Genie
A TEREX BRAND

Service Manual

Serial Number Range

from GRJL-2298

GR™-20J
GR™-26J

Original Instructions
Part No. 1312899GT
Rev A
March 2022

Introduction

Important

Read, understand and obey the safety rules and operating instructions in the appropriate Operator's Manual on your machine before attempting any maintenance procedure.

This manual provides detailed scheduled maintenance information for the machine owner and user. It also provides troubleshooting and repair procedures for qualified service professionals.

Basic mechanical, hydraulic and electrical skills are required to perform most procedures. However, several procedures require specialized skills, tools, lifting equipment and a suitable workshop. In these instances, we strongly recommend that maintenance and repair be performed at an authorized Genie dealer service center.

Compliance

Machine Classification

Group B/Type 3 as defined by ISO 16368

Machine Design Life

Unrestricted with proper operation, inspection and scheduled maintenance.

Technical Publications

Genie has endeavored to deliver the highest degree of accuracy possible. However, continuous improvement of our products is a Genie policy. Therefore, product specifications are subject to change without notice.

Readers are encouraged to notify Genie of errors and send in suggestions for improvement. All communications will be carefully considered for future printings of this and all other manuals.

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Second Edition, First Printing

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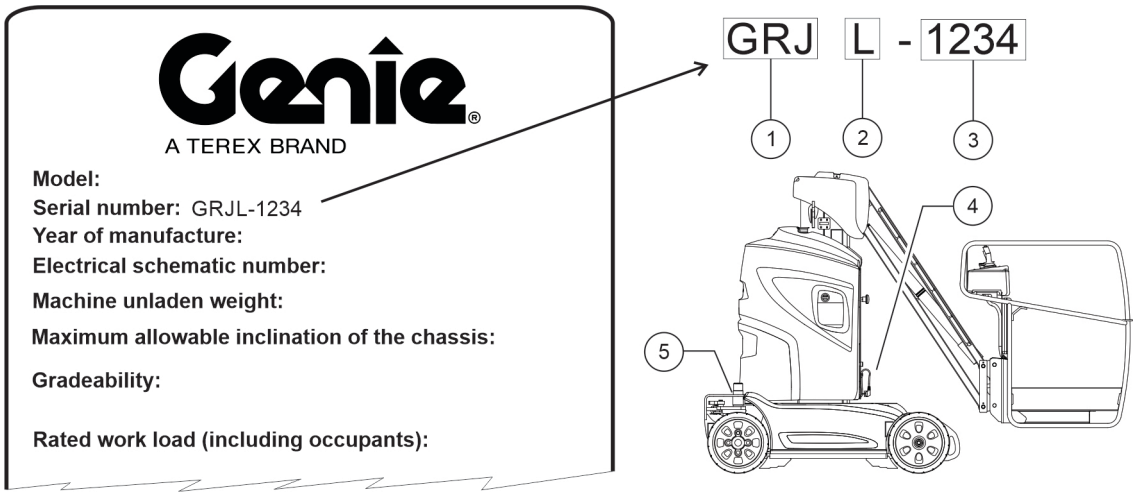
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Revision History

Revision	Date	Section	Procedure / Page / Description
A	3/2022		Initial Release
Reference Examples:			
Section – Maintenance, B-3			**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



1 Model
2 Facility code
3 Sequence number
4 Serial label
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

Batteries, Standard	
Voltage	2V DC
Group	AS/CE/UK - C5 ANSI/CSA - C20
Quantity	12
Battery capacity, maximum	AS/CE/UK - 250 AH ANSI/CSA - 270 AH
Weight	500 lbs 227 kg

Fluid capacities	
Hydraulic tank	5.8 gallons 22 liters

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

Tires and wheels	
Tire size (solid rubber)	16 x 5 x 11 in 40,6 x 12,7 x 28 cm
Castle nut torque, dry	89 ft-lbs 120 Nm
Castle nut torque, lubricated	66 ft-lbs 90 Nm
Lug nut torque, dry	132 ft-lbs 180 Nm
Lug nut torque, lubricated	96 ft-lbs 130 Nm

Turntable bearing	
Rotate bearing mounting bolts, lubricated	70 ft-lbs 95 Nm
Rotate bearing mounting bolts, dry	92 ft-lbs 125 Nm

Specifications

Performance Specifications

Drive speed, maximum	
Platform stowed	2.8 mph 40 ft / 9.8 sec 4,5 km/h 12,2 m / 9,8 sec
Platform raised	0.4 mph 40 ft / 54.8 sec 0.65 km/h 12.2 m / 54.8 sec
Braking distance, maximum	
High range on paved surface	60 in 152 cm
Gradeability	**See Operator's Manual**
Function speed, maximum from platform controls (with 1 person in platform)	
GR-20J	
Mast up	24 - 26 seconds
Mast down	19 - 21 seconds
GR-26J	
Mast up	54 - 56 seconds
Mast down	40 - 42 seconds
GR-20J, GR-26J	
Jib boom up	12 - 17 seconds
Jib boom down	21 - 26 seconds
Turntable rotate, 350°	32 - 37 seconds

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

Specifications

Hydraulic Component Specifications

Function Pump	
Type	Gear
Displacement per revolution	0.256 cu in 4.2 cc
Function manifold	
System relief valve pressure, maximum	2030 psi 140 bar
Lift relief valve pressure	930 psi 64 bar
Filter cap torque	37 ft-lbs 50 Nm
Torque specifications	
Brake mounting fasteners, dry	75 ft-lbs 102 Nm
Brake mounting fasteners, lubricated	56 ft-lbs 76 Nm
Grease specification	
RETINAX HDX2 grease, NLGI (lithium based) or equivalent	

Manifold Component Specifications

Plug torque	
SAE No. 2	36 in-lbs / 4 Nm
SAE No. 4	10 ft-lbs / 13 Nm
SAE No. 6	14 ft-lbs / 19 Nm
SAE No. 8	38 ft-lbs / 51 Nm
SAE No.10	41 ft-lbs / 55 Nm
SAE No. 12	56 ft-lbs / 76 Nm

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	200 ppm
Recommended Hydraulic Fluid	
Hydraulic oil type	Shell PW 46
Viscosity grade	Multi-viscosity
Viscosity index	152
Optional Hydraulic Fluids	
Biodegradable	Texaco Hydra 46 Shell Naturelle HF-E 46

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 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

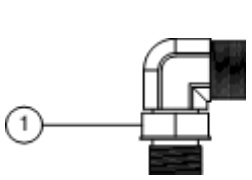
(swivel nut or hose connection)

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

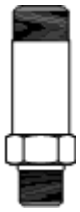
(tube fitting - installed into Aluminum)
(all types)

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.

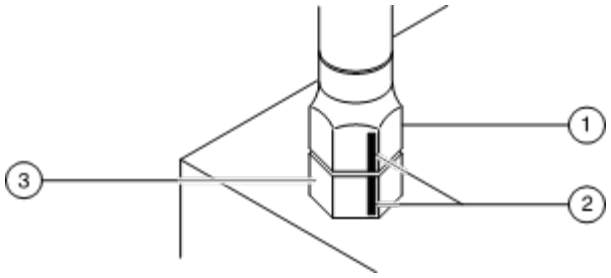


Illustration 1

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.

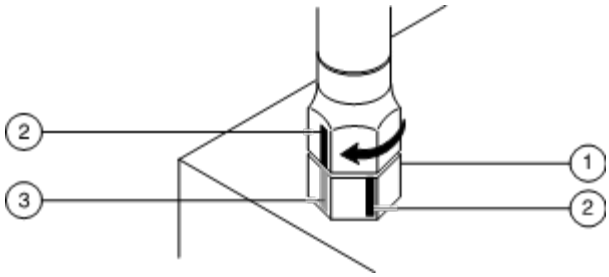


Illustration 2

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.

Specifications

SAE FASTENER TORQUE CHART

• This chart is to be used as a guide only unless noted elsewhere in this manual •

SIZE	THREAD	Grade 5				Grade 8				A574 High Strength Black Oxide Bolts	
		LUBED		DRY		LUBED		DRY		LUBED	
		in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
1/4	20	80	9	100	11.3	110	12.4	140	15.8	130	14.7
	28	90	10.1	120	13.5	120	13.5	160	18	140	15.8
		LUBED		DRY		LUBED		DRY		LUBED	
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
5/16	18	13	17.6	17	23	18	24	25	33.9	21	28.4
	24	14	19	19	25.7	20	27.1	27	36.6	24	32.5
3/8	16	23	31.2	31	42	33	44.7	44	59.6	38	51.5
	24	26	35.2	35	47.4	37	50.1	49	66.4	43	58.3
7/16	14	37	50.1	49	66.4	50	67.8	70	94.7	61	82.7
	20	41	55.5	55	74.5	60	81.3	80	108.4	68	92.1
1/2	13	57	77.3	75	101.6	80	108.4	110	149	93	126
	20	64	86.7	85	115	90	122	120	162	105	142
9/16	12	80	108.4	110	149	120	162	150	203	130	176
	18	90	122	120	162	130	176	170	230	140	189
5/8	11	110	149	150	203	160	217	210	284	180	244
	18	130	176	170	230	180	244	240	325	200	271
3/4	10	200	271	270	366	280	379	380	515	320	433
	16	220	298	300	406	310	420	420	569	350	474
7/8	9	320	433	430	583	450	610	610	827	510	691
	14	350	474	470	637	500	678	670	908	560	759
1	8	480	650	640	867	680	922	910	1233	770	1044
	12	530	718	710	962	750	1016	990	1342	840	1139
1 1/8	7	590	800	790	1071	970	1315	1290	1749	1090	1477
	12	670	908	890	1206	1080	1464	1440	1952	1220	1654
1 1/4	7	840	1138	1120	1518	1360	1844	1820	2467	1530	2074
	12	930	1260	1240	1681	1510	2047	2010	2725	1700	2304
1 1/2	6	1460	1979	1950	2643	2370	3213	3160	4284	2670	3620
	12	1640	2223	2190	2969	2670	3620	3560	4826	3000	4067

METRIC FASTENER TORQUE CHART

• This chart is to be used as a guide only unless noted elsewhere in this manual •

Size	Class 4.6				Class 8.8				Class 10.9				Class 12.9			
(mm)	LUBED		DRY		LUBED		DRY		LUBED		DRY		LUBED		DRY	
	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
5	16	1.8	21	2.4	41	4.63	54	6.18	58	6.63	78	8.84	68	7.75	91	10.3
6	19	3.05	36	4.07	69	7.87	93	10.5	100	11.3	132	15	116	13.2	155	17.6
7	45	5.12	60	6.83	116	13.2	155	17.6	167	18.9	223	25.2	1.95	22.1	260	29.4
	LUBED		DRY		LUBED		DRY		LUBED		DRY		LUBED		DRY	
	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
8	5.4	7.41	7.2	9.88	14	19.1	18.8	25.5	20.1	27.3	26.9	36.5	23.6	32	31.4	42.6
10	10.8	14.7	14.4	19.6	27.9	37.8	37.2	50.5	39.9	54.1	53.2	72.2	46.7	63.3	62.3	84.4
12	18.9	25.6	25.1	34.1	48.6	66	64.9	88	69.7	94.5	92.2	125	81	110	108	147
14	30.1	40.8	40	54.3	77.4	105	103	140	110	150	147	200	129	175	172	234
16	46.9	63.6	62.5	84.8	125	170	166	226	173	235	230	313	202	274	269	365
18	64.5	87.5	86.2	117	171	233	229	311	238	323	317	430	278	377	371	503
20	91	124	121	165	243	330	325	441	337	458	450	610	394	535	525	713
22	124	169	166	225	331	450	442	600	458	622	612	830	536	727	715	970
24	157	214	210	285	420	570	562	762	583	791	778	1055	682	925	909	1233

Scheduled Maintenance Procedures



Observe and Obey:

☑ Maintenance inspections shall be completed by a person trained and qualified on the maintenance of this machine.

☑ Scheduled maintenance inspections shall be completed daily, quarterly, semi-annually, annually and every 2 years as specified of the *Maintenance inspection Report*. The frequency and extent of periodic examinations and tests may also depend on national regulations.

⚠WARNING Failure to perform each procedure as presented and scheduled may cause death, serious injury or substantial damage.

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

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

☑ Use only Genie approved replacement parts.

☑ Machines that have been out of service for a period longer than 3 months must complete the quarterly inspection.

Machine Configuration:

☑ Unless otherwise specified, perform each 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

Scheduled Maintenance Procedures

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

Each procedure includes a description, safety warnings and step-by-step instructions.

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.

Maintenance Symbols Legend

Note: The following symbols have been used in this manual to help communicate the intent of the instructions. When one or more of the symbols appear at the beginning of a maintenance procedure, it conveys the meaning below.



Indicates that tools will be required to perform this procedure.



Indicates that new parts will be required to perform this procedure.



Indicates that dealer service will be required to perform this procedure.



Indicates that a cold motor or pump will be required to perform this procedure.

Scheduled Maintenance Procedures

Pre-delivery Preparation Report

The pre-delivery preparation report contains checklists for each type of scheduled inspection.

Make copies for each inspection. Store completed forms as required.

Maintenance Schedule

The *Scheduled Maintenance Procedures* section and the *Maintenance Inspection Report* have been divided into subsections. Use the following chart to determine which group(s) of procedures are required to perform a scheduled inspection.

Inspection	Checklist
Daily or every 8 hours	A
Quarterly or every 250 hours	A + B
Semi-annually or every 500 hours	A + B + C
Annually or every 1000 hours	A + B + C + D
Two-year or every 2000 hours	A + B + C + D + E

Maintenance Inspection Report

The maintenance inspection report contains checklists for each type of scheduled inspection.

Make copies of the *Maintenance Inspection Repor*t to use for each inspection. Maintain completed forms for a minimum of 4 years or in compliance with your employer, jobsite and governmental regulations and requirements.

Pre-Delivery Preparation Report

Fundamentals

It is the responsibility of the owner or dealer to perform the Pre-delivery Preparation.

The Pre-delivery Preparation is performed prior to each delivery. The inspection is designed to discover if anything is apparently wrong with a machine before it is put into service.

A damaged or modified machine must never be used. If damage or any variation from factory delivered condition is discovered, the machine must be tagged and removed from service.

Repairs to the machine may only be made by a qualified service technician, according to the manufacturer's specifications.

Scheduled maintenance inspections shall be performed by qualified service technicians, according to the manufacturer's specifications and the requirements listed in the responsibilities manual.

Instructions

Use the operator's manual on your machine.

The Pre-delivery Preparation consists of completing the Pre-operation Inspection, the Maintenance items and the Function Tests.

Use this form to record the results. Place a check in the appropriate box after each part is completed. Follow the instructions in the operator's manual.

If any inspection receives an N, remove the machine from service, repair and re-inspect it. After repair, place a check in the R box.

Legend

Y = yes, acceptable
N = no, remove from service
R = repaired

Comments

Pre-delivery Preparation	Y	N	R
Pre-operation inspection completed			
Maintenance items completed			
Function tests completed			

Model

Serial number

Date

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Genie
A TEREX BRAND

Terex South Dakota, Inc USA
500 Oak Wood Road
PO Box 1150
Watertown, SD 57201-6150
(605) 882-4000

Genie UK
The Maltings, Wharf Road
Grantham, Lincolnshire
NG31- 6BH England
(44) 1476-584333

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Maintenance Inspection Report

Model	
Serial number	
Date	
Hour meter	
Machine owner	
Inspected by (print)	
Inspector signature	
Inspector title	
Inspector company	

Instructions

- Make copies of this report to use for each inspection.
- Select the appropriate checklist(s) for the type of inspection(s) to perform.

☐	**Daily or every 8 hours**	**A**
☐	**Quarterly or every 250 hours**	**A + B**
☐	**Semi-annually or every 500 hours**	**A + B + C**
☐	**Annually or every 1000 hours**	**A + B + C + D**
☐	**Two-year or every 2000 hours**	**A + B + C + D + E**

- Place a check in the appropriate box after each inspection procedure is completed.
- Use the step-by-step procedures in this section to learn how to perform these inspections.
- If any inspection receives an "N," tag and remove the machine from service, repair and re-inspect it. After repair, place a check in the "R" box.

Legend

Y = yes, acceptable
N = no, remove from service
R = repaired

Checklist A		**Y**	**N**	**R**
Perform after 40 hours:				
A-1	30-day service			
Perform after 100 hours:				
A-2	Suction strainer			

Checklist B		**Y**	**N**	**R**
B-1	Batteries			
B-2	Electrical wiring			
B-3	Tires and wheels			
B-4	Drive brakes			
B-5	Drive speed - stowed			
B-6	Drive speed - raised			
B-7	Flashing beacon			
B-8	Motion alarm			
B-9	Hydraulic oil analysis			
B-10	Breather cap			
B-11	Free-wheel configuration			
B-12	Lateral offset of the mast			
B-13	Mast wear pads			

Checklist C		**Y**	**N**	**R**
C-1	Calibrate platform overload			
C-2	Breather cap - models with optional oil			

Checklist E		**Y**	**N**	**R**
E-1	Hydraulic oil			

Comments

Checklist A Procedures

A-1
Perform 30-Day Service



The 30-day maintenance procedure is a one time procedure to be performed after the first 30 days or 40 hours of usage. After this interval, refer to the maintenance tables for continued scheduled maintenance.

1 Perform the following maintenance procedures:

- B-3 Inspect the Tires, Wheels and Castle Nut Torque
- D-1 Replace the Hydraulic Return Filter

A-2
Replace the Hydraulic Suction Strainer



Genie specifications require that this procedure be performed every 100 hours or monthly, whichever comes first.

Replacement of the hydraulic suction strainer is essential for good machine performance and service life. A dirty or clogged suction strainer may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the suction strainer be replaced more often.

⚠ CAUTION Bodily injury hazard. Beware of hot oil. Contact with hot oil may cause severe burns.

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.

1 Open and remove the turntable cover at the hydraulic power unit side of the machine.

2 Working next to the hydraulic tank, remove the fasteners securing the chassis side cover to the chassis. Remove the side cover. Lay the side cover and fasteners to the side.

3 Tag and disconnect the wire harness connectors from the function manifold.

4 Tag and disconnect the cables from the motor.

Checklist A Procedures

5 Tag, disconnect and plug the hydraulic hoses at the function manifold. Cap the fittings on the manifold.

⚠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.

6 Place a suitable container under the hydraulic tank. Refer to Specifications, *Machine Specifications*.

7 Locate and remove the hydraulic tank filler cap. Set the filler cap to the side.

8 Remove the drain plug and drain all of the oil into a suitable container.

9 Clean up any oil that may have spilled. Properly discard the used oil.

10 Remove the fasteners securing the function manifold to the hydraulic tank. Set the fasteners to the side.

11 Loosen the clamp securing the hydraulic power unit to the hydraulic tank. Do not remove the clamp.

12 Remove the clamp securing the hydraulic power unit to the chassis. Set the clamp to the side.

13 Carefully remove the hydraulic power unit from the tank and place it on a clean work bench.

Note: If necessary, loosen the bottom connector of auxiliary pump to more easily remove the hydraulic power unit.

14 Remove the suction strainer from the end of the plastic tube.

15 Install the new suction strainer at the end of the plastic tube.

Checklist B Procedures

B-1
Inspect the Batteries

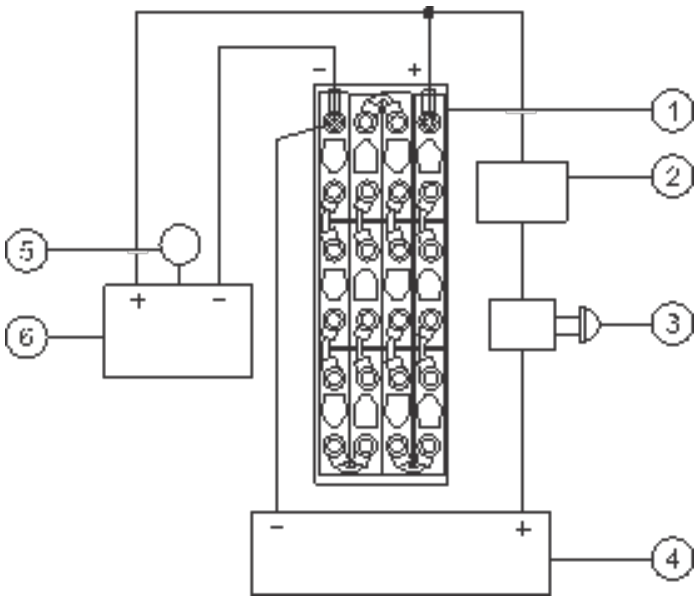
Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

Proper battery condition is essential to good machine performance and operational safety. Improper fluid levels or damaged cables and connections can result in component damage and hazardous conditions.

⚠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. Batteries contain acid. Avoid spilling or contacting battery acid. Neutralize battery acid spills with baking soda and water.

Note: Fully charge the batteries and allow the batteries to rest 24 hours before performing this procedure to allow the battery cells to equalize.



1 Batteries
2 Fuse 250A
3 Emergency Stop button
4 Motor controller
5 Battery charging indicator
6 Battery charger

1 Open the turntable covers.

2 Be sure that the battery cable connections are free of corrosion.

Note: Adding terminal protectors and a corrosion preventative sealant will help eliminate corrosion on the battery terminals and cables.

3 Be sure that the battery retainers and cable connections are tight.

Models without maintenance-free or sealed batteries:

4 Put on protective clothing and eye wear.

5 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer. Note the results.

Checklist B Procedures

6 Check the ambient air temperature and adjust the specific gravity reading for each cell as follows:

- Add 0.004 to the reading of each cell for every 10° F / 5.5° C above 80° F / 26.7° C.
- Subtract 0.004 from the reading of each cell for every 10° F / 5.5° C below 80° F / 26.7° C.

