Introduction

Important

Read, understand and obey the safety rules and operating instructions in the Genie S-60 and Genie S-65 Operator's Manual or the Genie S-60 HC Operator's Manual 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 Genie dealer service center.

Serial Number Information

Genie offers the following Service Manuals for these models:

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Contact Us:

http://www.genielift.com

e-mail: awp.techpub@terex.com
### Revision History

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**REFERENCE EXAMPLES:**

- Kubota Engine Section 2 Specifications.
- A-6,B-3,C-7 Section 3 Maintenance Procedure.
- 3-2, 6-4, 9-1 Section 4 Repair Procedure.
- Fault Codes Section 5.
- 6-35, 6-56, 6-104 Section 6 Schematic Page #.

**Electronic Version**

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**REFERENCE EXAMPLES:**

Kubota Engine_Section 2_Specifications.
A-6,B-3,C-7_Section 3_Maintenance Procedure.
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**Electronic Version**

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Serial Number Legend

Genie
A TEREX BRAND

Model: S-60
Serial number: S6005-12345
Model year: 2005  Manufacture date: 04/12/05
Electrical schematic number: E0186
Machine unladen weight: 20,736lbs / 9,406kg
  Foam Tires add 764 lbs/347 kg to weight

Rated work load (including occupants): 500 lb / 227 kg
Maximum number of platform occupants: 2
Maximum allowable side force: 150 lb / 670 N
Maximum allowable inclination of the chassis:
  Air Tires 2 deg / Foam Tires 4.5 deg
Maximum wind speed: 28 mph/ 12.5 m/s
Maximum platform height: 60 ft 2 in/ 18.3 m
Maximum platform reach: 50 ft 4 in/ 15.3 m
Gradeability: 45%
Country of manufacture: USA
This machine complies with:
  ANSI A92.5
  CAN B.354.4

Terex South Dakota, Inc.
500 Oak Wood Road
PO Box 1150
Watertown, SD 57201
USA

PN - 77055
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 an imminently hazardous situation which, if not avoided, will result in death or serious injury.
  - WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
  - CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
  - 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.

Danger

Failure to obey the instructions and safety rules in this manual, and the Genie S-60 and Genie S-65 Operator’s Manual or the Genie S-60 HC Operator’s Manual 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.
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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<td>Platform Control Box Switch Panel Wiring Diagram,</td>
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<td>Electrical Schematic, S-60, Perkins 404-22 Models</td>
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<td>(after serial number 11879)</td>
<td></td>
</tr>
<tr>
<td>Ground Control Box Terminal Strip Wiring Diagram,</td>
<td>6 - 90</td>
</tr>
<tr>
<td>S-60, Perkins 404-22 Models (before serial number 11880)</td>
<td></td>
</tr>
<tr>
<td>Ground Control Box Switch Panel Wiring Diagram,</td>
<td>6 - 91</td>
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<tr>
<td>S-60, Perkins 404-22 Models (before serial number 11880)</td>
<td></td>
</tr>
<tr>
<td>Ground Control Box Terminal Strip Wiring Diagram,</td>
<td>6 - 92</td>
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<tr>
<td>S-60, Perkins 404-22 Models (after serial number 11879)</td>
<td></td>
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<tr>
<td>Ground Control Box Switch Panel Wiring Diagram,</td>
<td>6 - 93</td>
</tr>
<tr>
<td>S-60, Perkins 404-22 Models (after serial number 11879)</td>
<td></td>
</tr>
<tr>
<td>Platform Control Box Terminal Strip Wiring Diagram,</td>
<td>6 - 94</td>
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<tr>
<td>S-60, Perkins 404-22 Models</td>
<td></td>
</tr>
<tr>
<td>Platform Control Box Switch Panel Wiring Diagram,</td>
<td>6 - 95</td>
</tr>
<tr>
<td>S-60, Perkins 404-22 Models</td>
<td></td>
</tr>
<tr>
<td>Electrical Schematic, S-65, Perkins 404-22 Models</td>
<td>6 - 96</td>
</tr>
<tr>
<td>(before serial number 11880)</td>
<td></td>
</tr>
<tr>
<td>Electrical Schematic, S-65, Perkins 404-22 Models</td>
<td>6 - 98</td>
</tr>
<tr>
<td>(after serial number 11879)</td>
<td></td>
</tr>
<tr>
<td>Ground Control Box Terminal Strip Wiring Diagram,</td>
<td>6 - 100</td>
</tr>
<tr>
<td>S-65, Perkins 404-22 Models (before serial number 11880)</td>
<td></td>
</tr>
<tr>
<td>Ground Control Box Switch Panel Wiring Diagram,</td>
<td>6 - 101</td>
</tr>
<tr>
<td>S-65, Perkins 404-22 Models (before serial number 11880)</td>
<td></td>
</tr>
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Specifications

