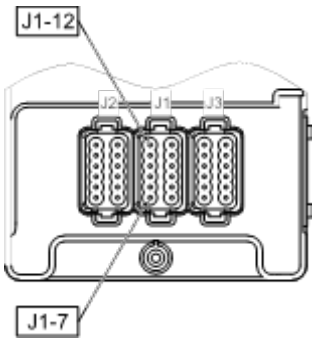
In order to successfully troubleshoot "HXXX" or "PXXX" type faults, the entire faulted out circuit must be investigated.

Fault Inspection Procedure

1	Check the device associated with the faulted circuit		
	1 Disconnect the faulted device connector. 2 Using a multi-meter, measure resistance between the two terminals of the faulted device. 3 Resistance should be as follows. **Device** — **Typical Resistance** Solenoid Valve, Steer — 19 Ω Solenoid Valve, Platform Up — 25 Ω Solenoid Valve, Platform Down — 6.25 Ω GCON and PCON Alarm — >1M Ω Automotive Horn — 1.0 Ω Motor Controller – Enable — 5.7k Ω Motor Controller – Throttle — 5.7k Ω Contactor Coil — 47 Ω		
OK	**Go to step 2**	**No Good**	**Replace faulted device**

2	Check the harness between the ground controls and the faulted device		
	1 Disconnect the GCON ECM connectors, J1, J2 and J3. 2 Disconnect the faulted device connector. 3 Check the continuity between the GCON ECM connector and the signal side of the faulted device. ⊙ Result: Resistance should be close to 0 Ω 4 Check the continuity between the return side of faulted device and system ground. ⊙ Result: Resistance should be close to 0 Ω 5 Check resistance between return side and signal side of the harness plug of faulted device. ⊙ Result: Resistance should be 1M Ω or higher.		
OK	**Go to step 3**	**No Good**	**Replace or repair harness**

Fault Inspection Procedure

3	Check the GCON ECM	
	1 Disconnect the GCON ECM connectors, J1, J2 and J3. 2 For short to B- type faults, measure resistance between pins J1-7 (ground) and the GCON pin associated with the fault code. Refer to the GCON I/O Map in this section to identify the faulted out circuit pin. 3 Short to ground resistance should be greater than 5k Ω. 4 For short to B+ type faults, measure resistance between pins J1-12 (driver power) and the GCON pin associated with the fault code. Refer to the GCON I/O Map in this section to identify the faulted out circuit pin. 5 Short to power resistance should be greater than 50k Ω.	
	No Good	**Replace GCON ECM**

Type "HXXX" Faults

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
H001:	H001:COILFAULT PLAT UP1:BAT-	Short circuit of the platform up #1 circuit to battery negative.	• Short circuit in platform up #1 harness. • Platform up #1 coil short circuit. • GCON ECM.	Platform up function inhibited.
H002:	H002:COILFAULT PLAT UP1:OPEN	Open circuit in the platform up #1 circuit.	• Short circuit in platform up #1 harness. • Platform up #1 coil open circuit. • GCON ECM.	Platform up function inhibited.
H003:	H003:COILFAULT PLAT UP1:BAT+	Short circuit of the platform up #1 circuit to battery positive.	• Short circuit in platform up #1 harness. • Platform up #1 coil short circuit. • GCON ECM.	All functions inhibited except platform down.
H009:	H009:COILFAULT PLAT DOWN1:BAT+	Short circuit of the platform down #1 circuit to battery positive.	• Short circuit in platform down #1 harness. • Platform down #1 coil short circuit. • GCON ECM.	All functions inhibited.
H013:	H013:COILFAULT DRIVE FWD1:BAT-	Short circuit of the drive forward #1 circuit to battery negative.	• Short circuit in drive forward #1 harness. • Drive forward #1 coil short circuit. • GCON ECM.	Drive forward function inhibited.
H014:	H014:COILFAULT DRIVE FWD1:OPEN	Open circuit in the drive forward #1 circuit.	• Open circuit in drive forward #1 harness. • Drive forward #1 coil open circuit. • GCON ECM.	Drive forward function inhibited.
H015:	H015:COILFAULT DRIVE FWD1:BAT+	Short circuit of the drive forward #1 circuit to battery positive.	• Short circuit in drive forward #1 harness. • Drive forward #1 coil short circuit. • GCON ECM.	All functions inhibited except platform down.
H019:	H019:COILFAULT DRIVE REV1:BAT-	Short circuit of the drive reverse #1 circuit to battery negative.	• Short circuit in drive reverse #1 harness. • Drive reverse #1 coil short circuit. • GCON ECM.	Drive reverse function inhibited.
H020:	H020:COILFAULT DRIVE REV1:OPEN	Open circuit in the drive reverse #1 circuit.	• Open circuit in drive reverse #1 harness. • Drive reverse #1 coil open circuit. • GCON ECM.	Drive reverse function inhibited.
H021:	H021:COILFAULT DRIVE REV1:BAT+	Short circuit of the drive reverse #1 circuit to battery positive.	• Short circuit in drive reverse #1 harness. • Drive reverse #1 coil short circuit. • GCON ECM.	All functions inhibited except platform down.
H027:	H027:COILFAULT DRIVE STEER RIGHT:BAT+	Short circuit of the steer right circuit to battery positive.	• Short circuit in steer right harness. • Steer right coil short circuit. • GCON ECM.	All functions inhibited except platform down.
H030:	H030:COILFAULT DRIVE STEER LEFT:BAT+	Short circuit of the steer left circuit to battery positive.	• Short circuit in steer left harness. • Steer left coil short circuit. • GCON ECM.	All functions inhibited except platform down.
H033:	H033:COILFAULT HI/LO SPEED:BAT+	Short circuit of the hi/lo speed coil to battery positive.	• Short circuit in Hi/Lo speed coil harness. • Hi/Lo speed coil short circuit. • GCON ECM.	Hi/Lo speed coil disabled. Machine will operate in low speed mode.

Type "HXXX" Faults

Type "HXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
HO43:	H043:COILFAULT BRAKE REL:BAT-	Short circuit of the brake circuit to battery negative.	• Short circuit in brake release enable harness. • Brake release relay short circuit. • GCON ECM.	All functions inhibited except platform down.
HO45:	H045:COILFAULT BRAKE REL:BAT+	Short circuit of the brake circuit to battery positive.	• Short circuit in brake release enable harness. • Brake release relay short circuit. • GCON ECM.	All functions inhibited except platform down.
H049:	H049:COILFAULT O/R EXTEND:BAT-	Short circuit of the outrigger extend coil to battery negative.	• Short circuit in outrigger extend coil harness. • Outrigger extend coil short circuit. • GCON ECM.	Only outrigger extend function disabled.
H050:	H050:COILFAULT O/R EXTEND:OPEN	Open circuit in the outrigger extend coil circuit.	• Short circuit in outrigger extend coil harness. • Outrigger extend coil open circuit. • GCON ECM.	Only outrigger extend function disabled.
H051:	H051:COILFAULT O/R EXTEND:BAT+	Short circuit of the outrigger extend coil to battery positive.	• Short circuit in outrigger extend coil harness. • Outrigger extend coil short circuit. • GCON ECM.	All functions inhibited except platform down.
H052:	H052:COILFAULT O/R RETRACT:BAT-	Short circuit of the outrigger retract coil to battery negative.	• Short circuit in outrigger retract coil harness. • Outrigger retract coil short circuit. • GCON ECM.	Only outrigger retract function disabled.
H053:	H053:COILFAULT O/R RETRACT:OPEN	Open circuit in the outrigger retract coil circuit.	• Short circuit in outrigger retract coil harness. • Outrigger retract coil open circuit. • GCON ECM.	Only outrigger retract function disabled.
H054:	H054:COILFAULT O/R RETRACT:BAT+	Short circuit of the outrigger retract coil to battery positive.	• Short circuit in outrigger retract coil harness. • Outrigger retract coil short circuit. • GCON ECM.	All functions inhibited except platform down.
H057:	H057:COILFAULT LF RIGGER:BAT+	Short circuit of the left front outrigger coil to battery positive.	• Short circuit in left front outrigger coil harness. • Left front outrigger coil short circuit. • GCON ECM.	All functions inhibited except platform down.
H060:	H060:COILFAULT LR RIGGER:BAT+	Short circuit of the left rear outrigger coil to battery positive.	• Short circuit in left rear outrigger coil harness. • Left rear outrigger coil short circuit. • GCON ECM.	All functions inhibited except platform down.
H063:	H063:COILFAULT RF RIGGER:BAT+	Short circuit of the right front outrigger coil to battery positive.	• Short circuit in right front outrigger coil harness. • Right front outrigger coil short circuit. • GCON ECM.	All functions inhibited except platform down.
H066:	H066:COILFAULT RR RIGGER:BAT+	Short circuit of the right rear outrigger coil to battery positive.	• Short circuit in right rear outrigger coil harness. • Right rear outrigger coil short circuit. • GCON ECM.	All functions inhibited except platform down.
H067:	H067:FAULT MC ENABLE:BAT-	Short circuit of the motor controller circuit to battery negative.	• Short circuit in motor controller enable wire. • Motor Controller. • Contactor coil shorted to battery negative. • GCON ECM.	All functions inhibited except platform down.
H069:	H069:FAULT MC ENABLE:BAT+	Short circuit of the motor controller circuit to battery positive.	• Short circuit in motor controller enable wire. • Motor Controller. • Contactor Coil. • GCON ECM.	All functions inhibited except platform down.
H070:	H070:FAULT MC THROTTLE:BAT-	Short circuit of the motor controller throttle circuit to battery negative.	• Short circuit in motor controller throttle wire. • Motor Controller. • GCON ECM.	All functions inhibited except platform down.

Type "HXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
H072:	H072:FAULT MC THROTTLE:BAT+	Short circuit of the motor controller throttle circuit to battery positive.	• Short circuit in motor controller throttle wire. • Motor Controller. • GCON ECM.	All functions inhibited except platform down.
H074:	H074:COILFAULT LF RIGGER	Short circuit of the left front outrigger circuit to battery positive/negative or open circuit.	• Short or open circuit in left front outrigger harness. • Left front outrigger coil short or open circuit. • GCON ECM.	Left front outrigger function inhibited.
H075:	H075:COILFAULT LR RIGGER	Short circuit of the left rear outrigger circuit to battery positive/negative or open circuit.	• Short or open circuit in left rear outrigger harness. • Left rear outrigger coil short or open circuit. • GCON ECM.	Left rear outrigger function inhibited.
H076:	H076:COILFAULT RF RIGGER	Short circuit of the right front outrigger circuit to battery positive/negative or open circuit.	• Short or open circuit in right front outrigger harness. • Right front outrigger coil short or open circuit. • GCON ECM.	Right front outrigger function inhibited.
H077:	H077:COILFAULT RR RIGGER	Short circuit of the right rear outrigger circuit to battery positive/negative or open circuit.	• Short or open circuit in right rear outrigger harness. • Right rear outrigger coil short or open circuit. • GCON ECM.	Right rear outrigger function inhibited.
H078:	H078:COILFAULT PLAT DOWN1	Short circuit of the platform down #1 circuit to battery positive/negative or open circuit.	• Short or open circuit in platform down #1 harness. • Platform down #1 coil short or open circuit. • GCON ECM.	Platform down function inhibited.
H079:	H079:COILFAULT HI/LO SPEED	Short circuit of the HI/LO speed circuit to battery positive/negative or open circuit.	• Short circuit in HI/LO speed harness. • HI/LO speed coil short or open circuit. • GCON ECM.	Hi/Lo speed coil disabled. Machine will operate in high speed mode if open circuit or short with battery negative. Machine will operate in low speed mode if short with battery positive.
H080:	H080:COILFAULT STEER LEFT	Short circuit of the steer left circuit to battery negative or open circuit.	• Short or open circuit in steer left harness. • Steer left coil short or open circuit. • GCON ECM.	Steer left function inhibited.
H081:	H081:COILFAULT STEER RIGHT	Short circuit of the steer right circuit to battery negative or open circuit.	• Short or open circuit in steer right harness. • Steer right coil short or open circuit. • GCON ECM.	Steer right function inhibited.
H102:	H102:COILFAULT RELIEF VALVE:BAT+	Short circuit of the relief valve circuit to battery positive.	• Short circuit in relief valve harness. • Relief valve coil short circuit. • GCON ECM.	All functions inhibited except platform down while above limit switch.
H103:	H103:COILFAULT RELIEF VALVE:BAT-	Short circuit of the relief valve circuit to battery negative.	• Short circuit in relief valve harness. • Relief valve coil short circuit. • GCON ECM.	All functions inhibited except platform down while above limit switch.
H104:	H104:COILFAULT RELIEF VALVE:OPEN	Relief valve circuit open.	• Open circuit in relief valve harness. • Relief valve coil open circuit. • GCON ECM.	All functions inhibited except platform down while above limit switch.

Type "HXXX" Faults

Type "HXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
H106:	H106:COILFAULT DECK EXTEND:BAT-	Short circuit of the platform extend circuit to battery negative.	• Short circuit in PED harness. • PED extend valve coil short circuit. • GCON ECM.	All functions inhibited.
H107:	H107:COILFAULT DECK EXTEND:OPEN	Open circuit in the platform extend circuit.	• Open circuit in PED harness. • PED extend valve coil open circuit. • GCON ECM.	All functions inhibited.
H108:	H108:COILFAULT DECK EXTEND:BAT+	Short circuit of the platform extend circuit to battery positive.	• Short circuit in PED harness. • PED extend valve coil short circuit. • GCON ECM.	All functions inhibited.
H109:	H109:COILFAULT DECK RETRACT:BAT-	Short circuit of the platform retract circuit to battery negative.	• Short circuit in PED harness. • PED retract valve coil short circuit. • GCON ECM.	All functions inhibited.
H110:	H110:COILFAULT DECK RETRACT:OPEN	Open circuit in the platform retract circuit.	• Open circuit in PED harness. • PED retract valve coil open circuit. • GCON ECM.	All functions inhibited.
H111:	H111:COILFAULT DECK RETRACT:BAT+	Short circuit of the platform retract circuit to battery positive.	• Short circuit in PED harness. • PED retract valve coil short circuit. • GCON ECM.	All functions inhibited.
H114:	H114:COILFAULT DECK ENABLE:BAT+	Short circuit of the platform enable circuit to battery positive.	• Short circuit in PED harness. • PED enable valve coil short circuit. • GCON ECM.	All functions inhibited.
H115:	H115:COILFAULT DECK ENABLE	Short circuit of the platform enable circuit.	• Short circuit in PED harness. • GCON ECM.	All functions inhibited.

Type "PXXX" Faults

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
P001:	P001:PWR FAULT SW PWR1:BAT-	Short circuit of the switched power #1 circuit to battery negative.	• Short circuit in switched power #1, down limit switch, pothole limit switch, digital tilt switch harness. • GCON ECM.	All functions inhibited.
P003:	P003:PWR FAULT SW PWR1:BAT+	Short circuit of the switched power #1 circuit to battery positive.	• Short circuit in switched power #1, down limit switch, pothole limit switch, digital tilt switch harness. • GCON ECM.	All functions inhibited.
P004:	P004:DEVICEFAULT HORN:BAT-	Short circuit of the automotive horn circuit to battery negative.	• Short circuit in automotive horn harness. • Automotive horn short circuit. • GCON ECM.	Automotive horn inhibited.
P005:	P005:DEVICEFAULT HORN:OPEN	Open circuit of the automotive horn circuit.	• Open circuit in automotive horn harness. • Automotive horn open circuit. • GCON ECM.	Automotive horn inhibited.
P006:	P006:DEVICEFAULT HORN:BAT+	Short circuit of the automotive horn circuit to battery positive.	• Short circuit in automotive horn harness. • Automotive horn short circuit. • GCON ECM.	Automotive horn inhibited.
P007:	P007:DEVICEFAULT GCON ALARM:BAT-	Short circuit of the GCON alarm circuit to battery negative.	• Short circuit in GCON alarm harness. • GCON alarm short circuit. • GCON ECM.	GCON alarm inhibited.
P009:	P009:DEVICEFAULT GCON ALARM:BAT+	Short circuit of the GCON alarm circuit to battery positive.	• Short circuit in GCON alarm harness. • GCON alarm short circuit. • GCON ECM.	GCON alarm inhibited.
P013:	P013:PWR FAULT PCON PWRET:BAT-	Short circuit of the PCON power return circuit to battery negative.	• Short circuit in PCON power return harness. • GCON ECM.	All functions inhibited.
P015:	P015:PWR FAULT PCON PWRET:BAT+	Short circuit of the PCON power return circuit to battery positive.	• Short circuit in PCON power return harness. • GCON ECM.	All functions inhibited.
P018:	018:PWR FAULT PCON POWER:BAT-	Short circuit of the PCON power circuit to battery negative.	• Short circuit in PCON power harness. • GCON ECM.	All functions inhibited.
P019:	018:PWR FAULT PCON POWER:BAT+	Short circuit of the PCON power circuit to battery positive.	• Short circuit in PCON power harness. • GCON ECM.	All functions inhibited.

Type "PXXX" Faults

Type "PXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
P023:	P023:PUMP MOTOR VOLTAGE NOT OK	Pump motor voltage out of range.	• Pump voltage to low. • Pump voltage to high. • DCON ECM.	All functions inhibited.
P025:	P025:PUMP MOTOR CURRENT FEEDBK+	Open or short circuit of the P- circuit from the right rear drive controller to the pump motor.	• Open or short circuit in pump motor P-cable. • Faulty pump. • DCON ECM.	All functions inhibited.
P026:	P026:MOTOR RIGHT REAR VOLTAGE NOT OK	Open or short circuit of the U or W circuit from the right rear drive controller to the right rear drive motor.	• Open circuit. in right rear drive motor U or W cable. • Drive motor. • DCON ECM.	All functions inhibited.
P028:	P028:CONTACTOR STUCK CLOSED	Main contactor stuck in the closed position.	• Short circuit in main contactor harness. • Faulty contactor. • DCON ECM.	All functions inhibited.
P029:	P029:CONTACTOR DOES NOT CLOSE	Main contactor stuck in the open position.	• Open circuit in main contactor harness. • Faulty contactor. • DCON ECM.	All functions inhibited.
P030:	P030:COIL FAULT	Short circuit of the main contactor coil to battery negative or open circuit.	• Open or short circuit in main contactor harness. • Faulty contactor. • DCON ECM.	All functions inhibited.
P037:	PO37:BATTERY OUT OF RANGE	Battery voltage is out of range at startup.	• Open or short circuit in voltage sensor circuits. • Low batteries. • Faulty battery. • Battery charger connected to AC power source. • DCON ECM.	All functions inhibited.
P039:	P039:DEVICE FAULT BRAKE PWR RELAY	Open or short circuit of the brake relay contact or coil.	• Open or short circuit in brake relay harness. • Brake relay contact stuck closed. • Faulty brake relay. • GCON ECM.	All functions inhibited.
P040:	P040:COIL FAULT BRAKE PWR OPEN	Open or short circuit of the brake relay contact or coil to battery negative.	• Open or short circuit in brake relay harness. • Faulty brake relay. • Left or right DCON ECM. • GCON ECM.	All functions inhibited.

Type "PXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
P053:	P053:COIL FAULT BRAKE/LC:Bat+	Open or short circuit of the brake circuit to battery positive.	• Open or short on driver load. • Faulty connections or harness. • DCON ECM.	All functions inhibited except platform down.
P054:	P054:COIL FAULT MC:OPEN	Open or short circuit of the motor controller.	• Open or short on driver load. • Faulty connections or harness. • DCON ECM.	All functions inhibited except platform down.
P056:	P056:MOTOR CURRENT FEEDBACK	Short circuit of the motor controller circuit to battery negative.	• Leakage to chassis frame from phase U, V or W. • Drive motor. • DCON ECM.	All functions inhibited except platform down.
P057:	P057:MOTOR CURRENT OVERLOAD	Short circuit of the drive motor circuit.	• External short of U, V or W motor connection. • Speed encoder noise. • Motor parameters out of range. • DCON ECM.	All functions inhibited except platform down.
P059:	P059:MOTOR RF PHASE OPEN	Open circuit of the right front drive motor.	• Open circuit. • Faulty connections or harness.	All functions inhibited except platform down.
P060:	P060:MOTOR LF PHASE OPEN	Open circuit of the left front drive motor.	• Open circuit. • Faulty connections or harness.	All functions inhibited except platform down.
P061:	PO61:COIL FAULT SUPPLY: Bat-	DCON coil supply fault	• Coil supply shorted.	All functions inhibited except platform down.
P070:	P070:COIL FAULT BRAKE RF:B+	Short circuit of the right front brake coil to battery positive	• Open or short on driver load. • Faulty connector pins at controller or contactor coil. • Faulty connections or harness.	All functions inhibited except platform down.
P071:	P071:COIL FAULT BRAKE LF:B+	Short circuit of the left front brake coil to battery positive	• Open or short on driver load. • Faulty connector pins at controller or contactor coil. • Faulty connections or harness.	All functions inhibited except platform down.
P072:	P072:COIL FAULT BRAKE RF:B-	Short circuit of the right front brake coil to battery negative	• Open or short on driver load. • Faulty connector pins at controller or contactor coil. • Faulty connections or harness.	All functions inhibited except platform down.
P073:	P073:COIL FAULT BRAKE LF:B-	Short circuit of the left front brake coil to battery negative	• Open or short on driver load. • Faulty connector pins at controller or contactor coil. • Faulty connections or harness.	All functions inhibited except platform down.