⊙ Result: All battery cells display an adjusted specific gravity of 1.277 or higher. The battery is fully charged. Proceed to step 11.

⊠ Result: One or more battery cells display a specific gravity of 1.276 or below. Proceed to step 8.

7 Perform an equalizing charge OR fully charge the battery(s) and allow the battery(s) to rest at least 6 hours.

8 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer. Note the results.

9 Check the ambient air temperature and adjust the specific gravity reading for each cell as follows:

- Add 0.004 to the reading of each cell for every 10° F / 5.5° C above 80° F / 26.7° C.
- Subtract 0.004 from the reading of each cell for every 10° F / 5.5° C below 80° F / 26.7° C.

⊙ Result: All battery cells display a specific gravity of 1.277 or greater. The battery is fully charged. Proceed to step 11.

⊠ Result: One or more battery cells display a specific gravity from 1.218 to 1.269. The battery is still usable, but at a lower performance. The battery will need to be recharged more often. Proceed to step 11.

⊠ Result: One or more battery cells display a specific gravity from 1.217 to 1.173. The battery is approaching the end of it's life. Proceed to step 11.

⊠ Result: The difference in specific gravity readings between cells is greater than 0.1 OR the specific gravity of one or more cells is less than 1.177. Replace the battery.

10 Check the battery acid level. If needed, replenish with distilled water to 1/8 inch / 3 mm below the bottom of the battery fill tube. Do not overfill.

11 Install the vent caps and neutralize any electrolyte that may have spilled.

B-2
Inspect the Electrical Wiring



Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

Maintaining electrical wiring in good condition is essential to safe operation and good machine performance. Failure to find and replace burnt, chafed, corroded or pinched wires could result in unsafe operating conditions and may cause 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 Open and remove the turntable covers from the machine.

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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

3 Raise the jib boom until the platform is approximately 8 feet / 2,4 m from the ground.

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

5 Tag and disconnect the cables from the ground terminal of the battery.

6 Remove the fasteners securing the rear chassis cover to the chassis at the non-steer end of the machine. Remove the chassis cover. Lay the cover and fasteners to the side.

7 Inspect the drive motors connections for burnt, chafed, pinched cables and loose connections.

8 Install the rear chassis cover at the non-steer end of the machine and securely install the fasteners.

9 Install the cables onto the ground terminal of the battery, and securely tighten.

10 Inspect the battery pack for burnt, chafed and pinched cables.

11 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:

- Ground control panel
- Battery charger
- Hydraulic power unit

12 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

Checklist B Procedures

13 Lower the jib boom until the platform is approximately 2 feet / 0,5 m from the ground.

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

15 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:

- Mast cable
- Platform controls
- Power to platform wiring

16 Inspect for a liberal coating of dielectric grease in all wiring connections between the ground control panel and the platform controls, and level sensor wiring.

17 Install both the turntable covers on the machine.

B-3
Inspect the Tires, Wheels and Castle Nut Torque



Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

Maintaining the tires and wheels, including proper wheel fastener torque, is essential to safe operation and good performance. Tire and/or wheel failure could result in a machine tip-over. Component damage may also result if problems are not discovered and repaired in a timely fashion.

1 Check the tire surface and sidewalls for cuts, cracks and unusual wear.

2 Check each wheel for damage, bends and cracks.

Non-steer end:

3 Remove the lock washer flange from the slot of the castle nut. Check the castle nut for proper torque. Refer to Specifications, *Machine Specifications*.

4 Install the lock washer flange into a slot of the castle nut.

Steer end:

5 Check each lug bolt for proper torque. Refer to Specifications*, Machine Specifications*.

B-4
Test the Drive Brakes

Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

Proper brake action is essential to safe machine operation. The drive brake function should operate smoothly, free of hesitation, jerking and unusual noise. Hydraulically-released individual wheel brakes can appear to operate normally when not fully operational.

Note: Perform this procedure with the machine on a firm, level surface that is free of obstructions.

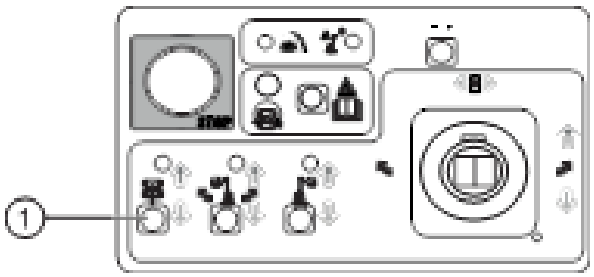
1 Lower the platform to the stowed position.

2 Mark a test line on the ground for reference.

3 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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

4 Press the drive function select button.



1 drive function select button

5 Choose a point on the machine (i.e., contact patch of a tire) as a visual reference for use when crossing the test line.

6 Bring the machine to top drive speed before reaching the test line. Release the drive joystick when your reference point on the machine crosses the test line.

7 Measure the distance between the test line and your machine reference point. Refer to Specifications, *Performance Specifications*.

Note: The brakes must be able to hold the machine on any slope it is able to climb.

Checklist B Procedures

B-5
Test the Drive Speed – Stowed Position

Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

Proper drive function is essential to safe machine operation. The drive function should respond quickly and smoothly to operator control. Drive performance should also be free of hesitation, jerking and unusual noise over the entire proportionally controlled speed range.

Note: Perform this procedure with the machine on a firm, level surface that is free of obstructions.

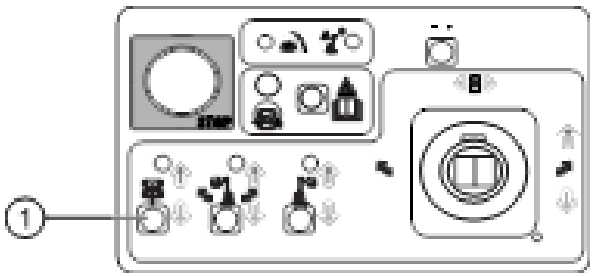
1 Lower the platform to the stowed position.

2 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.

3 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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

4 Press the drive function select button.



1 drive function select button

5 Choose a point on the machine (i.e., contact patch of a tire) as a visual reference for use when crossing the start and finish lines.

6 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

7 Continue at full speed and note the time when the machine reference point crosses the finish line. Refer to Specifications, *Performance Specifications*.

B-6
Test the Drive Speed - Raised Position

Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

Proper drive function is essential to safe machine operation. The drive function should respond quickly and smoothly to operator control. Drive performance should also be free of hesitation, jerking and unusual noise over the entire proportionally controlled speed range.

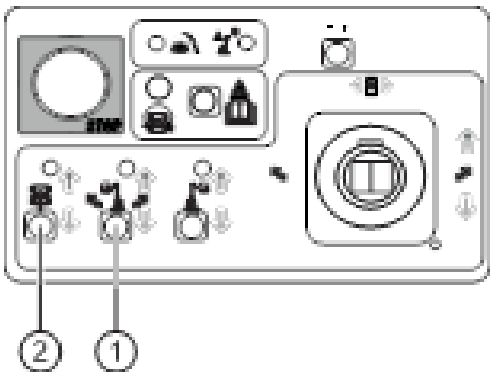
Note: Perform this procedure with the machine on a firm, level surface that is free of obstructions.

1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.

2 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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

3 Press the lift function select button.



1 lift function select button
2 drive function select button

4 Raise the platform to approximately 3 ft / 1 m.

5 Press the drive function select button.

6 Choose a point on the machine (i.e., contact patch of a tire) as a visual reference for use when crossing the start and finish lines.

7 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

8 Continue at full speed and note the time when the machine reference point crosses the finish line. Refer to Specifications, *Performance Specifications*.

Checklist B Procedures

B-7
Test the Flashing Beacons (if equipped)

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Flashing beacons are used to alert operators and ground personnel of machine proximity and motion.

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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

2 Activate any machine function from the ground control.

⊙ Result: The beacons should flash.

3 Turn the key switch to platform controls.

4 Activate any machine function from the platform control.

⊙ Result: The beacons should flash.

Note: The beacon will only flash when you activate any machine function either from ground or platform controls.

B-8
Test the Motion Alarm

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

The motion alarm is used to alert operators and ground personnel of machine proximity and motion.

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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

2 Raise the platform to approximately 1 ft / 30 cm.

⊙ Result: The alarm should sound.

3 Lower the platform to the stowed position.

⊙ Result: The alarm should sound.

4 Turn the key switch to ground controls.

5 Press the lift function select button.

6 Press and hold the function enable switch on the joystick. Move the joystick off center, hold for a moment and then release it. Move the joystick off center in the opposite direction, hold for a moment and then release it.

⊙ Result: The alarm should sound.

7 Press the drive function select button.

8 Press and hold the function enable switch on the joystick. Move the joystick off center, hold for a moment and then release it. Move the joystick off center in the opposite direction, hold for a moment and then release it.

⊙ Result: The alarm should sound.

9 Press and hold the function enable switch on the joystick. Press and hold the thumb rocker switch for a moment to the left position and then release it. Press and hold the thumb rocker switch for a moment to the right position and then release it.

⊙ Result: The alarm should sound.

B-9
Visual Inspection of the Hydraulic Oil



Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil and a clogged suction strainer may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more often. For hydraulic oil specifications, Refer to Specifications, *Hydraulic Specifications*.

Note: Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. Replace the oil when it fails the test. Refer to Maintenance Procedure, *Test or Replace the Hydraulic Oil*.

Checklist B Procedures

1 Collect a sample of hydraulic oil and place in a clear container. Visually inspect the hydraulic oil for the following:

- Color: oil should be a clear, light-honey colored
- Appearance, oil should be clear and not cloudy or visibly distorts the view through the sight glass or container
- Contains no particles, foreign objects, or other contamination
- The hydraulic oil can be inspected by smell (can smell “hot” but not “burnt”) or rubbing between fingers (should feel viscous and free of any rough feel due to particles)

⊙ If the hydraulic oil passes all of the above inspections, continue the scheduled maintenance intervals.

⊠ If the hydraulic oil fails any of the above inspections, the hydraulic oil must be tested by an oil distributor or replaced.

Note: If the hydraulic oil was not replaced at or before the 2000 hour maintenance interval, the oil must be tested every quarter by an oil distributor until the oil fails the test and is replaced. After the oil has been replaced, continue the scheduled quarterly maintenance inspection.

Note: When replacing the hydraulic oil, it is recommended that all hydraulic filters be replaced at the same time.

B-10
Inspect the Breather Cap



Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

A free-breathing hydraulic tank cap is essential for good machine performance and service life. A dirty or clogged cap may cause the machine to perform poorly. Extremely dirty conditions may require that the cap be inspected more often.

1 Open the turntable cover on the hydraulic power unit side of the machine.

2 Remove the breather cap from the hydraulic tank.

3 Check for proper venting.

⊙ Result: Air passes through the breather cap.

⊠ Result: If air does not pass through the cap, clean or replace the cap.

Note: When checking for positive tank cap venting, air should pass freely through the cap.

4 Using a mild solvent, carefully wash the cap venting system. Dry using low pressure compressed air.

5 Install the breather cap onto the hydraulic tank.

B-11
Check the Free-wheel Configuration

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

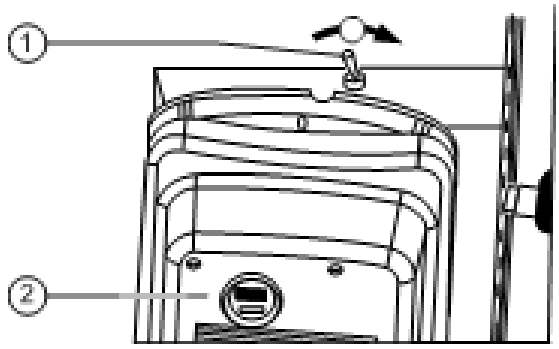
Note: Perform this procedure with the machine on a firm, level surface that is free of obstructions.

1 Chock the wheels at both ends of the machine.

2 Secure the steer end of the machine to a forklift or similar device using a connecting bar no greater than 3 ft / 1 m in length. Set the brakes on forklift.

3 Open the turntable cover at the ground control side of the machine.

4 Locate the brake release toggle switch on the top of the ground control box.



1 brake release toggle switch
2 ground controls

5 Move the brake release toggle switch to the right to release the brakes.

⊙ Result: The parking brakes release and the alarm will sound.

6 Remove the wheel chocks and, using a fork lift or similar device, apply force to the machine.

⊙ Result: The machine will move freely.

NOTICE Component damage hazard. The machine can be damaged if it breaks free from the forklift. Do not attempt to test the free-wheel function unless a connecting bar of adequate size and strength is used to secure the machine to the forklift or similar device.

7 Move the brake release toggle switch to the left.

⊙ Result: The parking brakes will reset and the alarm will not sound.

8 Using a fork lift or similar device, apply force to the machine.

⊙ Result: The machine will not move freely.

Checklist B Procedures

B-12
Inspect the Lateral Offset of the Mast

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

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

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.

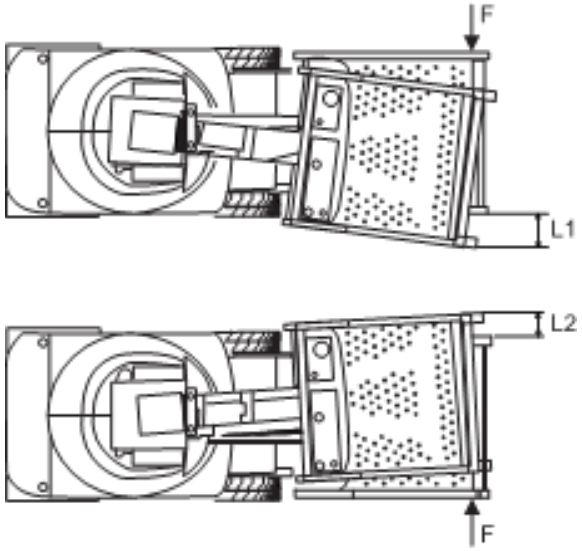
Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

2 Raise the jib to the horizontal position.

3 Raise the mast head approximately 8 inches / 20 cm.

4 Apply approximately 29.5 ft-lb / 40 Nm of side force near the floor of the platform at location "F".

⊙ Result: Lateral offset of the mast i.e. distance L1 and L2 as shown should not exceed 13.75 inches / 350 mm.



B-13
Inspect the Mast Wear Pads

Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

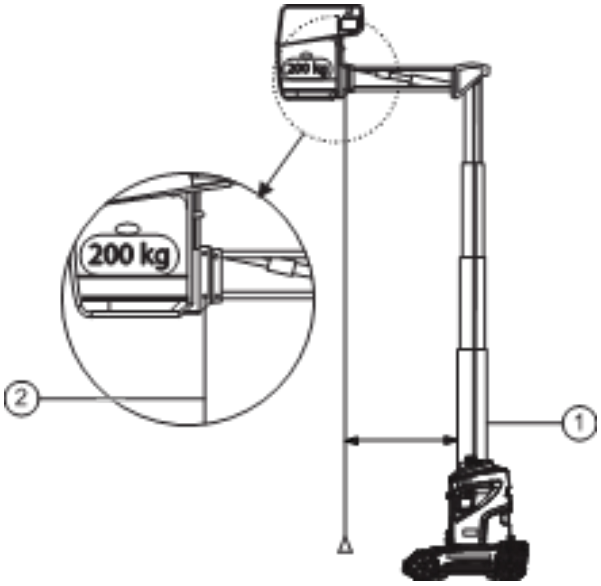
Wear pads are used to provide a uniform fit between the mast sections, as the mast assembly extends and retracts. Over time, it may be necessary to replace the wear pads to ensure good machine performance.

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: Perform this procedure in a location that is sheltered from the wind.

1 Install a plumb line of a suitable length onto the platform.



1 number 1 mast
2 plumb line

2 Using a suitable lifting device, place a 440 lbs / 200 Kg test weight in the center of the platform. Secure the weight to the platform.

3 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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

4 Raise the jib to the horizontal position.

5 From the ground controls, fully raise the mast.

6 Using a suitable measuring device, measure the distance between plumb line and the face of the number 1 mast. Refer to illustration.

⊙ Result: The distance between the plumb line and the face of the number 1 mast does not exceed 66.9 inches / 170 cm. The wear pads are in good condition.

☒ Result: The distance between the plumb line and the face of the number 1 mast exceeds 66.9 inches / 170 cm. The wear pads are not in good condition. Install new wear pads. Refer to Repair Procedure, *How to Remove the Mast Assembly*.

Checklist C Procedures

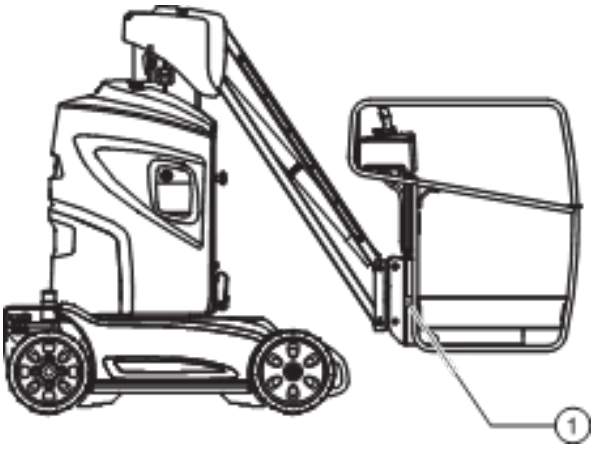
C-1
Calibrate the Platform Overload System

Genie specifications require that this procedure be performed every 500 hours or six months, whichever comes first OR when the machine fails to lift the maximum rated load.

Calibrating the platform overload system regularly is essential to safe machine operation. Continued use of an improperly operating platform overload system, could result in the system not sensing an overloaded platform condition. Machine stability could be compromised resulting in the machine tipping over.The platform overload system is designed to detect an overloaded platform and prevent machine operation anytime the machine is turned on. When activated, the system halts all normal boom operation, giving visual and audible warning to the operator.

Models equipped with the platform overload option are provided with additional machine components: an adjustable spring-loaded platform support subassembly, a limit switch, an electronic module which receives the overload signal and interrupts power, and an audio/visual warning indication to alert the operator of the overload.

Refer to Repair Procedure, *How to Calibrate the Platform Overload System*.



1 platform overload limit switch

C-2
Replace the Hydraulic Tank Breather Cap - Models with Optional Hydraulic Oil



Genie specifications require that this procedure be performed every 500 hours or six months, whichever comes first OR when the machine fails to lift the maximum rated load.

The hydraulic tank is a vented-type tank. The breather cap has an internal air filter that can become clogged or, over time, can deteriorate. If the breather cap is faulty or improperly installed, impurities can enter the hydraulic system which may cause component damage. Extremely dirty conditions may require that the cap be inspected more often.

1 Remove and discard the hydraulic tank breather cap.

Note: The tank filler cap and breather are a one piece component.

2 Install a new cap onto the tank.

Checklist E Procedures

E-1
Test or Replace the Hydraulic Oil



Genie requires that this procedure be performed every 2000 hours or every two years, whichever comes first.

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil and a clogged suction strainer may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more often. For hydraulic oil specifications, Refer to Specifications, *Hydraulic Specifications*.

Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.**

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

1 Open the turntable covers.

2 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.

3 Remove the fasteners securing the chassis side cover next to the tank to the chassis. Remove the side cover. Lay the side cover and fasteners to the side.

4 Place a suitable container under the hydraulic tank. Refer to Specifications, *Machine Specifications*.

5 Locate and remove the hydraulic tank filler cap. Set the filler cap to the side.

6 Remove the drain plug and drain all of the oil into a suitable container.

7 Clean up any oil that may have spilled. Properly discard the used oil.

Note: To clean the inside of the hydraulic tank using a mild solvent, it may be helpful to remove the hydraulic power unit from the tank. Refer to Repair Procedure, *How to Remove the Function Pump*.

8 Install the drain plug onto the hydraulic tank and torque to specification.

Torque specifications	
Hydraulic tank drain plug	44 in-lbs 5 Nm

9 Fill the tank with hydraulic oil until the fluid is at the full indicator on the hydraulic tank. Do not overfill.

10 Install the filler cap onto the hydraulic tank, and securely tighten. Do not over tighten.

11 Activate the pump to fill the hydraulic system with oil and bleed the system of air.

NOTICE Component damage hazard. The pump can be damaged if operated without oil. Be careful not to empty the hydraulic tank while in the process of filling the hydraulic system. Do not allow the pump to cavitate.

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. The platform controls are used to operate the various machine functions.

The platform controls consist of an electronic circuit board, joystick, alarm, buttons and LEDs.

For further information or assistance, contact Genie Product Support.

1-1 Circuit Boards

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 Remove the fasteners securing the top plate assembly to the platform control box. Carefully remove the top plate assembly from the box to expose the circuit boards.

3 Tag and disconnect the 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.

4 Remove the fasteners securing the platform controls circuit board to the top plate assembly. Set the fasteners to the side.

5 Remove the platform controls circuit boards from the top plate assembly.

Platform Controls

1-2 Controller Adjustments

How to Activate or Deactivate the Motion Alarm

The alarm is activated at the platform controls and sounds at the ground as a warning to ground personnel. An improperly functioning alarm will prevent the operator from alerting ground personnel of hazards or unsafe conditions.

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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

2 Simultaneously press and hold all three function buttons for 3 seconds.

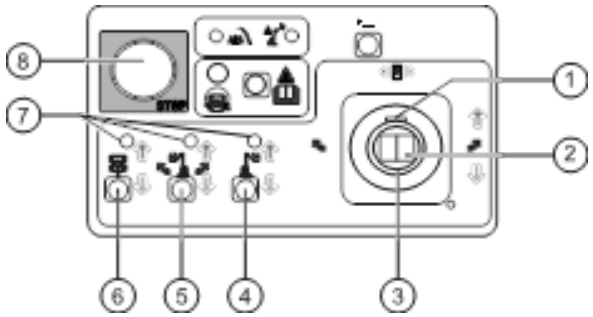
⊙ Result: A beep sounds and three function indicator lights will flash one after another.

