TEREX®

Service Manual

Serial Number Range

AL4L

from AL4L10-001 to AL4L16-1499
and from AL4LJ-1500

AL5L

from AL5L10-001 to AL5L15-128

Part No. 229171
Rev B
August 2016

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 or repair procedure.

This manual provides detailed scheduled maintenance information for the machine owner and user. It also provides troubleshooting fault codes 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 Terex dealer service center.

Technical Publications

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

Readers are encouraged to notify Terex 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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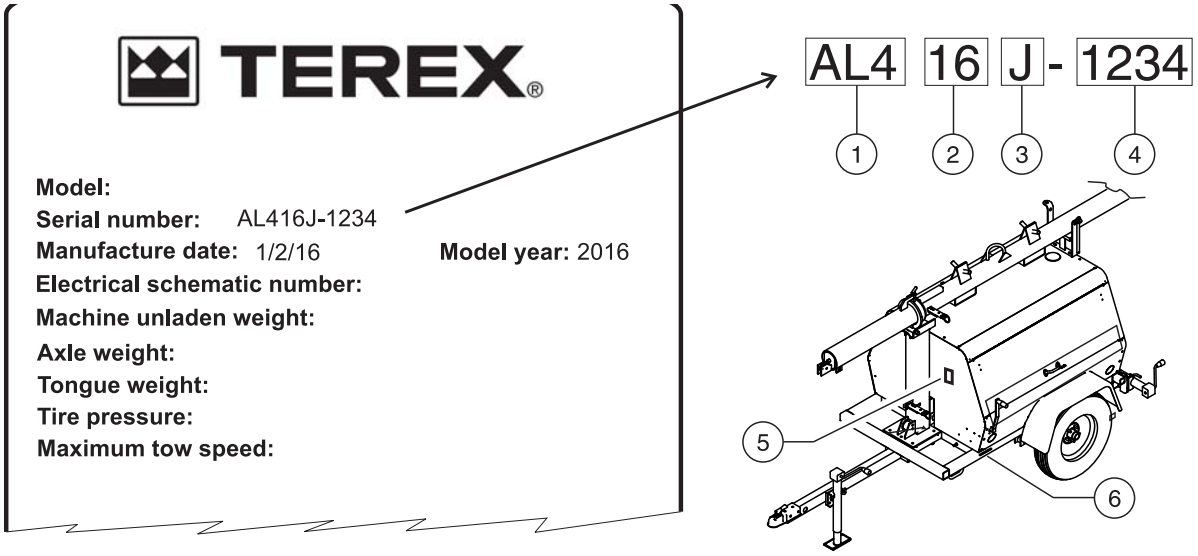
229171 Rev B August 2016
First Edition, Second Printing

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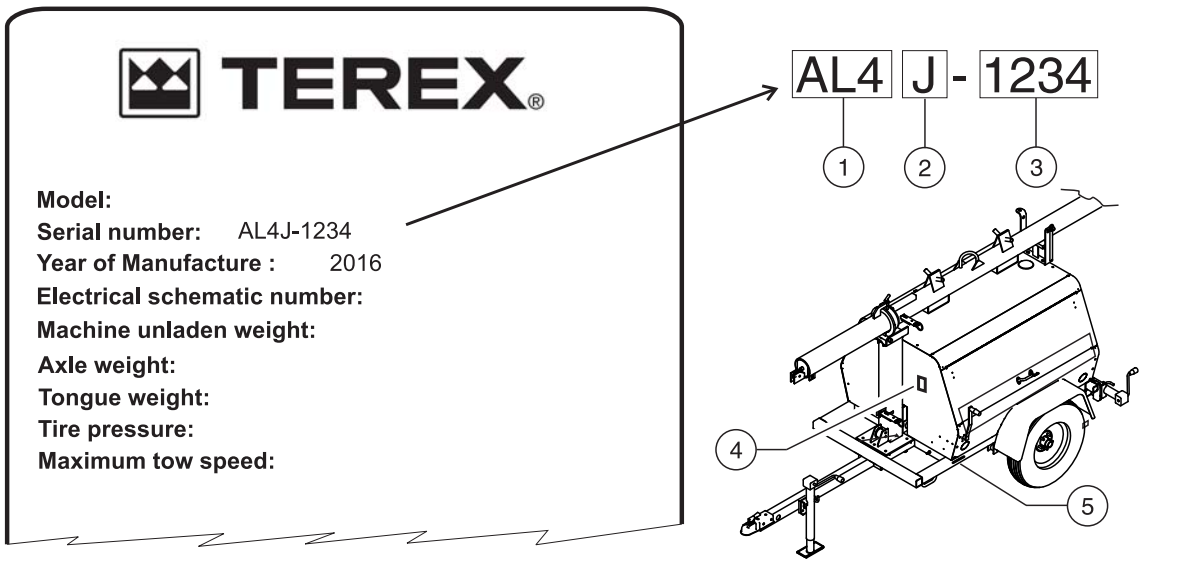
Serial Number Legend



1 Model
2 Model year
3 Facility code

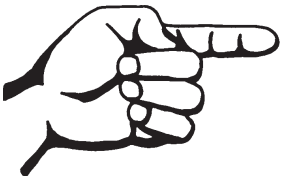
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5 Serial label
6 Serial number (stamped on chas

From September 1, 2016



1 Model
2 Facility code
3 Sequence number

4 Serial label
5 Serial number (stamped on chas



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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 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.



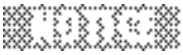
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.



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



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

REV B

Machine Specifications, AL4L

Total lighting wattage	4 x 270 watts
Batteries - Lighting	
Type	6V DC
Group	902 (J305G-AC)
Quantity	8
Reserve capacity @ 25A rate	678 minutes
Weight	88 lbs 40 kg
Tires and wheels	
Tire size	ST205/75D15
Load range	C
Lug nut torque, dry	90 ft-lbs 122 Nm
Lug nut torque, lubricated	67.5 ft-lbs 91.5 Nm
Tire pressure, maximum (cold)	50 psi 3.4 bar

Machine Specifications, AL5L

Total lighting wattage		4 x 270 watts
Fuel capacities		
Single tank		30 gallons 114 liters
Battery - Engine Start	**Standard**	**Heavy-duty**
Type	12V DC	12V DC
Group	24	24
Quantity	1	1
Cold cranking ampere	400	650
Reserve capacity @ 25A rate	60 min	90 min
Batteries - Lighting		
Type		6V DC
Group		902 (J305G-AC)
Quantity		8
Reserve capacity @ 25A rate		678 minutes
Weight		88 lbs 40 kg
Tires and wheels		
Tire size		ST205/75D15
Load range		C
Lug nut torque, dry		90 ft-lbs 122 Nm
Lug nut torque, lubricated		67.5 ft-lbs 91.5 Nm
Tire pressure, maximum (cold)		50 psi 3.4 bar

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

Continuous improvement of our products is a Genie policy. Product specifications are subject to change without notice.

SPECIFICATIONS REV B

Performance Specifications

Tongue weight, maximum	
AL4L with batteries	110 lbs 50 kg
AL5L with no fuel	146 lbs 66 kg
Run time	
AL4L with batteries	10 hours
AL5L	10 hours

Marathon Generator, AL4L

Generator speed @ full load	60 Hz	1800 rpm
Temperature, ambient maximum		104°F 40°C
Power		6 kw
Capacitor (disconnected)		25 µF

Marathon Generator, AL5L

Generator speed @ full load	60 Hz	1800 rpm
Temperature, ambient maximum		104°F 40°C
Power		8 kw
Capacitor (disconnected)		25 µF

Continuous improvement of our products is a Genie policy. Product specifications are subject to change without notice.

REV B SPECIFICATIONS

Kubota D1105-D3BG Engine

Displacement	68.53 cu in 1.123 liters
Number of cylinders	3
Bore and stroke	3.07 x 3.09 inches 78 x 78.4 mm
Horsepower, gross intermittent	13.6 @ 1800 rpm 10.1 kW
Firing order	1 - 2 - 3
Compression ratio	24:1
Compression pressure	412 to 469 psi 28.4 to 32.3 bar
Idle speed @ no load Frequency	1850 rpm 61.5 hz
Governor	centrifugal mechanical
Valve clearance, cold	0.0057 to 0.0072 in 0.145 to 0.185 mm
Engine coolant capacity	3.3 quarts 3.1 liters

Lubrication system	
Oil pressure	28 to 64 psi 1.93 to 4.41 bar
Oil capacity (including filter)	5.4 quarts 5.1 liters

Oil viscosity requirements

Units ship with 10W-30.
Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator Handbook on your machine.

Injection system	
Injection pump make	Bosch MD
Injection timing	18° BTDC
Injection pump pressure	1991 psi 137 bar

Fuel requirement

For fuel requirements, refer to the engine Operator's Manual on your machine.

Continuous improvement of our products is a Genie policy. Product specifications are subject to change without notice.

SPECIFICATIONS REV B

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				ASTM High Strength Black Grade Metric	
		LUBED		DRY		LUBED		DRY		LUBED	
		ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m
1/4	20	8	11	10	13	12	16	14	19	10	14
	28	10	13	12	16	14	19	17	23	12	16
	LUBED		DRY		LUBED		DRY		LUBED		
	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	
5/16	18	24	20	27	25	34	29	39	21	28	
	20	27	23	31	29	39	33	45	24	33	
3/8	30	41	35	47	44	60	50	68	33	45	
	32	43	37	50	47	64	54	73	35	47	
7/16	46	62	55	75	70	95	80	108	52	70	
	50	68	60	81	78	106	90	122	57	77	
1/2	68	92	80	108	105	142	120	163	78	106	
	75	102	90	122	120	163	132	179	87	118	
9/16	90	122	110	149	139	189	165	224	104	141	
	100	136	120	163	155	210	180	244	116	158	
5/8	130	176	150	203	201	272	231	313	150	203	
	145	197	170	231	223	303	255	346	168	228	
3/4	235	319	270	366	362	491	413	560	270	366	
	260	353	300	407	401	544	457	620	299	406	
7/8	225	305	429	581	578	784	656	889	429	581	
	250	339	474	643	639	866	724	981	473	641	
1	338	458	644	873	867	1176	984	1334	644	873	
	375	508	704	954	948	1285	1080	1464	704	954	
1 1/8	475	644	794	1076	1068	1448	1211	1642	794	1076	
	525	712	893	1211	1202	1629	1361	1845	893	1211	
1 1/4	671	910	1120	1518	1511	2048	1711	2319	1120	1518	
	745	1010	1265	1715	1705	2312	1933	2620	1265	1715	
1 3/8	880	1193	1470	1992	1986	2692	2249	3048	1470	1992	
	990	1342	1650	2237	2237	3032	2533	3433	1650	2237	
1 1/2	1178	1597	1963	2661	2649	3591	3001	4068	1963	2661	
	1320	1790	2200	2983	2982	4043	3379	4580	2200	2983	

METRIC FASTENER TORQUE CHART

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

Size (mm)	Class 4.8				Class 8.8				Class 10.9				Class 12.9			
	LUBED		DRY		LUBED		DRY		LUBED		DRY		LUBED		DRY	
	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m
5	3	4	4	5	6	8	7	9	8	11	9	12	10	13	11	15
6	5	7	6	8	10	13	12	16	14	18	16	22	17	23	19	26
7	8	10	9	12	16	21	19	25	22	29	25	34	27	36	31	42
	LUBED		DRY		LUBED		DRY		LUBED		DRY		LUBED		DRY	
	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m	ft-lbs	N•m
8	9.4	12.1	11.2	15.2	14	19.1	16.8	23.5	20.1	27.2	23.8	32.3	23.8	32	28.4	42.8
10	18.8	25.5	22.4	30.4	28.2	38.2	33.7	45.7	39.8	54.1	47.2	64.2	46.7	63.3	55.8	75.6
12	32.9	44.6	39.1	53.1	49.3	66.8	58.7	79.6	69.7	94.5	82.7	112.1	81	110	96.6	131
14	52.1	70.6	62	84.1	78.1	106	93	126	110	150	131	178	129	175	153	208
16	80.9	109.7	96.2	130.4	121	164	144	195	171	232	203	276	199	270	237	321
18	111	151	133	180	167	226	199	270	236	320	281	381	275	373	327	444
20	156	211	185	251	234	317	278	377	330	448	393	533	385	522	459	622
22	212	287	253	343	318	431	379	514	450	610	536	727	524	711	624	846
24	268	363	319	433	402	545	478	648	568	770	676	917	661	896	787	1067

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 on the *Maintenance Inspection Report.*

⚠WARNING Failure to perform each procedure as presented and scheduled could result in 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 Terex approved replacement parts.
- ☑ Machines that have been out of service for a period longer than 3 months must complete the quarterly inspection.
- ☑ Unless otherwise specified, perform each maintenance procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Mast in the stowed position
  - Wheels chocked
  - Light switches in the off position
  - No external AC power devices connected to the power outlets at the control box.