Type "PXXX" Faults

Type "PXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
P074:	P074:BATTERY CURRENT TOO HIGH	Battery current limit exceeded	• Function has drawn too much current from the battery • Excessive charge current while battery temperature is below freezing	All functions inhibited except platform down.
P075:	P075:BATTERY SHORTED TO 0V	Short circuit of battery positive to battery negative	• Short circuit in battery cables • Battery charger • DCON ECM.	All functions inhibited except platform down.
P076:	P076:BATTERY VOLTAGE TOO HIGH	Battery overvoltage	• Braking charge current • Battery charger	All functions inhibited except platform down.
P077:	P077:BATTERY VOLTAGE TOO LOW	Battery undervoltage	• Storage without putting battery in storage mode • High current draw while battery temperature is below freezing	All functions inhibited except platform down.
P078:	P078:RELIEF COIL: SHORTED TO SUPPLY	Relief coil shorted to battery positive	• Motor controller connector 2, pin 2 is open circuit • Motor controller connector 2, pin 2 is shorted to supply	All functions inhibited except platform down.
P079:	P079:RELIEF COIL SHORTED TO 0V	Relief coil shorted to battery negative	• Motor controller connector 2, pin 2 is shorted to supply • Overcurrent of motor controller connector 2, pin 2	All functions inhibited except platform down.
P080:	PO80:MOTOR SHORT ACTIVE	Motor controller short detected	• DCON ECM.	All functions inhibited except platform down.
P081:	P081:BRAKE INPUT FAULT	Brake input fault detected	• DCON ECM.	All functions inhibited except platform down.
P082:	P082:PUMP HDP SHORTED SUPPLY	Pump Throttle Shorted to Supply	• DCON ECM.	All functions inhibited except platform down.
P083:	P083:PUMP BDI TOO LOW	Pump voltage too low	• Charge batteries	All functions inhibited except platform down.
P084:	P084:COIL SUPPLY FAULT	Coil supply fault	• Short on driver loads • Dirty connector pins at device • • DCON ECM.	All functions inhibited except platform down.
P085:	P085:BMS CUTBACK FAULT	BMS cutback fault	• DCON ECM.	All functions inhibited except platform down.
P086:	P086:BATTERY DMO CTRL:Bat+	DMO control short to battery positive	• Short circuit in battery cables	All functions inhibited.
P087:	P087:BATTERY DMO CTRL:Bat-	DMO control short to battery negative	• Short circuit in battery cables	All functions inhibited.

Type "PXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
P088:	P088:LIFT MOTOR CURRENT OVERLOAD	Short circuit of the lift motor circuit.	• External short of U, V or W motor connection. • Speed encoder noise. • Motor parameters out of range. • DCON ECM.	All functions inhibited except platform down.
P089:	P089: COIL FAULT BRAKE LIFT:Bat+	Short circuit of the lift brake coil to battery positive.	• Open or short on driver load. • Faulty connections or harness. • DCON ECM.	All functions inhibited except platform down.
P090:	P090:COIL FAULT BRAKE LIFT:Bat-	Short circuit of the lift brake coil to battery negative.	• Open or short on driver load. • Faulty connections or harness. • DCON ECM.	All functions inhibited except platform down.
P091:	P091:LIFT MOTOR PHASE OPEN	Open circuit of the lift motor.	• Open circuit. • Faulty connections or harness.	All functions inhibited except platform down.
P092:	P092:LIFT MOTOR SHORT ACTIVE	Motor controller short detected.	• DCON ECM.	All functions inhibited except platform down.
P093:	P093:LIFT MOTOR CURRENT FEEDBACK	Short circuit of the lift motor controller circuit to battery negative.	• Leakage to chassis frame from phase U, V or W. • Lift motor. • DCON ECM.	All functions inhibited except platform down.
P094:	P094:LED FAULT BEACON:Bat-	Short circuit of the beacon LED to battery negative.	• Faulty connections or harness.	All functions inhibited except platform down.
P095:	P095:LED FAULT BEACON:Bat+	Short circuit of the beacon LED to battery positive.	• Faulty connections or harness.	All functions inhibited except platform down.
P096:	P096:LCON 12V SUPPLY FAILURE	LOCN 12V supply failed.	• Coil supply shorted.	All functions inhibited except platform down.
P097:	P097: DCON DRIVER 1 FAULT	DCON driver 1 failed.	• DCON ECM.	All functions inhibited except platform down.
P098:	P098: DCON DRIVER 5 FAULT	DCON driver 5 failed.	• DCON ECM.	All functions inhibited except platform down.
P099:	P099:LIFT BRAKE INPUT FAULT	Input to the lift brake failed.	• DCON ECM.	All functions inhibited except platform down.
P100:	P100:LCON COIL SUPPLY FAULT	Coil supply failed.	• Coil supply shorted.	All functions inhibited except platform down.

Type "PXXX" Faults

Type "PXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
P101:	P101:CONTACTOR STUCK CLOSED	Main contactor stuck in the closed position.	• Short circuit in main contactor harness. • Faulty contactor. • DCON ECM.	All functions inhibited.
P102:	P102:CONTACTOR DOES NOT CLOSE	Main contactor stuck in the open position.	• Open circuit in main contactor harness. • Faulty contactor. • DCON ECM.	All functions inhibited.
P103:	P103: LCON DRIVER 1 FAULT	LCON driver 1 failed.	• LCON ECM.	All functions inhibited except platform down.
P104:	P104: LCON DRIVER 4 FAULT	LCON driver 4 failed.	• LCON ECM.	All functions inhibited except platform down.
P105:	P105: LCON DRIVER 5 FAULT	LCON driver 5 failed.	• LCON ECM.	All functions inhibited except platform down.
P106:	P106:LCON COIL BRAKE/LC:Bat+	Open or short circuit of the brake circuit to battery positive.	• Open or short on driver load. • Faulty connections or harness. • LCON ECM.	All functions inhibited except platform down.
P107:	P107: LCON COIL FAULT MC:OPEN	Open or short circuit of the motor controller.	• Open or short on driver load. • Faulty connections or harness. • LCON ECM.	All functions inhibited except platform down.

Type "UXXX" Faults

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
U001:	U001:SWITCHFAULT GCON MAIN FTN EN	Short circuit of the GCON main function enable switch at system startup.	• Short circuit of the GCON main function enable switch. • GCON ECM.	All GCON functions inhibited.
U002:	U002:SWITCHFAULT GCON PLAT UP	Short circuit of the GCON up directional switch at system startup.	• Short circuit of the GCON up directional switch. • GCON ECM.	All GCON functions inhibited except platform down.
U003:	U003:SWITCHFAULT GCON PLAT DOWN	Short circuit of the GCON down directional switch at system startup.	• Short circuit of the GCON down directional switch. • GCON ECM.	All GCON functions inhibited except platform up.
U004:	U004:SWITCHFAULT GCON LCD UP	Short circuit of the GCON LCD scroll up switch at system startup.	• Short circuit of the GCON LCD scroll up switch. • GCON ECM.	All GCON LCD menu functions inhibited.
U005:	U005:SWITCHFAULT GCON LCD DOWN	Short circuit of the GCON LCD scroll down switch at system startup.	• Short circuit of the GCON LCD scroll down switch. • GCON ECM.	All GCON LCD menu functions inhibited.
U006:	U006:SWITCHFAULT GCON LCD ENTER	Short circuit of the GCON LCD enter switch at system startup.	• Short circuit of the GCON LCD enter switch. • GCON ECM.	All GCON LCD menu functions inhibited.
U007:	U007:SWITCHFAULT GCON LCD ESCAPE	Short circuit of the GCON LCD escape switch at system startup.	• Short circuit of the GCON LCD escape switch. • GCON ECM.	All GCON LCD menu functions inhibited.
U014:	U014:SWITCHFAULT PCON DRIVE EN	Short circuit of the PCON drive enable switch at system startup.	• Short circuit of the PCON drive enable switch. • GCON ECM.	All PCON drive and steer functions inhibited.
U015:	U015:SWITCHFAULT PCON STEER LEFT	Short circuit of the PCON steer left switch at system startup.	• Short circuit of the PCON steer left switch. • GCON ECM.	All PCON drive and steer functions inhibited.
U016:	U016:SWITCHFAULT PCON STEER RIGHT	Short circuit of the PCON steer right switch at system startup.	• Short circuit of the PCON steer right switch. • GCON ECM.	All PCON drive and steer functions inhibited.
U017:	U017:SWITCHFAULT PCON HORN	Short circuit of the PCON horn switch at system startup.	• Short circuit of the PCON horn switch. • GCON ECM.	PCON horn switch function inhibited.
U018:	U018:SWITCHFAULT PCON LO DRIV SPD	Short circuit of the PCON low drive speed switch at system startup.	• Short circuit of the PCON low drive speed switch. • GCON ECM.	The machine is limited to low drive speed.
U019:	U019:SWITCHFAULT PCON LO LIFT SPD	Short circuit of the PCON low lift speed switch at system startup.	• Short circuit of the PCON low lift speed switch. • GCON ECM.	PCON platform up and down functions inhibited.

Type "UXXX" Faults

Type "UXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
U020:	U020:SWITCHFAULT PCON HI LIFT SPD	Short circuit of the PCON high lift speed switch at system startup.	• Short circuit of the PCON hi lift speed switch. • GCON ECM.	PCON platform up and down functions inhibited.
U021:	U021:SWITCHFAULT PCON UP	Short circuit of the PCON up directional switch at system startup.	• Short circuit of the PCON up directional switch. • GCON ECM.	PCON platform up function inhibited.
U022:	U022:SWITCHFAULT PCON DOWN	Short circuit of the PCON down directional switch at system startup.	• Short circuit of the PCON down directional switch. • GCON ECM.	PCON platform down functions inhibited.
U023:	U023:SWITCHFAULT PCON O/R ENABLE	Short circuit of the PCON outrigger enable switch at system startup.	• Short circuit of the PCON outrigger enable switch. • GCON ECM.	All outrigger functions inhibited.
U033:	U033:JSTICKFAULT OUT OF CAL RANGE	PCON drive joystick signal is outside acceptable calibration range at system startup.	• PCON drive joystick is not in neutral position at startup. • PCON joystick. • GCON ECM.	All PCON drive and steer functions inhibited.
U034:	U034:JSTICKFAULT OUT OF RANGE:HI	Short circuit of the PCON drive joystick signal to battery positive at system startup.	• Short circuit of the PCON drive joystick signal circuit. • PCON joystick. • GCON ECM.	All PCON drive and steer functions inhibited.
U035:	U035:JSTICKFAULT OUT OF RANGE:LO	Short circuit of the PCON drive joystick signal to battery negative at system startup.	• Short circuit of the PCON drive joystick signal circuit. • PCON joystick. • GCON ECM.	All PCON drive and steer functions inhibited.
U036:	U036:SWITCHFAULT GCON + PCON:ON	Mis-wiring or short circuit of GCON key switch.	• GCON key switch. • GCON ECM.	All functions inhibited.
U037:	U037:SWITCHFAULT FOOTSW PRESSED	Foot switch pressed at machine startup.	• Short circuit in the foot switch harness. • Foot switch. • GCON ECM.	All functions inhibited.
U038:	U038:SWITCHFAULT FOOTSWITCH:BAT+	Mis-wiring or short circuit of foot switch to battery positive.	• Short circuit in the foot switch harness. • Foot switch. • GCON ECM.	All functions inhibited.
U039:	U039:SWITCHFAULT FOOTSW:OPEN/BAT-	Mis-wiring, open or short circuit of foot switch to battery negative.	• Short circuit in the foot switch harness. • Foot switch. • GCON ECM.	All functions inhibited.
U040:	U040:SWITCHFAULT FOOTSW:TIMEOUT	PCON deck switch pressed at machine startup.	• Short circuit in the foot switch harness. • Foot switch. • GCON ECM.	All functions inhibited.

Type "UXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
U041:	U041:SWITCHFAULT GCON DECK ENABLE	GCON deck enable switch stuck closed, or depressed at system startup.	• GCON deck enable switch stuck closed. • GCON deck enable switch depressed at system startup. • GCON ECM.	All functions inhibited.
U042:	U042:SWITCHFAULT PCON DRIVE MODE	PCON drive mode switch stuck closed, or depressed at system startup.	• PCON drive mode switch stuck closed. • PCON drive mode switch depressed at system startup. • PCON ECM.	Drive functions inhibited.
U043:	U043:SWITCHFAULT PCON OR MODE	PCON outrigger mode switch stuck closed, or depressed at system startup.	• PCON outrigger mode switch stuck closed. • PCON outrigger mode switch depressed at system startup. • PCON ECM.	Outrigger extend/retract functions inhibited.
U045:	U045:SWITCHFAULT PCON FUNCTION EN	PCON function enable switch stuck closed, or depressed at system startup.	• PCON function enable switch stuck closed. • PCON function enable switch depressed at system startup. • PCON ECM.	All drive and steer functions inhibited.
U046:	U046:SWITCHFAULT PCON LIFT MODE	PCON lift mode switch stuck closed, or depressed at system startup.	• PCON lift mode switch stuck closed. • PCON lift mode switch depressed at system startup. • PCON ECM.	All functions operate except platform up/down.
U047:	U047:SWITCHFAULT PCON INDOOR MODE	PCON Switch Fault	• Indoor button pressed at system power up • Internally shorted switch on PCON indoor button	All functions operate except platform up/down.
U048:	U048:SWITCHFAULT PCON OUTDOOR MODE	PCON Switch Fault	• Outdoor button pressed at system power up • Internally shorted switch on PCON outdoor button	All functions operate except platform up/down.
U049:	U049:SWITCHFAULT BRAKE RELEASE	Brake Release Switch Fault	• Brake Release switch activated at system power up • Internally shorted brake release switch	All functions inhibited.

Type "FXXX" Faults

Type "FXXX" Faults

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
F001:	F001:SWITCHFAULT UP LIMIT1:BAT+	Short circuit of the up limit #1 switch at system startup.	• Short circuit of the up limit switch circuit. • Up limit #1 switch short circuit. • GCON ECM.	Platform up function inhibited.
F003:	F003:SWITCHFAULT DOWN LIMIT1:BAT+	Short circuit of the down limit #1 switch at system startup.	• Short circuit of the down limit switch circuit. • Down limit #1 switch short circuit. • GCON ECM.	All functions inhibited except platform down.
F005:	F005:SWITCHFAULT POTHOLE:BAT+	Short circuit of the pothole limit #1 switch at system startup.	• Short circuit of the pothole switch circuit. • Pothole limit #1 switch short circuit. • GCON ECM.	All functions inhibited except platform down as long as machine is in the elevated position. If machine is in stowed position, all functionality is resumed.
F007:	F007:SWITCHFAULT CHASSISTILT:BAT+	Short circuit of the chassis digital tilt switch at system startup.	• Short circuit of the chassis digital tilt switch circuit. • Chassis digital tilt switch short circuit. • GCON ECM.	All functions inhibited except platform down as long as machine is in the elevated position. If machine is in stowed position, all functionality is resumed.
F008:	F008:SENSORFAULT OVLD XDUCER:BAT+	Short circuit of the Platform Overload Transducer circuit to battery positive.	• Short circuit in the transducer circuit. • Faulty pressure transducer. • GCON ECM.	All functions inhibited.
F009:	F009:SENSORFAULT OVLD XDUCER:BAT-	Short circuit of the Platform Overload Transducer circuit to battery negative.	• Short circuit in the transducer circuit. • Faulty pressure transducer. • GCON ECM.	All functions inhibited.
F010:	F010:SENSORFAULT PLAT HEIGHT:BAT+	Short circuit of the Platform Height Sensor circuit to battery positive.	• Short circuit in the platform height circuit. • Faulty platform height sensor. • GCON ECM.	All functions inhibited except platform down as long as machine is in the elevated position. If machine is in stowed position, all functionality is resumed.
F011:	F011:SENSORFAULT PLAT HEIGHT:BAT-	Short circuit of the Platform Height Sensor circuit to battery negative.	• Short circuit in the platform height circuit. • Faulty platform height sensor. • GCON ECM.	All functions inhibited except platform down as long as machine is in the elevated position. If machine is in stowed position, all functionality is resumed.

Type "FXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
F012:	F012:SENSORFAULT LEVEL PITCH:BAT+	Short circuit of the Level Pitch Sensor circuit to battery positive.	• Short circuit in the level pitch sensor circuit. • Faulty level sensor. • GCON ECM.	All functions inhibited.
F013:	F013:SENSORFAULT LEVEL PITCH:BAT-	Short circuit of the Level Pitch Sensor circuit to battery negative.	• Short circuit in the level pitch sensor circuit. • Faulty level sensor. • GCON ECM.	All functions inhibited.
F014:	F014:SENSORFAULT LEVEL ROLL:BAT+	Short circuit of the Level Roll Sensor circuit to battery positive.	• Short circuit in the level roll sensor circuit. • Faulty level sensor. • GCON ECM.	All functions inhibited.
F015:	F015:SENSORFAULT LEVEL ROLL:BAT-	Short circuit of the Level Roll Sensor circuit to battery negative.	• Short circuit in the level roll sensor circuit. • Faulty level sensor. • GCON ECM.	All functions inhibited.
F016:	F016:SENSORFAULT LF RIGGER:BAT+	Short circuit of the Left Front Outrigger Sensor circuit to battery positive.	• Short circuit in the left front outrigger sensor circuit. • Faulty pressure transducer. • GCON ECM.	Left front outrigger inhibited if outrigger extend is activated. Outrigger can still be retracted.
F017:	F017:SENSORFAULT LF RIGGER:BAT-	Short circuit of the Left Front Outrigger Sensor circuit to battery negative.	• Short circuit in the left front outrigger sensor circuit. • Faulty pressure transducer. • GCON ECM.	Left front outrigger inhibited if outrigger extend is activated. Outrigger can still be retracted.
F018:	F018:SENSORFAULT RF RIGGER:BAT+	Short circuit of the Right Front Outrigger Sensor circuit to battery positive.	• Short circuit in the right front outrigger sensor circuit. • Faulty pressure transducer. • GCON ECM.	Right front outrigger inhibited if outrigger extend is activated. Outrigger can still be retracted.
F019:	F019:SENSORFAULT RF RIGGER:BAT-	Short circuit of the Right Front Outrigger Sensor circuit to battery negative.	• Short circuit in the right front outrigger sensor circuit. • Faulty pressure transducer. • GCON ECM.	Right front outrigger inhibited if outrigger extend is activated. Outrigger can still be retracted.
F020:	F020:SENSORFAULT LR RIGGER:BAT+	Short circuit of the Left Rear Outrigger Sensor circuit to battery positive.	• Short circuit in the left rear outrigger sensor circuit. • Faulty pressure transducer. • GCON ECM.	Left rear outrigger inhibited if outrigger extend is activated. Outrigger can still be retracted.
F021:	F021:SENSORFAULT LR RIGGER:BAT-	Short circuit of the Left Rear Outrigger Sensor circuit to battery negative.	• Short circuit in the left rear outrigger sensor circuit. • Faulty pressure transducer. • GCON ECM.	Left rear outrigger inhibited if outrigger extend is activated. Outrigger can still be retracted.
F022:	F022:SENSORFAULT RR RIGGER:BAT+	Short circuit of the Right Rear Outrigger Sensor circuit to battery positive.	• Short circuit in the right rear outrigger sensor circuit. • Faulty pressure transducer. • GCON ECM.	Right rear outrigger inhibited if outrigger extend is activated. Outrigger can still be retracted.

Type "FXXX" Faults

Type "FXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
F023:	F023:SENSORFAULT RR RIGGER:BAT-	Short circuit of the Right Rear Outrigger Sensor circuit to battery negative.	• Short circuit in the right rear outrigger sensor circuit. • Faulty pressure transducer. • GCON ECM.	Right rear outrigger inhibited if outrigger extend is activated. Outrigger can still be retracted.
F034:	F034:SENSORFAULT OVLD:PLAT HEIGHT	Height Sensor settings are not calibrated correctly.	• Height sensor needs calibration for stowed height and maximum height settings. • GCON or PCON ECM.	All functions inhibited.
F035:	F035:SENSORFAULT OVLD RANGE:LOW	Height Sensor setting is lower than calibrated stowed height.	• Height sensor not calibrated for stowed height correctly. • GCON or PCON ECM.	All functions inhibited.
F036:	F036:SENSORFAULT OVLD RANGE:HI	Height Sensor setting is higher than calibrated maximum height.	• Height sensor not calibrated for maximum height correctly. • GCON or PCON ECM.	All functions inhibited.
F072:	F072:SENSORFAULT FUNCTION CUT B+	Function Cutout sensor B+ fault.	• Faulty extension deck limit switch. • Faulty gate proximity switch. • GCON ECM.	All functions inhibited.
F073:	F073:SENSORFAULT DECK SENSOR B+	Power Deck sensor B+ fault.	• Short circuit in deck sensor input circuit. • GCON ECM.	All functions inhibited.
F077:	F077:BATTERY TEMPERATURE HIGH	Operating temperature has exceeded the max allowable discharge/charge temperature for the battery	• High current draw and/or high ambient temperature have caused battery temperature to exceed maximum allowable functional temperatures	All functions inhibited.
F078:	f078:BATTERY TEMPERATURE LOW	Operating temperature is below the min allowable discharge/charge temperature for the battery	• Low current draw and/or low ambient temperature have caused battery temperature to exceed minimum allowable functional temperatures	All functions inhibited.
F081:	F081:DCON ECM THERM PROTECTION	DCON thermal protection	• Controller is operating in an extreme environment. • Excessive load on vehicle. • Improper mounting of controller which is preventing controller cooling. • Controller is performance-limited at this temperature.	All functions inhibited except platform down.
F082:	F082:MOTOR RF ENCODER FAULT	Right front motor encoder fault	• Encoder Steps parameter does not match the actual motor encoder. • Verify parameter settings: AC Motor Setup >> Quadrature Encoder>> Encoder Steps. • Motor encoder failure. • Bad crimps or faulty wiring. • External load impedance on the +5V supply is too low.	All functions inhibited except platform down.
F083:	F083:MOTOR LF ENCODER FAULT	Left front motor encoder fault	• Encoder Steps parameter does not match the actual motor encoder. • Verify parameter settings: AC Motor Setup >> Quadrature Encoder>> Encoder Steps. • Motor encoder failure. • Bad crimps or faulty wiring. • External load impedance on the +5V supply is too low.	All functions inhibited except platform down.
F084:	F084:MOTOR RF STALL/ENCODER	Right front motor stall	• Stalled motor. • Motor encoder failure. • Bad crimps or faulty wiring. • Problems with power supply for the motor encoder.	All drive and steer functions inhibited.
F085:	F085:MOTOR LF STALL/ENCODER	Left front motor stall	• Stalled motor. • Motor encoder failure. • Bad crimps or faulty wiring. • Problems with power supply for the motor encoder.	All drive and steer functions inhibited.
F086:	F086:RH BRAKE FAIL SET	Right emergency brake set failed	• Vehicle movement sensed after EM Brake has been commanded to set. • EM Brake will not hold the motor from rotating.	All functions inhibited except platform down.
F087:	F087:MOTOR LIMIT RUN	Motor limit run	• Limited Operating Strategy (LOS) control mode has been activated. • Motor encoder failure. • Bad crimps or faulty wiring. • Vehicle is stalled.	All drive and steer functions inhibited.
F088:	F088: LH BRAKE FAIL SET	Left emergency brake set failed	• Vehicle movement sensed after EM Brake has been commanded to set. • EM Brake will not hold the motor from rotating.	All functions inhibited except platform down.
F129:	F129:TILT SENSOR FAULT	UTS mismatch fault. Two accelerometers inside UTS mismatch.(universal tilt sensor)	• Faulty UTS.	All functions inhibited.