3 Simultaneously press and hold the drive function and the lift function buttons for 3 seconds.

⊙ Result: All three function indicator lights will stop flashing.

4 Briefly press and release the drive function button to turn the motion alarm on or off.

⊙ Result: The drive indicator light will be on if the motion alarm is activated.It will be off if the motion alarm is deactivated.



1 joystick function enable switch
2 thumb rocker switch
3 joystick
4 jib boom function button
5 lift function and turntable rotate function button
6 drive function button
7 function indicator lights
8 red Emergency Stop button

5 Press and hold the drive function button for 3 seconds.

⊙ Result: All three indicator lights will flash for 3 seconds and turn off.

6 Push in the red Emergency Stop button at platform controls to confirm the procedure.

⊙ Result: If activated, the motion alarm will sound during all machine movements.

⊙ Result: If deactivated, the motion alarm will not sound during any machine movement.

How to Activate or Deactivate the Flashing Beacon (if equipped)

The flashing beacon is installed to alert operators and ground personnel of machine proximity and motion. The flashing beacon is installed on the ground control side of the mast.

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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

2 Simultaneously press and hold all three function buttons for 3 seconds.

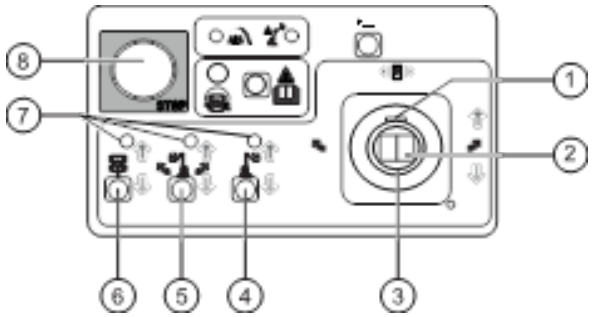
⊙ Result: A beep sounds and three function indicator lights will flash one after another.

3 Simultaneously press and hold the drive function and the lift function buttons for 3 seconds.

⊙ Result: All three function indicator lights will stop flashing.

4 Briefly press and release the lift function button to turn the flashing beacon on or off.

⊙ Result: The lift indicator light will be on if the flashing beacon is activated.It will be off if the flashing beacon is deactivated.



1 joystick function enable switch
2 thumb rocker switch
3 joystick
4 jib boom function button
5 lift function and turntable rotate function button
6 drive function button
7 function indicator lights
8 red Emergency Stop button

5 Press and hold the drive function button for 3 seconds.

⊙ Result: All three indicator lights will flash for 3 seconds and turn off.

6 Push in the red Emergency Stop button at platform controls to confirm the procedure.

⊙ Result: If activated, the beacon will flash during all machine movements.

⊙ Result: If deactivated, the beacon will not flash during any machine movement.

Platform Controls

How to Calibrate a Joystick

Calibration of the joystick is essential for safe machine operation. The joystick on this machine utilize Hall Effect technology for proportional control. If a joystick is disconnected or replaced, it must be calibrated before operating 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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

2 Simultaneously press and hold all three function buttons for 3 seconds.

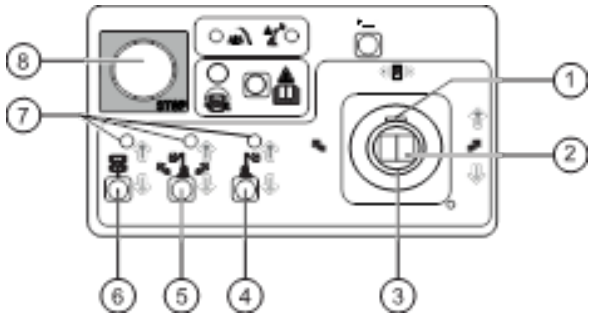
⊙ Result: A beep sounds and three function indicator lights will flash one after another.

3 Simultaneously press and hold the drive function and jib boom function buttons for 3 seconds.

⊙ Result: All three function indicator lights will stop flashing.

4 Move the joystick fully to the left, then return the joystick to the neutral position.

Note: Do not squeeze or activate the joystick function enable switch. No machine function should operate while performing the joystick calibration procedure.



1 joystick function enable switch
2 thumb rocker switch
3 joystick
4 jib boom function button
5 lift function and turntable rotate function button
6 drive function button
7 function indicator lights
8 red Emergency Stop button

5 Move the joystick fully to the right, then return the joystick to the neutral position.

6 Move the joystick fully to the rear, then return the joystick to the neutral position.

7 Move the joystick fully to the front, then return the joystick to the neutral position.

8 Press and hold the drive function button for 3 seconds.

⊙ Result: All three function indicator lights will flash three times. Joystick calibration is complete.

How to Calibrate the Steer Angle Sensor

Calibration of the steer angle sensor is essential for safe machine operation. The steer angle sensor controls the maximum steering angle that can be attained.

1 Adjust the steer tires so they are in a straight driving position.

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

3 Tag and disconnect the steer angle sensor wire harness from the machine wire harness.

4 With a multimeter set to read 4k ±0.2 ohms, connect the leads to the green and black wires of the potentiometer.

⊙ Result: The reading is 4k ±0.2 ohms. Proceed to step 5.

⊠ Result: The reading is not 4k ±0.2 ohms. Refer to Repair Procedure, *How to Replace the Steer Angle Sensor*.

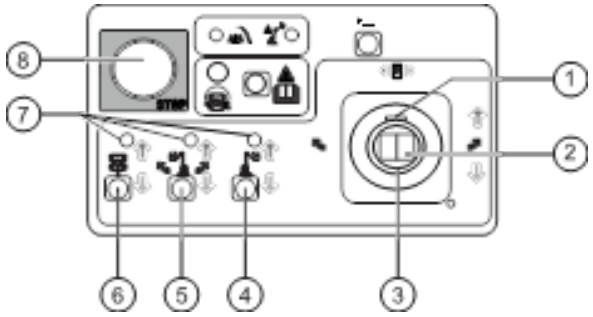
5 Connect the steer sensor assembly cable to the main harness.

6 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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

7 Simultaneously press and hold all three function buttons for 3 seconds.

⊙ Result: A beep sounds and three function indicator lights will flash one after another.



1 joystick function enable switch
2 thumb rocker switch
3 joystick
4 jib boom function button
5 lift function and turntable rotate function button
6 drive function button
7 function indicator lights
8 red Emergency Stop button

8 Simultaneously press and hold the lift function and jib boom function buttons for 3 seconds.

⊙ Result: All three function indicator lights will stop flashing.

9 Press and hold the joystick function enable switch and activate the thumb rocker switch turning the wheels fully to the left.

10 Press the drive function button for 1 second to validate the left side steering limit.

11 Press and hold the joystick function enable switch and activate the thumb rocker switch turning the wheels fully to the right.

Platform Controls

12 Press the jib boom function button for 1 second to validate the right side steering limit.

13 Press and hold the joystick function enable switch and activate the thumb rocker switch placing the wheels in line with the chassis.

14 Press the lift function button for 1 second.

15 Press and hold the drive function button for 3 seconds. Steer sensor calibration is complete.

2-1 Platform

How to Remove the Platform

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

2 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.

3 Remove the fasteners securing the top plate assembly to the platform control box.

4 Tag and disconnect the wire harness connectors from the platform controls circuit boards.

5 Tag and disconnect the wire harness connectors from the joystick. Set the top plate assembly to the side.

6 Remove the fasteners securing the bottom plate assembly to the platform control box. Lay the bottom plate assembly and fasteners to the side.

7 Remove the fasteners securing the outlet mounting plate to the platform. Set the mounting plate assembly and fasteners to the side.

8 Attach a lifting strap of suitable capacity from an overhead supporting device to the bottom of the platform. Support the platform. Do not apply any lifting pressure.

NOTICE Component damage hazard. The platform railings can be damaged if used to lift the platform. Do not attach the lifting straps to the platform railings.

9 Remove the platform mounting pins retaining fasteners. Set the fasteners to the side.

10 Remove the pins securing the platform to the jib boom.

11 Remove the platform.

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

Note: During removal, the lifting strap will need to be adjusted for proper balancing.

Platform Components

2-2
Platform Overload System

How to Calibrate the Platform Overload System

Calibrating the platform overload system regularly is essential to safe machine operation. Continued use of an improperly operating platform overload system, could result in the system not sensing an overloaded platform condition. Machine stability could be compromised resulting in the machine tipping over.

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

1 Chock the wheels at the steer end of the machine.

2 Remove all weight, tools, accessories and equipment from the platform.

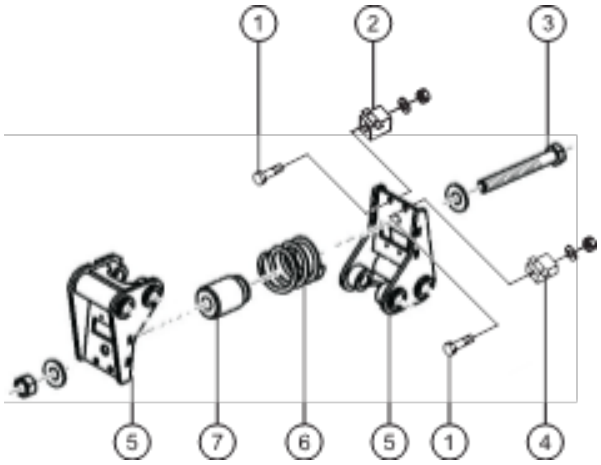
Note: Failure to remove all weight, tools, accessories and equipment from the platform will result in an incorrect calibration.

3 Fully tighten the adjusting screws of both the overload sensors. Do not over tighten.

4 Using a suitable lifting device, place an appropriate test weight equal to that of the maximum platform capacity at the center of the platform floor.

Weight = 440 lbs / 200 kg

5 Tighten the overload spring adjustment screw just until the screw and lock nut will rotate freely, and the clearance between the lock nut and sensor mounting bracket is minimal.



1 adjusting screw
2 overload sensor number 1
3 overload spring adjustment screw
4 overload sensor number 2
5 overload sensor mounting bracket
6 overload spring
7 spacer

6 Place an additional 44 lbs / 20 kg test weight in the center of the platform. Secure the weight to the platform.

7 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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

8 Turn the adjusting screw of the number 1 overload sensor 10° in a counterclockwise direction.

⊙ Result: The overload indicator lights are flashing at the ground and platform controls, and the alarm is sounding intermittently. Proceed to step 9.

⊠ Result: The overload indicator lights are off at the ground and platform controls and the alarm does not sound intermittently. Repeat the procedure beginning with step 8.

9 Turn the adjusting screw of the number 2 overload sensor 10° in a counterclockwise direction.

⊙ Result: The overload indicator lights are flashing at the ground and platform controls, and the alarm is sounding continuously. Proceed to step 10.

⊠ Result: The overload indicator lights are off at the ground and platform controls and the alarm does not sound continuously. Repeat the procedure beginning with step 9.

10 Test all machine functions from the platform controls.

⊙ Result: All platform control functions do not operate.

11 Turn the key switch to ground controls.

12 Test all machine functions from the ground controls.

⊙ Result: All ground control functions do not operate.

13 Using a suitable lifting device, lift the additional test weight from the platform.

⊙ Result: The platform overload indicator lights are off at both the ground and platform controls and the alarm does not sound.

14 Test all machine functions from the ground controls.

⊙ Result: All ground control functions operate normally.

Jib Components

3-1
Jib Cylinder

How to Remove the Jib Boom Lift Cylinder

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills and a suitable workshop. Attempting this procedure without the specific skills and tools could result in death or serious injury and significant component damage.

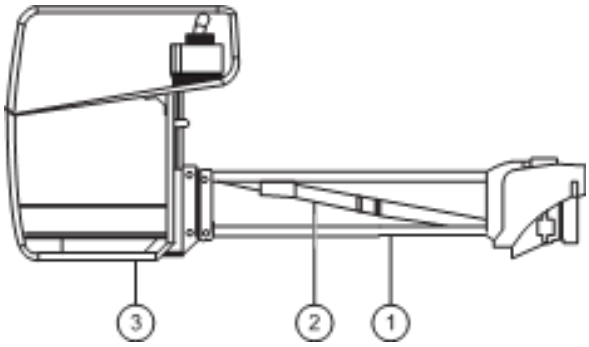
Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

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

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

2 Raise the jib boom to a comfortable working height and place blocks under the platform for support. Lower the jib boom until the platform is resting on the blocks.

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



1 jib boom
2 jib boom lift cylinder
3 platform

4 Tag, disconnect and plug the jib boom lift cylinder hydraulic hoses. 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.

5 Remove the pin retaining fasteners from the jib cylinder rod-end pivot pin. Do not remove the pin.

6 Remove the pin retaining fasteners from the jib cylinder barrel-end pivot pin. Do not remove the pin.

Jib Components

7 Attach a lifting strap from an overhead lifting device to the lug on the rod-end of the jib cylinder.

8 Place a block across both sides of the jib boom under the jib cylinder.

9 Use a soft metal drift to remove the barrel-end pivot pin and rod-end pivot pin.

10 Carefully remove the jib cylinder from the machine.

⚠WARNING Crushing hazard. The jib boom lift cylinder may become unbalanced and fall when it is removed from the machine if it is not properly supported by the lifting device.

Mast Components

4-1
Mast Assembly

How to Remove the Mast Assembly

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.*

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

1 Check the condition of the wear pads. Refer to Maintenance Procedure, *Inspect the Mast Wear Pads.*

2 Using Illustration 1 as a guide, create a safety steel plate using the dimensions specified.

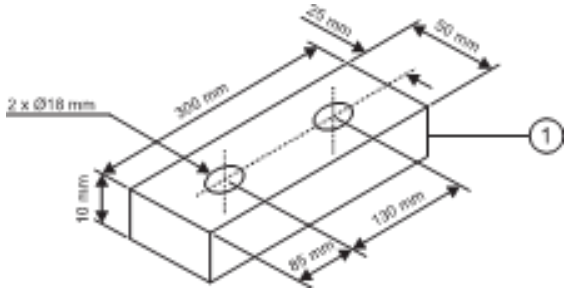


Illustration 1

1 safety steel plate

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

4 Open and remove the turntable covers.

5 Remove the fasteners securing the mast head cover to the mast. Set the fasteners to the side.

6 Remove the mast head cover from the mast head.

7 Tag and disconnect the proximity sensor. Lay the proximity sensor to the side.

8 Tag, disconnect and plug the hydraulic hose at the top of the lift cylinder. Remove the hose connector from the lift cylinder. Plug the lift 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.

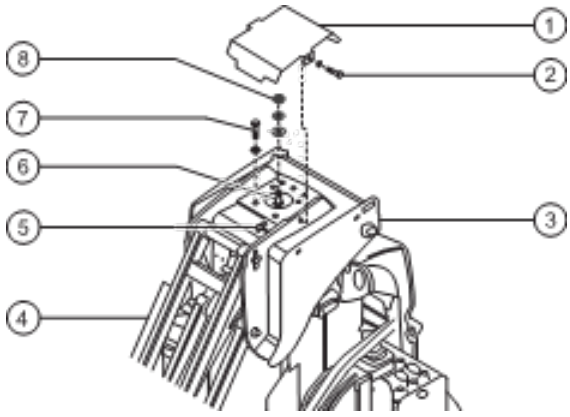


Illustration 2

1 mast head cover
2 mast head cover fasteners
3 mast head
4 jib boom
5 proximity sensor
6 lift cylinder
7 mast head fasteners
8 lift cylinder fasteners

Mast Components

9 Attach a lifting strap of suitable capacity from an overhead lifting device to the mast head, jib boom and platform assembly. Support the assembly. Do not apply any lifting pressure.

NOTICE Component damage hazard. The platform railings can be damaged if used to lift the platform. Do not attach the lifting straps to the platform railings.

10 Remove the fasteners securing the mast head to the mast assembly. Set the fasteners to the side.

11 Raise the mast head, jib boom and platform assembly and move the assembly approximately 20 inches / 50 cm towards the non-steer end of the machine.

⚠ WARNING Crushing hazard. The mast head, jib boom and platform assembly could become unbalanced and fall when removed from the machine

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

Note: During removal the mast head, jib boom and platform assembly, the overhead crane strap will need to be carefully adjusted for proper balancing. A properly balanced lifting strap is essential when removing the assembly from the machine.

12 Remove the fasteners securing the lift cylinder to the mast head. Set the fasteners to the side.

13 Remove the fasteners securing the stops to the mast assembly and remove the stops. Set the fasteners and stops to the side.

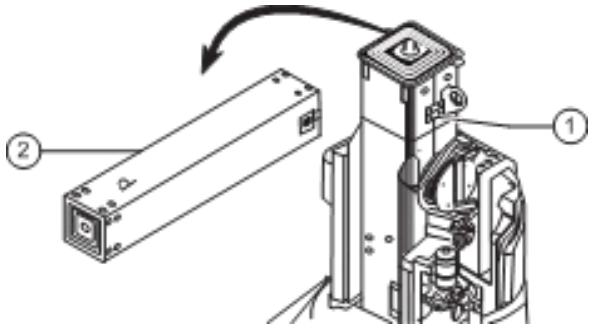


Illustration 3

1 stops
2 mast assembly

14 Using the mast head fasteners, install the safety steel plate onto the top of the mast assembly. Securely tighten the fasteners. Do not over tighten.

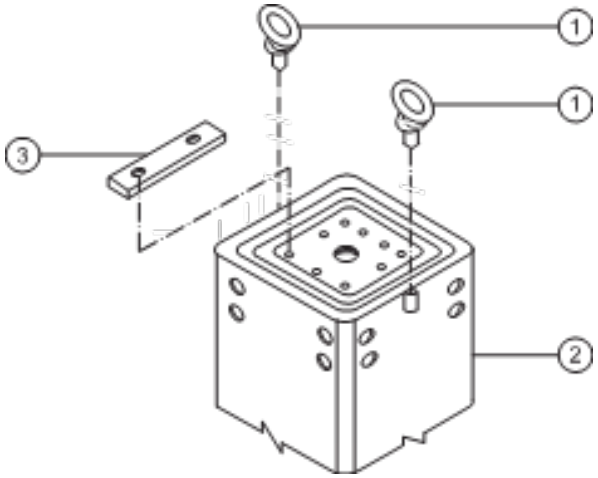


Illustration 4

1 M16 shackles
2 mast assembly
3 safety steel plate

Mast Components

15 Using an overhead lifting device, attach a lifting strap of suitable capacity equipped with the M16 shackles to the threaded rings at the top of the outer mast.

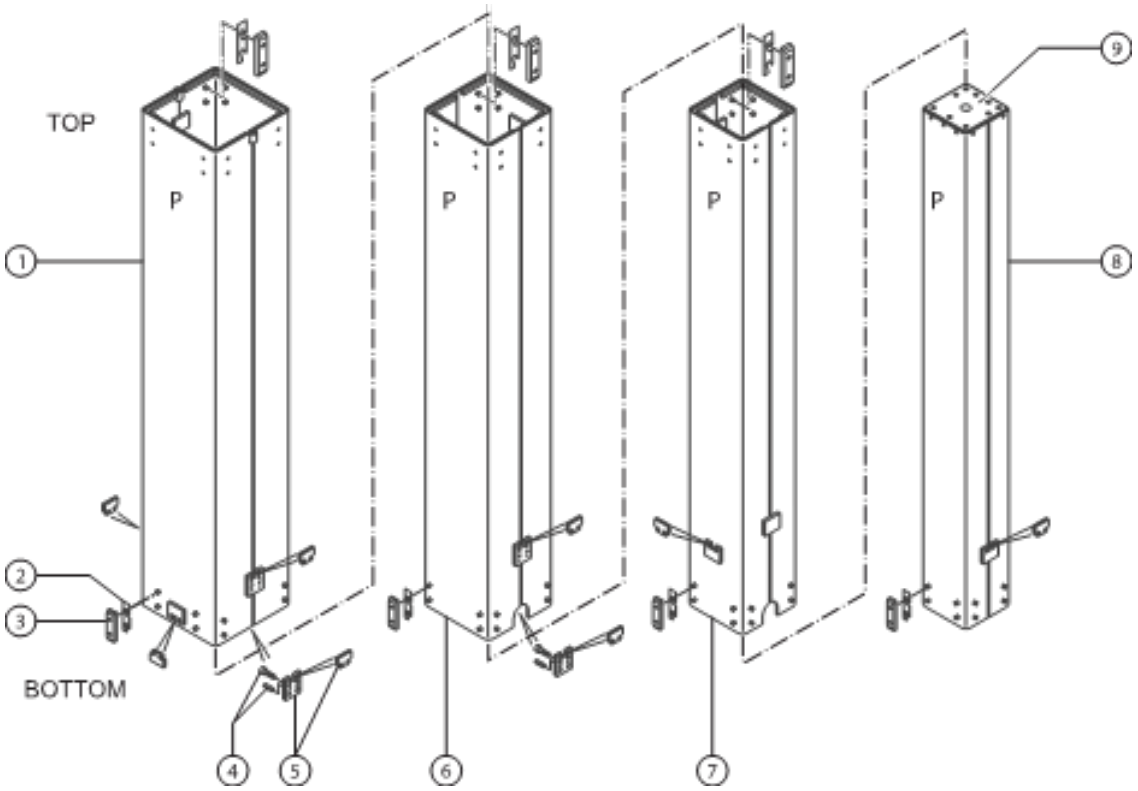
16 Lift the mast assembly approximately 12 inches / 30 cm. Use a permanent marker to indicate the face closest to the platform with the mark 'P' on the number 1 mast. Refer to Illustration 3.

17 Remove the mast assembly from the machine, while carefully pulling the cables and hydraulic hose from the mast. With the 'P' mark facing upwards, place the mast assembly on a level workbench capable of supporting it.