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 an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Indicates a potentially hazardous situation which, if not avoided, may 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.

SCHEDULED MAINTENANCE PROCEDURES REV B

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



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

Maintenance Schedule

There are five types of maintenance inspections that must be performed according to a schedule—daily, quarterly, semi-annually, annually, and two year. The *Scheduled Maintenance Procedures Section and the Maintenance Inspection Report* have been divided into five subsections—A, B, C, D, and E. 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 Report* to use for each inspection. Maintain completed forms in compliance with employer, job site and governmental regulations.

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 to be performed.

☐	**Daily or 8 hours Inspection:**	**A**
☐	**Quarterly or 250 hours Inspection:**	**A+B**
☐	**Semi-annually or 500 hours Inspection:**	**A+B+C**
☐	**Annually or 1000 hours Inspection:**	**A+B+C+D**
☐	**Two year or 2000 hours Inspection:**	**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 - Rev A	Y	N	R
A-1 Manuals and decals			
A-2 Pre-operation inspect			
A-3 Function tests			
Perform every 8 hours:			
A-4 Engine maintenance - Kubota models			
Perform before towing:			
A-5 Coupler			
A-6 Brakes			
Perform at 10 miles:			
A-7 Lug nuts			
Perform every week:			
A-8 Tires and wheels			
Perform every month:			
A-9 Cable and Pulleys			
Perform every 100 hours:			
A-10 Engine maintenance - Kubota models			
Perform every 160 hours:			
A-11 Battery			
Perform every 200 hours:			
A-12 Engine maintenance - Kubota models			
A-13 Generator			
A-14 Brakes			

Checklist B - Rev A	Y	N	R
B-1 Battery			
B-2 Electrical wiring			
B-3 Battery watering			
B-4 Lug nuts			
B-5 Jack			
B-6 Winch			
B-7 T-bolt			
Perform every 3000 miles:			
B-8 Brakes			
B-9 Suspension			
Perform every 400 hours:			
B-10 Engine maintenance - Kubota models			

Checklist C - Rev A	Y	N	R
C-1 Engine maintenance - Kubota models			
C-2 Lights			
Perform every 6000 miles:			
C-3 Wheel bearings			
C-4 Electric brake			
Perform every 800 hours:			
C-5 Engine maintenance - Kubota models			

Checklist D - Rev A	Y	N	R
Perform every 12000 miles:			
D-1 Engine maintenance - Kubota models			
Perform annually:			
D-2 Coupler			

Checklist E - Rev A	Y	N	R
Perform every 2000 hours:			
E-1 Cable			
E-2 Engine maintenance - Kubota models			
Perform every 3000 hours:			
E-3 Engine maintenance - Kubota models			
Perform every 10000 hours:			
E-4 Generator			

Comments

Checklist A Procedures

REV B

A-1
Inspect the Manuals and Decals



Terex specifications require that this procedure be performed at the beginning of every work shift or daily, whichever comes first.

Maintaining the operator's and safety manuals in good condition is essential to safe machine operation. Manuals are included with each machine and should be stored in the container provided in the cabinet. An illegible or missing manual will not provide safety and operational information necessary for a safe operating condition.

In addition, maintaining all of the safety and instructional decals in good condition is mandatory for safe machine operation. Decals alert operators and personnel to the many possible hazards associated with using this machine. They also provide users with operation and maintenance information. An illegible decal will fail to alert personnel of a procedure or hazard and could result in unsafe operating conditions.

1 Check to make sure that the operator's and safety manuals are present and complete in the storage container in the cabinet.

2 Examine the pages of each manual to be sure that they are legible and in good condition.

⊙ Result: The operator's manual is appropriate for the machine and all manuals are legible and in good condition.

⊠ Result: The operator's manual is not appropriate for the machine or all manuals are not in good condition or is illegible. Remove the machine from service until the manual is replaced.

3 Open the operator's manual to the decals inspection section. Carefully and thoroughly inspect all decals on the machine for legibility and damage.

⊙ Result: The machine is equipped with all required decals, and all decals are legible and in good condition.

⊠ Result: The machine is not equipped with all required decals, or one or more decals are illegible or in poor condition. Remove the machine from service until the decals are replaced.

4 Always return the manuals to the storage container after use.

Note: Contact your authorized Genie distributor or Genie Industries if replacement manuals or decals are needed.

REV B CHECKLIST A PROCEDURES

A-2
Perform Pre-operation Inspection



Terex specifications require that this procedure be performed at the beginning of every work shift or daily, whichever comes first.

Completing a Pre-operation Inspection is essential to safe machine operation. The Pre-operation Inspection is a visual inspection performed by the operator prior to each work shift. The inspection is designed to discover if anything is apparently wrong with a machine before the operator performs the function tests. The Pre-operation Inspection also serves to determine if routine maintenance procedures are required.

Complete information to perform this procedure is available in the appropriate operator's manual. Refer to the Operator's Manual on your machine.

A-3
Perform Function Tests



Terex specifications require that this procedure be performed at the beginning of every work shift or daily, whichever comes first.

Completing the function tests is essential to safe machine operation. Function tests are designed to discover any malfunctions before the machine is put into service. A malfunctioning machine must never be used. If malfunctions are discovered, the machine must be tagged and removed from service.

Complete information to perform this procedure is available in the appropriate operator's manual. Refer to the Operator's Manual on your machine.

CHECKLIST A PROCEDURES REV B

A-4
Perform Engine Maintenance - Kubota D1105-D3BG Models



Terex specifications require that this procedure be performed at the beginning of every work shift or daily, whichever comes first.

- Oil level and leaks
- Coolant level and leaks
- Damaged or loose parts
- Color of exhaust
- Unusual engine noise

Required maintenance procedures and additional engine information is available in the *Kubota D1105 Operators Manual* (Kubota part number 16622-89166)

Kubota D1105 Operators Manual	
Genie part number	131379

A-5
Perform Coupler Maintenance



Coupler specifications require that this procedure be performed before towing.

Maintaining the coupler in good condition is essential to safe operation and good performance. Coupler failure could result in a machine tip-over during transport, and component damage may also result if problems are not discovered and repaired in a timely fashion.

1 Check vehicle, mounting bracket, hitch ball and coupler for signs of wear or damage and that the coupler handle opens and closes freely.

Result: If coupler and/or mounting bracket is deformed or damaged, replace complete coupler and mounting bracket. Replace bent, broken or worn parts before use.

2 Close coupler securely by ensuring that the hitch ball is fully seated in the coupler ball pocket and the pin is inserted behind the collar or latch.

3 Check mounting bracket hardware for wear and proper tightness.

Result: Replace bent, broken or worn hardware.

A-6
Test the Brakes (if equipped)



Axle specifications require that this procedure be performed before towing.

Maintaining the axle brakes in good condition is essential to safe operation and good performance. Brakes which are out of adjustment can result in longer stopping distances and excessive brake wear on the towing vehicle. Component damage may also result if problems are not discovered and repaired in a timely fashion.

1 Test the brakes for proper function. Repair or replace any faulty components as needed.

A-7
Torque the Wheel Lug Nuts



Axle specifications require that this procedure be performed initially at 10, 25 and 50 miles of use, or after reinstallation of a tire.

Maintaining the wheel lug nuts at the proper torque is essential to safe operation and good service life of the tires, wheel and axle.

1 Check each lug nut for proper torque.

Specification	
Lug nut torque, dry	90 ft-lbs 122 Nm
Lug nut torque, lubricated	67.5 ft-lbs 91.5 Nm

CHECKLIST A PROCEDURES REV B

A-8
Check the Tires and Wheels



Axle specifications require that this procedure be performed weekly.

Maintaining the tires and wheels in good condition and the tires at the correct pressure 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.

⚠WARNING Bodily injury hazard. An over inflated tire can explode and could result in death or serious injury.

⚠WARNING Tip over hazard. Do not use temporary flat tire repair products.

1 Check all tire treads and sidewalls for cuts, cracks, punctures and unusual wear.

2 Check each wheel for damage, bends and cracks.

3 Check pressure in each tire. Add air as necessary to meet specifications.

Specification	
Air pressure	50 psi 3.4 bar

A-9
Inspect the Cable and Cable Pulleys



Terex specifications require that this procedure be performed monthly.

Detection of damage to the cable or pulleys is essential for safe machine operation. An unsafe working condition exists if these components are damaged and do not operate smoothly. Regular inspection of this system allows the inspector to identify changes in the operating condition that may indicate damage.

1 Visually inspect the winch cable pulleys for the following:

- broken or damaged pulleys
- unusual or excessive pulley wear

Result: A pulley is broken or damaged, or shows unusual or excessive pulley wear. The pulley must immediately be replaced.

2 Put on protective leather gloves and eyewear.

3 Fully unwind the cable from the winch.

4 Wearing leather gloves, run a hand up and down a length of the cable, inspecting the cable and components for the following:

- frayed or broken wire strands

Result: In any given one-foot of cable length there are 4 or more broken wires on any 2 or more strands. The cable must immediately be replaced.

5 Visually inspect the winch cable for the following:

- nicks (partial strand cut through)
- kinks in the cable (permanent bends)
- weld spatter

☒ Result: Nicks, kinks in the cable or weld spatter are found. The cable must immediately be replaced.

6 Visually inspect the winch cable for the following:

· crushed spot on the cable

☒ Result: A crushed spot on the cable measuring 125% of the cable diameter or more is found OR there is a broken wire at the crush point. The cable must immediately be replaced.

7 Wind the cable onto the winch, ensuring that the cable is correctly installed onto each of the pulleys.

A-10
Perform Engine Maintenance - Kubota D1105-D3BG Models



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

- Fuel lines and clamps

Required maintenance procedures and additional engine information is available in the *Kubota D1105 Operators Manual* (Kubota part number 16622-89166)

Kubota D1105 Operators Manual	
Genie part number	131379

CHECKLIST A PROCEDURES REV B

A-11
Perform Lighting-battery Maintenance (if equipped)



Terex specifications require that this procedure be performed for the batteries which supply power to the lighting every 160 hours or monthly, whichever comes first.