Type "FXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
F130:	F130:LIFT MOTOR ENCODER FAULT	Lift Motor Encoder fault.	• Encoder Steps parameter does not match the actual motor encoder. • Motor encoder failure. • Bad crimps or faulty wiring.	All functions inhibited except platform down.
F131:	F131:LCON ECM THERM PROTECTION	LCON Thermal Protection.	• Controller is operating in an extreme environment. • Excessive load on vehicle. • Improper mounting of controller which is preventing controller cooling. • Controller is performance-limited at this temperature.	All functions inhibited except platform down.
F132:	F132:LIFT MOTOR TEMP CUTBACK	Lift Motor Temp Cutback.	• DCON ECM.	All functions inhibited except platform down.
F133:	F133:LIFT MOTOR TEMP SENSOR	Lift Motor Temp Sensor.	• Short circuit in the platform height circuit. • Faulty lift motor sensor. • GCON ECM.	All functions inhibited except platform down.
F134:	F134:LIFT MOTOR STALL/ENCODER	Lift Motor Stall.	• Stalled motor. • Motor encoder failure. • Bad crimps or faulty wiring. • Problems with power supply for the motor encoder.	All drive and steer functions inhibited.
F135:	F135:LIFT BRAKE FAIL SET	Lift EM Brake Set.	• Vehicle movement sensed after EM Brake has been commanded to set. • EM Brake will not hold the motor from rotating.	All functions inhibited except platform down.

Type "CXXX" Faults

Type "CXXX" Faults

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
C001:	C001:GCON ECM FAULT TYPE 1	GCON ECM CRC check error.	• Incorrect software file. • GCON ECM internal failure.	All functions inhibited.
C004:	C004:GCON ECM FAULT TYPE 4	GCON ECM master switch error.	• Short circuit in the master switch circuit. • GCON ECM.	All functions inhibited.
C005:	C005:GCOM ECM FAULT TYPE 5	GCON ECM safety switch error.	• Short circuit in the safety switch circuit. • GCON ECM.	All functions inhibited.
C006:	C006:GCON ECM FAULT TYPE 6	GCON input redundancy error.	• Input conditioning circuit failure. • GCON ECM.	All functions inhibited.
C007:	C007:GCON ECM FAULT TYPE 7	GCON ECM inter-processor communication error.	• Incorrectly programmed device. • Error in loading software on device. • GCON ECM.	All functions inhibited.
C009:	C009:GCON ECM FAULT FAULT TYPE 9	GCON ECM fault type 9.	• Contact Genie support.	All functions inhibited.
C010:	C010:SECONDARY NOT PROGRAMMED	GCON secondary processor not programmed.	• Incorrectly programmed device. • Error in loading software on device. • GCON ECM.	All functions inhibited.
C021:	C021:PCON NOT DETECTED	PCON not detected error.	• PCON disconnected. • CAN communication failure. • GCON or PCON ECM.	All functions inhibited.
C023:	C023:MACHINE MODEL FAULT	Discrepancy between model detected and model programmed.	• Incorrect machine model programmed. • GCON or PCON ECM.	All functions inhibited.
C025:	C025:SYSTEMFAULT PLAT OVLD:NOCAL	Platform overload system not calibrated.	• Platform overload system not calibrated. • GCON or PCON ECM.	All functions inhibited.
C028:	C028:SERVICE OVERRIDE MODE ON	Machine is in service override mode.	• Machine programmed for use in service override mode.	All functions inhibited except for down function and up function. Platform can be elevated only once with the maximum elevate time of XX seconds. Elevate time XX depends on machine model.

Type "CXXX" Faults

Type "CXXX" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
C029:	C029:SYSTEMFAULT O/R SENSOR:NOCAL	Outrigger not calibrated.	• Outrigger not calibrated. • GCON ECM.	All functions operate. Will not lift above the down limit switch.
C053:	C053:PCON-GCOM SOFTWARE MISMATCH	Software revisions do not match between the PCON and GCON.	• Short circuit in the safety switch circuit. • GCON ECM.	All functions inhibited.
C055:	C055:DCON ECM Fault Type 01	Hardware failure of drive controller.	• DCON ECM.	Performance reduced or all functions inhibited.
C056:	C056:DCON ECM Fault Type 02	Setup initialization failure of the drive controller at system startup.	• Drive input active at system startup. • Faulty drive joystick. • Incorrect software.D14 • DCON ECM.	Performance reduced or all functions inhibited.
C058:	C058:DCON ECM Fault Type 04	Drive controller voltage out of range.	• Battery charger connected to AC power source. • Batteries to low. • DCON ECM.	All functions inhibited.
C059:	C059:DCON ECM Fault Type 05	Capacitor charge failure of the drive controller.	• Open on B+ or B- to the drive controller. • DCON ECM.	All functions inhibited.
C061:	C061:DCON ECM Fault Type 07	Open circuit of the key switch circuit or battery positive / negative of the drive controller.	• Open circuit of the motor controller harness. • Open circuit to B+ and/or B-. • Key switch relay power not closed. • DCON or GCON ECM.	All functions inhibited.
C063:	C063:DCON ECM Fault Type 09	Communication error of the CAN circuit between the GCON and the motor controller.	• Open circuit of the motor controller harness. • DCON or GCON ECM.	All functions inhibited.
C064:	C064:DCON ECM Fault Type 10	Output error of the thermal sensor circuit of the motor controller.	• DCON ECM.	All functions inhibited.
C077:	C077:DISABLED BY OWNER	Telematics Remote Disable.	• Machine disabled.	All functions inhibited.
C078:	C078:TELEMATICS NOT DETECTED	Telematics device not detected by GCON.	• Telematics device not connected. • Telematics device not installed.	**Telematics is installed:** Connect the telematics device to the GCON. **Telematics is not installed:** Navigate to the options menu on the machine and disable telematics.
C079:	C079:MOTOR SPEED MONITOR	Motor speed supervision.	• Motor speed detected exceeding the limit set by the Max Speed Supervision parameter. • Mis-adjusted Max Speed Supervision parameters.	All functions inhibited except platform down.
C080:	C080:MOTOR TRAVEL MONITOR	Motor travel supervision.	• With the vehicle in the stopped state, the motor frequency and/or phase current detected exceeding the limit set by the Travel Control Supervision parameter. • Mis-adjusted Travel Control Supervision parameters.	All functions inhibited except platform down.
C081:	C081: MOTOR INTERLOCK FAULT	Motor interlock monitor.	• During an interlock braking event, the motor speed exceeded he limit set by the Interlock Braking Supervision parameters.	All functions inhibited except platform down.
C082:	C082:SYSTEMFAULT OHL:NoCal	Outdoor height limit not calibrated.	• OHL not Calibrated.	All functions inhibited except platform down.
C083:	C083:DCON ECM SETUP INVALID	DCON startup configuration failed.	• Parameter is not modified successfully by GCON.	All drive and steer functions inhibited.
C084:	C084:BATT MGNT SYS NOT DETECTED	Battery not detected.	• Battery management system	All functions inhibited.
C085:	C085:BATTERY END OF LIFE	Battery has reached end of life.	• Batteries primary internal fuse has been blown • Battery has reached 0% State of Health	All functions inhibited.
C086:	C086:BMS FAULT	Battery management system internal error.	• Battery management system	All functions inhibited.

Note: An error code C053 will be displayed if an updated PCON is installed on a machine that has not had the GCON updated. The GCON must be updated, or the original PCON must be installed back on the machine.

Type "CXXX" Faults

Type "E-Lift" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
C087:	C087: LCON NOT DETECTED	LCON Not Detected.	• LCON disconnected. • CAN communication failed.	Lifting/Lowering disabled.
C088:	C088: LCM NOT DETECTED	LCM Not Detected.	• Load cell module disconnected. • CAN communication failed.	All functions inhibited except platform down.
C089:	C089: LCON ECM FAULT TYPE 01	LCON ECM Fault: Hardware.	• Failure to read or write to nonvolatile (NVM) memory. • Internal controller fault detected. • Physical damage from external sources/events. • Battery overcharged. • Excessive motor or controller heating. • Firmware in the controller is incorrect. • CRC of the application or OS does not match. • Application built with an incompatible OS version. • Autobaud failure on linked controller CAN port. • Internal error with the controller. • Software loaded (.cdev) is not compatible with the controller hardware. • Mistuned Hazardous_Direction_Response_Time parameter. • Mistuned Hazardous_Accel parameter. • Mistuned Hazardous_Speed_Error parameter. • Mistuned Hazardous_Throttle_Response_Time parameter • Vehicle is moving when calibrating.	Lifting/Lowering disabled.
C090:	C090: LCON ECM FAULT TYPE 02	LCON ECM Fault: ECM Setup.	• Motor setup is required. • Incorrect sequence in application of Keyswitch, Interlock, Direction, or Throttle. • Faulty wiring, crimps or switches at KSI, interlock, Direction, or Throttle. • Moisture in above-noted digital input switches causing invalid (real) On/Off state. • Changing a safety-based parameter when interlock is ON. • Internal controller fault. • PDO Map has too many data bytes assigned or has objects mapped that are not compatible. • Parameter value detected outside of the limits. • Incorrect position feedback type choosen for motor technology in use. • Dual drive is enabled in torque mode. • Dual drive enabled on only one controller. • A Driver Output is used for two or more functions. • Mistuned Dual Drive CAN parameters. • Conflicting CAN Node Ids for Dual Drive.	Lifting/Lowering disabled.

Type "E-Lift" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
C091:	C091: LCON ECM FAULT TYPE 03	LCON ECM Fault: ECM Valve.	• Not defined	
C092:	C092: LCON ECM FAULT TYPE 04	LCON ECM Fault: Over Under V.	• Non-controller system drain on battery/keyswitch circuit wiring. • Resistance in low power (KSI) circuit is too high. • KSI disconnected while driving. • Battery parameters are misadjusted. • Battery resistance too high for given regen current. • Battery disconnected while regen braking. • Battery voltage applied to KSI (pin1) exceeds the severe overvoltage limit. • Regen braking currents elevated the battery voltage Controller performance limited at this voltage.	Lifting/Lowering disabled
C093:	C093: LCON ECM FAULT TYPE 05	LCON ECM Fault: Cap Charge.	• An external load on the capacitor bank (B+ connection terminal) that prevents the capacitor bank from charging.	Lifting/Lowering disabled
C094:	C094: LCON ECM FAULT TYPE 06	LCON ECM Fault: PEV Disconnect.	• Not defined.	
C095:	C095: LCON ECM FAULT TYPE 07	LCON ECM Fault: ECM Key Off.	• Not defined.	
C096:	C096: LCON ECM FAULT TYPE 09	LCON ECM Fault: LCON No CAN Msg.	• Not defined.	
C097:	C097: LCON ECM FAULT TYPE 10	LCON ECM Fault: LCON Temp Sensor.	• Controller is operating in an extreme environment. • Excessive load on vehicle. • Improper mounting of controller.	Lifting/Lowering disabled
C098:	C098: LCON MOTOR TRAVEL MONITOR	LCON Motor Travel Supervision.	• Motor frequency and/or phase current detected exceeding the limit set by the Travel Control Supervision parameter. • Misadjusted Travel Control Supervision parameters.	Lifting/Lowering disabled
C099:	C099: PCON NOT AUTHORIZED	PCON not Authorized.	• Handshake process failed. • Non-genuine PCON installed onto the machine.	All functions operate.
C100:	C100: DCON NOT AUTHORIZED	DCON not Authorized.	• Handshake process failed. • Non-genuine DCON installed onto the machine.	All functions operate.

Type "CXXX" Faults

Type "E-Lift" Faults, (continued)

DTC Number	Message on GCON LCD	Description	Possible Causes	Failure Mode
C101:	C101: LCON NOT AUTHORIZED	LCON not Authorized.	• Handshake process failed. • Non-genuine LCON installed onto the machine.	All functions operate.
C102:	C102: TILT SENSOR NOT AUTHORIZED	Tilt Sensor not Authorized.	• Handshake process failed. • Non-genuine Tilt Sensor installed onto the machine.	All functions operate.
C103:	C103: LOAD SENSOR NOT AUTHORIZED	Load Cell not Authorized.	• Handshake process failed. • Non-genuine Load Cell installed onto the machine.	All functions operate.
C104:	C104:BATT CHRGR NOT AUTHORIZED	Battery Charger not Authorized.	• Handshake process failed. • Non-genuine Battery Charger installed onto the machine.	All functions operate.
C105:	C105: BATT MGMT NOT AUTHORIZED	Battery not Authorized.	• Handshake process failed. • Non-genuine Battery installed onto the machine.	All functions operate.
C106:	C106: DCON LCON COMMUNICATION	DCON LCON Communication.	• CAN communication failure. • DCON or LCON ECM.	Lifting/Lowering disabled
C107:	C107: LCON PDO TIMEOUT	LCON PDO timeout.	• The time between CAN PDO messages received exceeded the PDO timeout period as defined by the Event Timer parameter.	Lifting/Lowering disabled
C108:	C108: LIFT MOTOR SPEED MONITOR	Lift Motor Speed Supervision.	• Motor speed detected exceeding the limit set by the Max Speed Supervision parameter. • Misadjusted Max Speed Supervision parameter.	Lifting/Lowering disabled
C109:	C109: LIFT MOTOR FEEDBACK	Lift Motor Encoder Failure.	• Limited Operating Strategy (LOS) controlmode has been activated; as a result of either an Encoder Fault (flash code 3-6) or a Stall Detected fault (flash code 7-3). • Motor Encoder failure. • Bad crimps of faulty wiring. • Vehicle is stalled.	Lifting/Lowering disabled
C110:	C110: MC SOFTWARE MISMATCH	MC Software Mismatch.	• Incompatible DCON installed onto the machine. • DCON ECM.	All functions inhibited.
C111:	C111: SYSTEMFAULT MAX HEIGHT:NoCal	Max Height Not Calibrated.	• Max Height Calibration process not performed.	All functions inhibited except platform down.

Battery Charger

The charger continuously monitors internal and external conditions. Fault and Error codes are generated by the charger to indicate that an internal or external malfunction has been detected in the electrical system. The types of Diagnostic Trouble Codes that may occur are explained below.

Type "F" codes – Indicate an internal fault condition has occurred and caused charging to stop.

Type "E" codes - Indicate an external fault condition has occurred and caused charging to stop.

Type "P" code - Indicates charger programming mode is active. This will occur when the charger profile is being configured.

Type "USB" code - Indicates the USB interface is active, and the USB should not be removed. This will occur when the charger firmware is being updated.

 Solid red - Internal fault condition. Type "F" fault code.

 Flashing amber - External fault condition. Type "E" error code.

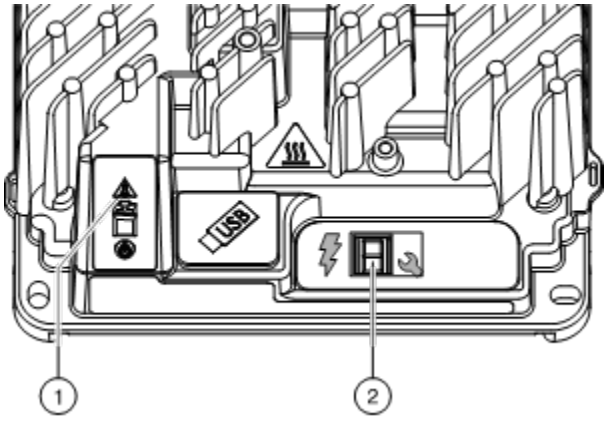
 Flashing green - USB interface is active.

 Solid green - Firmware update is complete. Remove USB from charger.

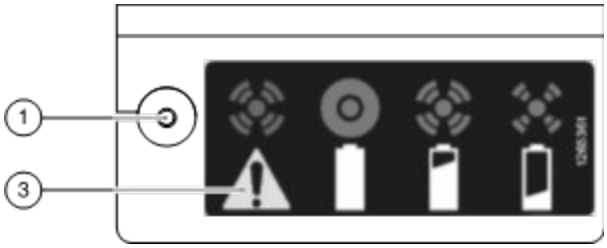
Codes are displayed as F, E or P and followed by three numbers and a period (example: E-0-0-4). The charger can display multiple codes.

If the batteries are changed from one type to another, (example: flooded lead acid to AGM), the charger profile must be programmed. Refer to Repair Procedure, *Programming the Charger Profile*.

Battery Charger



Charger status indicators



Remote charger status indicators

1 Error / Fault / USB indicator
2 Charger profile / Error display
3 Error / Fault

Charger Fault Codes

Charger Fault Code	Genie Fault ID	Genie Fault Type	Description	Possible Causes	**Solution**
F-0-0-1	135	8	DC-DC failure: LLC excessive leakage fault.	Internal charger fault.	Disconnect AC input and battery pack for 30 seconds. If fault does not clear, replace charger.
F-0-0-2	135	8	PFC failure: PFC excessive leakage fault.		
F-0-0-3	135	8	PFC taken too long to boost.		
F-0-0-4	135	8	Charger unable to calibrate current offset.		
F-0-0-5	135	8	Output relay voltage too high when closed.		

Charger Error Codes

Charger Error Code	Genie Fault ID	Genie Fault Type	Description	**Condition**	Possible Causes
E-0-0-1	131	23	High battery voltage	Battery voltage too high to charge.	Check battery voltage and cable connections. Self clearing when condition has been corrected.
E-0-0-2	131	24	Low battery voltage detected prior to starting charge cycle	Battery voltage too low to charge.	Check battery voltage and cable connections. Check battery condition. Self clearing when condition has been corrected.
E-0-0-3	135	28	Charge timeout	Charge timeout caused by battery pack not reaching required voltage within safe time limit.	Charge output reduced due to high temperature. Charge at lower temperature. Check battery condition. Replace damaged battery. Check battery connections. Battery pack deep discharge. Disconnect battery pack for 30 seconds to clear fault when condition has been corrected.
E-0-0-4	204	21	Defective battery	Battery pack could not be trickle charged up to the minimum voltage.	Check battery condition. Replace damaged battery. Check battery connections. Disconnect battery pack for 30 seconds to clear fault when condition has been corrected.
E-0-0-7	264	23	Amp hour limit exceeded	Safety limit exceeded.	Check battery condition. Replace damaged battery. Check battery connections. Battery pack deep discharge. High parasitic loads on battery pack while charging. Disconnect parasitic loads. Disconnect battery pack for 30 seconds to clear fault when condition has been corrected.

Battery Charger

Charger Error Codes

Charger Error Code	Genie Fault ID	Genie Fault Type	Description	Condition	Possible Causes
E-0-0-8	233	19	Battery temperature out of range	Battery temperature sensor.	Check temperature sensor and electrical connections. Rest charger. Disconnect AC power for 30 seconds. Self clearing when condition has been corrected.
E-0-1-1	135	8	Charger disabled by external command	Battery pack not being charged..	Power outage. AC power disconnected before charging complete.
E-0-1-2	135	8	Reverse polarity	Battery connected incorrectly.	Check battery connections. Self clearing when condition has been corrected.
E-0-1-3	204	21	Battery does not take current	Battery voltage is detected, but charger is unable to charge the battery pack..	Incorrect profile for battery type. Installed from a different machine with different battery type. Disconnect battery pack for 30 seconds to clear fault when condition has been corrected.
E-0-1-6	135	8	Software update failed	Software update failed.	Confirm USB Flash Drive is formatted with correct software. If software update continues to fail, contact Genie Product support.
E-0-1-7	265	21	USB error	USB not connected correctly.	Remove and re-insert USB Flash Drive Disconnect AC input and battery pack for 30 seconds.
E-0-1-8	135	8	Slot CRC error	Software update failed.	Confirm USB Flash Drive is formatted with correct software. If software update continues to fail, contact Genie Product support.
E-0-1-9	135	29	Hardware does not support software	Charger hardware does not support software version being programmed.	Confirm USB Flash Drive is formatted with correct software. If software update continues to fail, contact Genie Product support.
E-0-2-0	266	31	No algorithm selected	Charger profile not programmed.	Program the charger for the proper battery profile.

Charger Error Codes

Charger Error Code	Genie Fault ID	Genie Fault Type	Description	Condition	Possible Causes
E-0-2-1	254	23	High battery voltage detected while charging	Battery voltage too high as detected by charger profile.	Check battery voltage and cable connections. Confirm charger profile is programmed for correct battery type. Self clearing when condition has been corrected.
E-0-2-2	254	24	Low battery voltage detected while charging	Battery voltage too low as detected by charger profile.	Check battery voltage and cable connections. Confirm charger profile is programmed for correct battery type. Self clearing when condition has been corrected.
E-0-2-3	267	23	High AC voltage	AC voltage greater than 270 VAC.	Connect to a stable AC source between 85 - 270 VAC / 45 - 65 Hz. Self clearing when condition has been corrected.
E-0-2-4	135	8	Failure to initialize	Charger failed to turn on correctly.	Disconnect AC input and battery pack for 30 seconds. Contact Genie Product Support.
E-0-2-5	267	24	Low AC voltage oscillation	AC voltage unstable.	Connect to a stable AC source between 85 - 270 VAC / 45 - 65 Hz. Using an undersized generator. Self clearing when condition has been corrected.
E-0-2-6	135	8	Script failure	Software update failed.	Confirm USB Flash Drive is formatted with correct software. If software update continues to fail, contact Genie Product support.
E-0-2-7	265	21	USB over current fault	USB over current protection has been tripped.	Remove and re-insert USB Flash Drive Use different USB Flash drive.
E-0-2-8	266	21	Charge profile incompatibility	Selected charger profile is not compatible with charger software.	Update charger software. Confirm charger profile is programmed for correctly. Updating current firmware and error occurs, contact Genie Product Support.

Battery Charger

Charger Error Codes

Charger Error Code	Genie Fault ID	Genie Fault Type	Description	**Condition**	Possible Causes
E-0-2-9	135	18	CAN Bus error	CAN Bus network error.	Check CAN Bus connections. CAN modules not functioning correctly. Termination resistance is ~60 ohms.
E-0-3-0	135	8	COMM battery module error	CAN Bus battery module error.	CAN Buss battery module not functioning correctly.
E-0-3-1	135	8	Vref for ADC measurements triggered alarm	Internal charger error.	Disconnect AC input and battery pack for 30 seconds. Contact Genie Product Support.
E-0-3-2	135	13	CAN Bus heartbeat error	CAN Bus heartbeat error.	CAN Bus devices not functioning correctly.
E-0-3-6	233	21	Battery temperature sensor charge profile	Battery temperature sensor is required by charger profile but is not installed.	Check battery temperature sensor connections. Check charger profile and confirm battery temperature sensor is installed.
E-0-3-7	135	8	CAN Open Error	CAN Open reprogramming failed.	Download CAN Open software. Reprogram charger using USB Flash Drive.
E-0-3-8	268	21	Stalled cooling fan	Fan obstructed.	Inspect fan for damage Clear blockage.