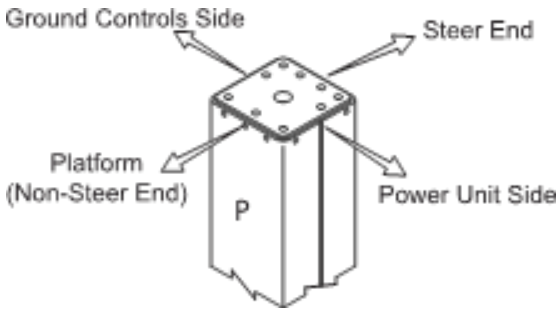
⚠WARNING Crushing hazard. The mast assembly will fall if it is not properly supported by an overhead supporting device.

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

GR-26J



1 number 1 mast
2 shims
3 wear pads
4 fasteners
5 stops
6 number 2 mast
7 number 3 mast
8 number 4 mast
9 cover plate



Repair Procedures

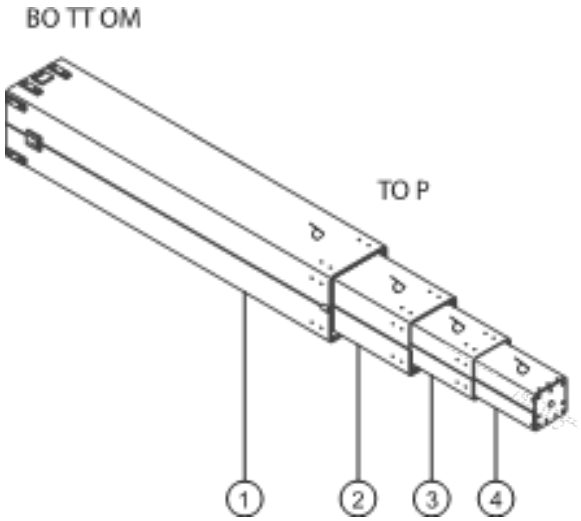
How to Disassemble the Mast, GR-26J

⚠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.

1 Remove the mast assembly. Refer to Repair Procedure, *How to Remove the Mast Assembly*.

2 With the 'P' mark facing upwards, secure the mast assembly to the workbench.

3 Working from the top of the mast assembly, pull the number 2, 3 and 4 mast sections approximately 12 inches / 30 cm out of mast 1. Use a permanent marker to indicate the face closest to the platform with the 'P' mark on the number 2, 3 and 4 mast sections corresponding to the 'P' mark on mast 1.



1 number 1 mast
2 number 2 mast
3 number 3 mast
4 number 4 mast

4 Working from the top of the mast assembly, push the number 2, 3 and 4 mast sections fully into the number 1 mast.

5 Remove the fasteners securing the safety steel plate to the mast assembly. Set the fasteners and safety steel plate to the side.

6 Working from the bottom of the mast assembly, pull the number 4 mast half way out.

7 Attach a lifting strap from an overhead supporting device to the number 4 mast section. Remove the number 4 mast while carefully pulling it out from the bottom of the number 3 mast. With the 'P' mark facing upwards, place the number 4 mast on a level workbench capable of supporting it.

⚠WARNING Crushing hazard. The mast section could become unbalanced and fall if not properly supported.

Note: During removal, the lifting strap will need to be adjusted for proper balancing.

8 Slide the number 2 mast and the number 3 mast towards the top of the number 1 mast to gain the access to the stops at the bottom of the number 1 mast.

9 Remove the fasteners securing stops to the inside of the number 1 mast. Remove the stops. Set the fasteners and stops to the side.

10 Push the number 3 mast fully into the number 2 mast. Working from the bottom of the number 1 mast, pull the number 2 mast and the number 3 mast half way out.

11 Attach a lifting strap from an overhead crane to the number 2 mast section. Remove both the number 2 mast and the number 3 mast while carefully pulling the assembly out from the bottom of the number 1 mast. With the 'P' mark facing upwards, place the number 2 mast and the number 3 mast assembly on a level workbench capable of supporting it.

Note: During removal, the lifting strap will need to be adjusted for proper balancing.

12 Slide the number 3 mast towards the top of the number 2 mast to gain the access to the stops at the bottom of the number 2 mast.

13 Remove the fasteners securing stops to the inside of the number 2 mast. Remove the stops. Set the fasteners and stops to the side.

14 Working from the bottom of the number 2 mast, pull the number 3 mast half way out.

15 Attach a lifting strap from an overhead supporting device to the number 3 mast section. Remove the number 3 mast while carefully pulling the it out from the bottom of the number 2 mast. With the 'P' mark facing upwards, place the number 3 mast on a level workbench capable of supporting it.

Note: During removal, the lifting strap will need to be adjusted for proper balancing.

16 Tag and remove the outer wear pads and shims from the bottom of the number 4 mast section. Set the shims to the side. Discard the wear pads.

Note: For ease of mast reassembly, make careful note of the location, order and orientation of the shims.

Note: Use a hammer and chisel if necessary to gently loosen the wear pads from the mast.

17 Tag and remove the outer wear pads and shims from the bottom of the number 3 mast section. Set the shims to the side. Discard the wear pads.

Note: For ease of reassembly of the mast, make careful note of the location, order and orientation of the shims.

Note: Use a hammer and chisel if necessary to gently loosen the wear pads from the mast.

Repair Procedures

18 Tag and remove the inner wear pads from the top of the number 3 mast section. Set the shims to the side. Discard the wear pads.

Note: For ease of mast reassembly, make careful note of the location, order and orientation of the shims.

Note: Use a hammer and chisel if necessary to gently loosen the wear pads from the mast.

19 Tag and remove the outer wear pads and shims from the bottom of the number 2 mast section. Set the shims to the side. Discard the wear pads.

Note: For ease of mast reassembly, make careful note of the location, order and orientation of the shims.

Note: Use a hammer and chisel if necessary to gently loosen the wear pads from the mast.

20 Tag and remove the inner wear pads from the top of the number 2 mast section. Set the shims to the side. Discard the wear pads.

Note: For ease of mast reassembly, make careful note of the location, order and orientation of the shims.

Note: Use a hammer and chisel if necessary to gently loosen the wear pads from the mast.

21 Tag and remove the outer wear pads and shims from the bottom of the number 1 mast section. Set the shims to the side. Discard the wear pads.

Note: For ease of mast reassembly, make careful note of the location, order and orientation of the shims.

Note: Use a hammer and chisel if necessary to gently loosen the wear pads from the mast.

22 Tag and remove the inner wear pads and shims from the top of the number 1 mast section. Set the shims to the side. Discard the wear pads.

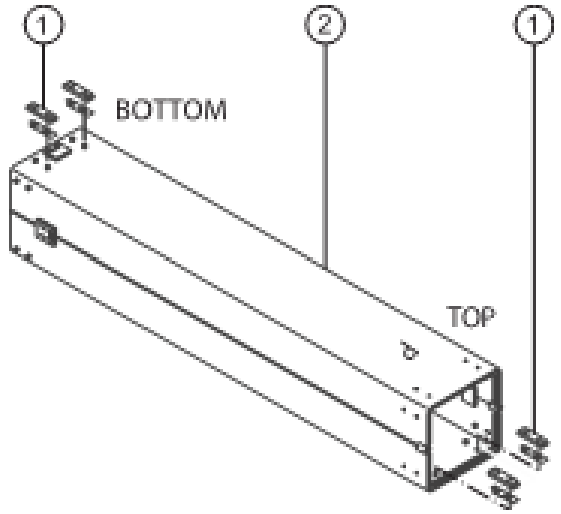
Note: For ease of mast reassembly, make careful note of the location, order and orientation of the shims.

Note: Use a hammer and chisel if necessary to gently loosen the wear pads from the mast.

How to Assemble the Mast, GR-26J

⚠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.

1 Install two 10 mm wear pads, and the corresponding shims removed in the mast disassembly process, onto the bottom of mast sections 1, 2, 3 and 4.



1 wear pad 10 mm
2 mast section (mast 1 shown)

2 Install six 12 mm wear pads, and the corresponding shims removed in the mast disassembly process, onto the bottom of mast sections 1, 2, 3 and 4.

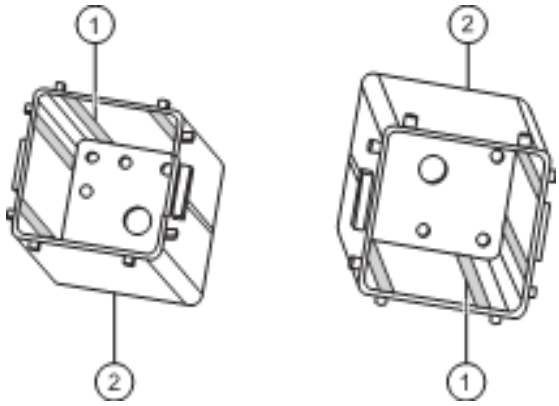
3 Install two 10 mm wear pads, and the corresponding shims removed in the mast disassembly process, onto the top of mast sections 1, 2 and 3.

4 Install six 12 mm wear pads, and the corresponding shims removed in the mast disassembly process, onto the top of mast sections 1, 2 and 3.

5 Apply grease onto the inner faces of the mast sections 1, 2 and 3.

Grease specification

RETINAX HDX2 grease, NLGI (lithium based) or equivalent

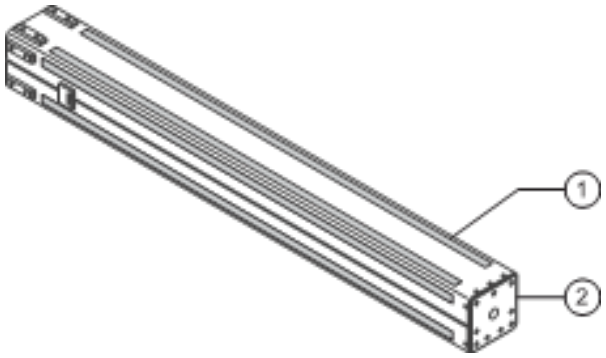


1 grease
2 mast section (mast 1 shown)

Repair Procedures

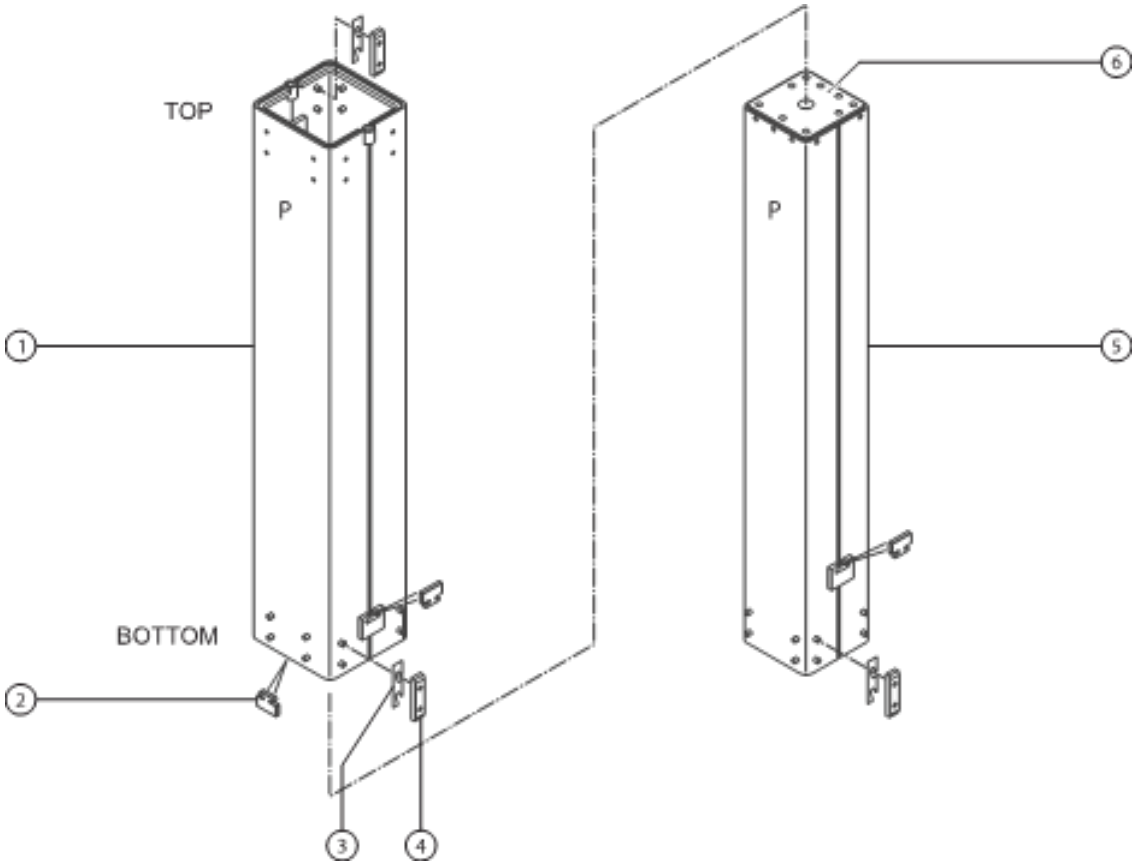
6 Apply grease onto the outer faces of the mast sections 1, 2, 3 and 4.

7 Carefully assemble the mast sections using the mast disassembly procedure in reverse order. Refer to Repair Procedure, *How to Disassemble the Mast, GR-26J*.

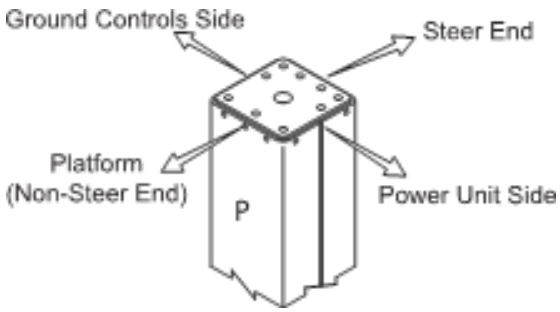


1 grease
2 mast section (mast 4 shown)

GR-20J



1 number 1 mast
2 stops
3 shims
4 wear pads
5 number 2 mast
6 cover plate



Repair Procedures

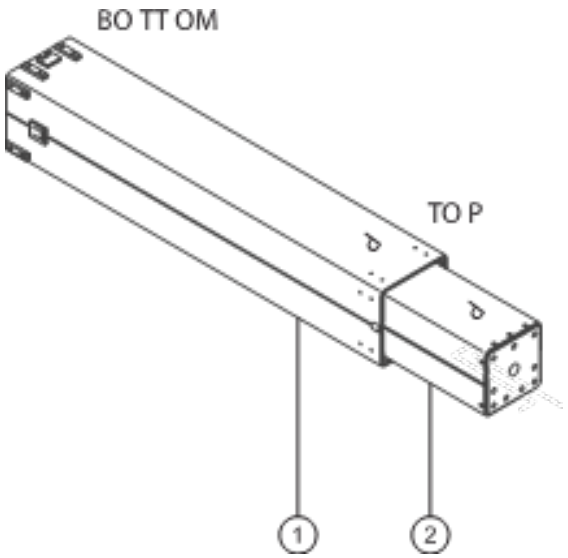
How to Disassemble the Mast, GR-20J

⚠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.

1 Remove the mast assembly. Refer to Repair Procedure, *How to Remove the Mast Assembly*.

2 With the 'P' mark facing upwards, secure the mast assembly to the workbench.

3 Working from the top of the mast assembly, pull the number 2 mast section approximately 12 inches / 30 cm out of mast 1. Use a permanent marker to indicate the face closest to the platform with the 'P' mark on the number 2 mast section corresponding to the 'P' mark on mast 1.



1 number 1 mast
2 number 2 mast

4 Remove the fasteners securing the safety steel plate to the mast assembly. Set the fasteners and safety steel plate to the side.

5 Remove the fasteners securing stops to the inside of the number 1 mast. Set the fasteners and stops to the side.

6 Working from the bottom of the number 1 mast, pull the number 2 mast half way out.

7 Attach a lifting strap from an overhead supporting device to the number 2 mast section. Remove the number 2 mast while carefully pulling the it out from the bottom of the number 1 mast. With the 'P' mark facing upwards, place the number 2 mast on a level workbench capable of supporting it.

⚠WARNING Crushing hazard. The mast section could become unbalanced and fall if not properly supported.

Note: During removal, the lifting strap will need to be adjusted for proper balancing.

8 Tag and remove the outer wear pads and shims from the bottom of the number 2 mast section. Set the shims to the side. Discard the wear pads.

Note: For ease of mast reassembly, make careful note of the location, order and orientation of the shims.

Note: Use a hammer and chisel if necessary to gently loosen the wear pads from the mast.

9 Tag and remove the outer wear pads and shims from the bottom of the number 1 mast section. Set the shims to the side. Discard the wear pads.

Note: For ease of mast reassembly, make careful note of the location, order and orientation of the shims.

Note: Use a hammer and chisel if necessary to gently loosen the wear pads from the mast.

10 Tag and remove the inner wear pads and shims from the top of the number 1 mast section. Set the shims to the side. Discard the wear pads.

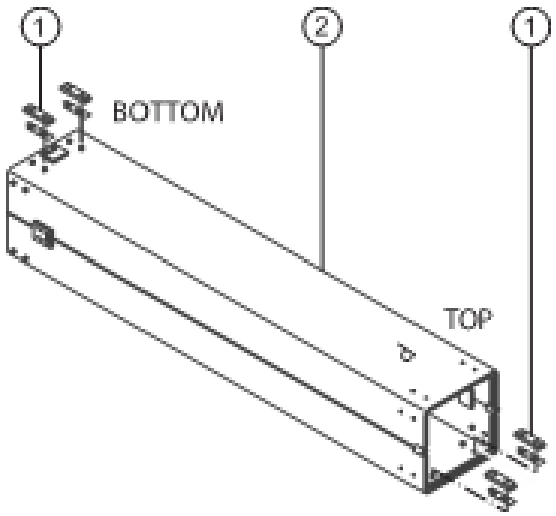
Note: For ease of mast reassembly, make careful note of the location, order and orientation of the shims.

Note: Use a hammer and chisel if necessary to gently loosen the wear pads from the mast.

How to Assemble the Mast, GR-20J

⚠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.

1 Install two 10 mm wear pads, and the corresponding shims removed in the mast disassembly process, onto the bottom of mast sections 1 and 2.



1 wear pad 10 mm
2 mast section (mast 1 shown)

Repair Procedures

2 Install six 12 mm wear pads, and the corresponding shims removed in the mast disassembly process, onto the bottom mast sections 1 and 2.

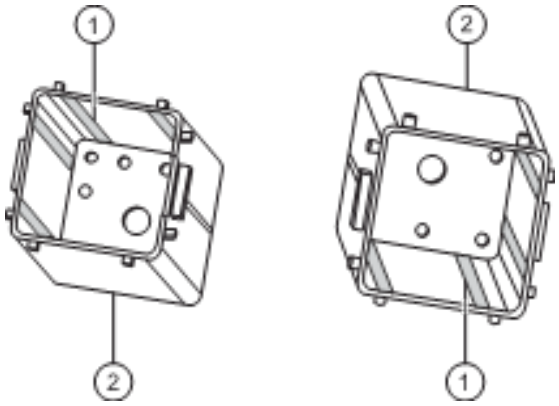
3 Install two 10 mm wear pads, and the corresponding shims removed in the mast disassembly process, onto the top of mast section 1.

4 Install six 12 mm wear pads, and the corresponding shims removed in the mast disassembly process, onto the top mast section 1.

5 Apply the grease onto the inner faces of the mast section 1.

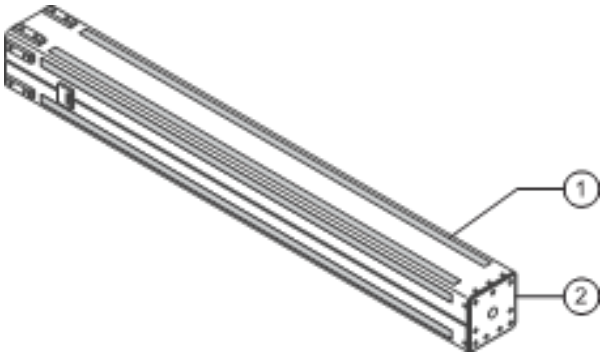
Grease specification

RETINAX HDX2 grease, NLGI (lithium based) or equivalent



1 grease
2 mast section (mast 1 shown)

6 Apply grease onto the outer faces of the mast sections 1 and 2.



1 grease
2 mast section (mast 2 shown)

7 Carefully assemble the mast sections using the mast disassembly procedure in reverse order. Refer to Repair Procedure, *How to Disassemble the Mast, GR-20J*.

4-2
Lift Cylinder

How to Remove the Lift Cylinder

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills and a suitable workshop. Attempting this procedure without the specific skills and tools could result in death or serious injury and significant component damage.

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.

1 Block the non-steer tires.

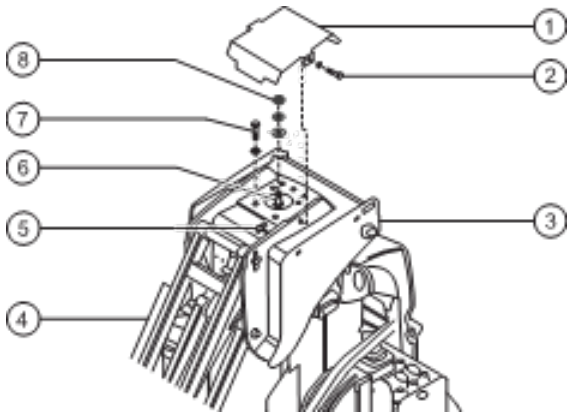
2 Open and remove the turntable covers of the machine.