Proper battery condition is essential to good machine performance and operational safety. Improper fluid levels 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.

1 Open the cabinet doors.

2 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.

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

A-12
Perform Engine Maintenance - Kubota D1105-D3BG Models



Engine specifications require that this procedure be performed every 200 hours or quarterly, whichever comes first.

- Radiator hoses and clamps
- Intake air piping
- Change engine oil

Required maintenance procedures and additional engine information is available in the *Kubota D1105 Operators Manual* (Kubota part number 16622-89166)

Kubota D1105 Operators Manual	
Genie part number	131379

A-13
Perform Generator Maintenance-Marathon Models



Generator specifications require that this procedure be performed every 200 hours or quarterly, whichever comes first.

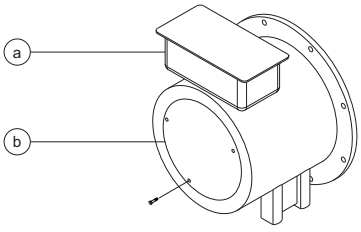
Maintaining the generator in good condition is essential to safe machine operation and long service life. Storing the generator in a harsh environment may require this procedure be performed more frequently. Allowing dirt and grease to build up on the generator may result in a generator which will run hotter, lose efficiency, and reduce the life of the generator.

1 Remove all dust, dirt, and oil and grease build-up from the external surfaces of the generator.

2 Use low-pressure compressed air (25 psi / 1.7 bar) to blow dirt and grease from the internal components through the fan opening.

3 Locate the Capacitor Box at the top of the generator. Remove the cover, clean the inside of the box and check for loose or damaged lead wires and components mounted in the box.

4 Replace the cover. Securely tighten the fasteners. Do not over tighten.



a capacitor box
b generator

A-14
Adjust the Brakes (if equipped)



Axle specifications require that this procedure be performed initially at 250 miles of use.

Maintaining the axle brakes in good condition is essential to safe operation and good performance. Brakes which are out of adjustment can result in longer stopping distances and excessive brake wear on the towing vehicle. Component damage may also result if problems are not discovered and repaired in a timely fashion.

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

1 Select a wheel. Chock the front and rear of the tire at the opposite side of the machine.

2 Place a lifting jack under the axle near the brake to be adjusted. Lift the axle until the wheel is off the ground and place a jack stand under the axle. Lower the axle onto the jack stand.

3 Working from the back side of the wheel at the brake backing plate, locate and remove the small rubber plug from the lower side of the backing plate to access the star-shaped brake adjuster wheel. Set the plug to the side.

4 Insert a brake adjuster tool into the opening of the brake backing plate, engaging it with the teeth of the brake adjuster wheel. Move the tip of the adjuster tool in an upwards direction to tighten the brakes.

Note: It may be helpful to use a flashlight when locating the brake adjuster wheel.

CHECKLIST A PROCEDURES REV B

5 Repeatedly move the tip of the adjuster tool in an upwards direction to tighten the brakes until the wheel locks up and will no longer turn.

Note: This centers the brake shoes on the brake drum, ensuring the shoes are positioned correctly.

6 Move the tip of the adjuster tool in a downwards direction 3 to 5 clicks to loosen the brakes only until the wheel spins freely with little drag.

7 Securely install the small rubber plug into the brake backing plate.

8 Check for wheel bearing wear by attempting to move wheel hub side to side, then up and down.

⊙ Result: There is no side to side or up and down movement. The bearing is good.

⊠ Result: There is side to side or up and down movement. The bearing must be adjusted or replaced. See B-8, *Inspect and Adjust the Brakes (if equipped)*.

9 Lift the axle slightly. Remove the jack stand and lower the machine to the ground. Chock the front and rear of the tire.

10 Repeat this procedure, beginning with step 2, for the other wheel.

Checklist B Procedures

REV B

B-1
Inspect the Engine Start Battery or Lighting Battery Pack



Terex specifications 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.

1 Open the side 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.

4 Fully charge the batteries. Allow the batteries to rest 24 hours before performing this procedure to allow the battery cells to equalize.

5 Put on protective clothing and eye wear.

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

7 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° / 5.5° C above 80° F / 26.7° C.
- Subtract 0.004 from the reading of each cell for every 10° / 5.5° C below 80° F / 26.7° C.

⊙ Result: All battery cells display an adjusted specific gravity of 1.277 +/- 0.007. The battery is fully charged. Proceed to step 11.

⊗ Result: One or more battery cells display a specific gravity of 1.269 or below. Proceed to step 8.

8 Perform an equalizing charge OR fully charge the batteries and allow the batteries to rest at least 6 hours.

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

CHECKLIST B PROCEDURES REV B

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

⊙ Result: All battery cells display a specific gravity of 1.277 +/- 0.007. The battery is fully charged. Proceed to step 11.

⊠ Result: One or more battery cells display a specific gravity from 1.269 to 1.218. The battery is still usable, but at a lower performance so 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 its 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 1.172 or less. Replace the battery.

11 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.

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

B-2
Inspect the Electrical Wiring



Terex specifications 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 Inspect the following areas for burnt, chafed, corroded and loose wires:

- Ground controls
- Battery pack (if equipped)
- Engine (if equipped)
- Mast
- Lighting junction box
- Trailer lighting wire harness

2 Inspect for a liberal coating of dielectric grease in the following locations:

- Lighting junction box
- Ground controls
- All wire harness connectors

B-3
Inspect the Battery Watering System (if equipped)



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

Maintaining the battery watering system is essential to good machine performance. Failure to find and replace faulty components could result in damage to the batteries.

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

1 Inspect the line strainer of the pump assembly. Clean or replace as necessary.

2 Inspect the tubing of the battery watering system ensuring that all parts are in good working condition and are secure, leak-free and fully installed into each battery vent. The coupler has an O-ring and dust cover properly attached.

B-4
Torque the Wheel Lug Nuts



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

Maintaining the wheel lug nuts at the proper torque is essential to safe operation and good service life of the tires, wheel and axle.

1 Check each lug nut for proper torque.

Specification	
Lug nut torque, dry	90 ft-lbs 122 Nm
Lug nut torque, lubricated	67.5 ft-lbs 91.5 Nm

CHECKLIST B PROCEDURES REV B

B-5
Perform Jack Maintenance



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

Maintaining the jack is essential to good machine performance and safe operation. An unsafe working condition exists if the jack has excessive wear
and/or does not operate smoothly, free of hesitation and binding.

1 Select a jack.

2 Remove the cover from the top of the jack.

3 Apply a small amount of automotive grease to the internal gearing, and rotate the handle several times to evenly distribute the grease.

4 Apply a few drops of light oil to the jack handle where it makes contact with the outside of the jack tube.

5 Securely install the cover onto the jack.

6 Repeat this procedure, beginning with step 1, for the other jacks on the machine.

B-6
Inspect and Lubricate the Winch



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

Maintaining the winch is essential to good machine performance and safe operation. An unsafe working condition exists if the winch has excessive wear and/or does not operate smoothly, free of hesitation and binding.

1 Carefully lubricate the pivot point on the ratchet pawl and winch shaft with 30W oil.

NOTICE Component damage hazard. Do not allow oil onto the brake disk.

2 Inspect the brake disks for excessive wear. Replace if the pad is less than $^{1}/_{16}$ inch / 1.5 mm thick. If necessary, refer to Repair procedure 2-1, *How to Disassemble the Winch.*

3 Inspect the pinion shaft bushings for excessive wear. Replace if the wall thickness of the bushing is less than $^{1}/_{8}$ inch / 3.1 mm. If necessary, refer to Repair procedure 2-1, *How to Disassemble the Winch.*

B-7
Lubricate the T-bolt

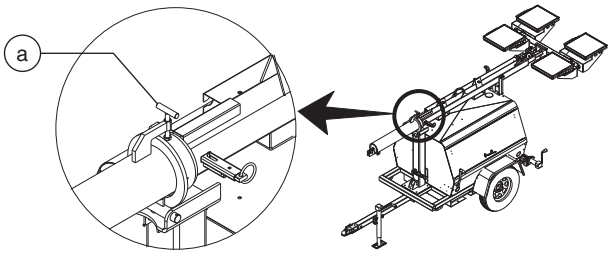
Terex specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Maintaining the T-bolt is essential to good machine performance and safe operation. An unsafe working condition exists if the T-bolt has excessive wear and/or does not operate smoothly, free of hesitation and binding.

1 Using the illustration as a guide, locate the T-bolt at the bottom of the mast assembly. Remove the T-bolt from the mast.

2 Remove all dust, dirt and oil residue from the threaded surfaces of the T-bolt, and apply a few drops of light oil or thread lubricant onto the threaded surfaces.

3 Fully install the T-bolt into the mast.



a T-bolt

B-8
Inspect and Adjust the Brakes (if equipped)

Axle specifications require that this procedure be performed every 3000 miles or quarterly, whichever comes first.

Maintaining the axle brakes in good condition is essential to safe operation and good performance. Brakes which are out of adjustment can result in longer stopping distances and excessive brake wear on the towing vehicle. Component damage may also result if problems are not discovered and repaired in a timely fashion.

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

1 Select a wheel. Chock the front and rear of the tire at the opposite side of the machine.

2 Loosen the wheel lug nuts. Do not remove them.

3 Place a lifting jack under the axle near the wheel to be removed. Lift the axle until the wheel is off the ground and place a jack stand under the axle. Lower the axle onto the jack stand and remove the wheel.

4 Remove the dust cap from the hub. Remove the cotter pin from the castle nut.

5 Remove the castle nut and washer.

6 Pull the hub off of the spindle. The washer and outer bearing should fall loose from the hub.

CHECKLIST B PROCEDURES REV B

7 Inspect the brake lining for wear (if equipped).

⊙ Result: The thickness of the brake lining is greater than $^{1}/_{16}$ inch / 1.6 mm. The brake shoes are good.

⊠ Result: The thickness of the brake lining is $^{1}/_{16}$ inch / 1.6 mm or less. The brake shoes must be replaced and the brake drums must inspected for wear, scoring and other damage.

Note: The maximum bore of a good brake drum shall not be greater than 0.090 inch / 2.29 mm in excess of the drum diameter.

Note: If drum resurfacing is required, the brake drum should be resurfaced to a 120 micron finish.

Note: If replacing the brake shoes, apply a light coating of grease or anti-seize compound to the brake anchor pin, arm bushing and pin, and areas of the backing plate which contact the magnet arm and brake shoes frame. Apply a small amount of lube to the actuating cam at the top of the magnet arm. Do not allow grease or oil to contact the brake shoes or the inside of the drum.

8 Slide the hub onto the yoke spindle.

NOTICE Component damage hazard. Do not apply excessive force or damage to the lip of the seal may occur.

9 Place the outer bearing into the hub.

10 Install the washer and castle nut.

11 Tighten the castle nut to 50 ft-lbs / 68 Nm to seat the bearings.

12 Fully loosen the castle nut. Do not rotate the hub.

13 Finger tighten the castle nut until snug.

14 Install a new cotter pin. Bend the cotter pin to lock it in place.

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

15 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to specification. Refer to Section 2, *Specifications*

16 Working from the back side of the wheel at the brake backing plate, locate and remove the small rubber plug from the lower side of the backing plate to access the star-shaped brake adjuster wheel. Set the plug to the side.

17 Insert a brake adjuster tool into the opening of the brake backing plate, engaging it with the teeth of the brake adjuster wheel. Move the tip of the adjuster tool in an upwards direction to tighten the brakes.