90AH Lithium Battery - Option

The battery is a modular battery system featuring an Intelligent Battery Management System (BMS) that offers safety protection for over/under voltage, overcharge/discharge current, short circuit and over/under temperature conditions.

Proper battery condition is essential to good machine performance and operational safety. Damaged cables and connections can result in component damage and hazardous conditions.

Note: Installation and maintenance shall be completed by a person trained and qualified to service lithium-ion batteries.

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

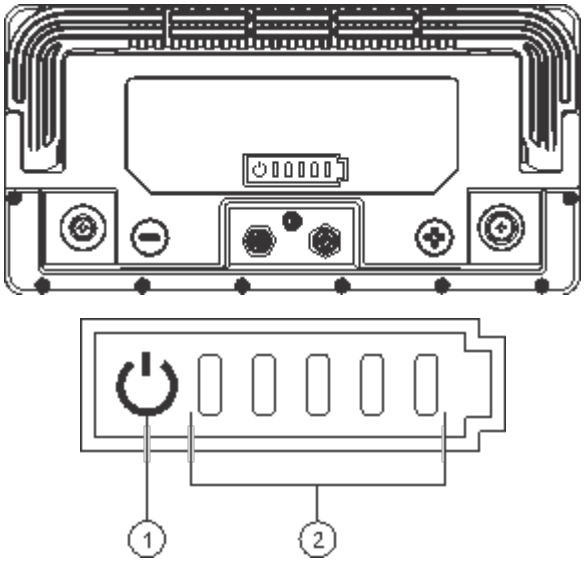
Battery manufacture recommends that the battery be placed in Ship Mode when the machine is stored for an extended period of time to extend battery storage life. When in Ship Mode the machine is inoperable until Wake Up Mode is activated.

SOC - State of Charge

Ship Mode and Wake Up Mode

Ship mode: Press and hold the SOC button for 20 seconds.

Wake Up mode: Press and hold the SOC button for 5 seconds.



1 SOC button
2 SOC / Fault indicator LED's

Lithium Battery - Option

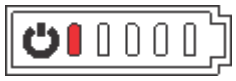
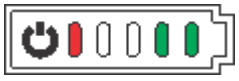
Battery SOC Indicators

Press and release the SOC button.

- Result: If the battery is above 10% SOC, the green indicators will remain on for 5 seconds.
- Result: If the battery is below 10% SOC, the red indicator will flash for 10 seconds.

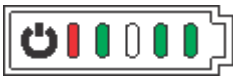
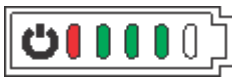
Battery SOC	LED Status
81 - 100%	
61 - 80%	
41 - 60%	
21 - 40%	
11 - 20%	
<10%	

Battery Fault Codes

Fault ID	LED Status	Description	Solution
F0		Over temperature (cells)	Wait for temperature to drop into acceptable operating range
F1		Over temperature (BMS)	Wait for temperature to drop into acceptable operating range
F2		Under temperature (charge)	Wait for temperature to drop into acceptable operating range
F3		Over current (recoverable)	If charging, power cycle charger. Replace charger if problem persists. If discharging, battery will resume operation after discharge has been stopped.
F4		Over current (permanent fault)	Disconnect and replace battery.
F5		Short circuit	Check all connection points to battery system.
F6		Cell under voltage during discharge only	Recharge battery.
F7		Cell over voltage during charge only (primary)	Discharge battery down to 20% SOC, then recharge battery.

Lithium Battery - Option

Battery Fault Codes

Fault ID	LED Status	Description	Solution
F8		Cell over voltage during charge only (secondary)	Disconnect and replace battery.
F9		Safety under voltage	Recharge battery.
F10		Cell pre-charge fault	Power cycle charger. Replace charger if problem persists.
F11		Charge fault	Power cycle charger. Replace charger if problem persists.
F12		Under temperature (discharge)	Wait for temperature to rise into acceptable operational range.
F13		Miscellaneous fault	Power cycle battery. Replace battery if problem persists.
F14		Pre-discharge	Enable the battery without load and check if fault goes away. If fault is not present, reconnect to system. If fault persists, disconnect and replace battery.
F15		Permanent fault	Disconnect and replace battery.

Schematics

Observe and Obey:

- ☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

About This Section

There are two groups of schematics in this section.

Electrical Schematics

⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

Hydraulic Schematics

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

Electrical Component and Wire Color Legends

Electrical Component Legend	
Item	**Description**
B5	Batteries
	B5 = Battery pack 24V DC, 4 each @ 6V DC (all other models) B10 = Battery pack 24 V DC, 2 each @ 12 V DC (GS-4046)
C	Connector
	C1 = Battery quick disconnect C2 = Cable connector, PCON C3 = Coil cord connector, PCON C4 = Power control (J1) C5 = Sensors and switches (J3) C6 = Function manifold (J2) C7 = Sensor power C8 = Sensor ground C9 = Pothole limit switch C10 = Down limit switch C11 = Level sensor C12 = Function manifold ground C13 = Drive reverse C14 = Drive forward C15 = Steer right C16 = Steer left C17 = Platform up C18 = Platform down C19 = Platform Overload C20 = Platform height sensor C21 = Platform Overload C22 = Parallel C23 = Platform height sensor C24 = Platform overload transducer C25 = Outriggers (J4) (GS-3232) C26 = Outrigger retract (GS-3232) C27 = Outrigger extend (GS-3232) C28 = Right rear outrigger (GS-3232) C29 = Left rear outrigger (GS-3232) C30 = Right front outrigger (GS-3232) C31 = Left front outrigger (GS-3232) C32 = Outrigger manifold - (GS-3232) C33 = Outrigger level sensor + (GS-3232) C34 = Outrigger level sensor - (GS-3232) C35 = Left front outrigger pressure transducer (GS-3232) C36 = Right front outrigger pressure transducer (GS-3232)

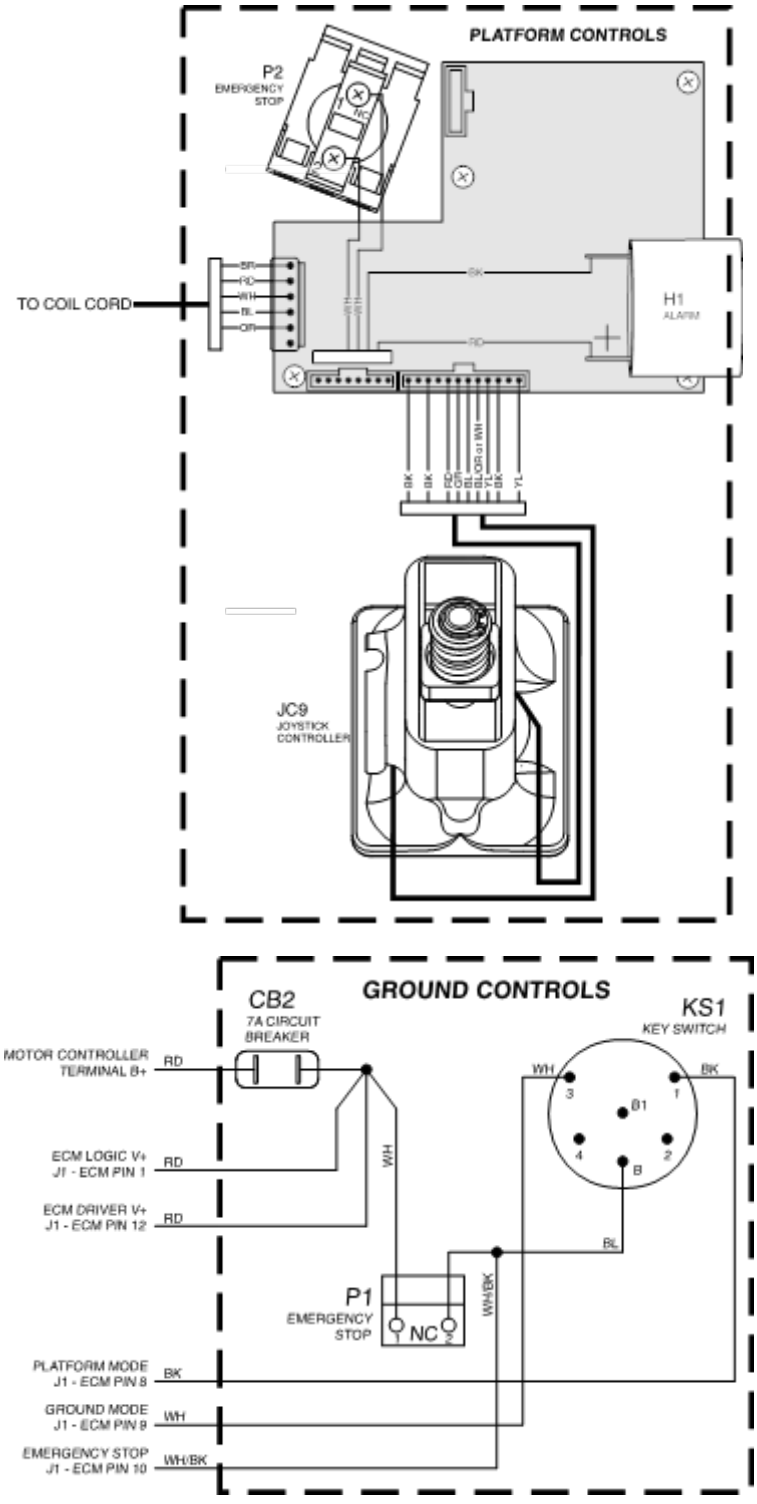
Electrical Component Legend, continued	
Item	**Description**
C	Connector
	C37 = Left rear outrigger pressure transducer (GS-3232) C38 = Right rear outrigger pressure transducer (GS-3232) C39 = Outrigger level sensor + (GS-3232) C40 = Limit switch (GS-3232) C41 = Platform controls C43 = Key switch C44 = Key switch C45 = Automotive horn + C46 = Emergency Stop button C47 = Alarm + C48 = Circuit breaker C49 = Emergency Stop button C50 = Circuit breaker C51 = Key switch C52 = Alarm - C53 = Automotive horn - C70 = Platform down + (GS-3232, GS-3246) C71 = Platform down - (GS-3232, GS-3246) C84 = Lift pressure selector (GS-4046)
CB2	Circuit breaker
E	Enclosure
	EN1 = Platform controls
	EN4 = AC outlet
FB	Flashing beacon (option)
FS1	Foot switch (option)
GND	Ground
H	Horn or alarm
	H1 = Horn or alarm H2 = Automotive horn (option) H5 = Multifunction Alarm
J	Connector plug
	J1 = Power control (U5) J2 = Function manifold (U5) J3 = Sensors and switches (U5) J4 = Outriggers (U5) (GS-3232) J5 = Coil cord to platform controls J6 = Emergency Stop and alarm to platform controls J7 = Joystick to PCON board

Electrical Component and Wire Color Legends

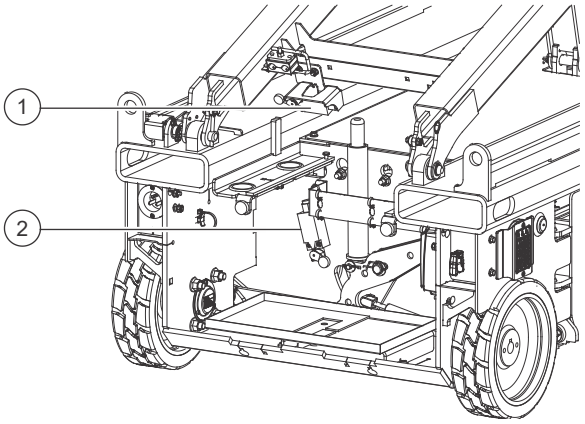
Electrical Component Legend, continued	
Item	**Description**
JC9	Joystick
K1	Contactor
KS1	Key switch
LS	Limit switch
	LS1 = Maximum drive height (GS-3232) LS6 = Platform down LS7 = Pothole LS8 = Pothole LS10 = Maximum drive height (GS-3232)
M5	Hydraulic power unit
N.C.	Normally closed
N.C.H.O	Normally closed held open
N.O.H.C.	Normally open held closed
P	Emergency power switch
	P1 = Emergency Stop button, GCON P2 = Emergency Stop button, PCON
PT	Pressure transducer
	PT1 = Left front outrigger (GS-3232) PT2 = Right front outrigger (GS-3232) PT3 = Left rear outrigger (GS-3232) PT4 = Right rear outrigger (GS-3232) PT15 = Platform Overload
R30	Resistor
S	Sensor
	S7 = Level sensor S8 = Outrigger level sensor (GS-3232) S14 = Platform height sensor
U	Electronic component
	U3 = Printed circuit board, PCON U5 = ECM - Electronic Control Module U6 = Drive motor controller, DCON U9 = Battery charger U13 = Inverter (if equipped)
Y	Valve coil
	Y1 = Parallel (GS-32, GS-46) Y2 = Lift pressure selector (GS-4046) Y3 = Steer right Y4 = Steer left Y5 = Drive reverse Y6 = Drive forward Y7 = Platform down Y8 = Platform up Y9 = Platform down (GS-3232, GS-3246) Y12 = Damper cylinder (GS-3232, GS-3246) Y33 = Left rear outrigger (GS-3232) Y34 = Right rear outrigger (GS-3232) Y35 = Left front outrigger (GS-3232) Y36 = Right front outrigger (GS-3232) Y39 = Outrigger retract (GS-3232) Y40 = Outrigger extend (GS-3232)

WIRE COLOR LEGEND	
Color	**Description**
BK	Black
BK/RD	Black/Red
BL	Blue
BL/BK	Blue/Black
BL/OR	Blue/Orange
BL/WH	Blue/White
BR	Brown
GR	Green
GR/BK	Green/Black
GR/WH	Green/White
GR/YL	Green/Yellow
LB	Light Blue
OR	Orange
OR/BK	Orange/Black
OR/RD	Orange/Red
OR/WH	Orange/White
RD	Red
RD/BK	Red/Black
RD/WH	Red/White
WH	White
WH/BK	White/Black
YL	Yellow

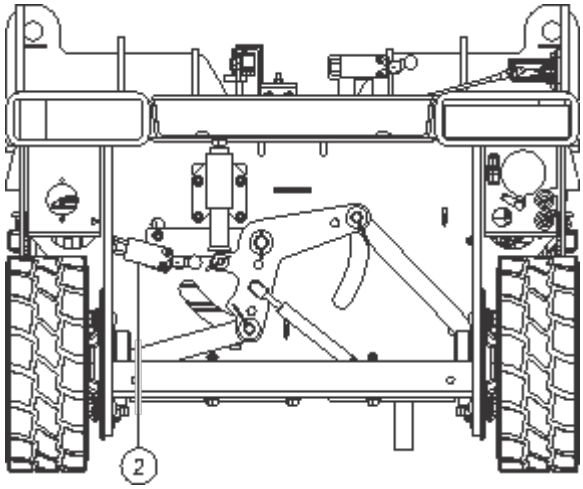
Wiring Diagram Ground and Platform Controls



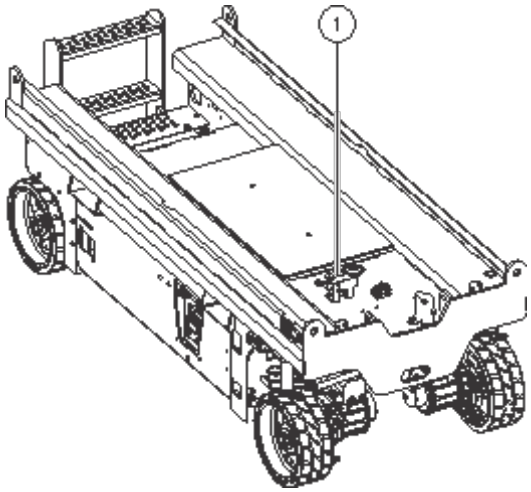
Limit Switch Legend



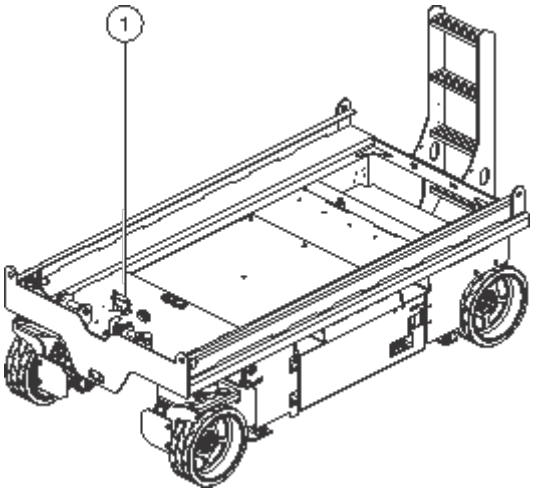
GS-1432m, GS-1932m



GS-1932, GS-2632, GS-3232



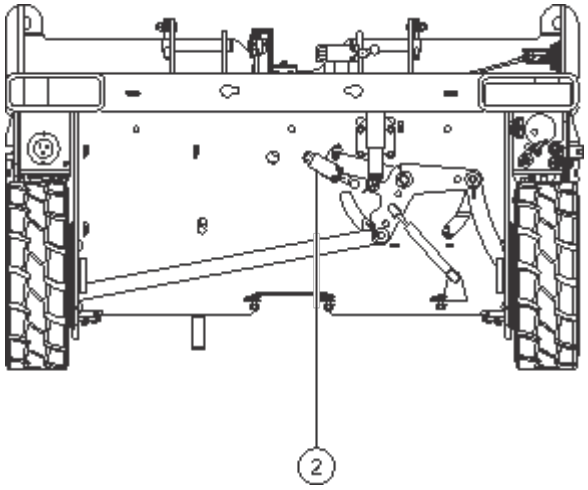
GS-1932



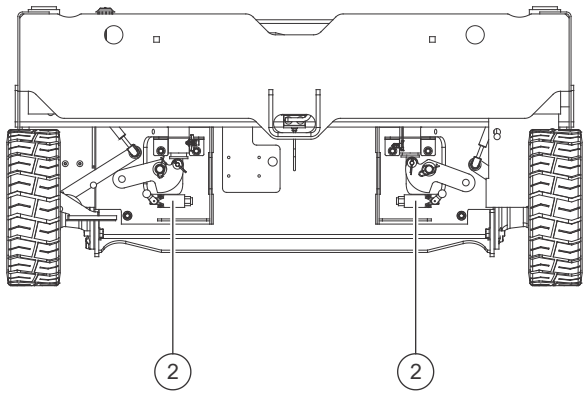
GS-2632, GS-3232, GS-2646, GS-3246, GS-4046

1 down limit switch LS6
2 pothole limit switches LS7, LS8

Limit Switch Legend



GS-2646, GS-3246, GS-4046

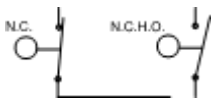


GS-4655

1 down limit switch LS6
2 pothole limit switches LS7, LS8

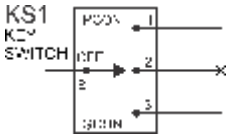
Electrical Symbol Legend

Wire with description or color



Limit switch

Motor controller

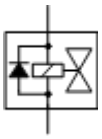


Key switch

Circuits crossing no connection

Emergency Stop button

Motor

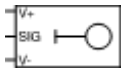


Solenoid valve with diode

Diode

Circuit breaker

Battery charger

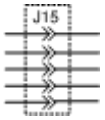


Level sensor

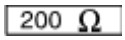
Circuit connection

Fuse

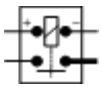
6V or 12V DC battery



Deutsch connector



Resistor



Contactor

Horn or alarm

Flashing beacon

Platform height sensor

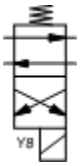
Pressure transducer

Hydraulic Symbols Legend

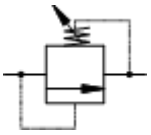
Hydraulic cylinder

Variable speed motor

Pressure transducer

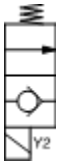


Solenoid operated
2 position 4 way
directional valve



Relief valve

Bi-directional motor

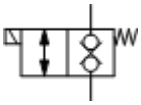


Solenoid operated
2 position 2 way
blocking valve
normally open

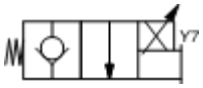
Solenoid operated
2 position 4 way
directional valve

Priority flow regulator

Brake

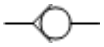


Solenoid operated
2 position 2 way valve
normally closed

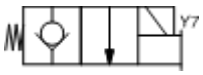


Proportional solenoid operated
2 position 2 way directional valve
normally closed

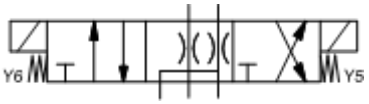
Accumulator



Check valve



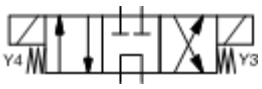
Solenoid operated
2 position 2 way
directional valve
normally closed



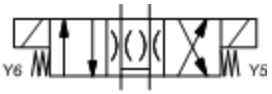
Solenoid operated
3 position 5 way
directional valve