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

4 Raise the steer end of the machine approximately 10 inches / 25 cm to access the nut at the bottom of the lift cylinder.

5 Place blocks under the chassis for support. Lower the machine onto the blocks.

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



1 mast head cover
2 mast head cover fasteners
3 mast head
4 jib boom
5 proximity sensor
6 lift cylinder
7 mast head fasteners
8 lift cylinder fasteners

6 Remove the nut securing the bottom of the lift cylinder to the chassis. Set it to the side.

7 Raise the machine slightly. Remove the blocks from under the chassis and lower the machine onto the ground. Remove the jack.

8 Remove the fasteners securing the mast head cover to the mast. Remove the mast head cover. Set the mast head cover and fasteners to the side.

Repair Procedures

9 Tag and disconnect the proximity sensor. Lay the proximity sensor to the side.

10 Tag, disconnect and plug the hydraulic hose at the top of the lift cylinder. Remove the hose connector from the lift cylinder. Plug the lift 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.

11 Attach a lifting strap of suitable capacity from an overhead lifting device to the mast head, jib boom and platform assembly. Support the assembly. Do not apply any lifting pressure.

NOTICE Component damage hazard. The platform railings can be damaged if used to lift the platform. Do not attach the lifting straps to the platform railings.

12 Remove the fasteners securing the mast head to the mast assembly. Set the fasteners to the side.

13 Raise the mast head, jib boom and platform assembly and move the assembly approximately 20 inches / 50 cm towards the non-steer end of the machine.

⚠WARNING Crushing hazard. The mast head, jib boom and platform assembly could become unbalanced and fall when removed from the machine.

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

Note: During removal the mast head, jib boom and platform assembly, the overhead crane strap will need to be carefully adjusted for proper balancing.

14 Remove the fasteners securing the lift cylinder to the mast head. Set the fasteners to the side.

15 Attach a lifting strap from an overhead lifting device to the lift cylinder.

16 Carefully remove the lift cylinder from the machine.

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

5-1
Level Sensor

The tilt alarm sounds when the incline of the chassis exceeds 2° to the side, front or rear.

How to Install and Calibrate the Level Sensor

⚠ DANGER Tip-over hazard. Failure to install or calibrate 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 or calibrate the level sensor other than specified in this procedure.

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

1 Open the turntable cover at the ground control side of the machine.

2 Locate the level sensor which is mounted on the turntable base below the battery charger.

3 Tag and disconnect the level sensor pigtail from the machine wire harness.

4 After noting the orientation of level sensor assembly, remove the fasteners securing the base of level sensor assembly to the chassis.

5 Install the new level sensor onto the machine. Install and securely tighten the fasteners. Do not over tighten.

6 Securely install the level sensor pigtail into the machine wire harness.

7 Remove the plastic cap from the end of the level sensor calibration wire.

8 Using a length of wire approximately 40 inches / 1 m long, connect the level sensor calibration wire to the negative post of the battery.

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

⊙ Result: The green LED underneath the level sensor flashes several times and stops. The level sensor calibration is complete.

⊙ Result: The green LED underneath the level sensor does not flash. Check the calibration wire connection.

Note: The green LED is on during normal machine operation and it only goes out when the tilt angle of the machine exceeds 2°.

After the green LED stops flashing, disconnect the calibration wire from the battery, and securely install the plastic cap.

Hydraulic Pump

6-1 Hydraulic Pump

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

How to Test the Hydraulic Pump

Refer to Repair Procedure, *How to Adjust the System Relief Valve*.

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.*

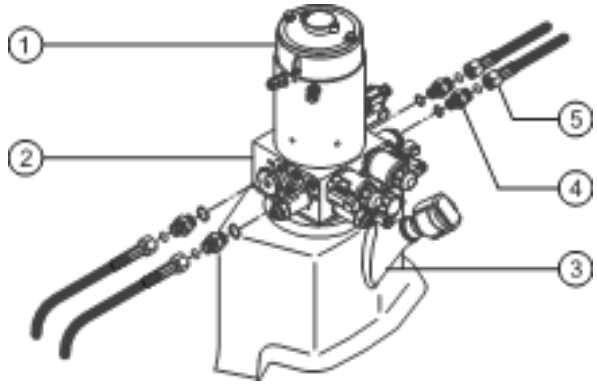
Note: Perform this procedure on a firm, level surface with the machine in the stowed position.

1 Disconnect the battery pack from the machine.

2 Open and remove the turntable cover at the hydraulic power unit side of the machine.

3 Tag and disconnect the wire harness connectors from the function manifold.

4 Tag and disconnect the cables from the motor.



1 motor
2 function manifold
3 hydraulic tank
4 connector fitting
5 hydraulic hose

5 Tag, disconnect and plug the hydraulic hoses at the function manifold. Cap the fittings on the manifold.

⚠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.

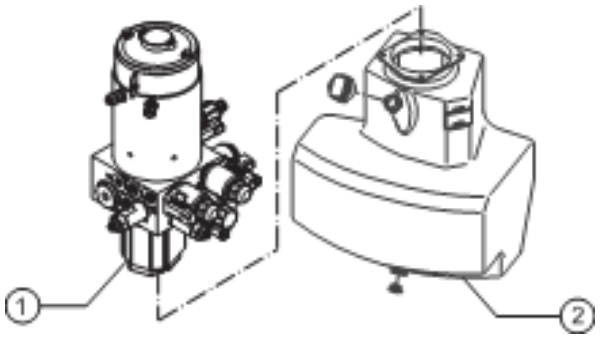
6 Remove the fasteners securing the function manifold to the hydraulic tank. Set the fasteners to the side.

7 Loosen the clamp securing the hydraulic power unit to the hydraulic tank. Do not remove the clamp.

8 Remove the clamp securing the hydraulic power unit to the chassis. Set the clamp to the side.

9 Carefully remove the hydraulic power unit from the tank and place it on a clean work bench.

Note: If necessary, loosen the bottom connector of auxiliary pump to more easily remove the hydraulic power unit.



1 function pump
2 hydraulic tank

10 Remove the fasteners securing the function pump to the function manifold. Set the fasteners to the side.

11 Carefully remove the function pump from the hydraulic power unit.

⚠DANGER Tip-over hazard. After replacing the hydraulic pump, it is critical to return the relief valve 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.

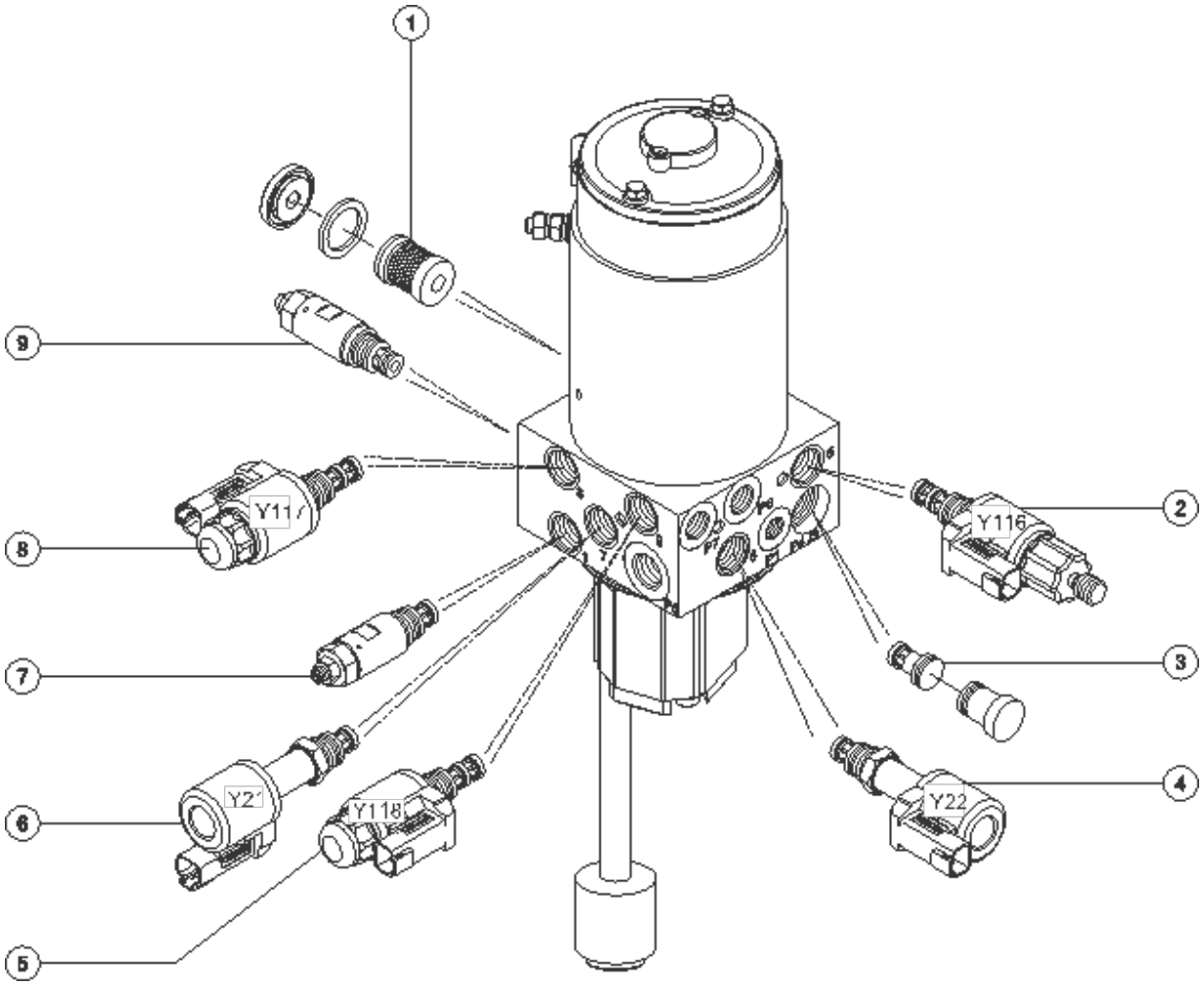
Function Manifold

7-1
Function Manifold Components

The function manifold is mounted on the hydraulic pump.

Index No.	Description	Schematic Item	Function	Torque
1	Filter	H	Suction filter	37 ft-lbs / 50 Nm
2	Solenoid valve, 2 position 4 way	B	Steer / Turntable rotate	18 ft-lbs / 25 Nm
3	Check valve	I	Blocks flow from auxiliary pump to function pump	29 ft-lbs / 40 Nm
4	Solenoid valve, 2 position 2 way	D	Platform up / Jib down	18 ft-lbs / 25 Nm
5	Solenoid valve, 2 position 4 way	C	Turntable rotate left/right	18 ft-lbs / 25 Nm
6	Solenoid valve, 2 position 2 way	E	Platform down / Jib down	18 ft-lbs / 25 Nm
7	Relief valve, 930 psi / 64 bar	G	Platform up	18 ft-lbs / 25 Nm
8	Solenoid valve, 2 position 4 way	A	Steer left/right	18 ft-lbs / 25 Nm
9	Relief valve, 2030 psi / 140 bar	F	System relief	18 ft-lbs / 25 Nm

Function Manifold



Repair Procedures

7-2
Valve Adjustments - Function Manifold

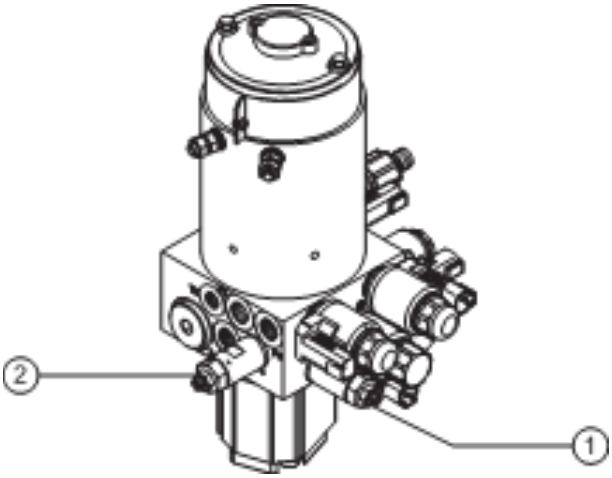
How to Adjust the System Relief Valve

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

1 Open the turntable cover on the hydraulic power unit side of the machine.

2 Connect a 0 to 2500 psi / 0 to 175 bar pressure gauge to the test port on the hydraulic hose reel.

3 Locate the system relief valve on the function manifold.



1 system relief valve
2 lift relief valve

4 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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

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

6 Turn the key switch to the off position.

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

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

NOTICE Component damage hazard. Do not adjust the relief valve pressures higher than specifications.

9 Turn the key switch to ground controls.

10 Repeat this procedure to confirm the relief valve pressure.

11 Lower the platform to the stowed position.

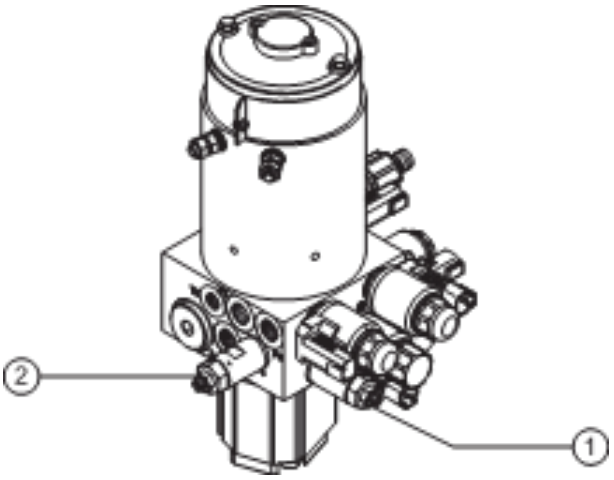
How to Adjust the Lift Relief Valve

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

1 Open the turntable cover on the hydraulic power unit side of the machine.

2 Connect a 0 to 2500 psi / 0 to 175 bar pressure gauge to the test port on the hydraulic hose reel.

3 Locate the lift relief valve on the function manifold.



1 system relief valve
2 lift relief valve

4 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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

5 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*.

6 Turn the key switch to the off position.

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

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

NOTICE

Component damage hazard. Do not adjust the relief valve pressures higher than specifications.

9 Turn the key switch to ground controls.

10 Repeat this procedure to confirm the relief valve pressure.

11 Lower the platform to the stowed position.

Hydraulic Tank

8-1 Hydraulic Tank

The primary functions of the hydraulic tank are to cool and deaerate the hydraulic fluid during operation.

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

1 Disconnect the battery pack from the machine.

2 Open and remove the turntable cover at the hydraulic power unit side of the machine.

3 Working next to the hydraulic tank, remove the fasteners securing the chassis side cover to the chassis. Remove the side cover. Set the side cover and fasteners to the side.

4 Tag and disconnect the wire harness connectors from the function manifold.

5 Tag and disconnect the cables from the motor.

6 Tag, disconnect and plug the hydraulic hoses at the function manifold. Cap the fittings on the manifold.

⚠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.

7 Place a suitable container under the hydraulic tank. Refer to Section 2, Specifications.

8 Locate and remove the hydraulic tank filler cap. Set the filler cap to the side.

9 Remove the drain plug and drain all of the oil into a suitable container.

10 Clean up any oil that may have spilled. Properly discard the used oil.

11 Install the drain plug onto the hydraulic tank and tighten to finger tight.

12 Install the filler cap onto the hydraulic tank and tighten to finger tight.

13 Remove the clamp securing the hydraulic power unit to the chassis. Set the clamp to the side.

14 Carefully remove the hydraulic tank along with hydraulic power unit from the machine and place it on a clean work bench.

15 Remove the fasteners securing the function manifold to the hydraulic tank. Set the fasteners to the side.

16 Remove the clamp securing the hydraulic power unit to the hydraulic tank. Set the clamp to the side.

17 Remove the hydraulic power unit from the hydraulic tank.

Torque specifications	
Hydraulic oil reservoir drain plug	44 in-lbs 5 Nm
Manifold to tank fasteners	40 in-lbs 4.5 Nm

9-1
Turntable Rotation Hydraulic Motor

How to Remove the Turntable Rotation Hydraulic Motor

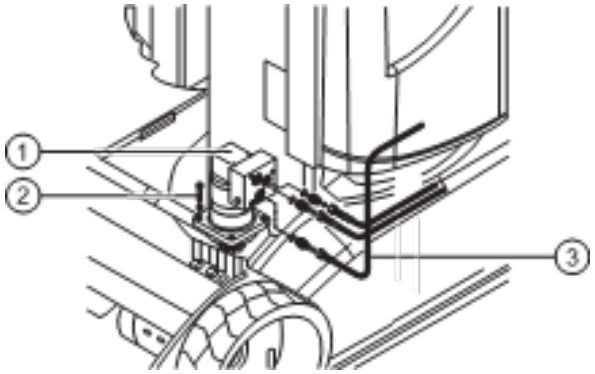
Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

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

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

2 From the ground controls, fully elevate the jib boom.

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



1 turntable rotation motor
2 fasteners
3 hydraulic hoses

4 Remove the rear chassis cover at the non-steer end of the machine and set aside.

5 Remove the side cover of the drive chassis and set aside.

6 Remove the turntable motor cover plate and set aside.

Note: The turntable motor cover plate is located above the turntable rotation motor.

7 Tag, disconnect the hydraulic hoses from the turntable rotation motor. Cap the fittings on the motor.

⚠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.

8 Remove fasteners securing the turntable rotation motor to the chassis and set aside.

9 Carefully remove the turntable rotation motor from the machine.

⚠CAUTION Bodily injury hazard. The turntable rotation motor may fall if not properly supported when removed from the machine.

Turntable Components

9-2 Battery

How to Remove the Battery

⚠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. Batteries contain acid. Avoid spilling or contacting battery acid. Neutralize battery acid spills with baking soda and water.

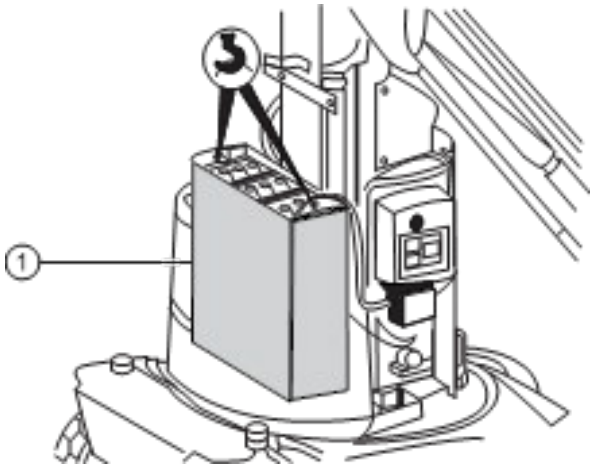
Note: Perform this procedure on a firm, level surface with the machine in the stowed position.

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

2 Open and remove the turntable covers.

3 Disconnect the battery pack from the machine.

4 Locate the bolts between the battery box and the counterweight. Loosen the bolts holding the battery pack in position.



1 battery box

5 Attach a lifting strap from an overhead supporting device to the battery box.

Note: For battery weight refer to Specifications, *Machine Specifications*.

6 Carefully remove the battery box from the machine.

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

10-1 Yoke Assembly

How to Remove the Yoke Assembly

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

1 Block the non-steer tires.

2 Loosen the bolts of the wheel at the steer end of the machine. Do not remove the bolts.

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

4 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.

5 Lower the machine onto the blocks.

6 Remove the bolts from the wheel at the steer end of the machine. Remove the wheel from the machine.

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

8 Remove the top cir-clip from the pin at the steering rod.

9 Remove the plastic cap above the yoke pivot shaft. Set the cap to the side.

10 **Ground control side:** Remove the steer sensor from the yoke pivot.

11 Remove the retaining fasteners from the yoke pivot shaft and set aside.

12 Remove the yoke assembly from the machine.

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

10-2 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 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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

2 Turn the wheels at the steer end of the machine, 20° to 25° to the right.

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

4 Block the non-steer tires.

5 Remove the pin retaining fasteners from the top of the steer cylinder barrel-end pivot pin.

Steer Axle Components

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

7 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.

8 Lower the machine onto the blocks.

9 Turn the wheels at the steer end of the machine fully to the left.

10 Tag, disconnect and plug the hydraulic hoses on the drive motor. Cap the fittings on the drive motor.

⚠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.

11 Remove the pin retaining fasteners from the steer cylinder rod-end pivot pin. Set the washers to the side. Discard the cotter pin.

Note: Always replace the cotter pin with a new one.

12 Remove the steer cylinder from the machine.

10-3 Steer Rod

How to Remove the Steer Rod

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

2 Remove the top cir-clips securing the steer rod to the steer yoke at both the ends of the steer rod.

3 Lift the steer rod up and off of the yoke to remove it from the machine.

10-4
Steer Angle Sensor

How to Replace the Steer Angle Sensor

1 Adjust the steer tires so they are in a straight driving position.

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

3 Tag and disconnect the steer angle sensor wire harness from the machine wire harness.

4 Remove the plastic cap above the steer yoke pivot. Set the cap to the side.

5 Carefully remove the sensor activator pin from the steer yoke pivot. Set the pin to the side.

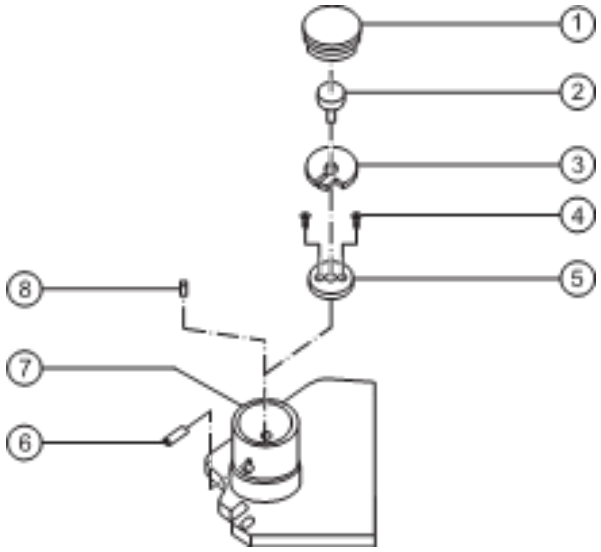
Note: Inspect the sensor activator pin to confirm it is not broken or twisted. If the sensor activator pin is broken or twisted, it must be replaced. Note the installation and orientation of the old sensor to be sure the new one is installed correctly.