Note: It may be helpful to use a flashlight when locating the brake adjuster wheel.

18 Repeatedly move the tip of the adjuster tool in an upwards direction to tighten the brakes until the wheel locks up and will no longer turn.

Note: This centers the brake shoes on the brake drum, ensuring the shoes are positioned correctly.

19 Move the tip of the adjuster tool in a downwards direction 3 to 5 clicks to loosen the brakes only until the wheel spins freely with little drag.

20 Securely install the small rubber plug into the brake backing plate.

21 Check for wheel bearing wear by attempting to move wheel hub side to side, then up and down.

⊙ Result: There is no side to side or up and down movement. The bearing is good.

⊠ Result: There is side to side or up and down movement. The bearing must be replaced.

22 Lift the axle slightly. Remove the jack stand and lower the machine to the ground. Chock the front and rear of the tire.

23 Repeat this procedure, beginning with step 2, for the other wheel.

B-9
Inspect the Suspension



Axle specifications require that this procedure be performed every 3000 miles or quarterly, whichever comes first.

Maintaining the axle suspension in good condition is essential to safe operation and good performance. Towing the machine with worn or damaged suspension components could result in a tip-over. Component damage may also result if problems are not discovered and repaired in a timely fashion.

1 Working with a flashlight or in a well lit shop, carefully inspect all suspension components and fasteners. Replace as necessary.

CHECKLIST B PROCEDURES REV B

B-10
Perform Engine Maintenance - Kubota D1105-D3BG Models



Engine specifications require that this procedure be performed every 400 hours or semi-annually, whichever comes first.

- Replace oil filter
- Replace fuel filter

Required maintenance procedures and additional engine information is available in the *Kubota D1105 Operators Manual* (Kubota part number 16622-89166)

Kubota D1105 Operators Manual	
Genie part number	131379

Checklist C Procedures

REV B

C-1
Perform Engine Maintenance - Kubota D1105-D3BG Models



Engine specifications require that this procedure be performed every 500 hours or semi-annually, whichever comes first.

- Clean fuel tank
- Clean radiator
- Replace fan belt

Required maintenance procedures and additional engine information is available in the *Kubota D1105 Operators Manual* (Kubota part number 16622-89166)

Kubota D1105 Operators Manual	
Genie part number	131379

C-2
Clean the Light Assemblies



Terex specifications require that this procedure be performed every 500 hours or semi-annually, whichever comes first.

Maintaining the light assemblies is essential to good machine performance. Failure to regularly clean the light assemblies may result in less light than expected and, over time, could result in damage to the machine.

Note: Perform this procedure with the light assemblies out of direct sunlight and cool to the touch.

1 Use clean, cool water to rinse the surface of each light assembly.

2 Clean each light assembly using a soft cloth, water and a mild dishwashing detergent.

NOTICE Component damage hazard. Harsh chemicals and cleaning agents will damage the surface of the light assembly. Do not allow harsh cleaning agents to make contact with the light surface.

3 Thoroughly rinse, then dry with a soft cloth.

CHECKLIST C PROCEDURES REV B

C-3
Grease the Wheel Bearings



Axle specifications require that this procedure be performed every 6000 miles or semi-annually, whichever comes first.

Maintaining the axle wheel bearings is essential for safe machine operation and service life. Operating the machine with loose or worn wheel bearings may cause an unsafe operating condition and continued use may result in component damage. Extremely wet or dirty conditions or regular steam cleaning and pressure washing of the machine may require that this procedure be performed more often.

1 Select a wheel. Chock the front and rear of the tire at the opposite side of the machine.

2 Loosen the wheel lug nuts. Do not remove them.

3 Place a lifting jack under the axle near the wheel to be removed. Lift the axle until the wheel is off the ground and place a jack stand under the axle. Lower the axle onto the jack stand and remove the wheel.

4 Remove the dust cap from the hub. Remove the cotter pin from the castle nut.

5 Remove the castle nut and washer.

6 Pull the hub off of the spindle. The washer and outer bearing should fall loose from the hub.

7 Place the hub on a flat surface and gently pry the bearing seal out of the hub. Remove the rear bearing.

8 Pack both bearings with clean, fresh grease.

9 Inspect the hub for wear. Replace if necessary.

10 Place the large inner bearing into the rear of the hub.

11 Install a new bearing grease seal into the hub by pressing it evenly into the hub until it is flush.

Note: Always replace the bearing grease seal when removing the hub.

12 Inspect the brake lining for wear (if equipped).

13 Inspect the brake cylinder for leaks (if equipped).

14 Inspect the brake springs for wear or loss of arch (if equipped).

15 Inspect the brake wiring/hoses for wear (if equipped).

16 Slide the hub onto the yoke spindle.

NOTICE Component damage hazard. Do not apply excessive force or damage to the lip of the seal may occur.

17 Place the outer bearing into the hub.

18 Install the washer and castle nut.

19 Tighten the castle nut to 50 ft-lbs / 68 Nm to seat the bearings.

20 Fully loosen the castle nut. Do not rotate the hub.

21 Finger tighten the castle nut until snug.

22 Install a new cotter pin. Bend the cotter pin to lock it in place.

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

23 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to specification. Refer to Section 2, *Specifications*.

C-4
Inspect the Electric Brake Magnets (if equipped)



Axle specifications require that this procedure be performed every 6000 miles or semi-annually, whichever comes first.

Maintaining the axle brakes in good condition is essential to safe operation and good performance. A faulty brake magnet can severely impact the stopping power of a trailer. While some magnet problems will be apparent upon visual inspection, there may also be electrical problems that can impact performance. A failing or faulty brake magnet can lead to weak or surging brakes, or cause the brakes to pull to one side. It is important to inspect and test the magnets at regular intervals to ensure maximum effectiveness.

1 Connect the electric brake wire harness to a tow vehicle capable of towing the machine.

2 Start the engine of the tow vehicle, and press down on the brake pedal.

⊙ Result: An audible 'click' is noted at each brake when the brake magnet is activated and pulls itself into contact with the brake drum. The brake circuit is functioning correctly.

⊠ Result: An audible 'click' is not noted at each brake because the brake magnet is not activated and does not make contact with the brake drum. The brake circuit is faulty. Inspect the wire harness and harness connections and repair as required, and repeat this procedure beginning with step 2.

3 With the engine running, press down on the brake pedal and use a multimeter to measure the total amp draw of the brake circuit by positioning an amp clamp around the brake wire lead near the trailer connector. Note the reading.

⊙ Result: The total amp draw measures 5.5 to 6.0 amps. The brake circuit is functioning correctly.

⊠ Result: The total amp draw measures less than 5.5 amps. Replace the magnets and magnet springs on both sides of the axle, and resurface the drake drums. Repeat this procedure beginning with step 4.

4 Stop the engine of the tow vehicle.

5 Select a wheel on the machine. Chock the front and rear of the tire at the opposite side of the machine.

6 Loosen the wheel lug nuts. Do not remove them.

7 Place a lifting jack under the axle near the wheel to be removed. Lift the axle until the wheel is off the ground and place a jack stand under the axle. Lower the axle onto the jack stand and remove the wheel.

8 Remove the dust cap from the hub. Remove the cotter pin from the castle nut.

9 Remove the castle nut and washer.

10 Pull the hub off of the spindle. The washer and outer bearing should fall loose from the hub.

11 Locate the brake magnet. Inspect the surface of the magnet for pitting and any irregular surface wear.

⊠ Result: Replace the magnets and magnet springs on both sides of the axle if pitting or any irregular surface wear is detected, and resurface the drake drums.

12 Inspect the copper coil at the center of the magnet.

☒ Result: Replace the magnets and magnet springs on both sides of the axle if the exposed copper coil is visible in any way, and resurface the drake drums.

13 Slide the hub onto the yoke spindle.

NOTICE Component damage hazard. Do not apply excessive force or damage to the lip of the seal may occur.

14 Place the outer bearing into the hub.

15 Install the washer and castle nut.

16 Tighten the castle nut to 50 ft-lbs / 68 Nm to seat the bearings.

17 Fully loosen the castle nut. Do not rotate the hub.

18 Finger tighten the castle nut until snug.

19 Install a new cotter pin. Bend the cotter pin to lock it in place.

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

20 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to specification. Refer to Section 2, *Specifications*.

21 Repeat this procedure, begining with step 6, for the other side of the machine.

C-5
Perform Engine Maintenance - Kubota D1105-D3BG Models



Engine specifications require that this procedure be performed every 800 hours or annually, whichever comes first.

- Replace air filter
- Inspect wiring
- Check valve clearance

Required maintenance procedures and additional engine information is available in the *Kubota D1105 Operators Manual* (Kubota part number 16622-89166)

Kubota D1105 Operators Manual	
Genie part number	131379

Checklist D Procedures

REV B

D-1
Perform Engine Maintenance - Kubota D1105-D3BG Models



Engine specifications require that this procedure be performed every 1500 hours or bi-annually, whichever comes first.

• Injectors

Required maintenance procedures and additional engine information is available in the *Kubota D1105 Operators Manual* (Kubota part number 16622-89166)

Kubota D1105 Operators Manual	
Genie part number	131379

D-2
Perform Coupler Maintenance



Coupler specifications require that this procedure be performed annually.

Maintaining the coupler in good condition is essential to safe operation and good performance. Coupler failure could result in a machine tip-over during transport, and component damage may also result if problems are not discovered and repaired in a timely fashion.

1 Check coupler welds and mounting bolt torque. Torque the fasteners to 35 ft-lbs / 48 Nm.

⊙ Result: 1.5 full threads of the locking bolt must be exposed beyond the lock nut after the adjustment.

2 Apply automotive grease to the coupler ball pocket.

3 Oil coupler pivot points using SAE 30 motor oil.

Checklist E Procedures

REV B

E-1
Replace the Mast Lift Cable



Terex specifications require that this procedure be performed every two years.

The mast cable is responsible for the raising and lowering of the mast and lights. Regular replacement of the mast cables is essential to good machine performance and safe machine operation.

1 Replace both mast lift cables. Refer to Repair Procedure 1-1, *How to Replace the Mast Lift Cable*.

E-2
Perform Engine Maintenance - Kubota D1105-D3BG Models



Engine specifications require that this procedure be performed every 2000 hours or bi-annually, whichever comes first.

- Replace coolant
- Replace radiator hoses and clamps
- Replace fuel hoses and clamps

Required maintenance procedures and additional engine information is available in the *Kubota D1105 Operators Manual* (Kubota part number 16622-89166)

Kubota D1105 Operators Manual	
Genie part number	131379

REV B CHECKLIST E PROCEDURES

E-3
Perform Engine Maintenance - Kubota D1105-D3BG Models



Engine specifications require that this procedure be performed every 3000 hours.

• Injection pump

Required maintenance procedures and additional engine information is available in the *Kubota D1105 Operators Manual* (Kubota part number 16622-89166)

Kubota D1105 Operators Manual	
Genie part number	131379

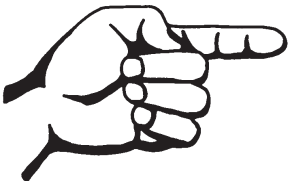
E-4
Perform Generator Maintenance- Marathon Models



Generator specifications require that this procedure be performed every 10,000 hours.

Maintaining the generator in good condition is essential to safe machine operation and long service life. Regular replacement of the shaft bearing will extend the service life of the generator.