Fixed displacement
pump

Shuttle valve



Solenoid operated 3 position
4 way directional valve

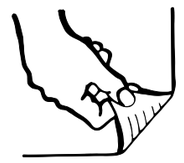


Solenoid operated 3 position
4 way directional valve

Filter

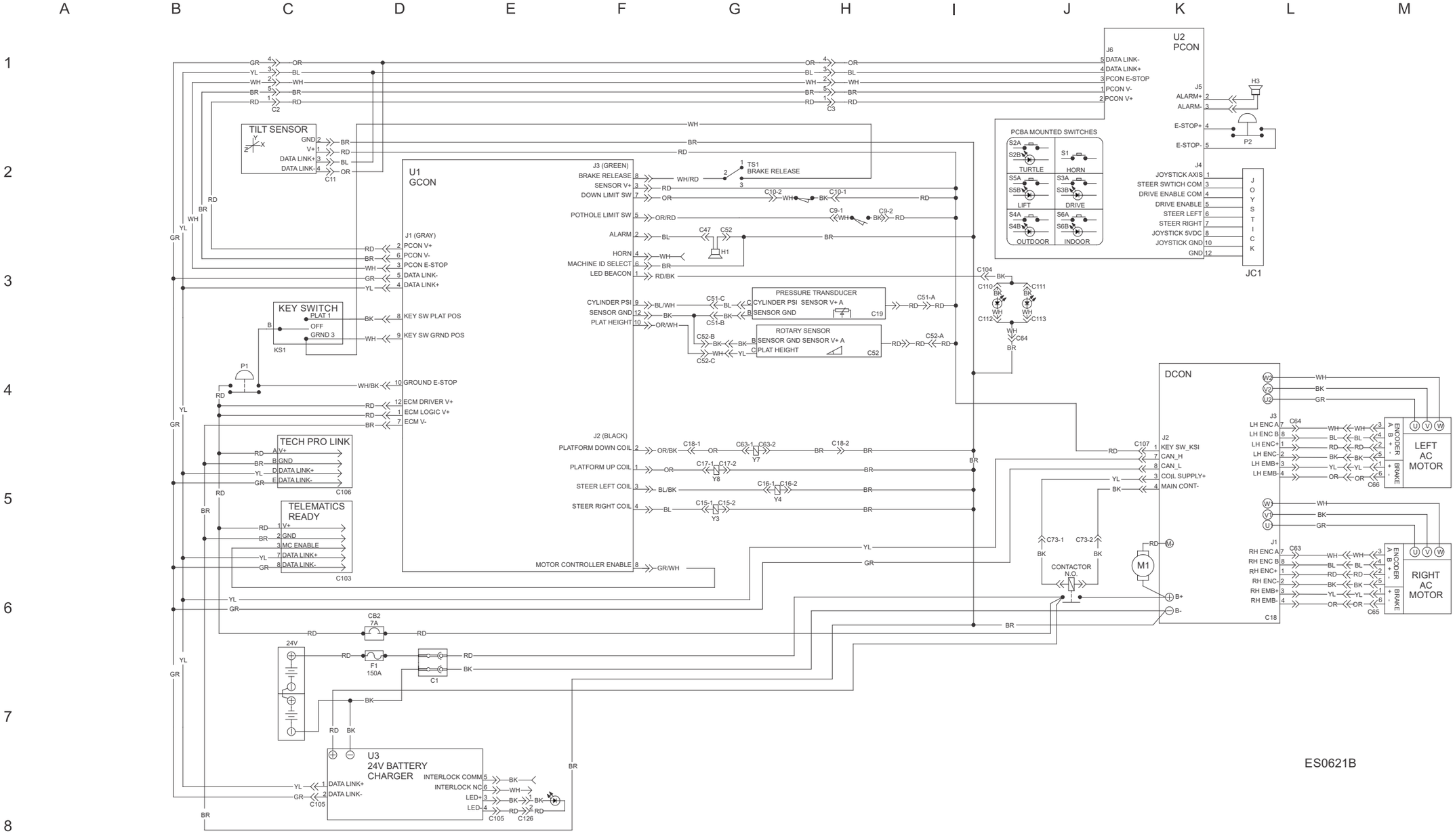
Orifice with size

Electrical Schematic,
GS-1432m, GS-1932m



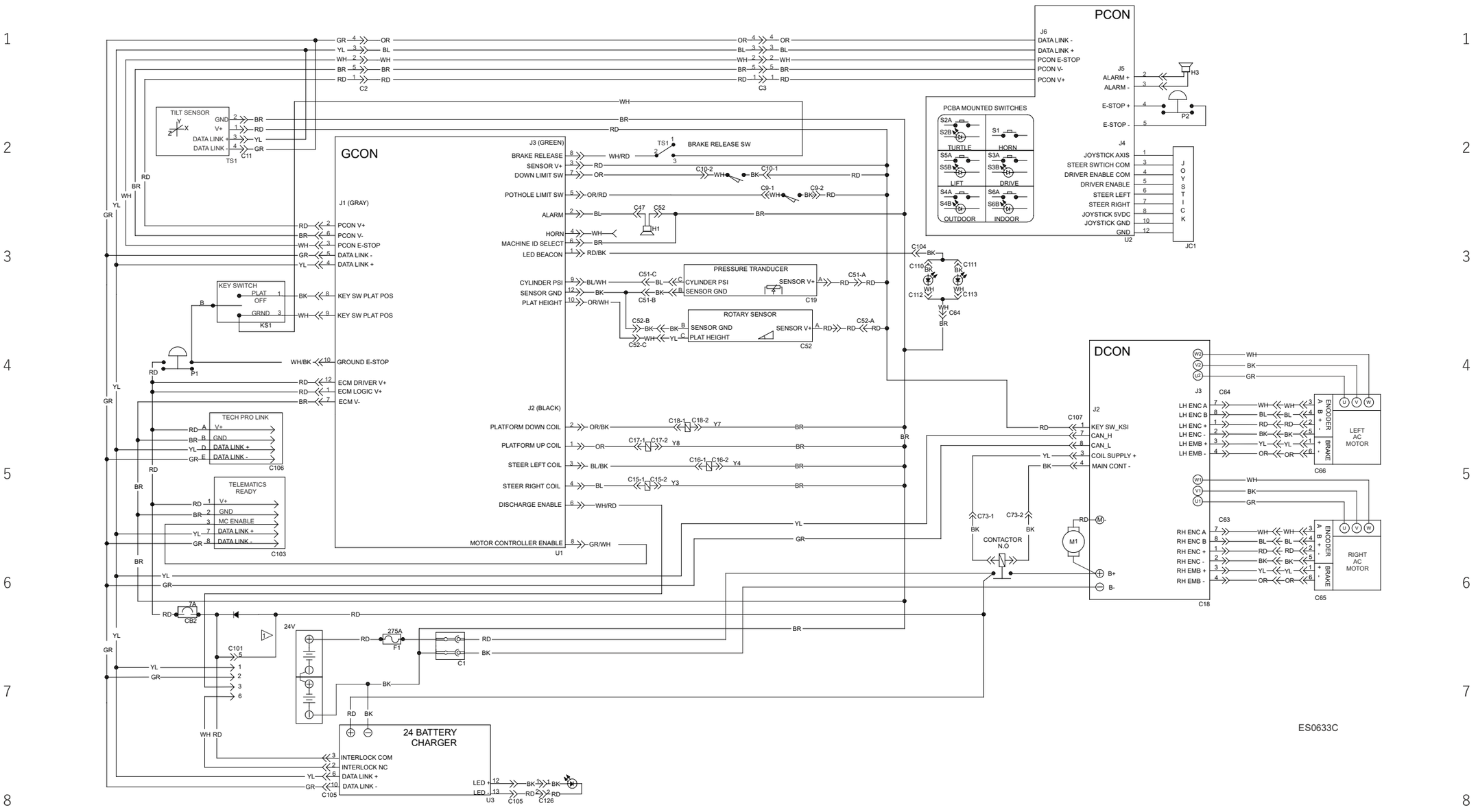
Electrical Schematic,

GS-1432m, GS-1932m



Electrical Schematic, GS-1932

Models with Hydraulic Lift, Standard Batteries

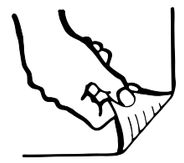


Electrical Schematic, GS-1932

Models with Hydraulic Lift, Standard Batteries

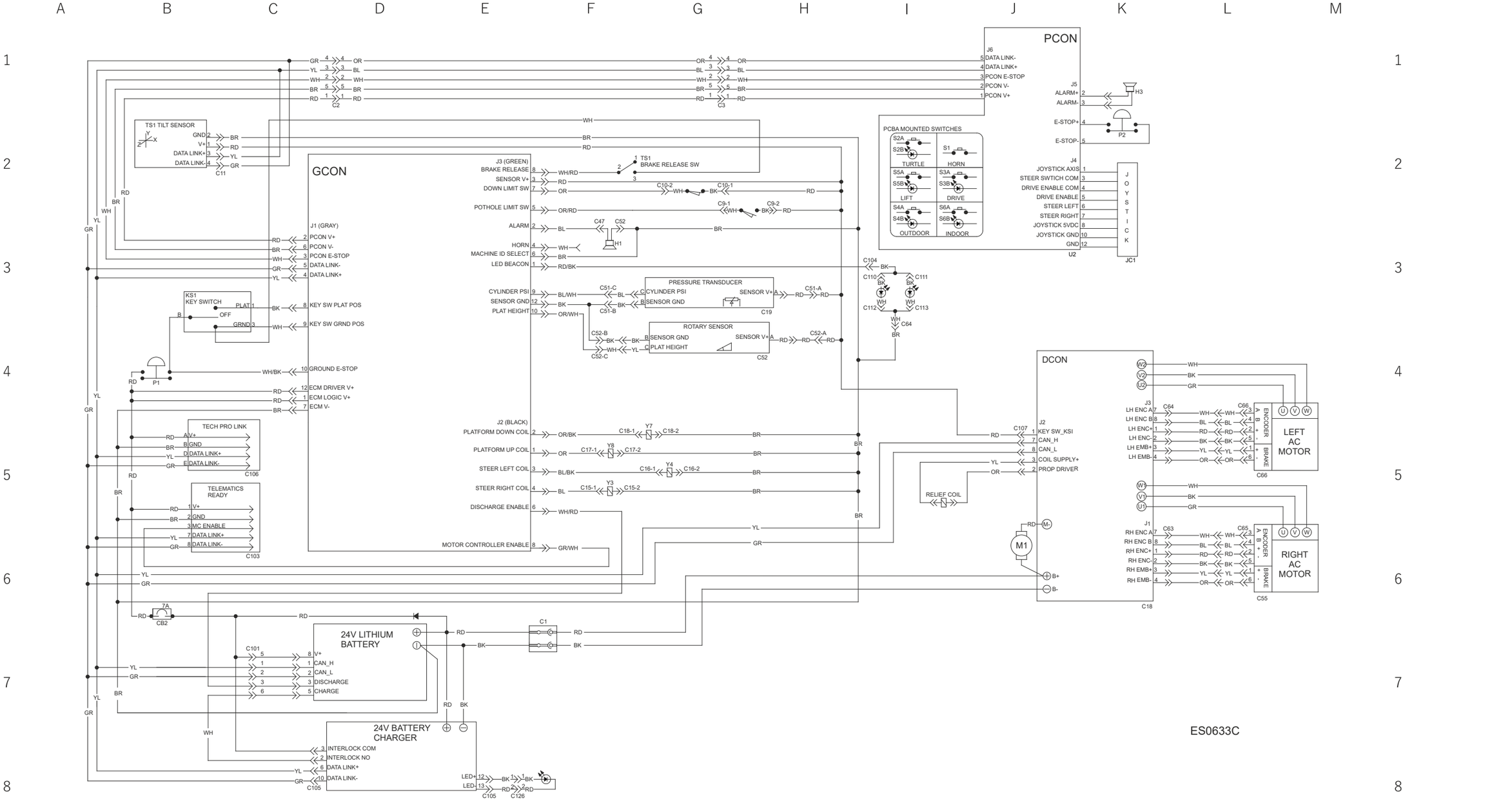
Electrical Schematic, GS-1932

Models with Hydraulic Lift, Lithium Battery



Electrical Schematic, GS-1932

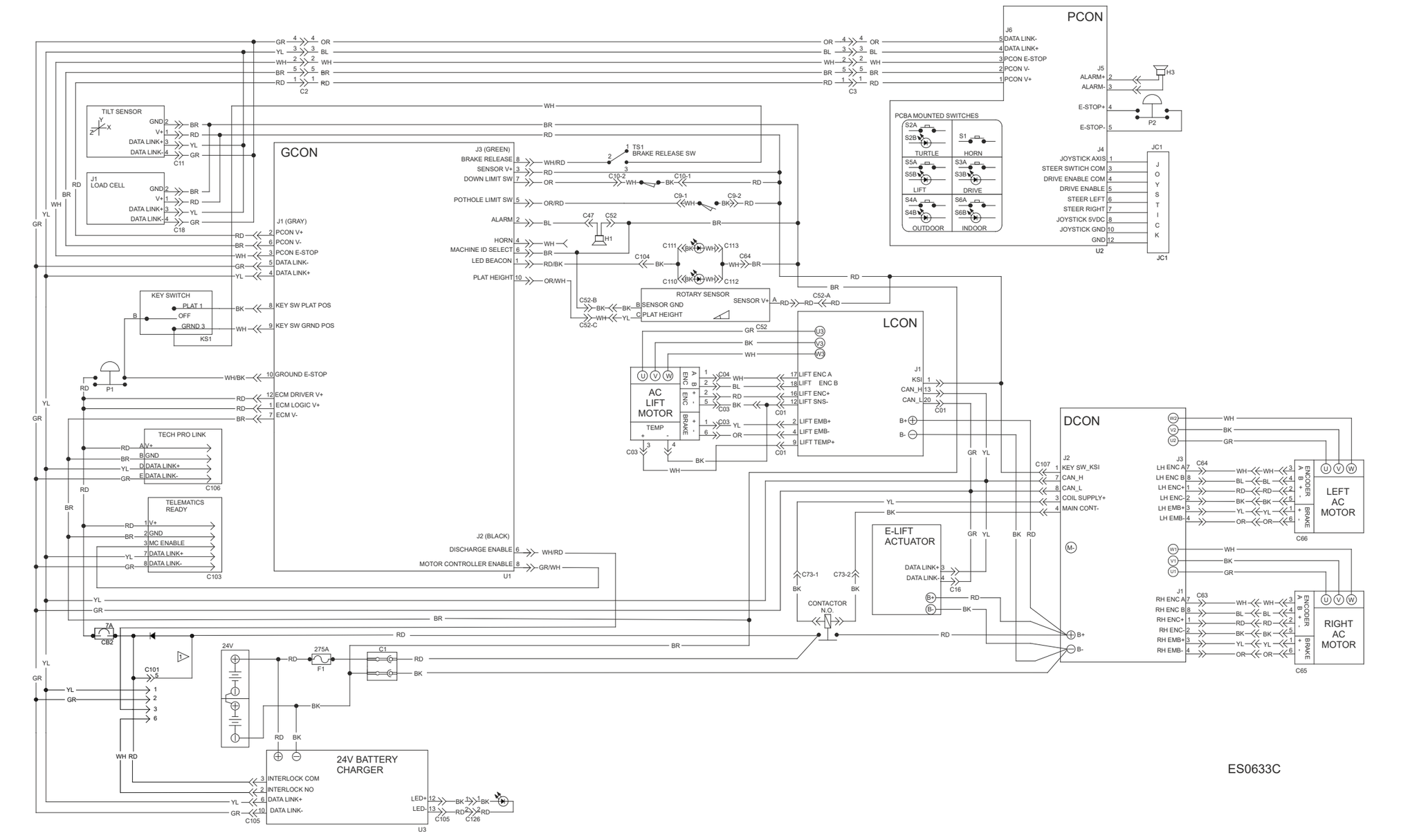
Models with Hydraulic Lift, Lithium Battery



ES0633C

Electrical Schematic, GS-1932

Models with Electric Lift, Standard Batteries



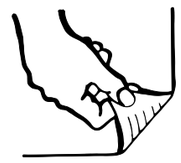
ES0633C

Electrical Schematic, GS-1932

Models with Electric Lift, Standard Batteries

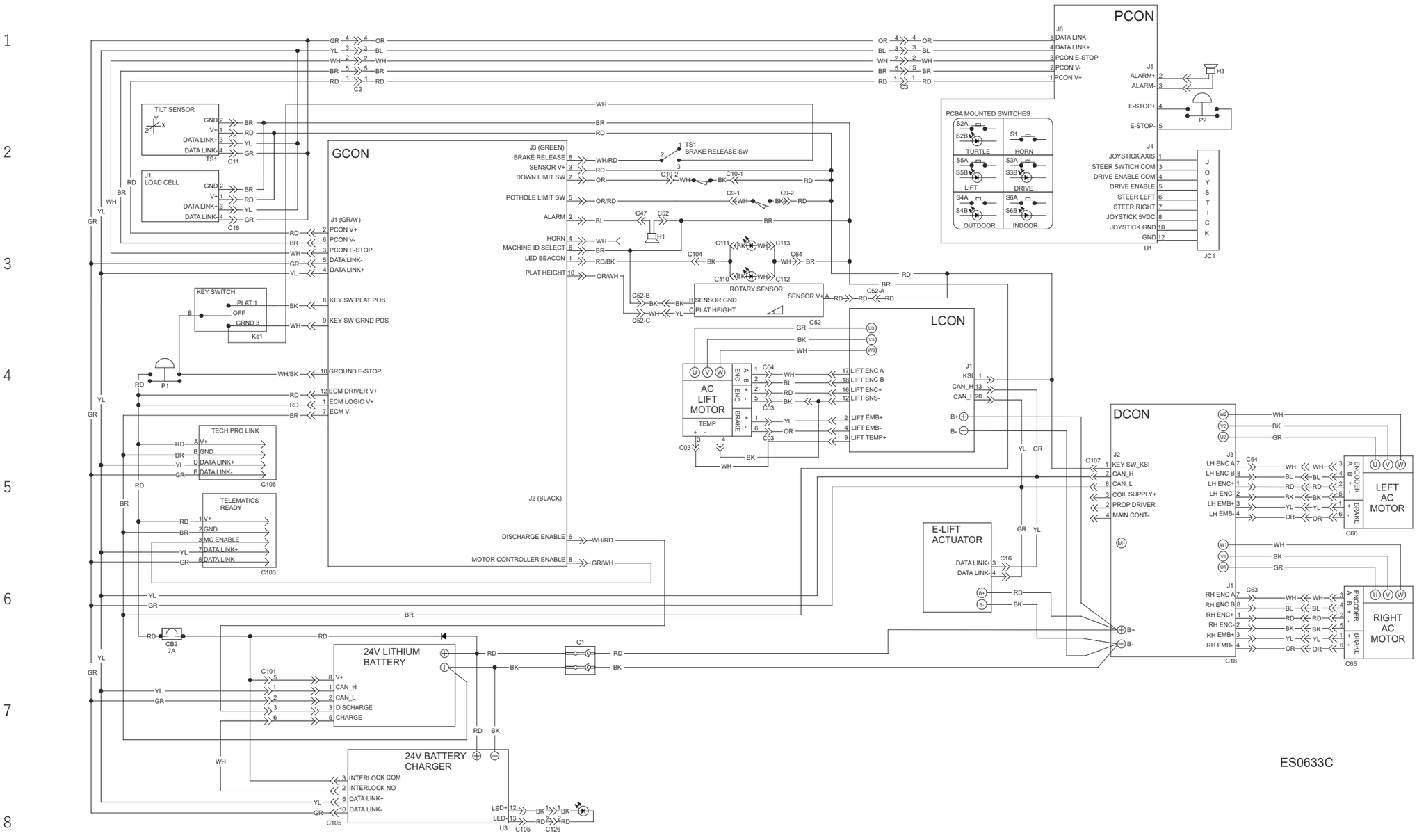
Electrical Schematic, GS-1932

Models with Electric Lift, Lithium Battery



Electrical Schematic, GS-1932

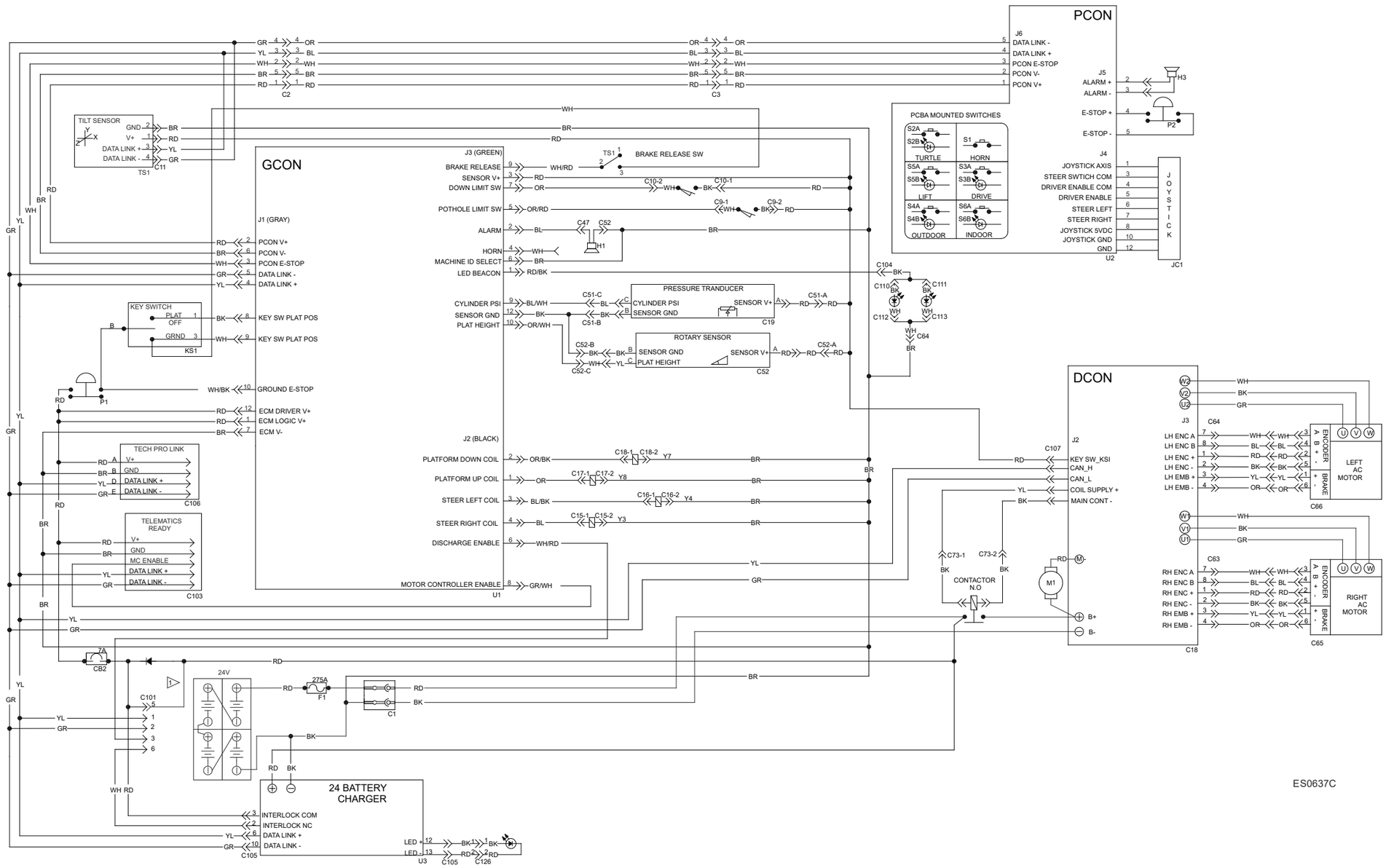
Models with Electric Lift, Lithium Battery