6 Remove the steer angle sensor retaining fasteners. Remove the steer angle sensor assembly.

7 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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

8 Mount the potentiometer onto the plate and securely tighten with the nut.



1 steer yoke pivot cap
2 potentiometer
3 potentiometer mounting plate
4 fasteners
5 bottom plate
6 sensor activator pin
7 chassis
8 screw

9 With a multimeter set to read 4k ±0.2 ohms, connect the leads to the green and black wires of the potentiometer.

10 Adjust the potentiometer until a reading of 4k ±0.2 ohms is obtained.

Steer Axle Components

11 Install the bottom plate and it's fasteners on the steer yoke pivot.

12 Install the sensor activator pin onto the steer yoke pivot.

Note: Be sure the sensor activator pin is engaged into the sensor.

13 Install the plate along with potentiometer on the steer yoke pivot and securely tighten the potentiometer stem with the screw. Do not over tighten.

14 Install the plastic cap onto the steer yoke pivot.

15 Connect the steer angle sensor wire harness to the machine wire harness.

16 Calibrate the steer sensor. Refer to Repair Procedure, *How to Calibrate the Steer Angle Sensor*.

11-1
Drive Motors

How to Remove a Drive Motor

1 Block the steer wheels.

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.

Note: Rotate the red Emergency Stop button at platform control one quarter turn in a clockwise direction to restore the power supply. The red Emergency Stop button returns automatically to the out, or on position.

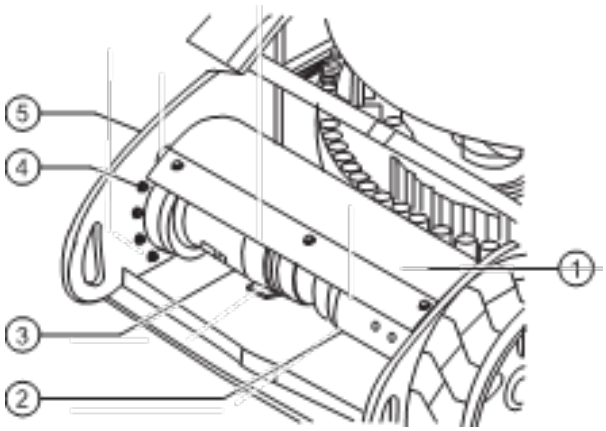
3 Fully elevate the jib boom.

4 Support the jib boom with an overhead supporting device.

⚠WARNING Crushing hazard. The jib boom could fall if not properly supported.

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

6 Open the turntable cover at the ground control side of the machine.



1 cable guard
2 right drive motor assembly
3 left drive motor assembly
4 fasteners
5 chassis

7 Remove the fasteners securing the rear chassis cover at the non-steer end of the machine. Remove the chassis cover. Lay the cover and fasteners to the side.

8 Tag and disconnect the two wire harness connectors at the steel bar above the drive motors.

9 Remove the fasteners securing the steel bar to the chassis. Set the fasteners to the side.

Non-Steer Axle Components

10 Turn over the steel bar and cut the zip ties attaching the two wire harness connectors to the steel bar. Lay the steel bar to the side.

11 Tag and disconnect the cables from the drive motor assembly.

12 Loosen the castle nut of the wheel at the non-steer end of the machine. Do not remove the castle nut.

Note: To remove the right drive motor assembly, first it is necessary to remove the left drive motor assembly.

13 Center a lifting jack under the drive chassis at the non-steer end of the machine.

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

15 Lower the machine onto the blocks.

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

16 Remove the castle nut from the wheel at the non-steer end of the machine. Remove the wheel from the machine.

Note: A properly sized puller may be needed to remove the wheel from the tapered shaft.

17 Place a 2 x 4 x 6 inch / 5 x 10 x 15 cm long wood block under the left drive motor.

Note: The wood block will support to the drive motor assembly when the fasteners are removed.

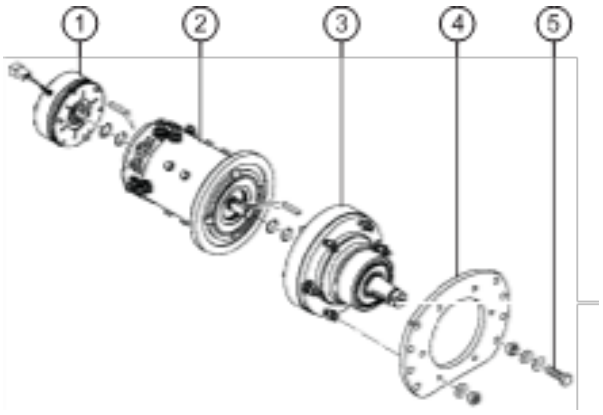
18 Remove the fasteners securing the left drive motor assembly to the chassis. Set the fasteners to the side.

19 Carefully remove the left drive motor assembly from the machine. Place it onto a suitable workbench capable of supporting it.

11-2
Drive Brake

How to Remove the Drive Brake

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



1 drive brake
2 drive motor
3 speed reducer
4 mounting plate
5 fasteners

2 Remove the fasteners securing the drive brake to the drive motor assembly. Set the fasteners to the side.

3 Carefully remove the drive brake from the drive motor assembly.

Torque specifications	
Brake mounting fasteners, dry	75 ft-lbs 102 Nm
Brake mounting fasteners, dry	56 ft-lbs 76 Nm

Battery Charger

12-1 Battery Charger

How to Remove the Battery Charger

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

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

2 Open and remove the turntable cover at the ground control side of the machine.

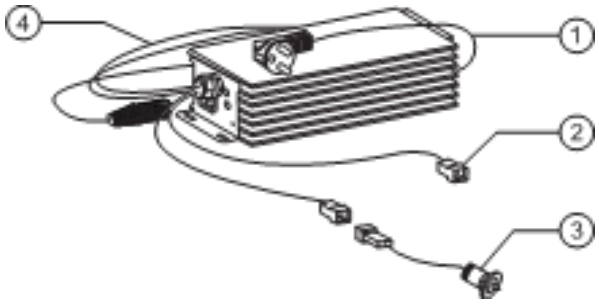
3 Tag and disconnect the cables connected to the ground terminal of the battery.

4 Tag and disconnect the black and red battery charger wires from the battery.

5 Tag and disconnect the power cable from the battery charger.

6 Locate the LED at the bottom of the bulkhead. Tag and disconnect the LED wire harness connector.

7 Tag and disconnect the charger cutout harness connector



1 power cable
2 charger cutout harness connector
3 LED
4 charger-to-battery wires

8 Locate and remove the nut holding the ground control box closed, and open the ground control box.

9 Remove the fasteners securing the top of the battery charger to the machine and set aside.

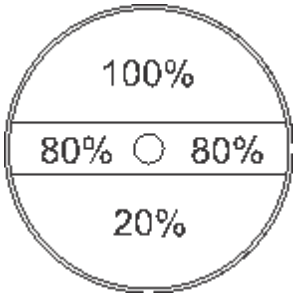
10 Close the ground control box and install the nut.

11 Remove the fasteners securing the bottom of the battery charger to the machine and set aside.

12 Lower the battery charger towards the tilt sensor, and remove the battery charger from the machine.

Battery Charger

Battery Charger Status Indicator



LED	Description	Condition
Red, solid	Phase I1 and P	Charging
Yellow, solid	Phase U and I2	Charging
Green, flashing	Equalization	Charging
Green, solid	End of charging	Charged
Red, flashing	Fault	• Charge duration too long • Temperature fault • Supply voltage fault • Charger fault / failure

Battery Charger not Operating

If the battery charger fails to operate when plugged into an AC power source, check the following:

- The black wire from the charger is connected to the negative post of the battery.
- The red wire from the charger is connected to the positive post of the battery.
- Corrosion at the battery terminals.
- The battery charger curve selector is set to the correct battery type.
- The correct battery type is installed on the machine.
- The AC supply voltage is within the specified range.

110V AC supply voltage: 85V AC - 138V AC

220V AC supply voltage: 195V AC - 265V AC

- Reset the battery charger.

Battery Charger

How to Reset the Battery Charger

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

2 Disconnect the battery charger from the AC power source.

3 Disconnect the battery charger from the battery.

4 Wait 15 minutes.

5 Connect the battery charger to the battery.

6 Connect the battery charger to an AC power source.

⊙ Result: The battery charger operates normally.

⊠ Result: The battery charger does not operate. Faulty charger.

Fault Codes



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 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

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.

⊙ 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.

Note: Two persons will be required to safely perform some troubleshooting procedures.

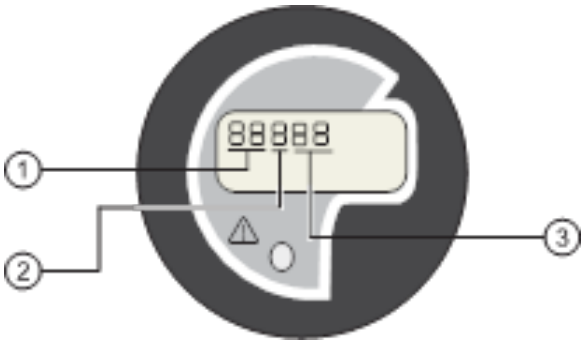
Fault Codes

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.

LED Diagnostic Readout

The diagnostic readout displays numerical codes that provide the information about the machine operating status and malfunctions.



1 Error Source: First two digits indicates the affected machine area or component.

- '01' Controller interface board
- '02' Controller logic board
- '08' Platform controls circuit board
- '16' Diagnostic display

2 Third digit always an alphabet "A" when fault code is displayed.

3 Error Type: Last two digits indicates the fault number.

The codes listed in the Fault Code Chart describe malfunctions and can aid in troubleshooting the machine by pinpointing the area or component affected.

Fault Code Chart

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
01	**Controller interface board**	02	Logic fault #1	The base board is waiting for the controller to complete its internal test.	This alarm may appear from time to time upon starting. Any initialization delay can cause this alarm to appear. If the alarm appears too often or if it is permanent, there is an internal error. Check the current software version or replace the controller.
		03	Valve Drv. off line	The internal device which controls all the auxiliary outputs has a problem and is not communicating correctly with the microcontroller.	Replace the controller.
		04	Output mismatch overcharge	This alarm is due to a disparity between the operating states detected by the two computers. The controller has asked the base board to activate the output for the drive or the pump but the interface does not identify a command or an operating state where the drive or pump must be allowed.	Check whether the software versions installed on the two consoles are correct. If so, there must be an internal fault.
		05	EEPROM	There is a fault in the management/verification of the internal EEPROM.	It is an internal fault. Replace the controller. The platform can still function but the controller will use default values for the internal parameters.
		06	Wrong RAM memory	The algorithm used to verify the main memory is working with erroneous data.	Try to break the contact. If the alarm is still present, replace the controller.
		10	Flash check	Incorrect software downloaded or the Flash memory is corrupted.	Check the installed software version or replace the controller.
		15	Analog input	There is a fault in the A/D converter of the micro-controller.	Replace the controller.

Fault Codes

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
01	**Controller interface board**	19	Serial error #1	The controller has not responded to the request from the base board as expected.	Replace the controller.
		32	Logic failure #1	Under-voltage or over- voltage has been detected.	If the fault occurs on starting or during an alarm, the fault is most likely to be linked to an under-voltage. Check whether the main voltage SI is stable. If the fault occurs on acceleration of the motor or activation of the pump, the fault may be due to under-voltage. Check the charge and the battery connections. If the fault is detected during braking, the fault may be due to over- voltage: Check the battery voltage during braking. In any other case, the fault may be due to an internal fault of the controller then replace it. Check whether there is contact or low impedance between pin A12 and the battery. Otherwise the circuit is damaged.
		33	Eb. Drv. Shorted	The electric cable of the brake is in short-circuit.	Check whether there is a short circuit or low impedance between pin A10 and the battery.
		34	Driver shorted	The main conductor of the driver is short-circuited.	Check whether there is a short circuit in parallel with the brake solenoid valve coil. Otherwise the conductor circuit is damaged and the controller must be replaced.
		36	Emergency button wire	Excitation wire on emergency button is disconnected.	Repair wire on the emergency button.
		37	Eb. Drv. / coil fail	The electric circuit of the break is open.	Replace the controller.
		40	Mc enable short.	The EB coil can not activate.	Replace the controller.
		41	Eb. enable short	The power contactor is short-circuited.	Check the wiring or change the controller.

Fault Codes

Error Source		Error Type		Condition	Solution
ID	Name	ID	Name		
01	**Controller interface board**	50	Multi selection	The electric brake is short-circuited. Several movements activated simultaneously.	Check the conformity of the control selectors.
		51	Plat. double required	The controller receives several commands simultaneously from the platform controls circuit board.	Check the wiring or change the controller.
		52	GND double required	The controller receives several commands simultaneously from the platform controls circuit board.	Check the wiring or change the controller.
		53	Tilted	Tilt triggers audible warning beep.	Check the conformity of the tilt sensor and its connection or change the controller.
		54	Overload HBT	Overload of HBT2 and HBT1 signals Overload incoherence.	Check the condition of the overload sensors or change the controller.
		55	Overcharge	Overload fault.	Check the condition of the overload sensors or change the controller.
		56	Battery low	Low battery voltage.	If the alarm is triggered when the battery is fully charged, change the controller.
		57	No CAN signal	The interface board has not received the CAN signal.	Check the BUSCAN connection between the modules or change the controller.
		58	No alarm on the console	There is a large disparity between the hour counter stored in the diagnostic display and the hour counter stored in the controller. The maximum acceptable difference is 10 hours. If it is greater, this alarm will appear.	After two minutes, the hour counter of the controller will automatically find the diagnostic display.
		59	Temperature of pump high	The temperature sensor of the pump has detected a high temperature.	The alarm should disappear as soon as the pump motor cools down. If this does not happen, there is a problem with the connection of terminal A16 or the temperature sensor.

Fault Codes

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
01	**Controller interface board**	61	Joystick	Joystick is pushed when machine is switching on.	Repair or replace the joystick.
		62	Short-circuit on function switches	The function switch has been closed for more than 2.5 seconds.	It should be possible to stop the alarm by stopping the main contactor or via the emergency stop. If the problem persists, check the wiring connection. If there is no problem, the alarm is due to an internal fault.
		63	Battery out of adjustment	The battery parameter differs by more than 20% from the nominal battery voltage.	Check the battery type parameter.
		64	Charge in progress	The platform has been started up with the battery charger in operation.	If the alarm appears with the charger disconnected from the mains, there may be a problem with the connection of terminal A17. Otherwise, it is an internal fault of the controller.
		65	Value of angle sensor incorrect	The value read by the potentiometer is different from the programmed value.	Check that the angle sensor potentiometer is functioning correctly. Otherwise, check the wiring.
		80	Lifting valve	There is a problem on one of the following outputs: terminal A32, terminal A26.	Check the condition of the valves and their connections. Otherwise, it is an internal fault of the controller.

Fault Codes

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
01	**Controller interface board**	81	Descent valve	There is a problem on one or other of the following outputs: terminal A30, terminal A26.	Check the condition of the valves and their connections. Otherwise, it is an internal fault of the controller.
		82	Rotation valve	There is a problem on one or other of the following outputs: terminal A34, terminal A25.	Check the condition of the valves and their connections. Otherwise, it is an internal fault of the controller.
		83	Steering valve	There is a problem on one or other of the following outputs: terminal A34, terminal A26.	Check the condition of the valves and their connections. Otherwise, it is an internal fault of the controller.
		84	Aux. Valve	There is a problem on one or other of the following outputs: "FLASHING LIGHT" and "TILT LAMP"	Repair or replace the option.
		86	Brake coil open	The main driver coil is not connected to pin A12 of NEB.	Check the connections of the BRAKE coil. Otherwise the conductor circuit is damaged and the controller must be replaced.
		89	Horn conductor	There is a problem (short-circuit to negative or positive, to absent horn) on the "WARNING" product.	Check the horn and its wiring. If the wiring is correct and the alarm persists, there is an internal fault.

Fault Codes

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
02	**Controller logic board**	7	Type disparity	The controller and the base board are not suitable for the type of operation chosen by the operator.	It is an internal fault. Replace the controller.
		8	HBT disparity	The HBT status is verified by the controller and the base board. If a difference is found between the two, this alarm appears.	It is an internal fault. Replace the controller.
		9	Faulty RAM	The algorithm used to verify the main memory detects an error. The file is corrupt.	Disconnect the key and then, if the alarm is still present, replace the controller.
		10	Instantaneous sum	The instantaneous sum is different from that expected. Incorrect software has been downloaded or the flash memory is corrupted.	It is an internal fault. Replace the controller.
		11	Thermal sensor faulty	The thermal sensor is not functioning correctly: its output voltage is outside the acceptable range.	It is an internal fault. Replace the controller.
		12	Stand by motor right	The right armature current sensor detects a current other than zero when the right motor is not running.	It is an internal fault. Replace the controller.
		13	Stand by motor left	The left armature current sensor detects a current other than zero when the left motor is not running.	It is an internal fault. Replace the controller.
		14	High field current	A current other than zero passes through the field circuit even if the field conductor is not active.	It is an internal fault. Replace the controller.
		15	Analog input	There is a fault in the A/D converter of the microcontroller.	It is an internal fault. Replace the controller.
		16	Trac. I sensor	The current sensor for the armature of motor 1 and/or motor 2 is not functioning correctly: its output voltage is outside the acceptable range.	It is an internal fault. Replace the controller.

Fault Codes

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
02	**Controller logic board**	17	Stand by pump	The current sensor of the pump detects a current other than zero when the pump is not working.	It is an internal fault. Replace the controller.
		18	Pump I=0	The current sensor of the pump detects a current of zero even though the pump is working.	Check the connection of the pump: if the pump is not connected, current cannot flow and the diagnostic fails. Otherwise, it is an internal problem.
		19	Periodic error #1	The base board has not responded to the request as expected. Th e controller board has asked the base board to leave its drive input inactive but it is active.	It is an internal fault. Replace the controller.
		20	Capacitor charge	An external charge is in parallel with the capacitor and reduces the current of the recharge circuit, thereby preventing the capacitors from charging. There is a problem with the charging circuit and the controller must be replaced.	When the key is connected, the controller tries to charge the power capacitors via a resistor and checks whether the capacitors are charged. If they do not charge, an alarm is generated. The main driver is not closed.
		21	Charge control lamp incorrect	During stand-by the field voltage should be approx. ½ V. This alarm is generated if the field voltage differs from this value.	The possible external causes are: incorrect connection of the excitation wires, leakage to the framework of the platform. Otherwise, it is an internal fault.
		22	VMN low	The VMN voltage of one of the drive motors is low.	This alarm appears during stand-by. Check : internal motor connections; electric cable connections; leakage from the motor to the framework of the platform. If everything is OK, the controller has an internal fault

Fault Codes

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
02	**Controller logic board**	23	VMN high	The VMN voltage of one of the motors is high when it should be low.	This alarm appears only on start-up. Check: internal motor connections. Electric cable connections, leakage from the motor to the framework of the lorry. If everything is OK, the controller has an internal fault.
		24	Pump VMN low	The VMN voltage of the pump is low when it should be high.	This alarm may appear during stand-by or during pump operation. Check: internal pump connections. Electric cable connections, leakage from the pump to the framework of the platform. If everything is OK, the controller has an internal fault.
		25	Pump VMN high	The VMN voltage of the pump is high when it should be low.	This alarm appears while the pump is working. Check: internal pump connections. Electric cable connections, leakage from the pump to the framework of the platform. If everything is OK, the controller has an internal fault.
		26	VMN right low	The VMN voltage of the right motor is low when it should be high.	This alarm only appears when the drive motors are activated. Check: internal motor connections. Electric cable connections, leakage from the motors to the framework of the platform. If everything is OK, the controller has an internal fault.
		27	VMN right high	The VMN voltage of the right motor is high when it should be low.	This alarm only appears when the drive motors are activated. Check: internal motor connections. Electric cable connections, leakage from the motor to the framework of the platform. If everything is OK, the controller has an internal fault.

Fault Codes

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
02	**Controller logic board**	28	VMN left low	The VMN voltage of the left motor is low when it should be high.	This alarm only appears when the drive motors are activated. Check: internal motor connections. Electric cable connections, leakage from the motor to the framework of the platform. If everything is OK, the controller has an internal fault.
		29	VMN left high	The VMN voltage of the left motor is high when it should be low.	This alarm only appears when the drive motors are activated. Check: internal motor connections. Electric cable connections, leakage from the motor to the framework of the platform. If everything is OK, the controller has an internal fault.
		30	Driver closed	Before activating the power relay, the controller checks whether the driver is closed. If the test is not conclusive, this alarm appears.	Check the contacts of the power relay. Replace the power relay if necessary.
		31	Driver open	The power relay is controlled by the controller, but this will not close.	The power relay is probably not working. Replace it.
		32	Logic fault #1	Under-voltage or over-voltage has been detected	If the fault is detected on starting or during an alarm, it is most likely to be under-voltage. Check whether the main voltage SI is stable. If the fault is detected during acceleration of the drive motors or pump, the fault may be due to under- voltage: check the battery charge and connections. If the fault is detected during braking, the fault may be due to over- voltage: check the battery voltage during braking.