1 Replace the generator shaft bearing. Consult a trained Marathon service professional.



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Repair Procedures

REV B

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 Terex approved replacement parts.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Unless otherwise specified, perform each maintenance procedure with the machine in the following configuration:
  - · Machine parked on a firm, level surface
  - · Mast in the stowed position
  - · Wheels chocked
  - · Light switches in the off position
  - · No external AC power devices connected to the power outlets at the control box.

About This Section

Most of the procedures in this section should only be performed by a 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 an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Indicates a potentially hazardous situation which, if not avoided, may 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.

Mast

REV B

1-1
Mast

How to Remove the Mast Assembly

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

1 Turn the handle of the mast winch and fully loosen the mast cable.

2 Open the cabinet doors and locate the winch. Remove the cable retaining fastener securing the cable to the winch drum. Unwind the cable from the winch drum.

⚠CAUTION Bodily injury hazard. Cables can fray. Always wear adequate hand protection when handling the cable.

3 Remove the fasteners securing the coil cable cover onto the side of the mast. Set the cover and fasteners to the side, and lay the coil cable to the side.

4 Tag and disconnect the light heads from the mast junction box, and remove the light heads from the mast.

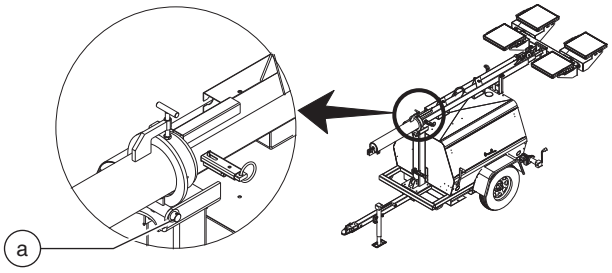
5 Remove the light head mount from the top of the mast.

6 Remove the junction box from the top of the mast. Lay the coil cord and junction box to the side.

7 Attach a lifting strap from an overhead crane to the mast. Support the mast. Do not apply any lifting pressure.

8 Unlock the mast hold-down pin at the mast cradle.

9 Remove the mast pivot pin fasteners, securing the lower end of the mast to the machine, and remove the mast from the machine.



a mast pivot pin

How to Disassemble the Mast

1 Remove the mast assembly. See 1-1, *How to Remove the Mast Assembly*.

2 Remove the T-bolt from the 6 inch / 15 cm round tube assembly.

3 Remove the nut from the bottom of the mast. Gently twist and pull the 6 inch / 15 cm round tube assembly from the mast while pulling the cable free.

⚠ CAUTION Bodily injury hazard. Cables can fray. Always wear adequate hand protection when handling the cable.

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

4 Remove the large round plastic bushing from the bottom of the 4 inch / 10 cm mast section.

5 Remove the 2.5 inch / 6 cm washer from the bottom of the mast assembly.

6 Pull the mast lock handle fully away from the mast, then immediately secure the mast lock in position using locking pliers or a clamp on the lock handle to restrain it in position.

7 Remove the fasteners securing the pulley and mast lock to the 4 inch / 10 cm mast section. Set the components to the side.

8 Working at the top of the 4 inch / 10 cm and 3 inch / 7.5 cm mast sections, use a drill to remove the rivets securing the wear pads in position.

NOTICE Component damage hazard. The mast can be damaged if the drill bit used is too large. Select a drill bit only large enough to remove the mandrel from the center of the rivet.

9 Remove the fasteners securing the pulley and shim to the 3 inch / 7.5 cm mast section. Set the components to the side.

10 Remove the 2 inch / 5 cm mast section from the 3 inch / 7.5 cm mast section.

11 Remove the 3 inch / 7.5 cm mast section from the 4 inch / 10 cm mast section.

Note: For ease of assembly, note the location where each wear pad is removed.

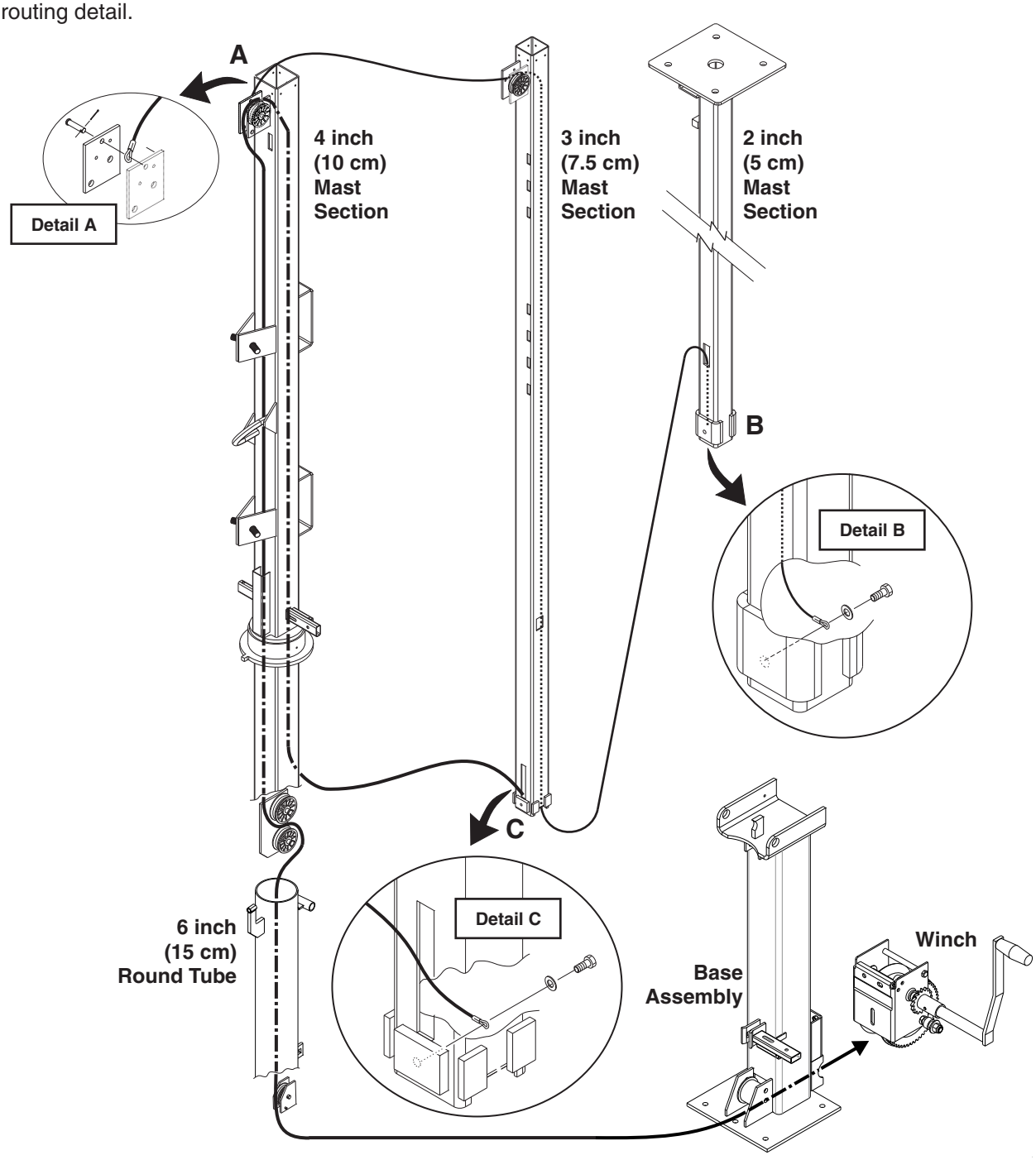
Note: To ensure that the mast extends properly after assembly, carefully measure the cable to confirm that the new cable is the same length as the old one.

Note: During assembly, carefully install the mast cable. Refer to the illustration on the following page for cable routing.

How to Replace the Mast Lift Cable

See 1-1, *How to Disassemble the Mast*.

Note: Refer to the illustration below for cable routing detail.



Winch

REV B

2-1
Winch

How to Remove the Winch

1 Turn the handle of the mast pivot winch and fully loosen the mast pivot cable. Remove the handle from the winch.

2 Open the cabinet doors and locate the winch. Remove the fasteners securing the handle to the winch, and remove the handle.

3 Remove the cable retaining fastener securing the cable to the winch drum. Unwind the cable from the winch drum.

⚠ CAUTION Bodily injury hazard. Cables can fray. Always wear adequate hand protection when handling the cable.

4 Remove the winch from the machine.

How to Disassemble the Winch

Note: For ease of disassembly, refer to the illustration on the next page.

1 Remove the winch. See 2-1, *How to Remove the Winch*.

2 On a workbench, remove the cable drum and lock arm.

3 Remove the lock gear and two jam nuts from the pinion shaft.

4 Remove the retaining ring from the small groove at the non-threaded end of the pinion shaft. Rotate the pinion shaft until the shaft is removed. Hold the winch components in place while removing the pinion shaft.

5 Remove the ratchet pawl assemblies.

6 Remove the pinion shaft bushings. Use a soft metal drift equal to the outside diameter of the bushing and tap with a rubber mallet.

Note: Carefully observe the quantity and location of the shims between the winch drum and the bushing before disassembling.

How to Assemble the Winch

1 Clean and inspect the winch components before installing.

2 Install the pinion shaft bushings. Use a soft metal drift equal to the outside diameter of the bushing and tap with a rubber mallet until fully seated.

3 Apply a small amount of lithium grease to the large threaded section of the pinion shaft.

4 Insert the pinion shaft through the small bushing in the winch frame, the pinion gear, friction disc ratchet gear, friction disc, pinion plate, spacer and finally through the large bushing at the other side of the frame. Refer to the illustration below.

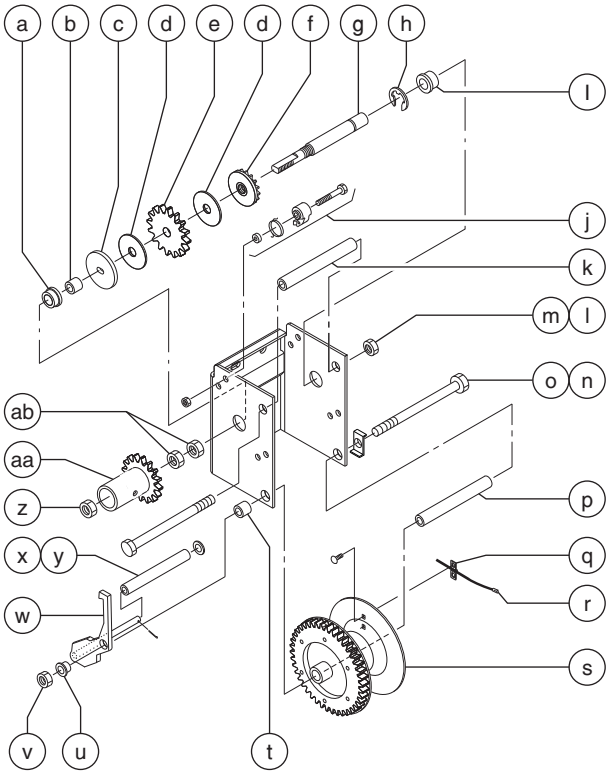
NOTICE Component damage hazard. Grease or oil on the friction disc will result in poor winch performance. Do not allow grease or oil onto the friction disk.

5 Install the retaining ring into the small groove at the non-threaded end of the pinion shaft.

6 Install the ratchet pawl kit as shown in the illustration. Securely tighten the fasteners.

7 Insert the drum bolt through the drum bolt lock, winch frame, drum spacer, cable drum, frame, lock arm spacer, lock arm and lock arm bushing. Install and securely tighten the locknut.