ES0633C

Electrical Schematic, GS-2632

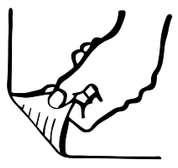
Models with Standard Batteries



ES0637C

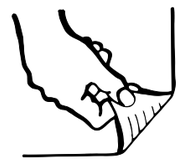
Electrical Schematic, GS-2632

Models with Standard Batteries



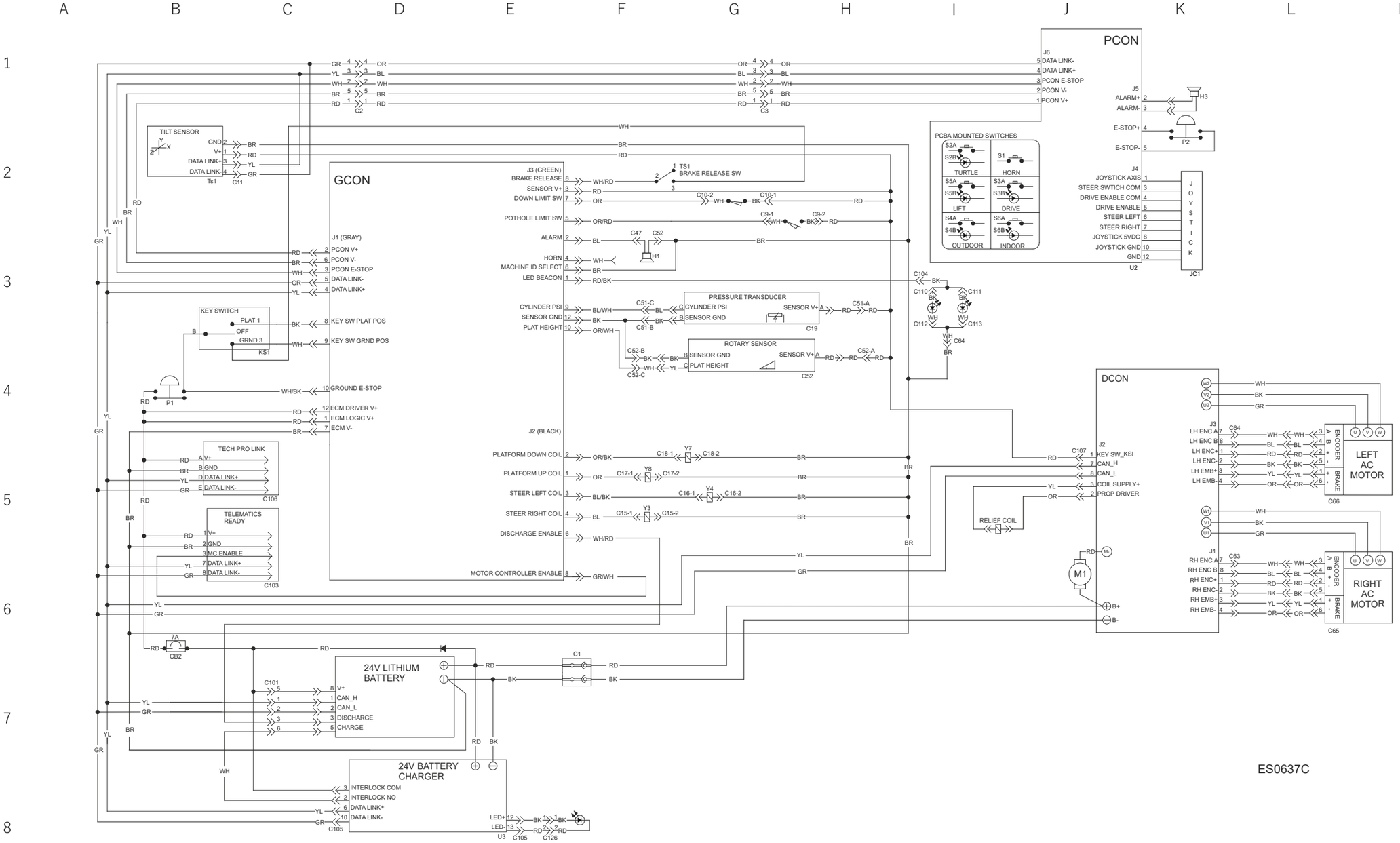
Electrical Schematic, GS-2632

Models with Lithium Battery



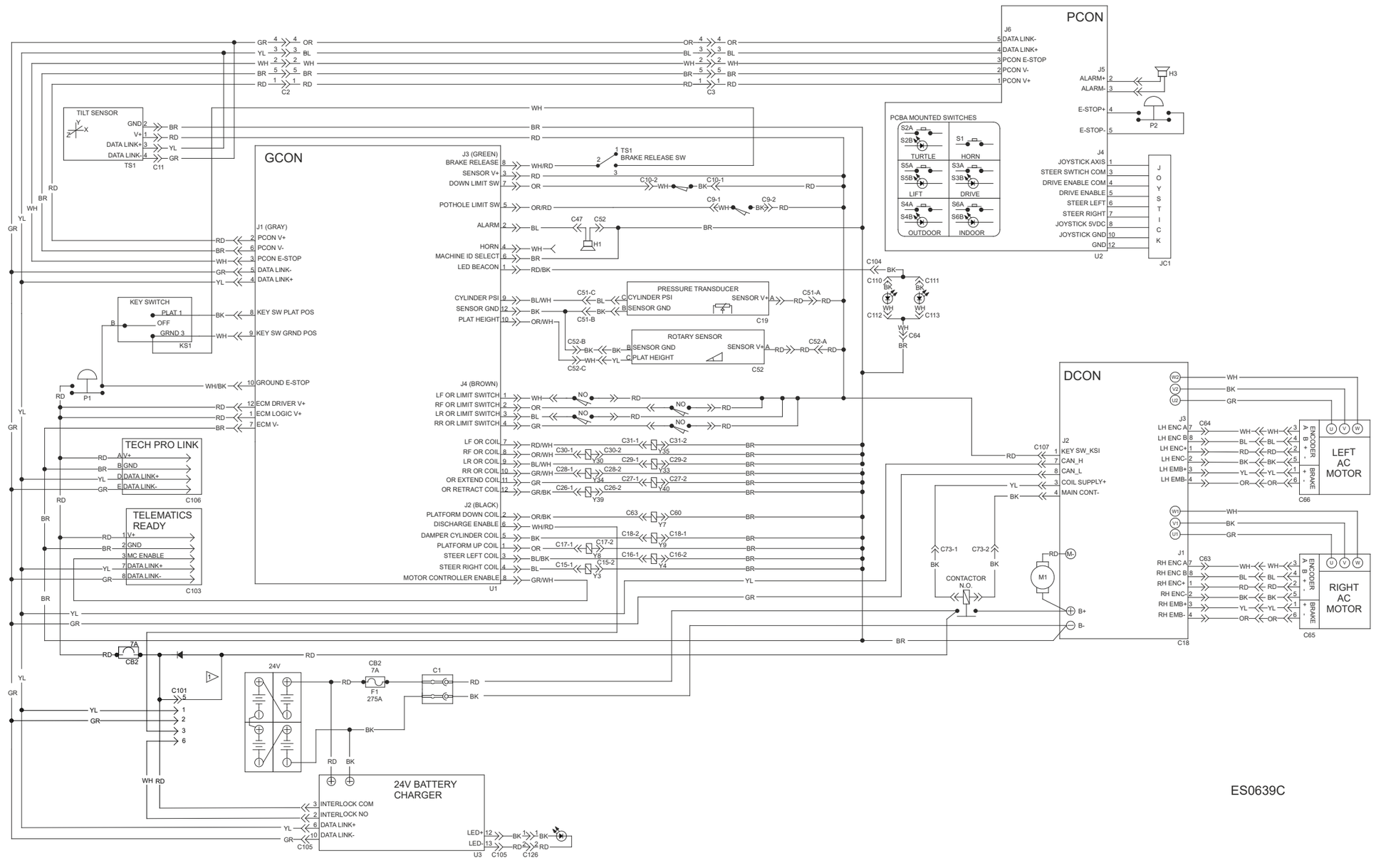
Electrical Schematic, GS-2632

Models with Lithium Battery



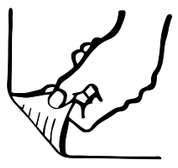
Electrical Schematic, GS-3232

Models with Standard Batteries



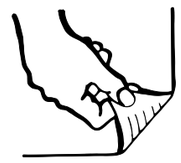
Electrical Schematic, GS-3232

Models with Standard Batteries



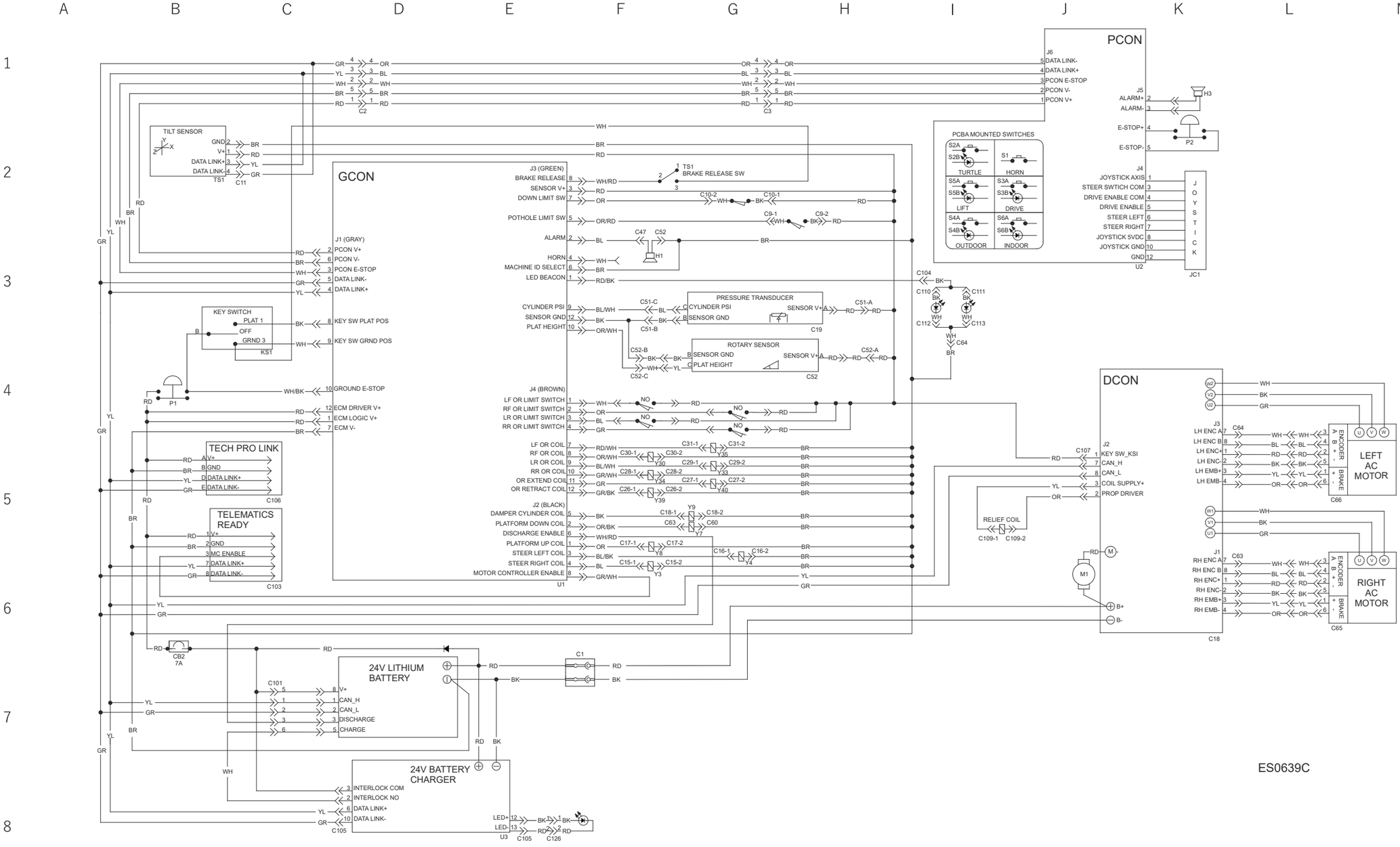
Electrical Schematic, GS-3232

Models with Lithium Battery



Electrical Schematic, GS-3232

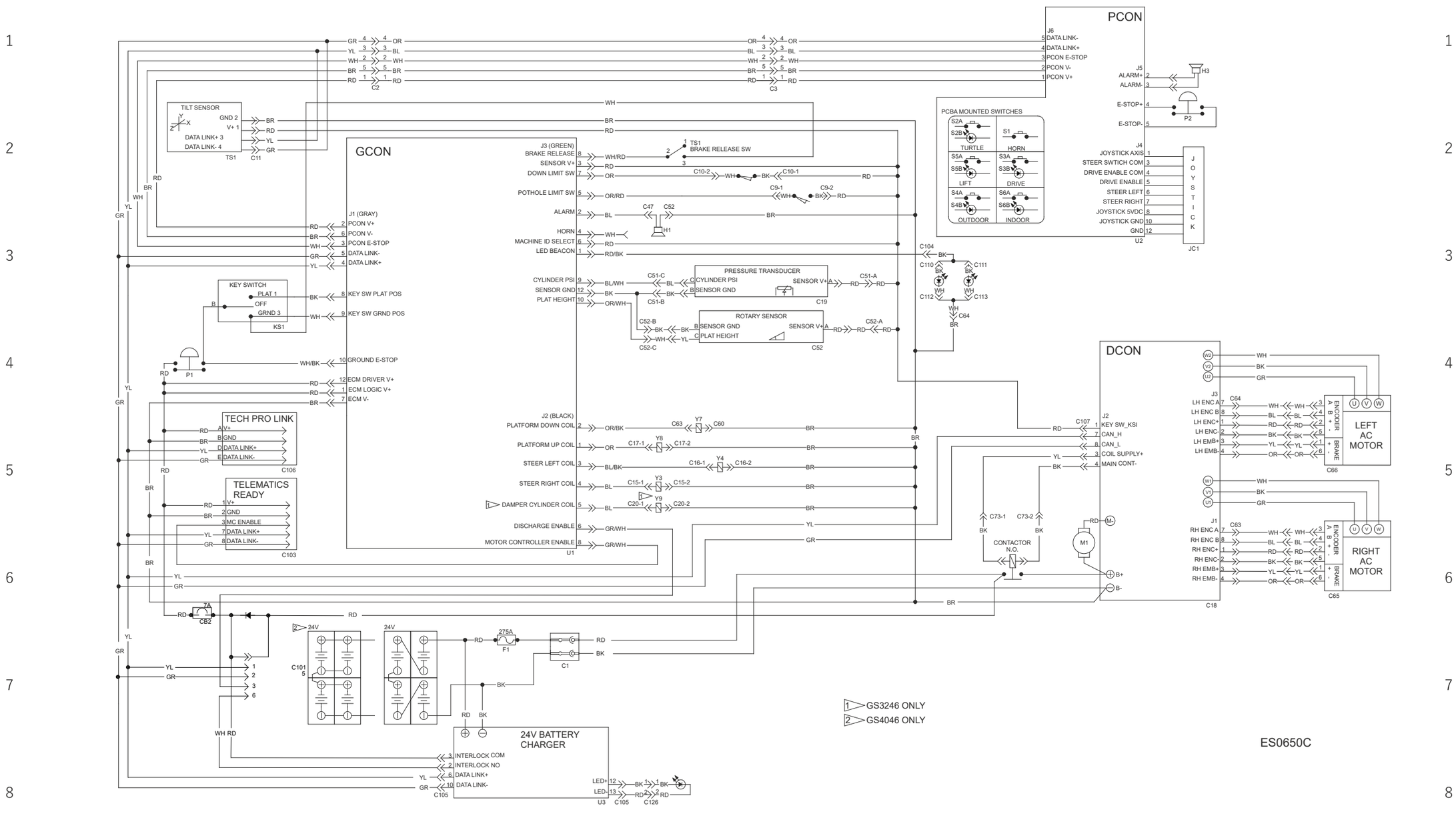
Models with Lithium Battery



ES0639C

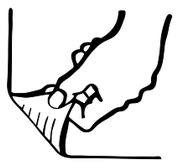
Electrical Schematic, GS-2646 / 3246 / 4046

Models with Standard Batteries



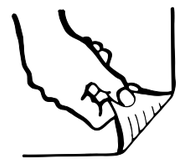
Electrical Schematic, GS-2646 / 3246 / 4046

Models with Standard Batteries



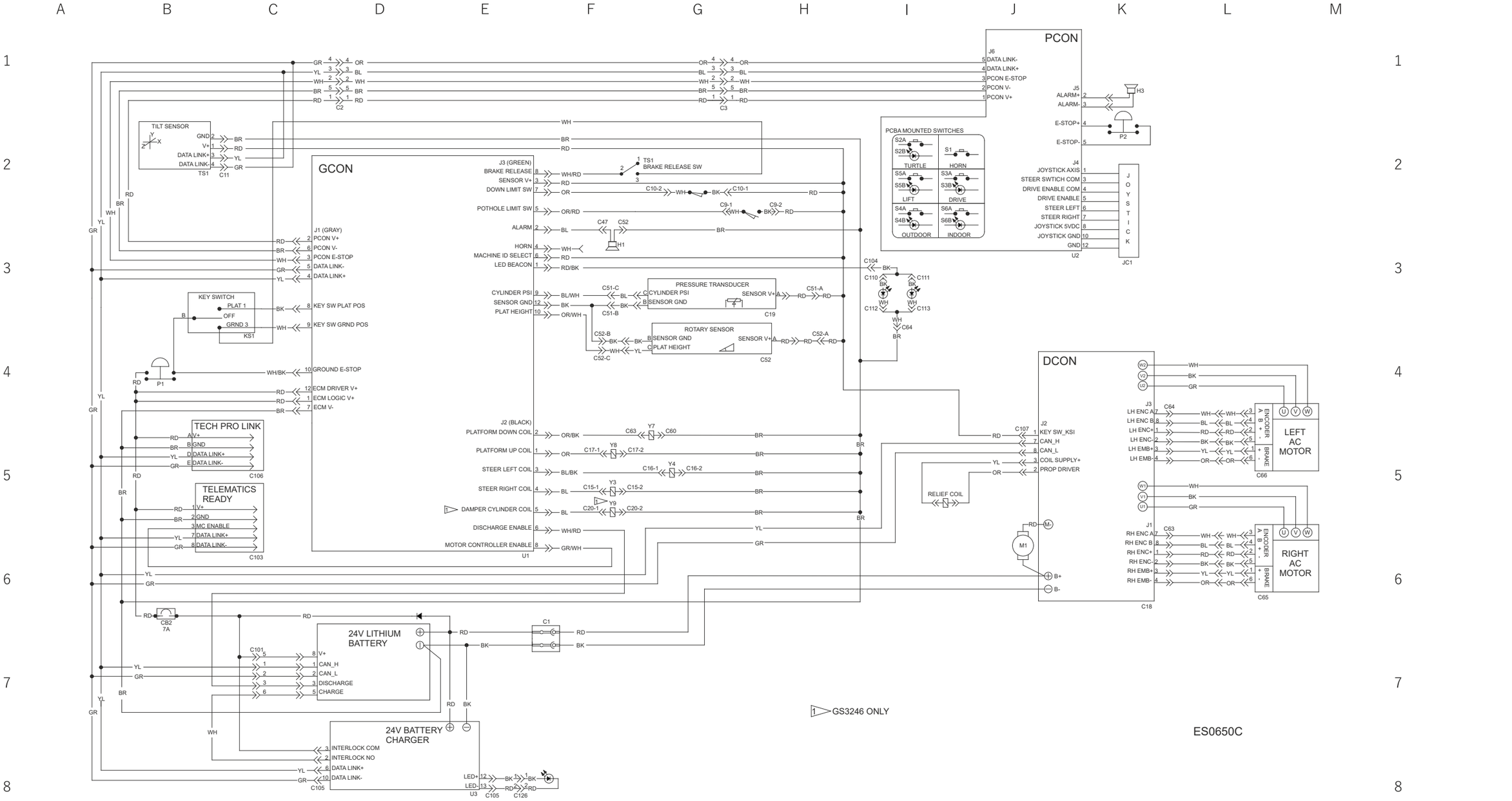
Electrical Schematic, GS-2646 / 3246 / 4046