Fault Codes

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
02	**Controller logic board**	42	Drive shorted	The drive output of the base board is short- circuited.	It is an internal fault. Replace the controller.
		42	Driver 3	The base board and the controller have performed a check of the signals for the drive conductor. If the controller board detects a problem in its own control circuit (right or left motor), this alarm will appear.	It is an internal fault. Replace the controller.
		43	Driver2	The base board and the controller perform a check of the signals for the pump. If the controller board detects a problem in its own control circuit, this alarm appears.	It is an internal fault. Replace the controller.
		44	Driver1	The interface and logic board performs a counter-check of signals for the steering choice. If the logic detects a problem in its own control circuit (field conductor circuit), this alarm appears.	It is an internal fault. Replace the controller.
		46	No ground current	Although the ground conductor is active, no current through the field is detected.	Check the connection of the motor to the controller or look for possible leakage to the framework of the platform. If everything is OK, the controller has an internal fault.
		47	Pump sensor	The current sensor of the pump is not working correctly. Its output voltage is outside the acceptable range.	It is an internal fault. Replace the controller.

Fault Codes

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
02	**Controller logic board**	49	Pump shorted	The pump inputs of the base board are short- circuited.	It is an internal fault. Replace the controller.
		57	No CAN message	The interface board has not received the message from CAN "N" (1= CMD+TRAC 2=MESG_EV+INTERFACE 5 = MESG_EV +IN_TRAC)	Check the BUSCAN connection between the modules. Otherwise, there is an internal fault in a module which causes a transmission error, or there is excessive noise on the BUSCAN line which is interfering with the signal.
		60	High temperatures	The power section of the fuse has reached the temperature limit: the maximum current is automatically reduced.	The alarm disappears as soon as the cutout cools down. If this does not happen, there is a problem with the internal temperature sensor.
		65	Value of angle sensor incorrect	The value read by the potentiometer is different from the programmed value.	Check that the angle sensor potentiometer is functioning correctly. Otherwise, check the wiring.
		87	Time delay	The controller board asks the base board to activate the drive motors or the pump. If they are not activated after 400 ms, this alarm is activated.	Check the software versions installed on the interface and logic board. This alarm may be due to a software disparity. Otherwise, there is an internal fault.

Fault Codes

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
08	**Platform controls circuit board**	70	System surveillance	Internal system surveillance has been put into operation. If the surveillance detects a fault in the execution of this surveillance, this alarm appears.	It is an internal fault. Replace the controller.
		72	SV1 incorrect	There is a problem (short-circuit to ground or to positive) on output CNE-10.	Check the wiring. If the wiring is correct and the alarm persists, there is an internal fault.
		73	SV2 incorrect	There is a problem (short-circuit to ground or to positive) on output CNE-5.	Check the wiring. If the wiring is correct and the alarm persists, there is an internal fault.
		74	SV3-4 incorrect	There is a problem (short-circuit to negative or to positive) on output CNE-1 or CNE-3.	Check the wiring. If the wiring is correct and the alarm persists, there is an internal fault.
		75	BUSCAN incorrect	The platform controls circuit board is not receiving the CAN signal from the controller.	There may be an interruption of the BUSCAN signal. Check the connection of the BUSCAN between the modules. Otherwise, there is an internal fault in a module which causes a transmission error, or there is excessive noise on the BUSCAN line.
16	**Diagnostic display**	06	No communication	The diagnostic display is not working properly.	Check wire connections. Repair or replace the diagnostic display.

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

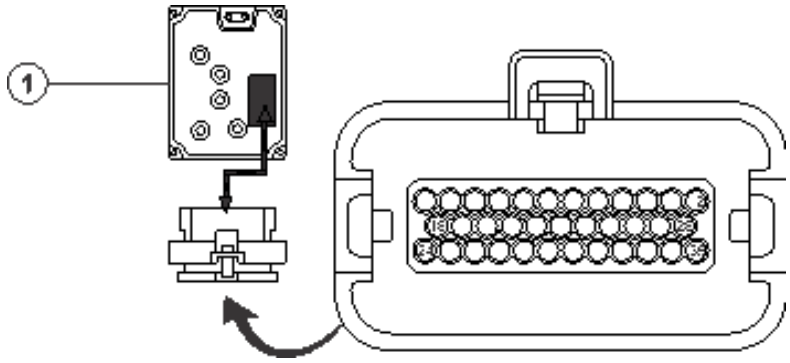
⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

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.

Schematics

ECM Pin Legend



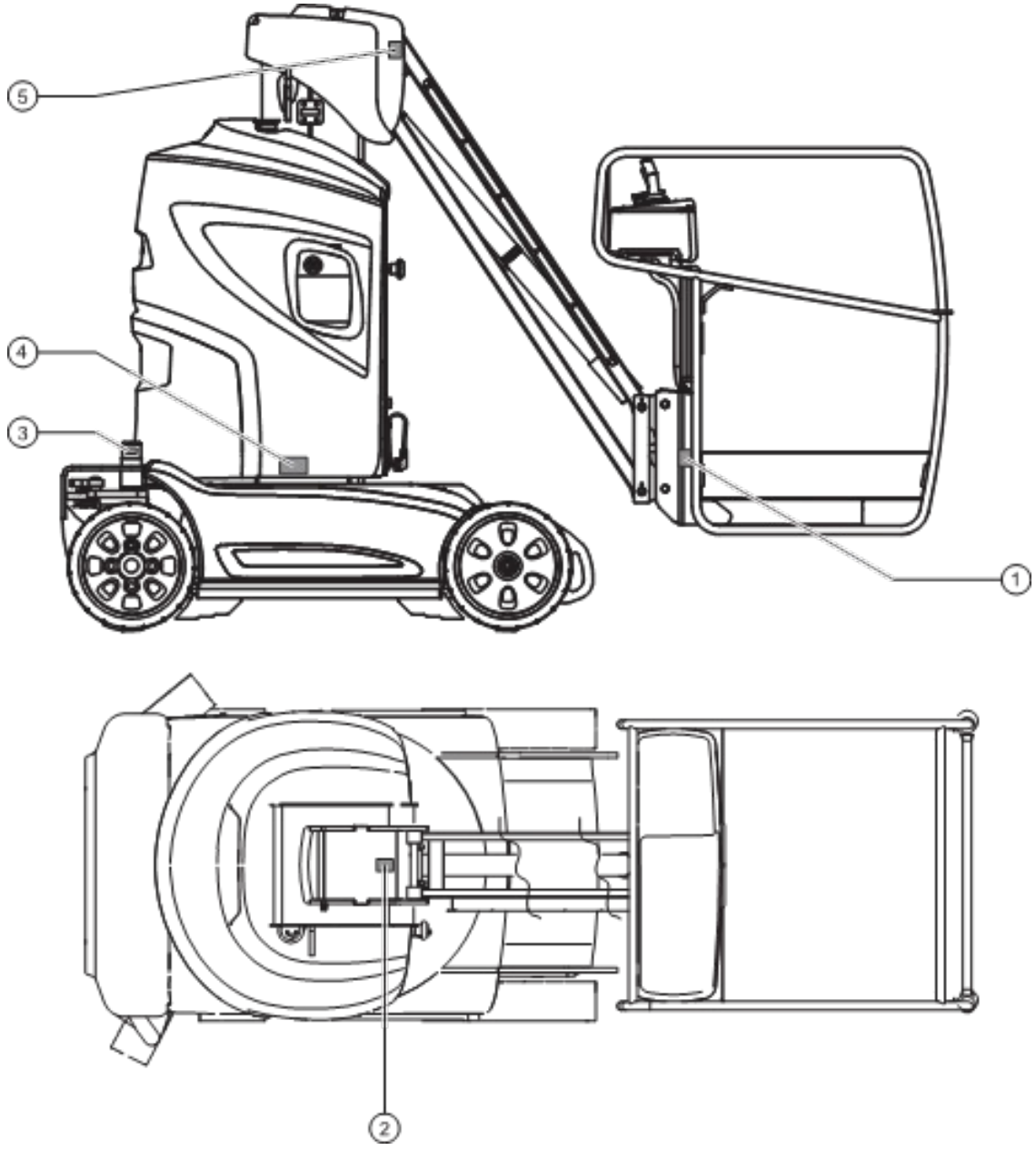
1 ground controls

ECM Pin Legend			
Pin number	Description	**Not activated**	**Activated**
1	+24V Ground control selection supply	0V	24V
2	+24V DC Power supply	--	--
3	Tilt signal	0V	--
4	--	--	--
5	--	--	--
6	+12V Power supply	0V	12V
7	Steer signal mid-point	0V	2.5V
8	CAN·L signal	--	--
9	CAN-H signal	--	--
10	0V AU coil / power contact	--	--
11	24V Power supply	0V	24V
12	0V Brake / Brake release solenoid	--	0V
13	+24V Platform control signal	0V	24V
14	HBT3 signal	--	--
15	HBT2 signal	--	--
16	Temperature sensor	--	--
17	Battery charger indicator	0V	24V
18	Mast down / turntable rotate signal	0V	24V

Schematics

ECM Pin Legend, cont.			
Pin number	Description	**Not activated**	**Activated**
19	Mast up / turntable rotate signal	0V	24V
20	Mast up / down signal	0V	24V
21	Jib signal	0V	24V
22	Turntable rotate signal	0V	24V
23	+24V Solenoid valve / F2 fuse power	0V	24V
24	0V Tilt indicator LED	24V	0V
25	0V Turntable rotate valve	24V	0V
26	0V Mast base valve	24V	0V
27	--	--	--
28	0V Steer valve	24V	0V
29	0V Horn	24V	0V
30	0V Mast down valve	24V	0V
31	Overload indicator LED	24V	0V
32	0V Mast up valve	24V	0V
33	--	--	--
34	0V Power supply selection valve	24V	0V
35	0V Flashing beacon	24V	0V

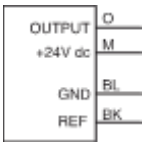
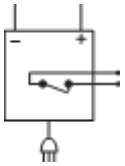
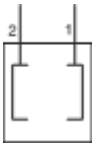
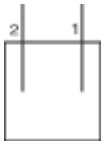
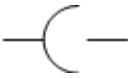
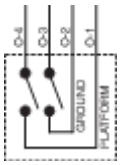
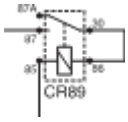
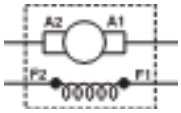
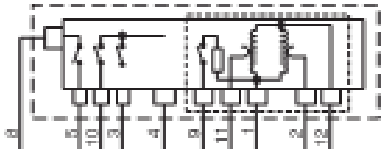
Limit Switch and Sensor Legend



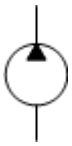
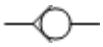
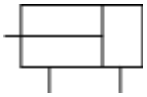
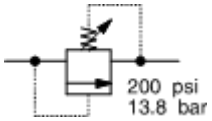
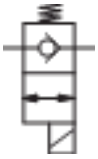
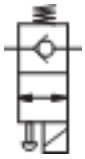
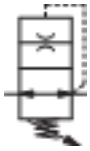
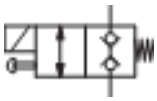
Limit and Sensor Legend

1 Platform overload LS31
2 Mast down LS18
3 Steer angle S21
4 Tilt sensor S7
5 Jib down LS11

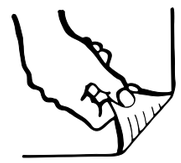
Electrical Symbols Legend

 Circuits Crossing (no connection)	 Switch or Button	 Motor	 Level Sensor
 Diode	 Toggle Switch	 Battery Charger	 Solenoid Valve
 Connection (no terminal)	 Emergency Stop Button	 Battery	 Parking Brake
 Connector	 Key Switch	 Control Relay	 Electric Motor
 Fuse	 Horn or Alarm	 Joystick Controller	
 Flashing Beacon	 LED	 Sensor (hydraulic oil temperature)	

Hydraulic Symbols Legend

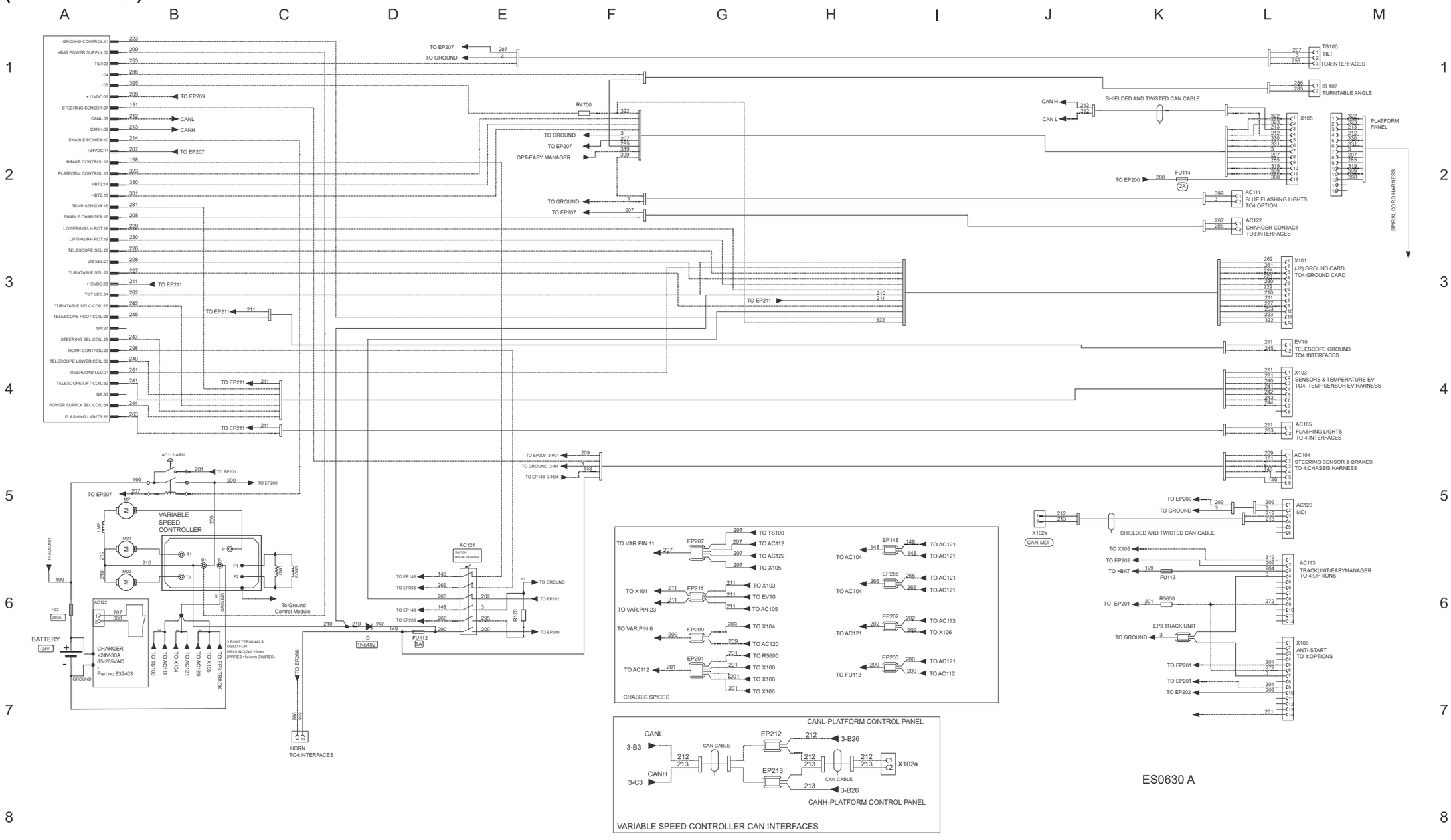
 Hand pump	 Variable speed motor	 Pump, fixed displacement	 Check valve
 Cylinder, double acting	 Filter	 Relief valve with pressure setting	 Motor, bi-directional
 Solenoid operated 2 position 2 way directional valve	 Solenoid operated 2 position 2 way directional valve	 Solenoid operated 2 position 2 way directional valve	 Solenoid operated 2 position 4 way directional valve
 Hose reel	 Solenoid operated 2 position 2 way directional valve	 Solenoid operated 2 position 4 way directional valve	

Electrical Schematic, GRJ
(from GRJL-2298)



Electrical Schematic, GRJ

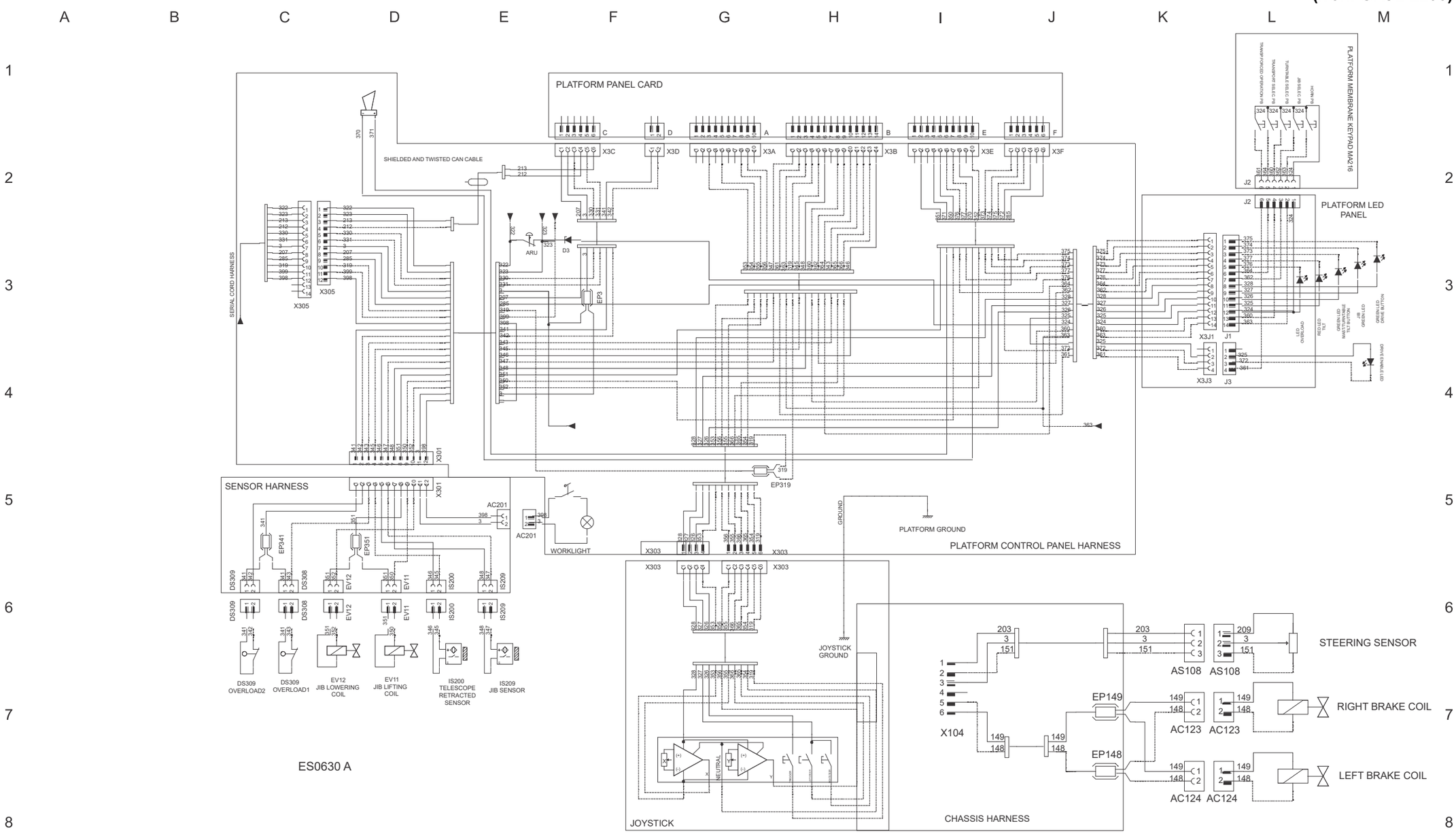
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ES0630 A

Electrical Schematic, GRJ

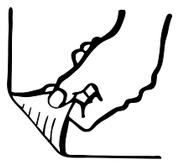
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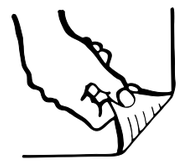
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Electrical Schematic, GRJ