8 Working from the threaded end of the pinion shaft, turn the shaft in a clockwise direction until the retaining ring, installed in step 5, is against the winch frame.



a pinion shaft bushing - large
b spacer
c pinion plate
d friction disc
e ratchet gear
f pinion gear
g pinion shaft
h retaining ring
i pinion shaft bushing - small
j ratchet pawl kit
k frame spacer
l frame spacer nut
m frame spacer bolt
n drum bolt
o drum bolt lock
p drum spacer
q cable fasteners
r cable
s cable drum
t lock arm spacer
u lock arm bushing
v lock arm nut
w lock arm
x cable roller
y cable roller washer
z winch lock gear nut
aa winch lock gear
ab pinion shaft nuts

9 Install the two jam nuts onto the pinion shaft and tighten.

NOTICE Component damage hazard. Be sure the pinion shaft is threaded all the way into the winch drum before tightening the two jam nuts.

10 Install the lock gear and lock gear nut onto the pinion shaft and tighten.

11 Install the winch onto the machine. Securely tighten the fasteners. Do not over tighten.

12 Route the cable onto the winch drum and install the cable retaining fasteners. Install the winch handle and wind the cable onto the drum.

⚠ CAUTION Bodily injury hazard. Cables can fray. Always wear adequate hand protection when handling the cable.

Note: Be sure the end of the cable does not extend past the edge of the winch drum.

Generator

REV B

3-1
Generator

How to Remove the Generator

⚠ DANGER High voltage. Exposure to electrical wires or electrical current will result in death or serious injury. Remove all rings, watches and other jewelry. Turn off all power when not needed for testing. Use extreme caution when working with high voltage electrical components.

⚠ DANGER Electrocution/burn hazard. Attempting to service the machine before the capacitor is fully discharged will result in death or serious injury.

Note: Be sure the engine has been turned off for at least 15 minutes before servicing the machine. Use a voltmeter to confirm there is no residual voltage in the capacitor.

1 Deploy the outriggers and level the machine.

2 Fully raise the mast.

3 Select and open a cabinet door. Tag and disconnect the gas strut, then continue to open the door until it comes to rest above the top panel of the cabinet. Repeat for the other side of the machine.

4 With both cabinet doors fully opened and above the top panel of the cabinet, secure the doors together using a length of rope or elastic cord.

5 Attach a lifting strap from an overhead crane to the top panel and doors assembly. Support the assembly. Do not apply any lifting pressure.

Notice: Component damage hazard. The cabinet doors and/or hinges can become damaged if excessive pressure is placed on the components. Use a spreader bar to ensure the lifting strap does not make contact with any portion of the doors.

6 Remove the fasteners securing the top cabinet panel to the front and rear cabinet end panels. Remove the top cabinet panel and doors from the machine and place it on a support of adequate capacity.

7 Pull the cover off the top of the capacitor box to access the wire harness where it connects to the generator.

⚠ CAUTION Burn hazard. Contact with hot engine components may cause severe burns. Use caution when working around a hot engine.

8 Using an insulated conductor or a screwdriver with an insulated handle, discharge the capacitor by shorting across the capacitor terminals. Repeat for the second capacitor, if equipped.

⚠ DANGER High voltage. Exposure to electrical wires or electrical current will result in death or serious injury. Remove all rings, watches and other jewelry. Use extreme caution when working with high voltage electrical components.

9 Tag and disconnect all external wires from the generator.

10 Use a lifting jack to support the rear of the engine. Do not apply any lifting pressure.

11 Remove the fasteners securing the generator to the chassis.

12 Remove the fasteners securing the generator to the engine bellhousing.

13 Pull the generator away from the engine just enough to reach the fasteners securing the generator rotor to the engine flywheel. Remove the fasteners.

14 Remove the generator from the machine.

⚠ CAUTION Crushing hazard. The generator will fall if not properly supported when removed from the machine.

How to Install the Generator

1 Using a liquid threadlocker on the fastener threads, install the fasteners securing the generator rotor to the engine flywheel. Tighten to finger tight.

2 In a star pattern, torque the flywheel fasteners to 15 ft-lbs / 20 Nm.

3 With the engine supported, install the generator onto the engine. Using a liquid threadlocker on the fastener threads, install the fasteners securing the generator to the engine bellhousing. Tighten to finger tight.

4 In a star pattern, torque the bellhousing fasteners to 30 ft-lbs / 41 Nm.

5 Install the fasteners securing the generator to the chassis. Securely tighten the fasteners.

6 Install the external wires onto the terminal block at the top of the generator. Securely tighten the fasteners.

7 Install the capacitor cover onto the generator. Install and securely tighten the fasteners.

How to Check a Generator Capacitor

⚠ DANGER High voltage. Exposure to electrical wires or electrical current will result in death or serious injury. Remove all rings, watches and other jewelry. Turn off all power when not needed for testing. Use extreme caution when working with high voltage electrical components.

⚠ DANGER Electrocution/burn hazard. Attempting to service the machine before the capacitor is fully discharged will result in death or serious injury.

Note: Be sure the engine has been turned off for at least 15 minutes before servicing the machine. Use a voltmeter to confirm there is no residual voltage in the capacitor.

1 Remove the generator capacitor cover.

2 Using an insulated conductor or a screwdriver with an insulated handle, discharge the capacitor by shorting across the capacitor terminals. Repeat for the second capacitor, if equipped.

⚠ DANGER High voltage. Exposure to electrical wires or electrical current will result in death or serious injury. Remove all rings, watches and other jewelry. Use extreme caution when working with high voltage electrical components.

3 Tag and disconnect the wires attached to the capacitor(s).

4 With an ohmmeter set to its highest resistance scale, connect the ohmmeter leads to the capacitor terminals and observe the reading on the meter. Then, reverse the connections and observe the reading on the meter.

Result: The meter indicates a very low resistance which then gradually increases AND a very high resistance which then gradually decreases. The capacitor is working.

Result: The meter indicates a very high resistance which does not decrease. The capacitor is faulty and should be replaced.

Result: The meter indicates a very low resistance which does not increase. The capacitor is faulty and should be replaced.

How to Check a Generator Diode

⚠ DANGER High voltage. Exposure to electrical wires or electrical current will result in death or serious injury. Remove all rings, watches and other jewelry. Turn off all power when not needed for testing. Use extreme caution when working with high voltage electrical components.

⚠ DANGER Electrocution/burn hazard. Attempting to service the machine before the capacitor is fully discharged will result in death or serious injury.

Note: Be sure the engine has been turned off for at least 15 minutes before servicing the machine. Use a voltmeter to confirm there is no residual voltage in the capacitor.

1 Remove the fasteners securing the end cover/bearing housing to the generator. Remove the cover.

2 Locate the diode at the end of the generator.

3 Tag and disconnect the positive wire lead from the diode.

4 With a multimeter set to test diodes, connect one multimeter lead to the diode terminal and the other multimeter lead to the 'Q' lead terminal of the generator. Note the results.

Note: Refer to the instructions which are provided for your multimeter to ensure the diode is accurately tested.

5 Reverse the multimeter lead connections. Note the results.

⊙ Result: The two readings are at a ratio of 3000:1 or higher. The diode is good.

⊗ Result: The two readings are at a ratio of less than 3000:1. The diode is faulty and should be replaced.

Note: Before installing a new diode, clean the surface of the exciter rotor core, and run a bead of a thermal-electrical compound around the base of the diode (the threads of the diode should not be coated). Torque to 20 to 30 in-lbs / 2.2 to 3.4 Nm.

Engine

REV B

4-1
Engine RPM

How to Adjust the Engine RPM

Note: Perform this procedure with the light switches in the off position and with no external AC power devices connected to the power outlets at the control box.

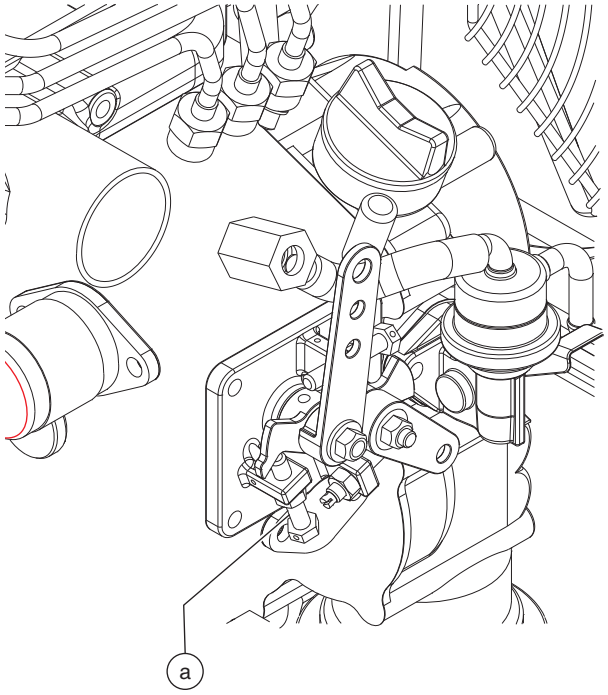
1 Start the engine, and allow the engine to warm to normal operating temperature.

2 With a multimeter set to read AC frequency (Hz), connect the multimeter leads to one of the outlets at the control box and note the reading.

Result: The reading is 61.5 +/- 0.5 Hz. The engine RPM is set correctly.

Result: The reading is less than 61 Hz OR the reading is greater than 62 Hz. The engine RPM is not set correctly and should be adjusted. Proceed to step 3.

3 Using the illustration as a guide, locate the engine speed adjustment screw. Loosen the locknut, then turn the adjustment screw clockwise to increase the RPM or counterclockwise to decrease the engine RPM. Tighten the locknut and repeat this procedure beginning with step 2.



a adjustment screw

Troubleshooting

Observe and Obey:

- ☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - · Machine parked on a firm, level surface
  - · Mast in the stowed position
  - · Light switches in the off position
  - · Wheels chocked

Before Troubleshooting:

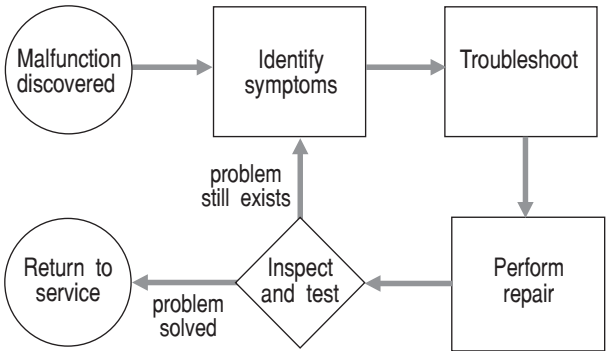
- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

⚠ DANGER Electrocution hazard. Exposure to electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

⚠ DANGER High voltage. Exposure to electrical wires or electrical current will result in death or serious injury. Remove all rings, watches and other jewelry. Turn off all power when not needed for testing. Use extreme caution when working with high voltage electrical components.

⚠ CAUTION Burn hazard. Contact with hot engine components may cause severe burns. Use caution when working around lamps or a hot engine.