Models with Lithium Battery

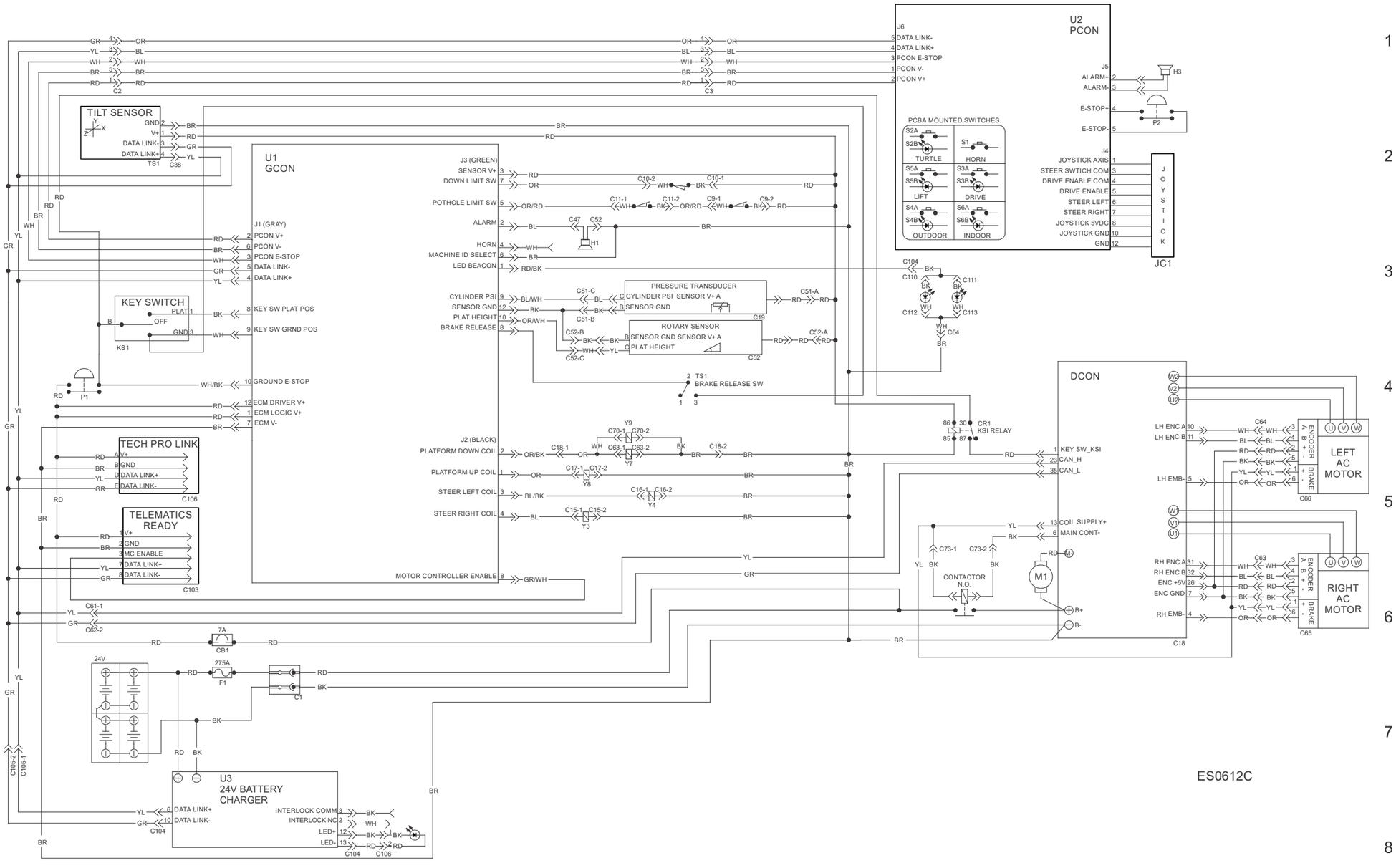


Electrical Schematic, GS-2646 / 3246 / 4046

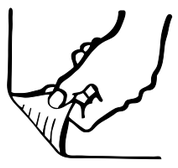
Models with Lithium Battery



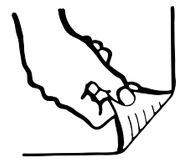
Electrical Schematic, GS-4655



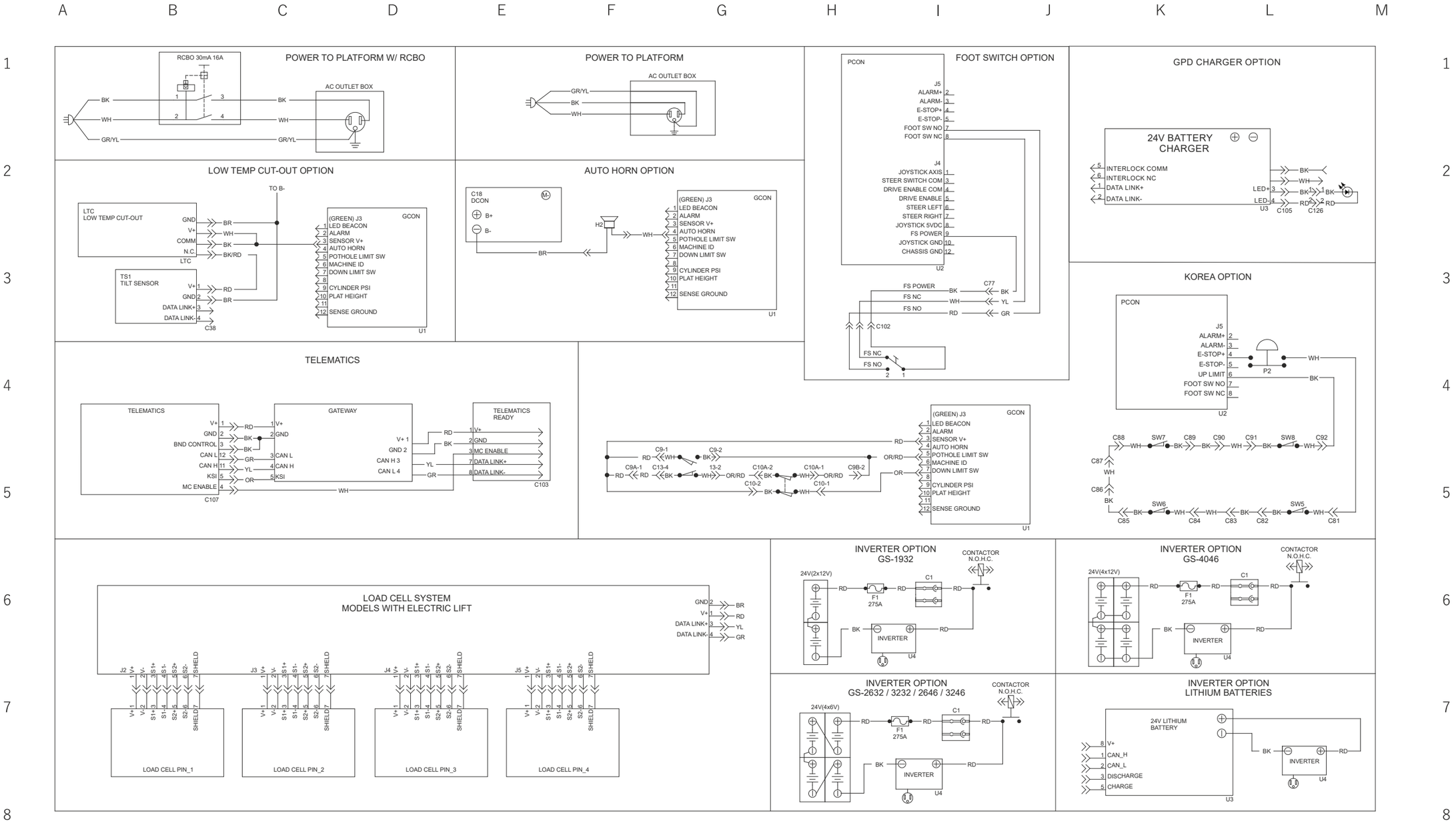
Electrical Schematic, GS-4655



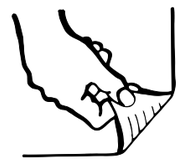
Electrical Schematic, Options



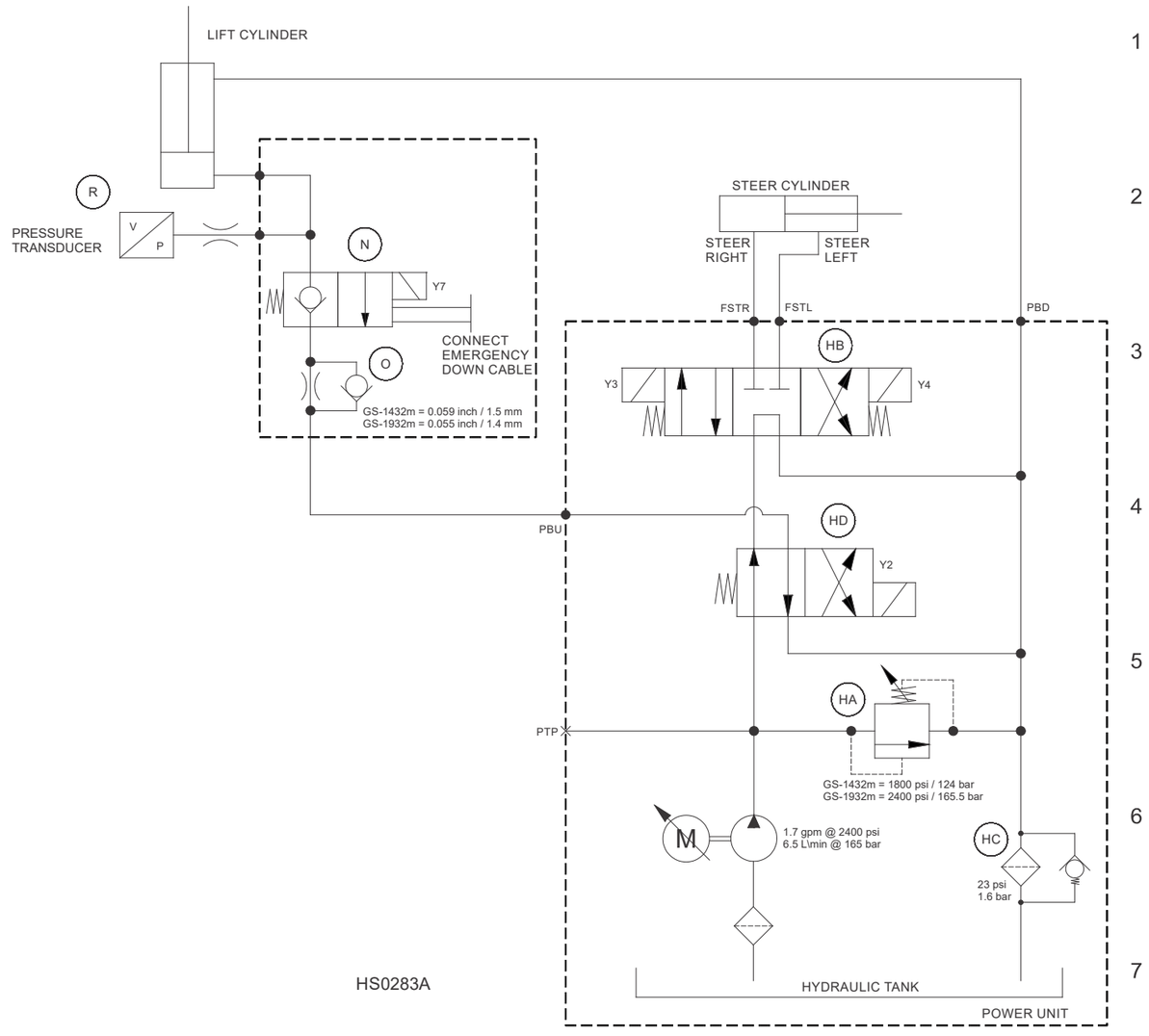
Electrical Schematic, Options



Hydraulic Schematic, GS-1432m, GS-1932m



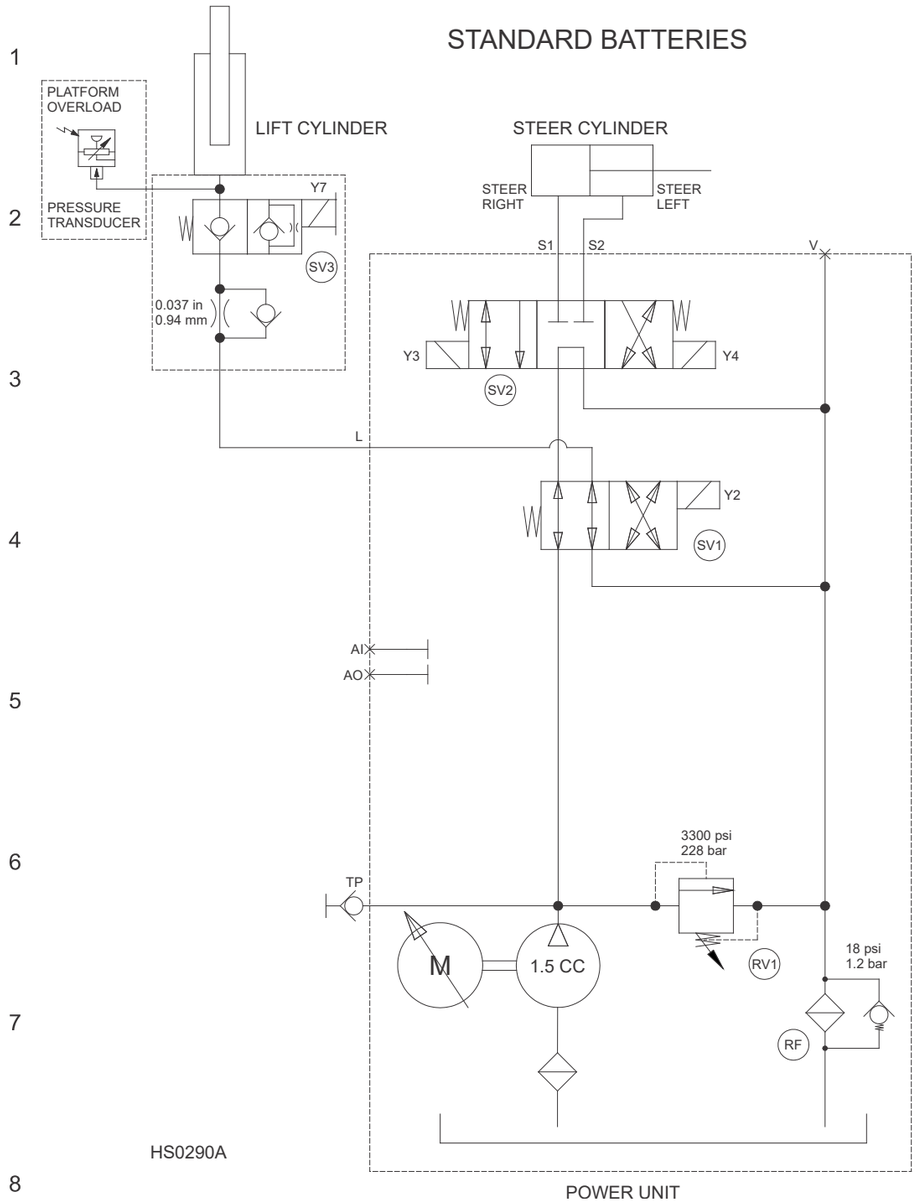
Hydraulic Schematic, GS-1432m, GS-1932m



HS0283A

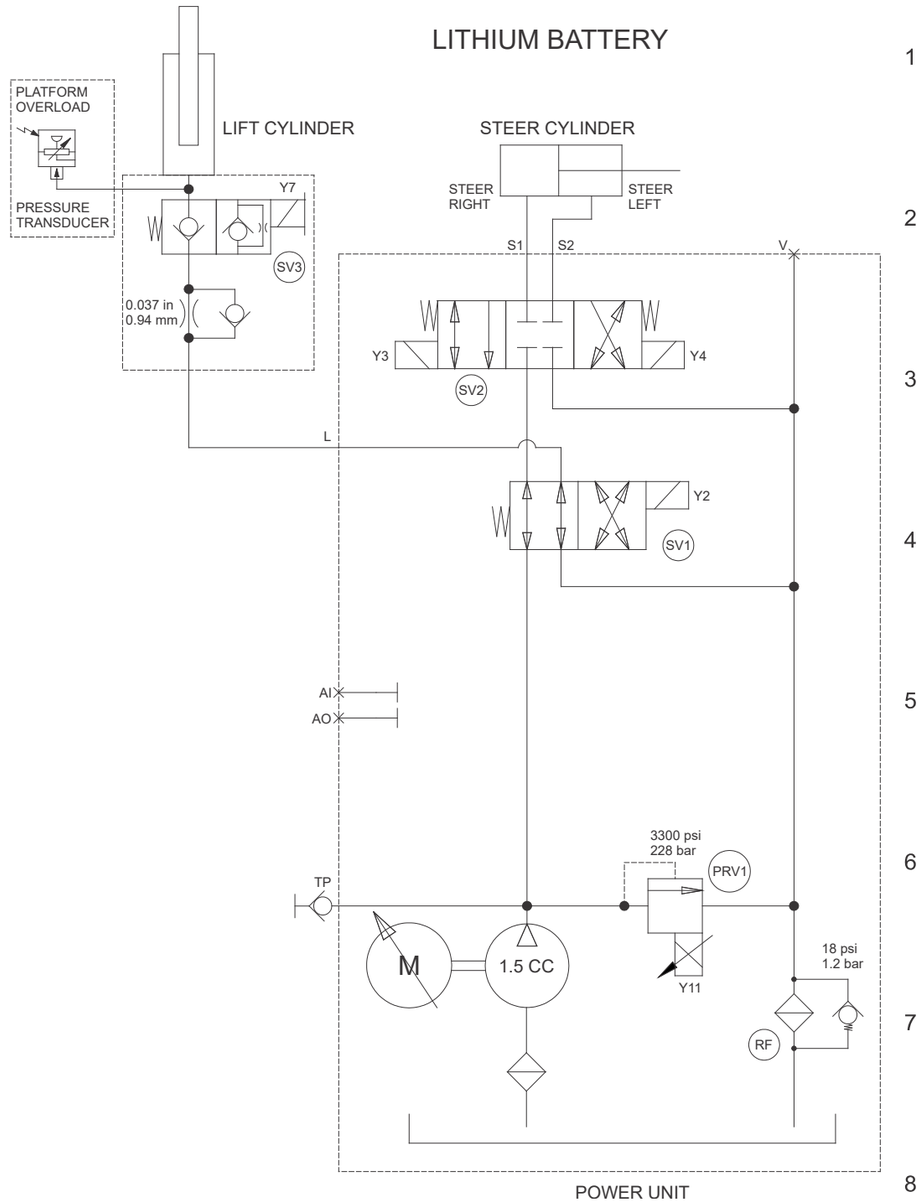
Hydraulic Schematic, GS-1932

STANDARD BATTERIES

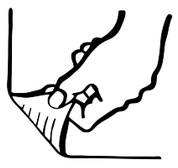


HS0290A

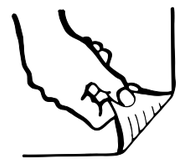
LITHIUM BATTERY



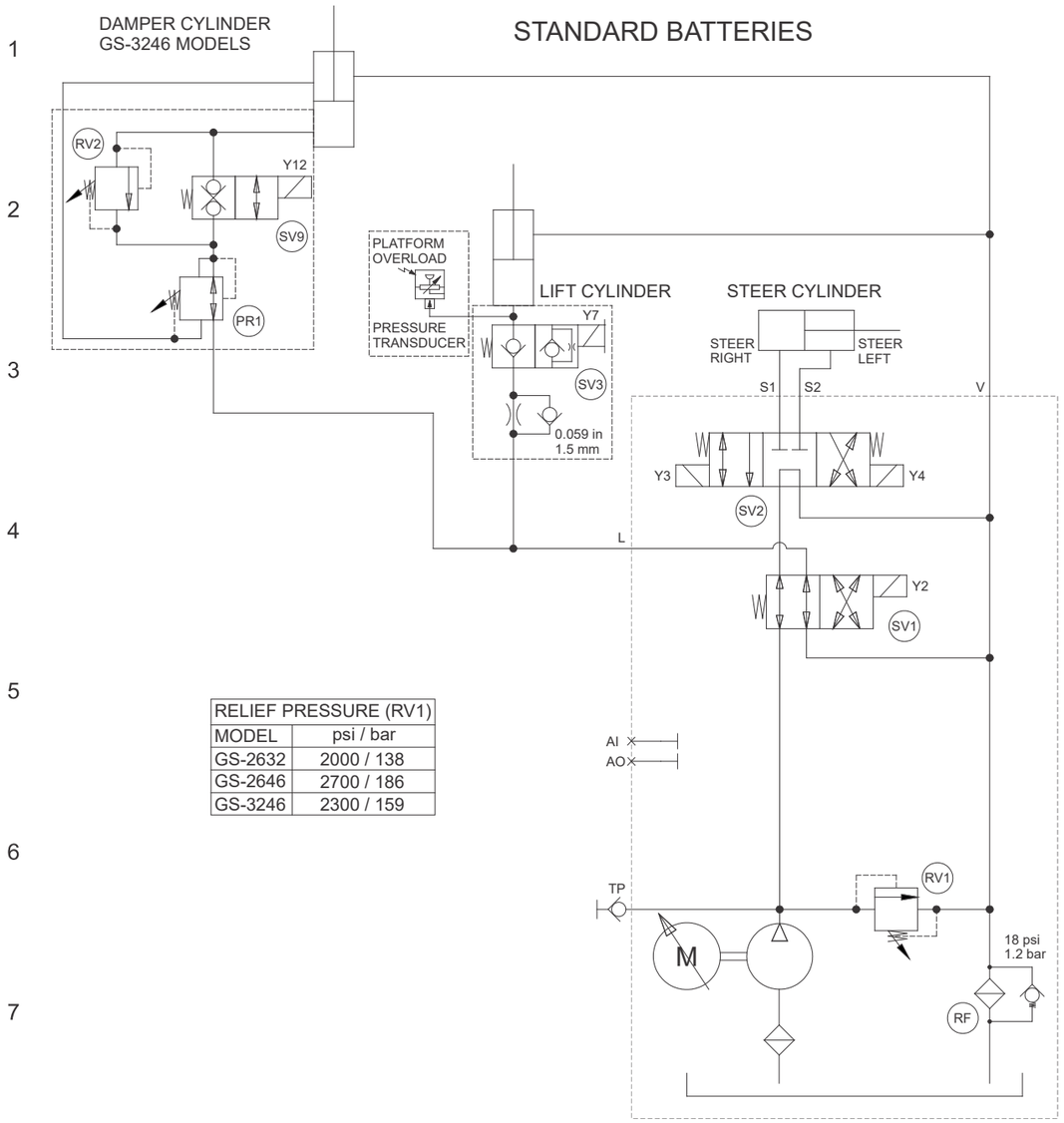
Hydraulic Schematic, GS-1932



Hydraulic Schematic, GS-2632, GS-2646, GS-3246



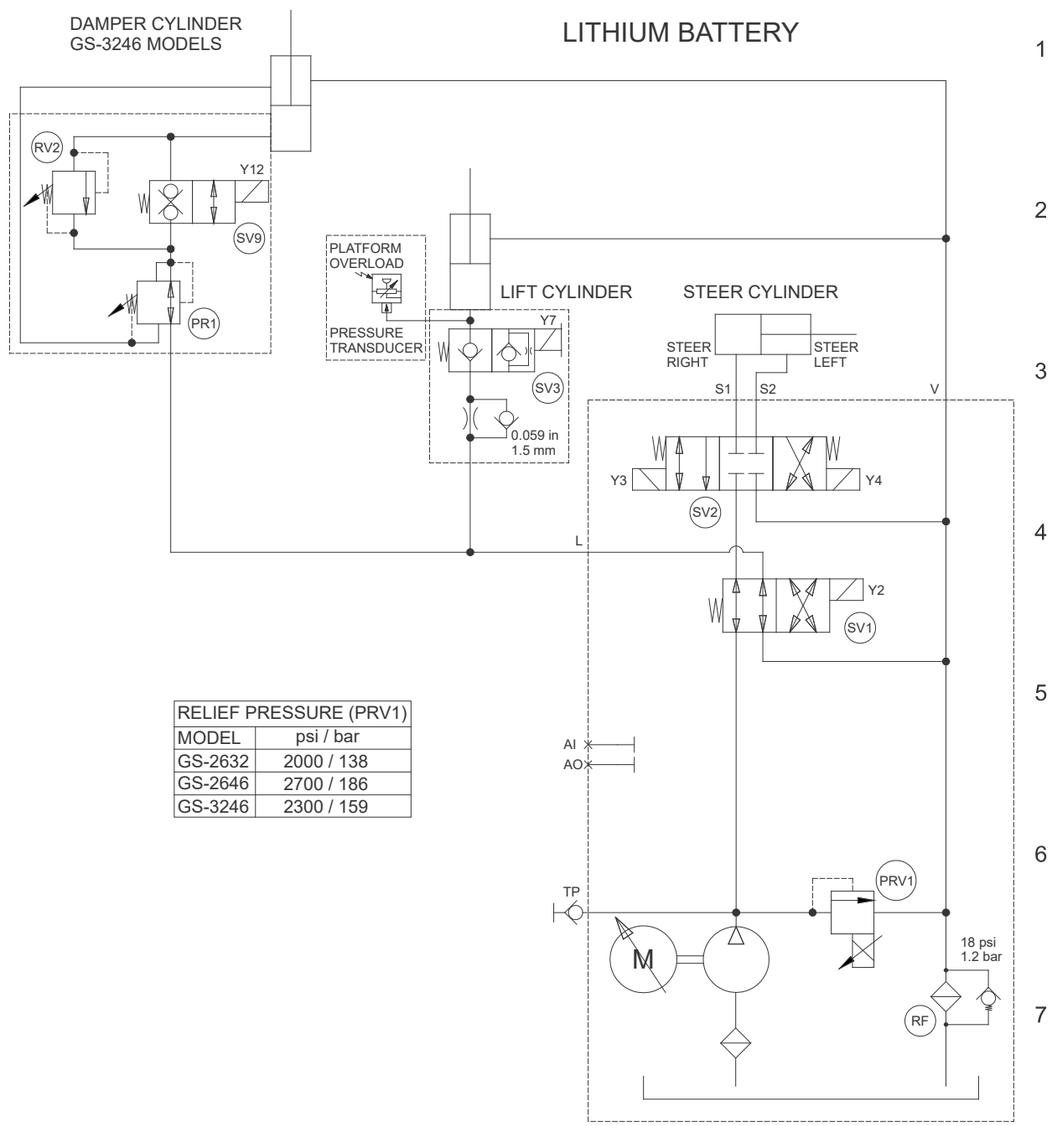
Hydraulic Schematic, GS-2632, GS-2646, GS-3246