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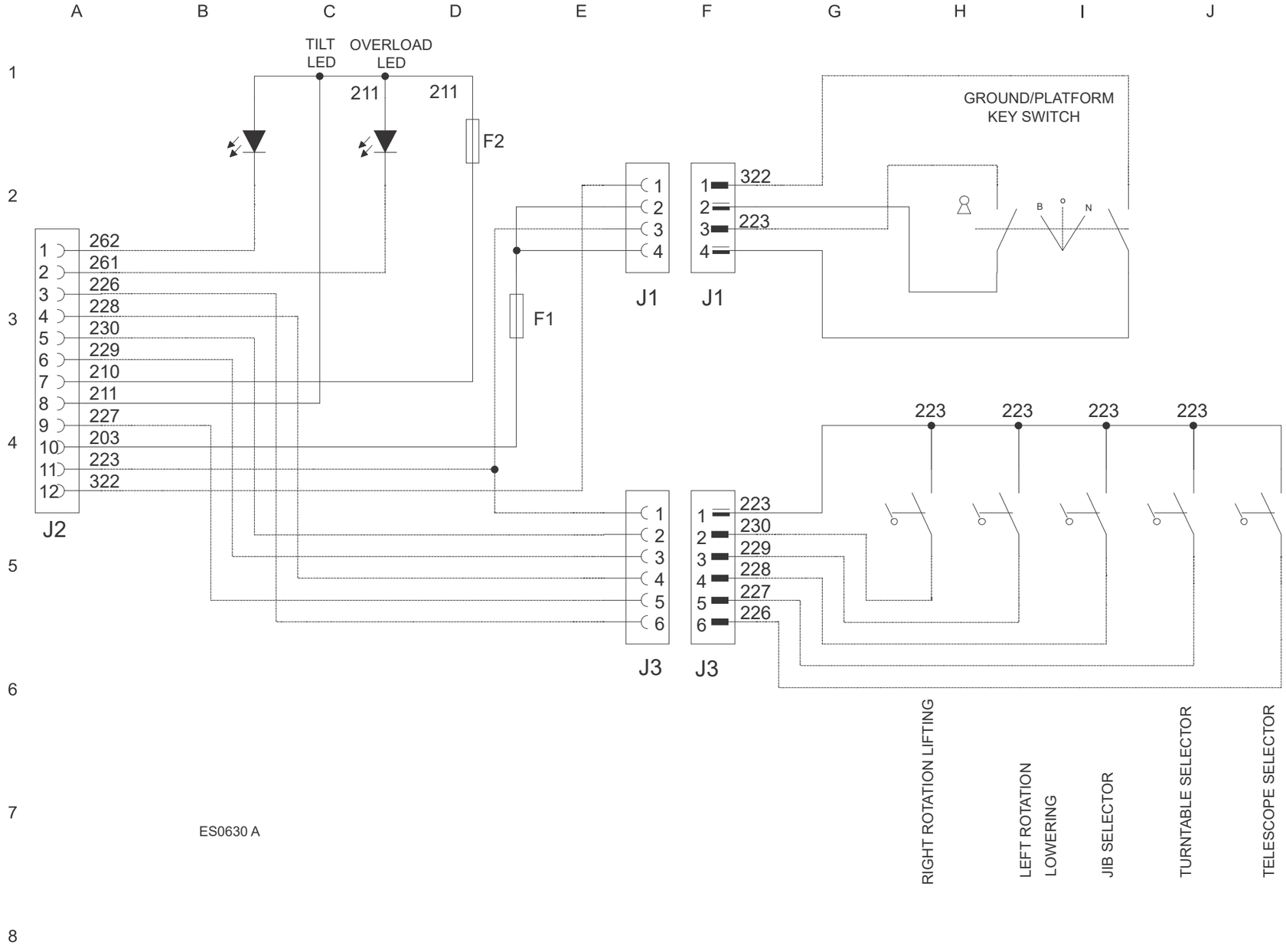


GCON LED Panel, GRJ
(from GRJL-2298)



GCON LED Panel, GRJ

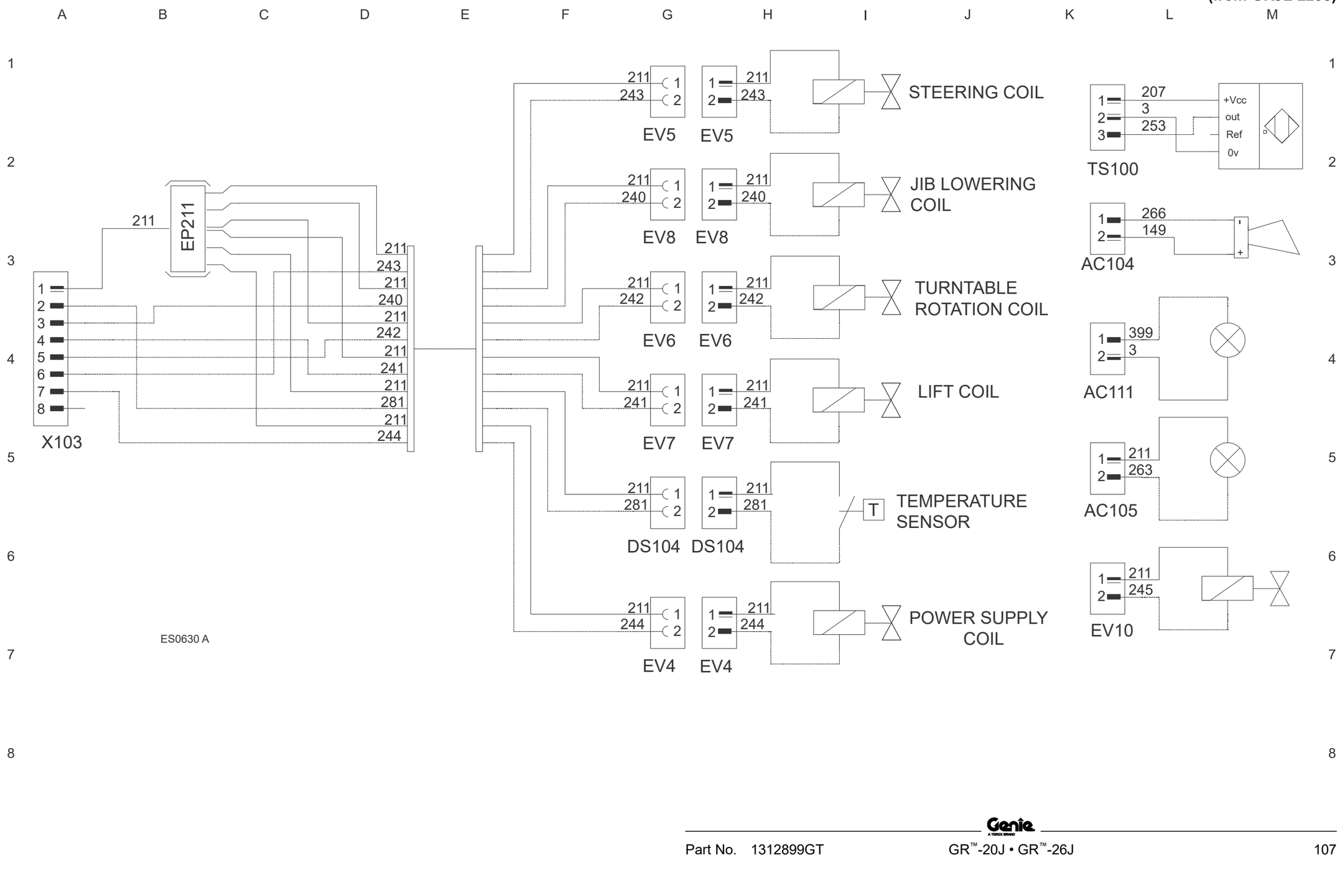
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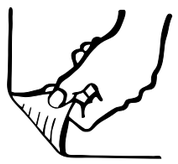
ES0630 A

Temperature Sensor Harness, GRJ

(from GRJL-2298)

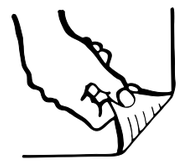


Temperature Sensor Harness, GRJ
(from GRJL-2298)



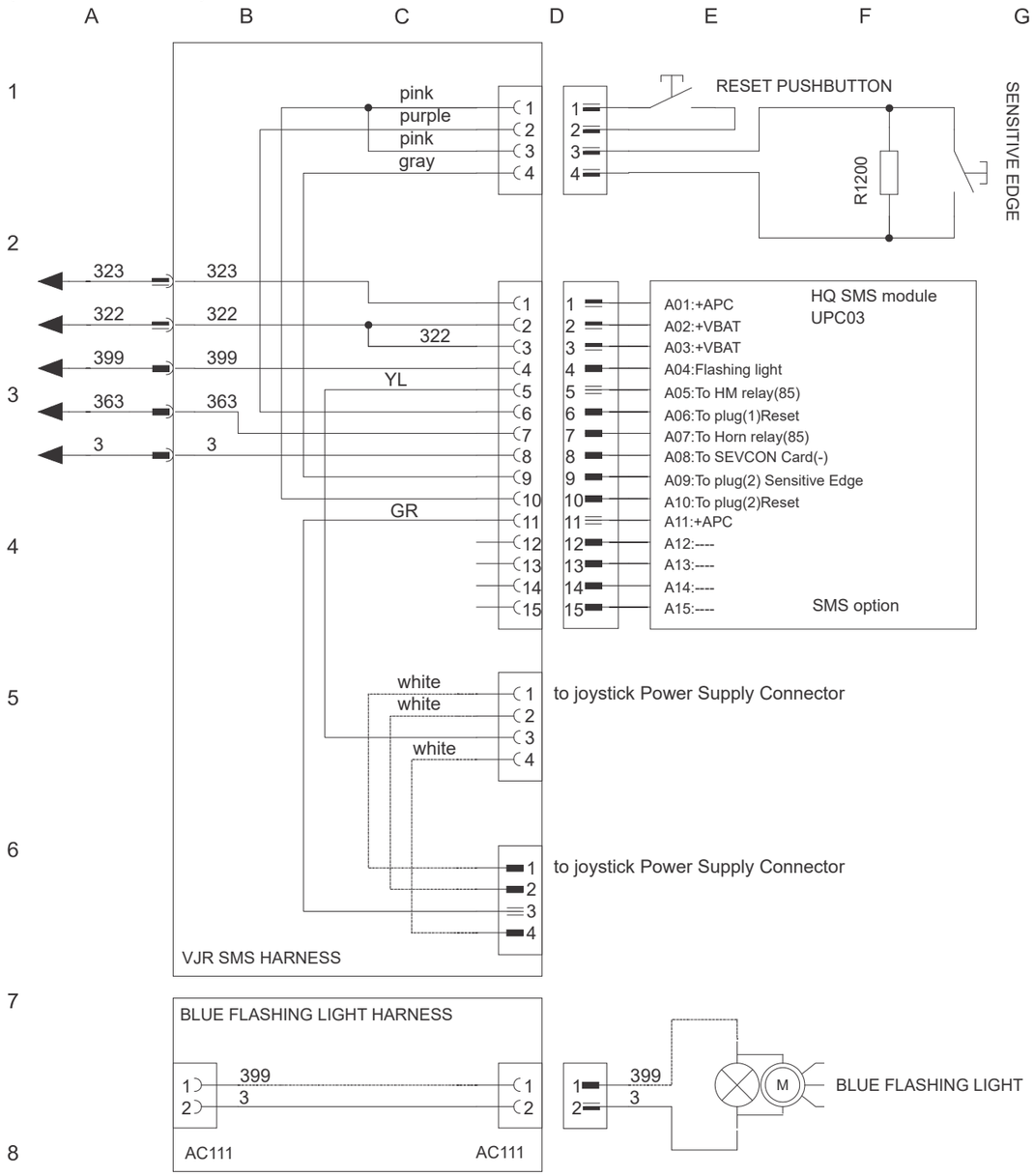
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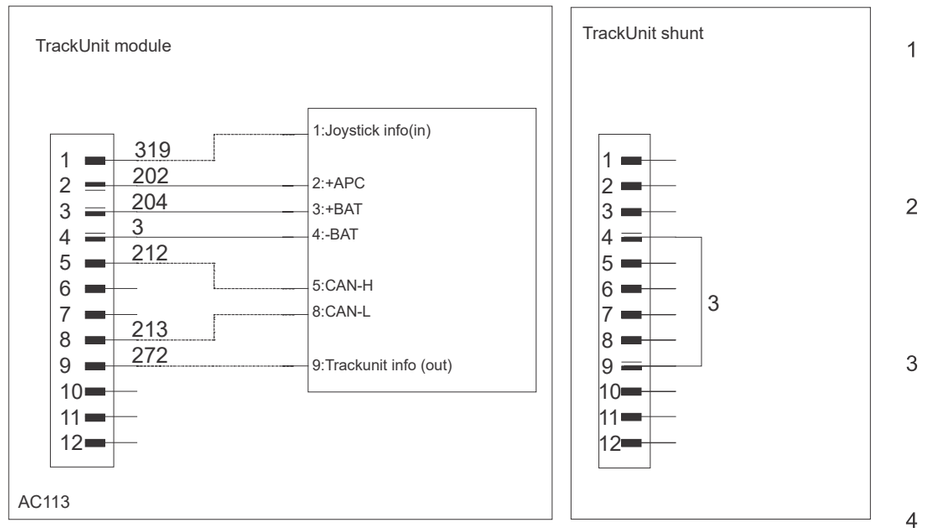
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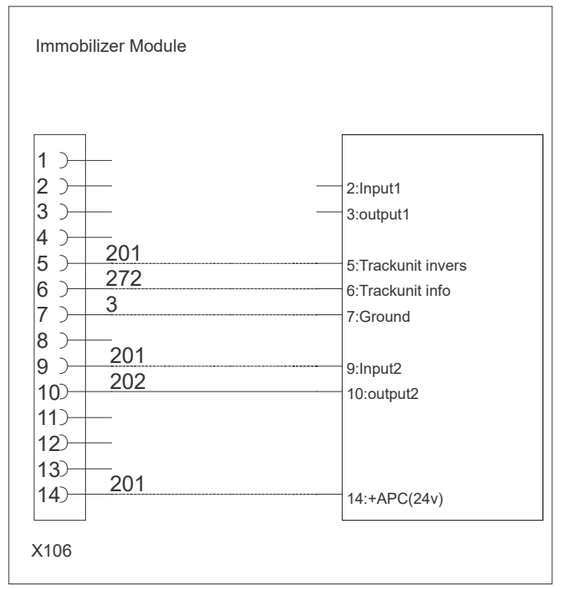


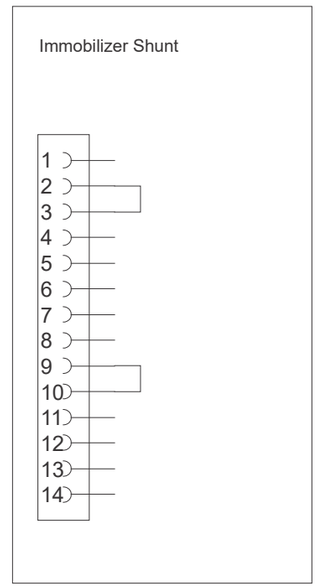
Options, GRJ

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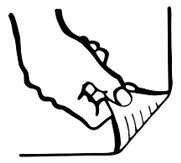






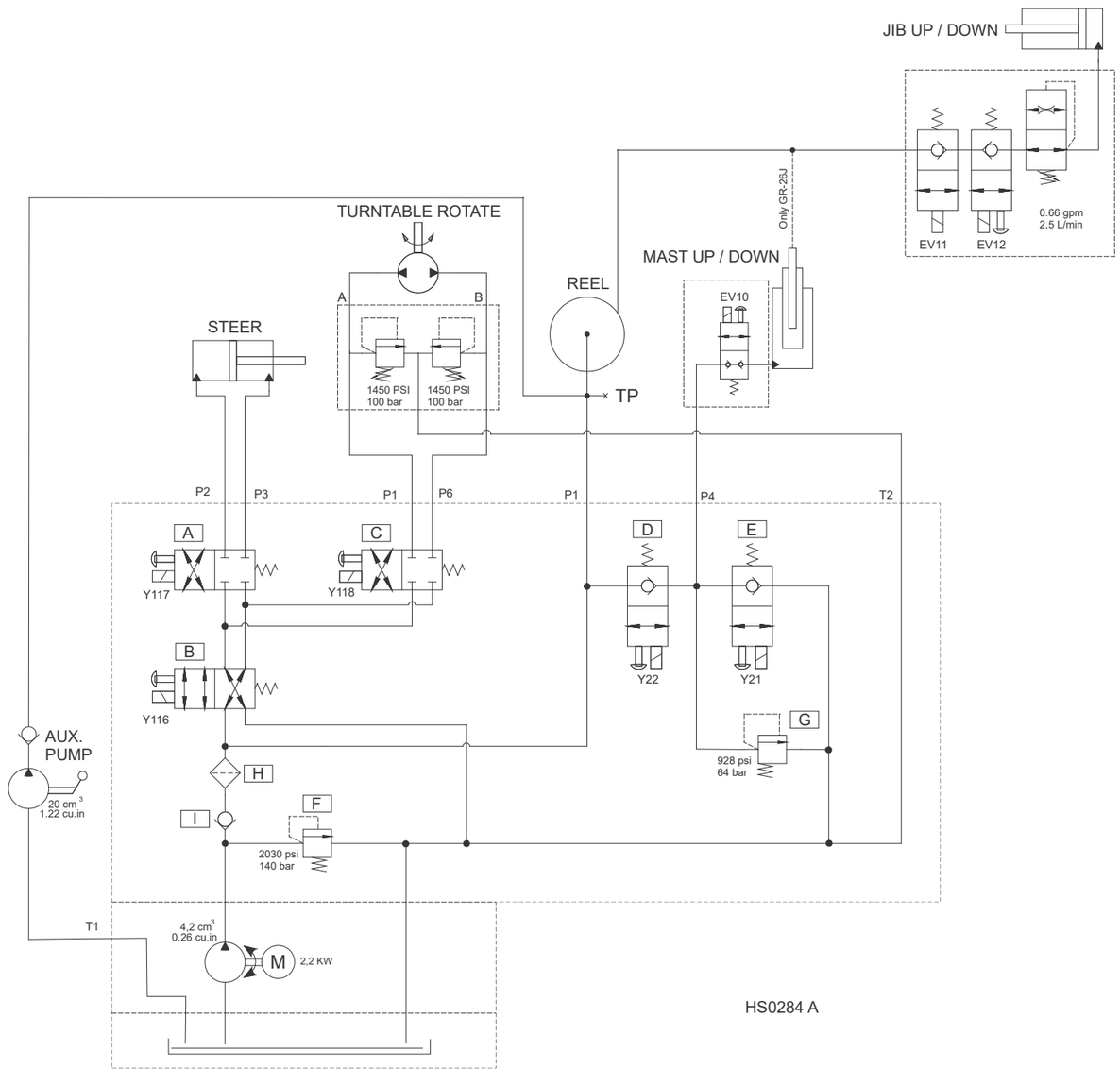
ES0630 A

Hydraulic Schematic, 2.2 kw
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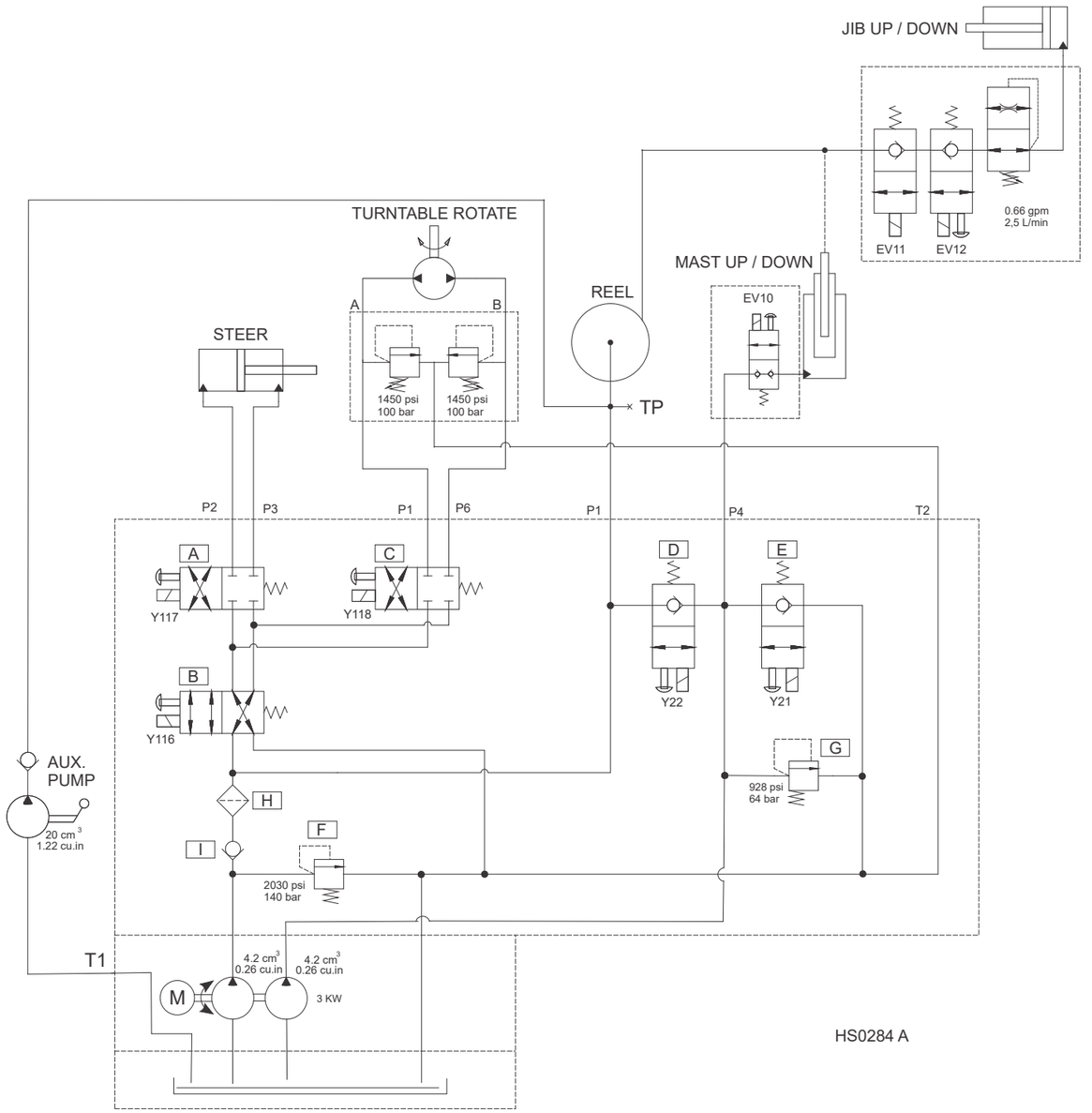


Hydraulic Schematic, 2.2 kw

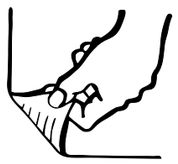
(from GRJL-2298)



Hydraulic Schematic, 3 kw
(from GRJL-2298)



Hydraulic Schematic, 3 kw
(from GRJL-2298)



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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