General Repair Process



Troubleshooting

REV B

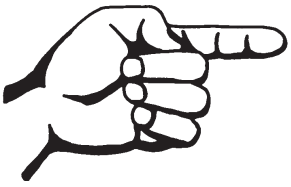
Problem	Possible Cause	Solution
Boom will not rise to the operating position	Yoke pin is in place	Remove yoke pin
	Faulty cable or pulley	Inspect and repair as needed
	Faulty winch	Inspect and repair as needed
Boom will not telescope	Telescope lock pin closed	Open telescope lock pin
	Faulty cable or pulley	Inspect and repair as needed
	Faulty winch	Inspect and repair as needed
Engine will not turn over	No power	Inspect and repair battery cables and connections as needed Inspect and charge or replace battery as needed Inspect and replace fuse
	Faulty starter	Inspect and repair as needed
	Faulty starter switch	Inspect and repair switch and/or switch wiring as needed
Engine overheats	Low coolant level	Top off radiator and coolant overflow tank with correct coolant mixture per engine Operator's Manual
	Radiator is blocked	Clear the radiator fins
	Radiator or cooling system clogged or corroded	Inspect and repair as needed
	Fan or radiator cap faulty	Inspect and repair as needed
	Thermostat faulty	Inspect and repair as needed
	Head gasket faulty	Inspect and repair as needed
	Fan belt is loose	Tighten fan belt
	Unsuitable fuel used	Drain fuel system and replace with specified fuel
Engine runs but produces a dense smoke	Crankcase oil level is too high	Drain oil to the proper level
	Low compression	Inspect for broken/siezed piston rings OR inspect valve clearances
	Injector nozzle faulty	Replace injector
	Combustion incomplete due to faulty injector timing, poor valve adjustment or lack of compression	Inspect and repair as needed

Problem	Possible Cause	Solution
Engine runs rough	Air or contaminated fuel in fuel system	Inspect and repair as needed
	Clogged or leaking fuel system	Replace fuel lines, tighten all connections, inspect the fuel pickup tube and inspect the fuel filter
	Clogged exhaust system	Inspect and repair as needed
	Clogged air filter	Inspect and repair or replace as needed
	Clogged or stuck fuel injectors	Inspect and repair as needed
	Faulty governor or fuel pump	Inspect and repair as needed
Engine turns over but will not start or is difficult to start	Empty fuel tank	Add fuel to tank
	Leaking or pinched fuel lines	Inspect and repair as needed
	Clogged fuel lines or tank	Inspect and repair as needed
	Clogged fuel filter	Replace filter
	Air or water mixed in fuel	Air: Tighten fuel lines and vent fuel system air at injection pump. Water: Drain fuel and replace filter; inspect and clean or replace injector as needed.
	Fuel injection nozzle clogged	Inspect and repair as needed
	Fuel injection pump faulty	Inspect and repair as needed
	Fuel solenoid valve faulty	Inspect and repair as needed
	Faulty glow plug	Inspect and repair as needed
	Faulty relay or wiring connection in control box	Inspect and repair as needed
	Battery is discharged or low	Charge or replace battery
	Air cleaner is dirty	Clean or replace more frequently
Engine battery quickly discharged	Battery electrolyte low	Add distilled water and charge
	Fan belt slips	Inspect and repair as needed
	Wiring loose or disconnected	Inspect and repair as needed
	Faulty alternator, rectifier or diode	Inspect and repair as needed
	Faulty battery	Replace

TROUBLESHOOTING REV B

Problem	Possible Cause	Solution
Engine runs but battery voltage is low	Faulty alternator	Inspect and repair as needed
Engine runs but lights will not operate	Circuit breaker has tripped	Reset circuit breaker
	Loose wiring connections	Inspect and repair as needed
	Faulty generator	Inspect and repair as needed
Lamp light output low	Dirty light fixture	Clean light fixture
Light heads are flashing on-off	Batteries low	Charge batteries
	Short in power supply cable	Inspect and repair as needed
	Power supply cable connector faulty	Inspect and repair as needed
Single LED burned out	End of life	Continue to use until light head failure OR replace
Light head will not illuminate	End of life	Replace
	Short in power supply cable	Inspect and repair as needed
	Power supply cable connector faulty OR poor connection	Inspect and repair as needed
Unusual noise from the generator	Generator has a faulty bearing or faulty fan blade	Inspect and repair as needed
Generator produces full voltage at no load OR voltage drops at full load	Loose or broken lead wires	Inspect lead wires and conections for broken wires and loose connections
	Rotor open or shorted	Measure resistance between leads
	Stator grounded or shorted	Contact the Genie Service Dept.
Generator voltage too high	High engine speed	Adjust to 1850 rpm (no load)
Generator produces no voltage at no load or at full load	Faulty surge suppressor	Disconnect suppressor from circuit. If there is an obvious increase in voltage, replace the suppressor.
	Faulty capacitor	Replace
	Loss of residual magnatism	Flash the rotor
	Open winding	Replace the generator

Problem	Possible Cause	Solution
Generator will not hold voltage (loss of residual magnetism)	Machine has been unused for significant length of time	Flash the rotor
	Rotor shorting out when unit gets hot	Inspect rotor windings for broken and/or burned wires
	Pinched leads	Inspect and repair as needed
	Faulty capacitor	Replace
	Faulty diode	Replace
	Faulty surge suppressor	Replace
Generator voltage spikes	Incorrect engine adjustment, fuel line or faulty fuel	Change fuel filter and check engine speed
	Loose connection	Inspect all connections and repair as needed
	Faulty ground connection	Inspect all ground connections and repair as needed
	Load induced	Filter load
Generator voltage low	Loss of residual magnetism	Flash the rotor
	Low engine speed	Adjust idle. See Repair Section.
	Faulty capacitor	Replace
	Faulty diode	Replace



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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 before attempting any maintenance or repair procedure.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

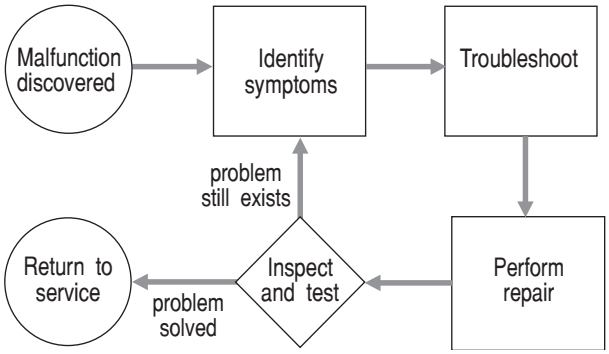
About This Section

There is one group 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.

General Repair Process



Electrical Component and Wire Color Legends

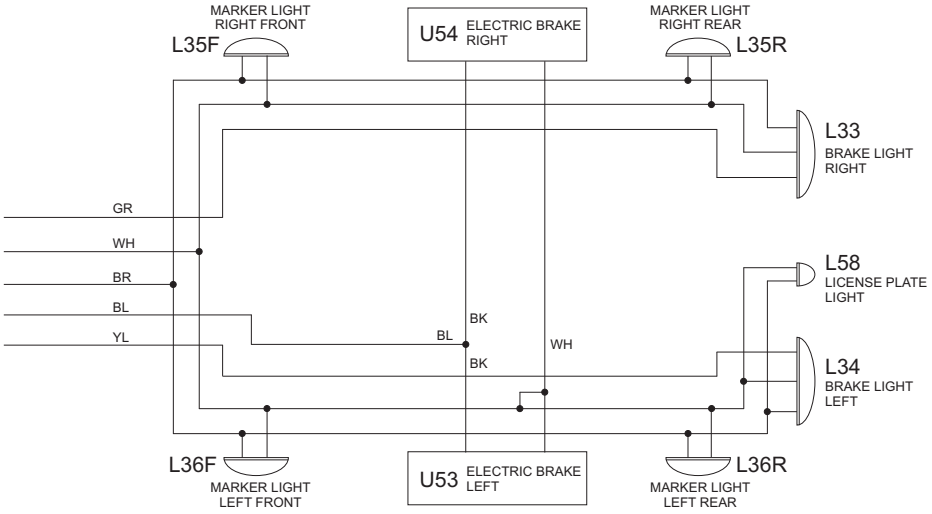
REV B

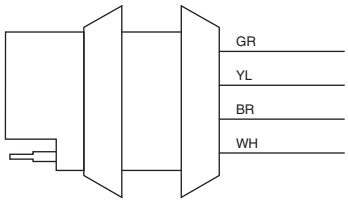
ELECTRICAL SCHEMATIC LEGEND	
Item	**Description**
_B	Battery B1 = Engine start B8 = Battery pack
BN	Button BN3 = Glow plug
CB	Circuit breaker CB11 = 30 amp, power outlet, main CB12 = 15 amp, power outlet, individual
CR	Control relay CR2 = Ignition power CR114 = Timer
D	Power supply D1 = Alternator
EN	Enclosure EN2 = Control box EN12 = Junction box
F	Fuse F9-50 = 50 amp, Inline, Main F9-30 = 30 amp, Engine starter
G	Gauge G6 = Hour meter, lights G6A = Hour meter, engine
_KS	Key switch KS1 = Key switch
L	LED or Light L30-1 = Light head, top left L30-2 = Light head, bottom left L30-3 = Light head, top right L30-4 = Light head, bottom right L33 = Brake, right L34 = Brake, left L35F = Marker, right front L35R = Marker, right rear L36F = Marker, left front L36R = Marker, left rear L52 = Alternator failure L58 = License plate
M	Motor or Pump M3 = Starter M4 = Fuel pump
P	Red emergency stop button P1 = Ground control
Q	Solenoid Q8 = Fuel shut off
QD	Quick disconnect QD1 = Battery pack disconnect
SW	Switch SW1 = Engine coolant temperature SW2 = Engine oil pressure SW45 = Lights, 5A
U	Electronic Component U9 = Battery charger U32 = Glow plug U53 = Electric brake, left U54 = Electric brake, right U60 = Timer U61 = Power outlet, 120V U62 = Power ouitlet, 240V U63 = Generator

WIRE COLOR LEGEND	
Item	**Description**
BL	Blue
BK	Black
BR	Brown
GR	Green
OR	Orange
PP	Purple
RD	Red
WH	White
YL	Yellow
OR/BK	Orange/Black
WH/BK	White/Black
WH/RD	White/Red

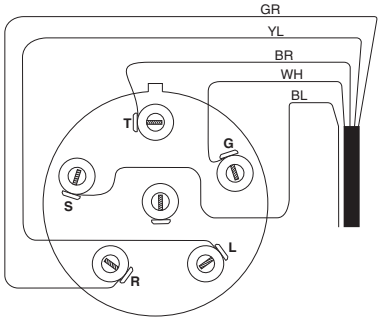
Trailer Lighting Wiring Diagram

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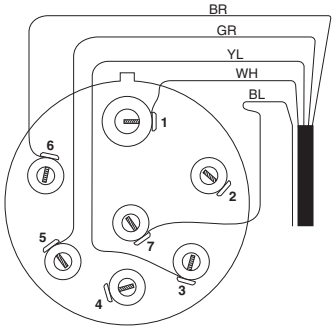