RELIEF PRESSURE (RV1)	
MODEL	psi / bar
GS-2632	2000 / 138
GS-2646	2700 / 186
GS-3246	2300 / 159

HS0286B

POWER UNIT

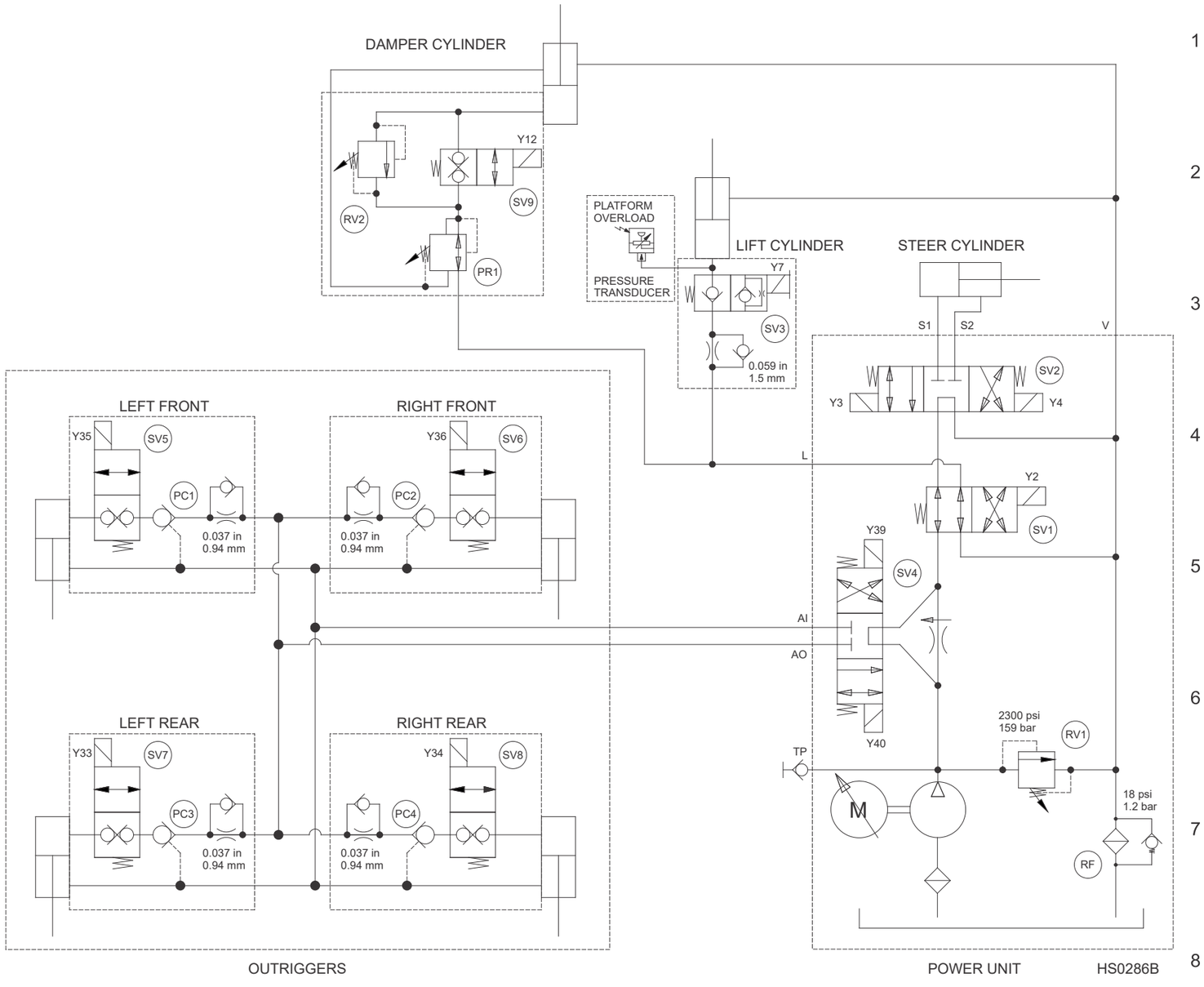


RELIEF PRESSURE (PRV1)	
MODEL	psi / bar
GS-2632	2000 / 138
GS-2646	2700 / 186
GS-3246	2300 / 159

POWER UNIT

Hydraulic Schematic, GS-3232

Models with Standard Batteries

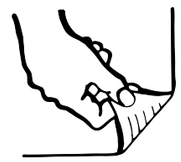


Hydraulic Schematic, GS-3232

Models with Standard Batteries

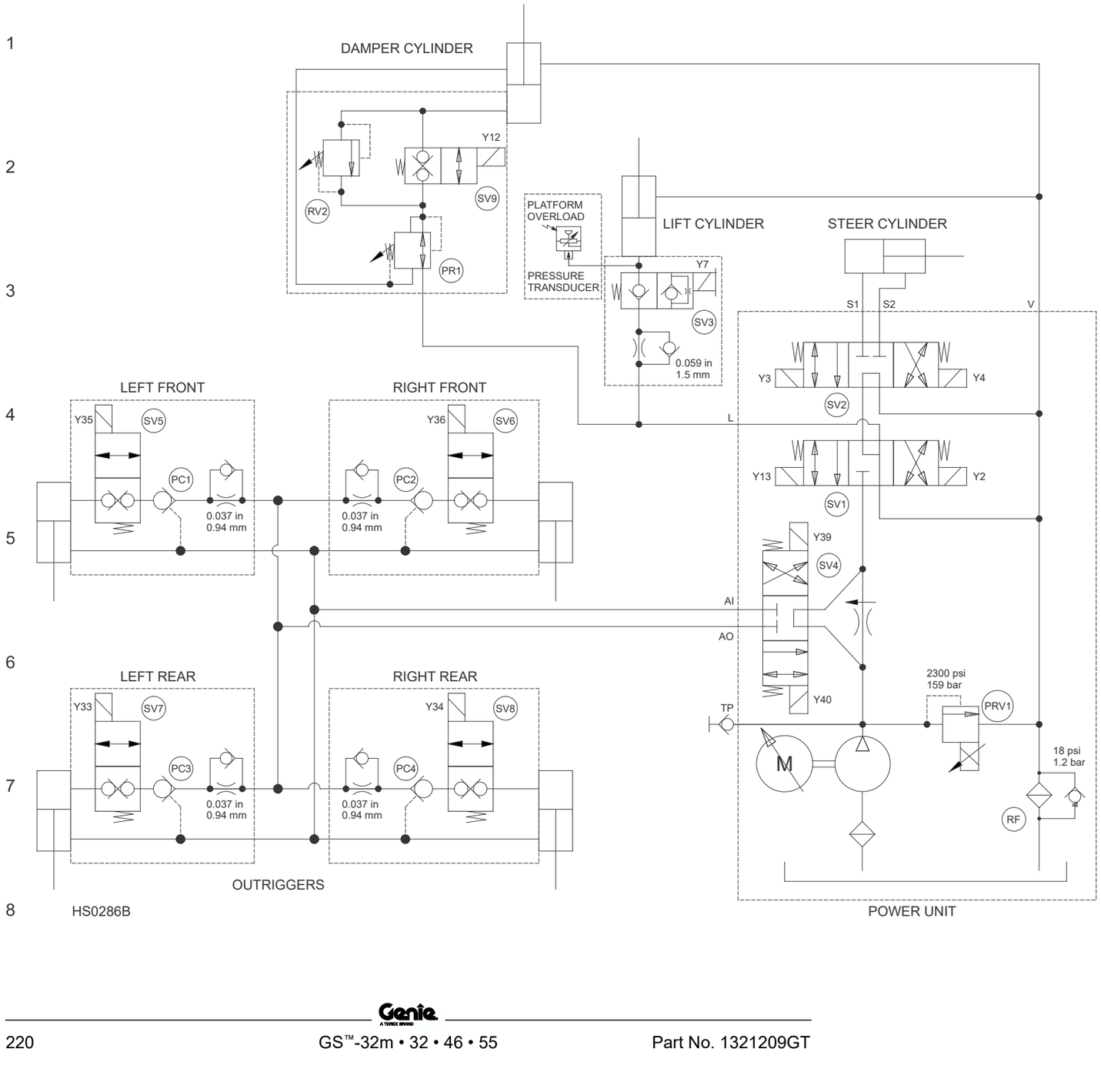
Hydraulic Schematic, GS-3232

Models with Lithium Battery



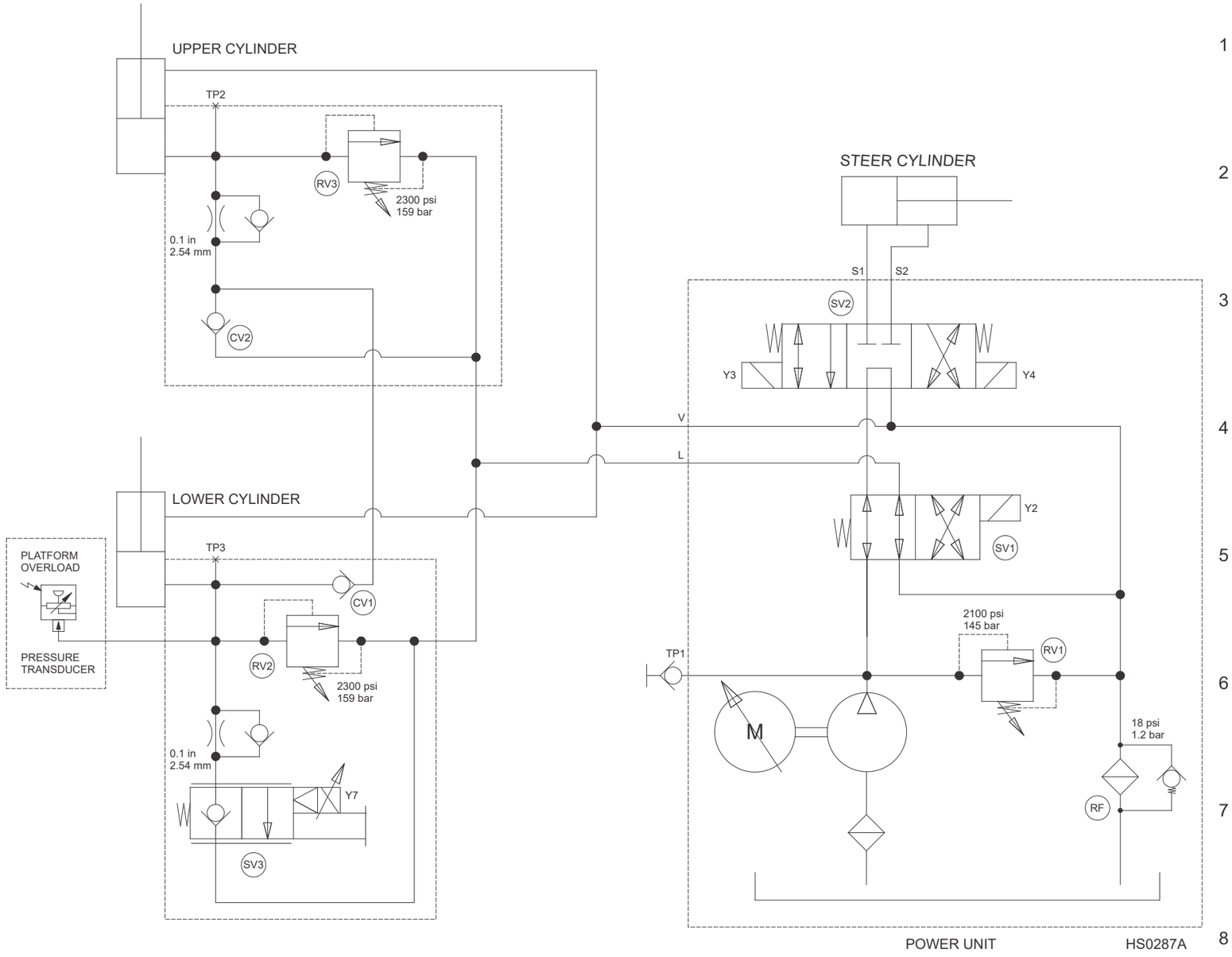
Hydraulic Schematic, GS-3232

Models with Lithium Battery



Hydraulic Schematic, GS-4046

Models with Standard Batteries

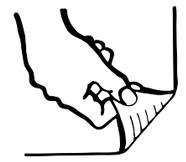


Hydraulic Schematic, GS-4046

Models with Standard Batteries

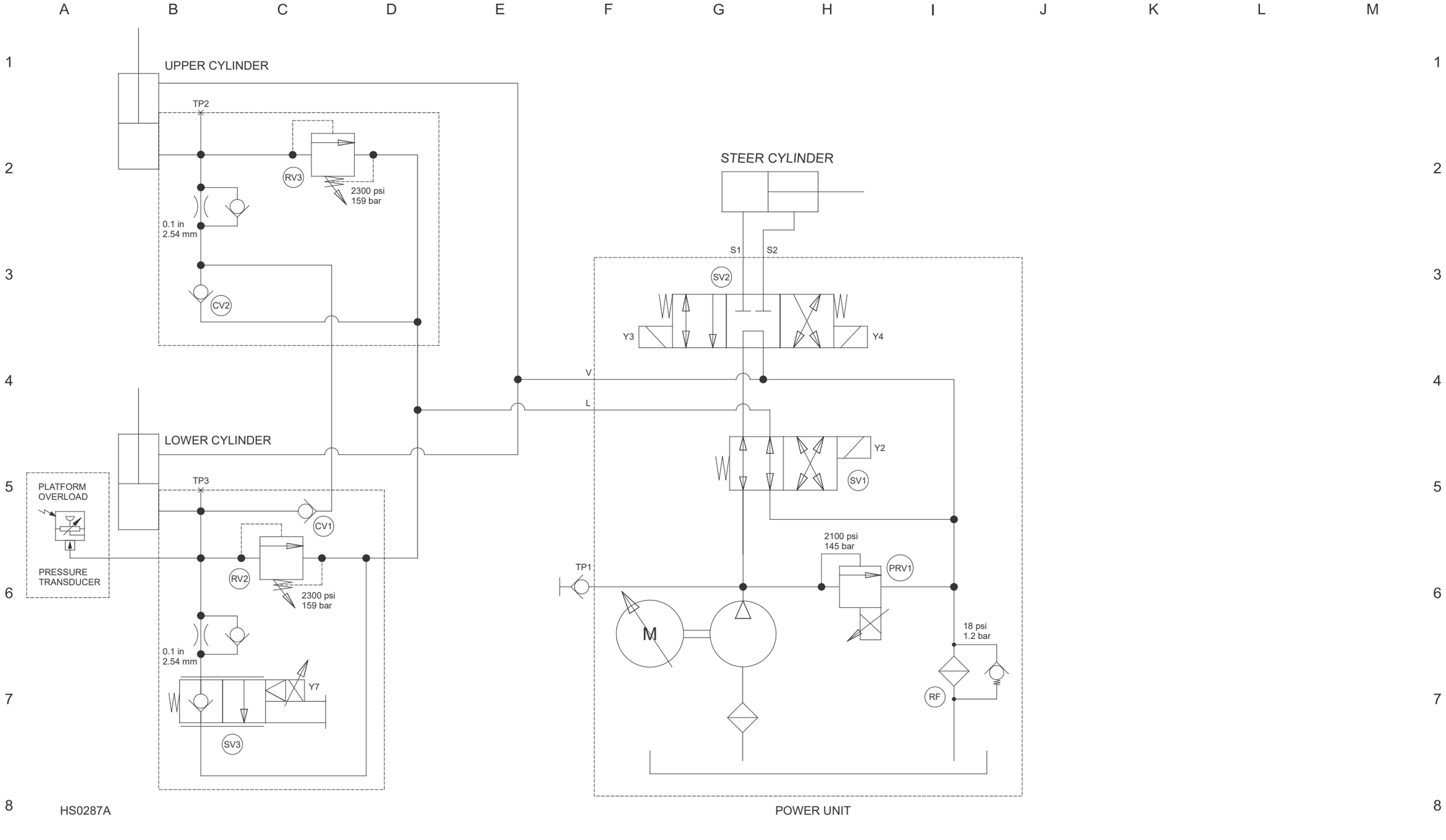
Hydraulic Schematic, GS-4046

Models with Lithium Battery

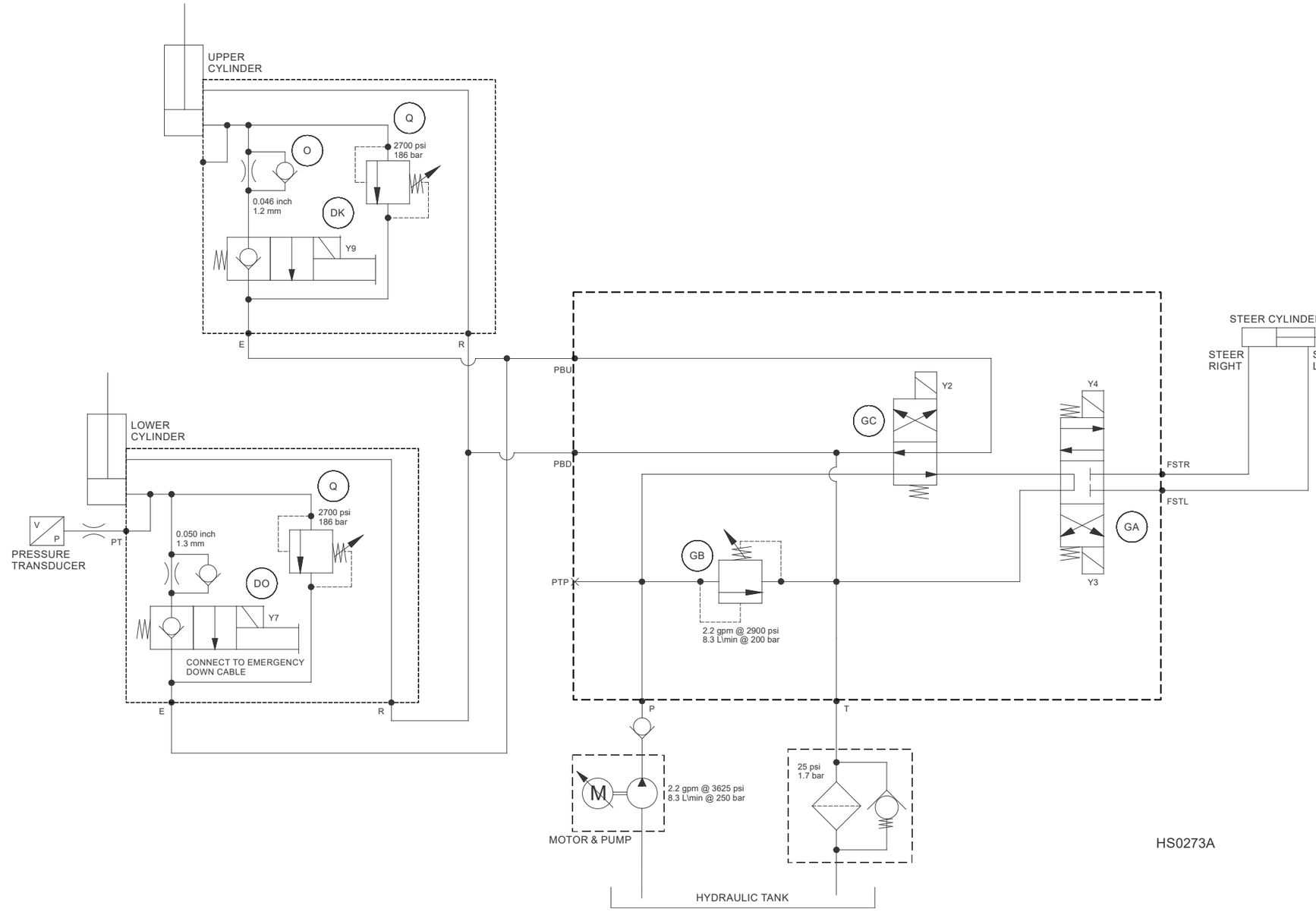


Hydraulic Schematic, GS-4046

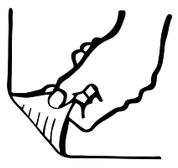
Models with Lithium Battery



Hydraulic Schematic, GS-4655



Hydraulic Schematic, GS-4655



California Proposition 65

WARNING

Operating, servicing and maintaining this equipment can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. These chemicals can be emitted from or contained in other various parts and systems, fluids and some component wear by-products. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your equipment and vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your equipment or vehicle and after operation. For more information go to www.P65Warnings.ca.gov/passenger-vehicle.

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