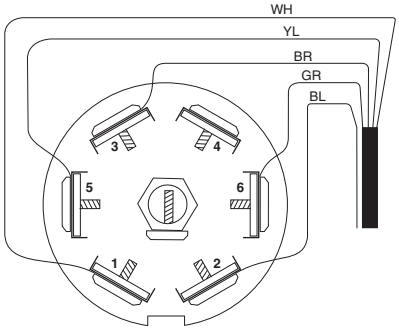
4-way
Connector Wiring



6-way 'Round Pin'
Connector Wiring



7-way 'Round Pin'
Connector Wiring



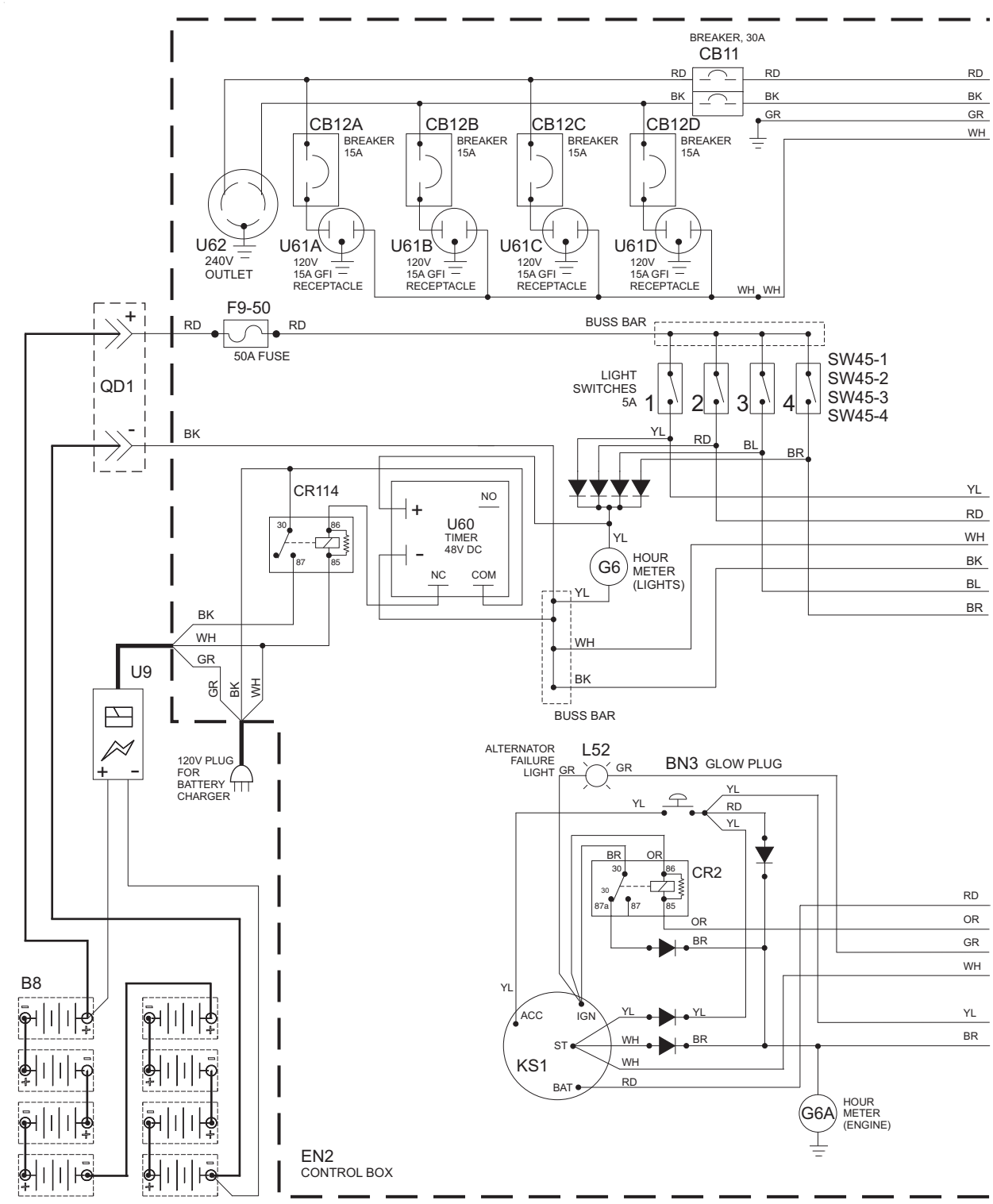
7-way 'Blade'
Connector Wiring

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Electrical Schematic, AL5L

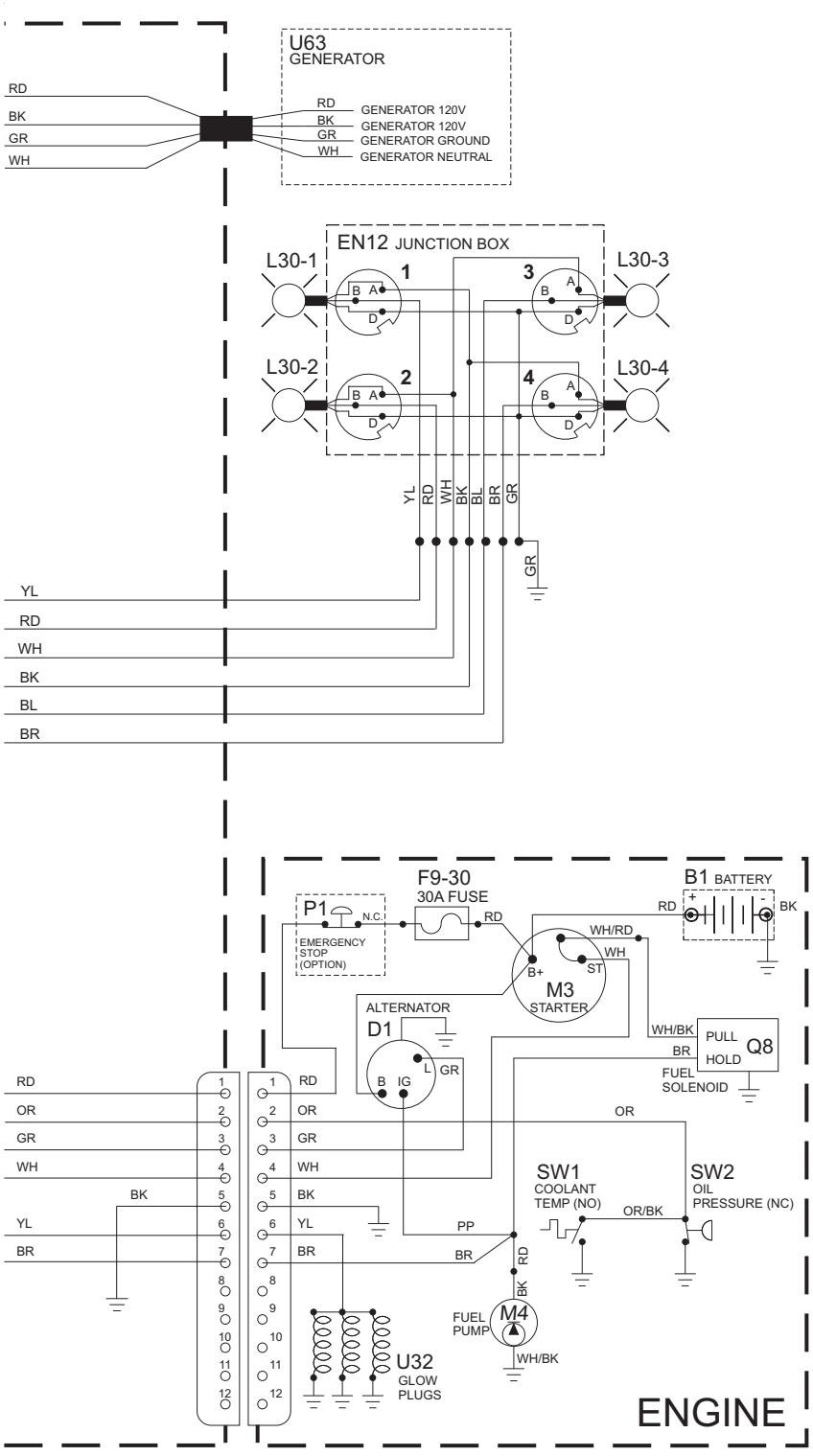
Page 1 of 2

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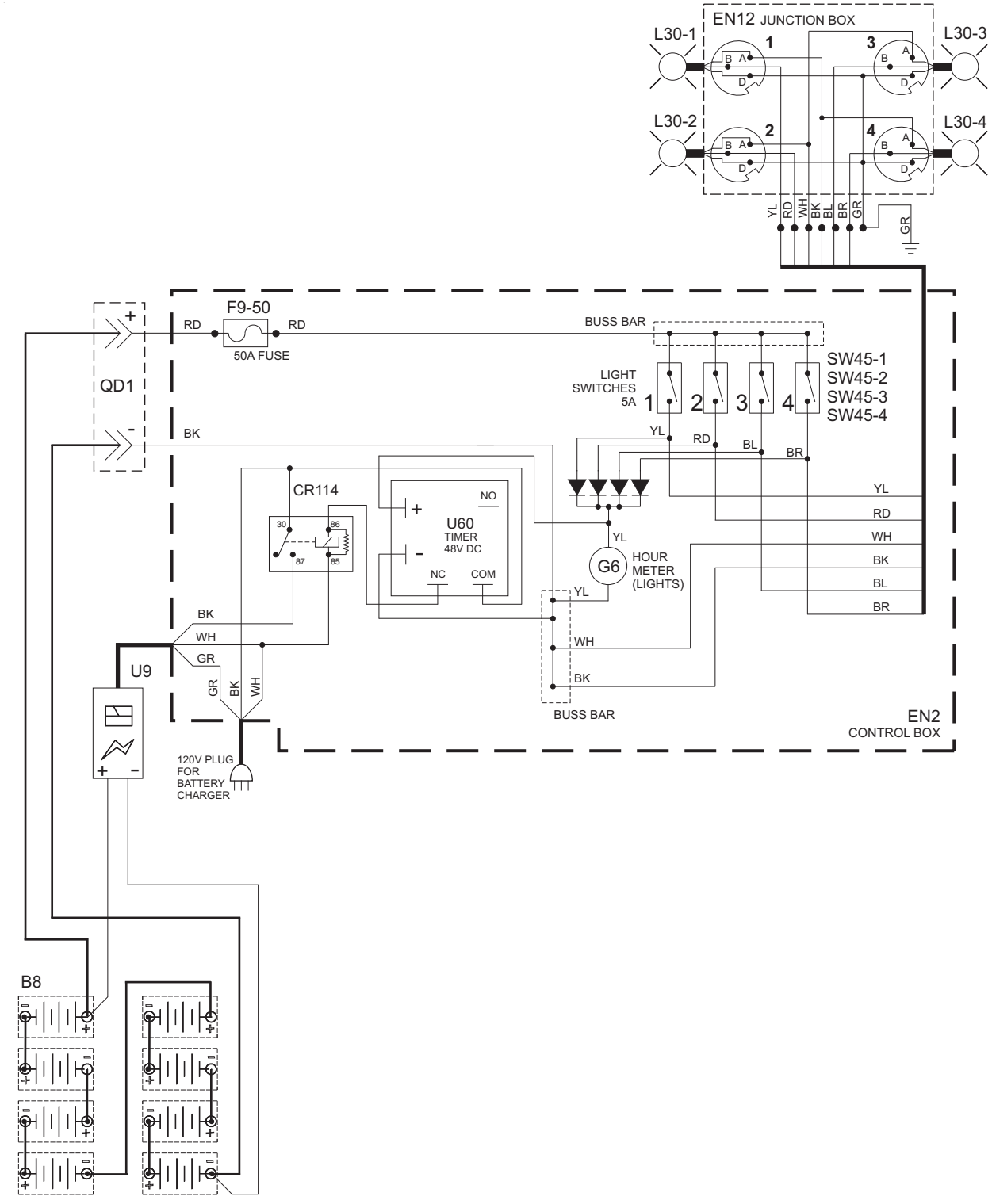
Electrical Schematic, AL5L

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Electrical Schematic, AL4L

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ES0528B

California Proposition 65

Warning

The exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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