Machine Specifications

Tires and wheels

<table>
<thead>
<tr>
<th>Tire size</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Rough terrain, low profile)</td>
<td>355/55D625</td>
</tr>
<tr>
<td>(Rough terrain, tall)</td>
<td>385-19.5</td>
</tr>
<tr>
<td>(Hi-flotation)</td>
<td>41/18LL x 22.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tire ply rating</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Rough terrain, low profile and Hi-flotation)</td>
<td>14</td>
</tr>
<tr>
<td>(Rough terrain, tall)</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wheel lugs</th>
<th>9 @ 5/8 -18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lug nut torque, dry</td>
<td>240 ft-lbs</td>
</tr>
<tr>
<td></td>
<td>325 Nm</td>
</tr>
<tr>
<td>Lug nut torque, lubricated</td>
<td>180 ft-lbs</td>
</tr>
<tr>
<td></td>
<td>244 Nm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall tire diameter</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Rough terrain, low profile tires)</td>
<td>36.9 in</td>
</tr>
<tr>
<td></td>
<td>93.7 cm</td>
</tr>
<tr>
<td>(Rough terrain, tall tires)</td>
<td>40.1 in</td>
</tr>
<tr>
<td></td>
<td>102 cm</td>
</tr>
<tr>
<td>(Hi-flotation tires)</td>
<td>40.3 in</td>
</tr>
<tr>
<td></td>
<td>102.4 cm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tire pressure</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Rough terrain, low profile tires)</td>
<td>70 psi</td>
</tr>
<tr>
<td>(Rough terrain, tall tires)</td>
<td>85 psi</td>
</tr>
<tr>
<td>(Hi-flotation tires)</td>
<td>60 psi</td>
</tr>
</tbody>
</table>

Fluid capacities

<table>
<thead>
<tr>
<th>Fluid type</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel tank</td>
<td>35 gallons</td>
</tr>
<tr>
<td></td>
<td>151 liters</td>
</tr>
<tr>
<td>LPG tank</td>
<td>33.5 pounds</td>
</tr>
<tr>
<td></td>
<td>15.2 kg</td>
</tr>
<tr>
<td>Hydraulic tank</td>
<td>45 gallons</td>
</tr>
<tr>
<td></td>
<td>170 liters</td>
</tr>
<tr>
<td>Hydraulic system (including tank)</td>
<td>55 gallons</td>
</tr>
<tr>
<td></td>
<td>208 liters</td>
</tr>
<tr>
<td>Drive hubs</td>
<td>20 fl oz</td>
</tr>
<tr>
<td></td>
<td>0.6 liters</td>
</tr>
<tr>
<td>Turntable rotation drive hub</td>
<td>40 fl oz</td>
</tr>
<tr>
<td></td>
<td>1.19 liters</td>
</tr>
</tbody>
</table>

Drive hub oil type:
SAE 90 multipurpose hypoid gear oil API service classification GL5

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

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### Performance Specifications

**Boom function speeds, maximum from platform controls**

<table>
<thead>
<tr>
<th>Function</th>
<th>Time Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jib boom up, S-65</td>
<td>60 to 70 seconds</td>
</tr>
<tr>
<td>Jib boom down, S-65</td>
<td>40 to 50 seconds</td>
</tr>
<tr>
<td>Boom up</td>
<td>60 to 70 seconds</td>
</tr>
<tr>
<td>Boom down</td>
<td>60 to 70 seconds</td>
</tr>
<tr>
<td>Boom extend</td>
<td>58 to 66 seconds</td>
</tr>
<tr>
<td>Boom retract</td>
<td>53 to 62 seconds</td>
</tr>
<tr>
<td>Turntable rotate, 360° boom stowed</td>
<td>78 to 86 seconds</td>
</tr>
<tr>
<td>Turntable rotate, 360° boom raised or extended</td>
<td>125 to 165 seconds</td>
</tr>
<tr>
<td>Platform rotate, 160°</td>
<td>8 to 12 seconds</td>
</tr>
</tbody>
</table>

**Braking distance, maximum**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Distance Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>High range on paved surface</td>
<td>3 to 6 ft</td>
</tr>
<tr>
<td></td>
<td>0.9 to 1.8 m</td>
</tr>
</tbody>
</table>

**Drive speed, maximum stowed position**

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Speed</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>2WD models</td>
<td>40 ft</td>
<td>6.2 sec</td>
</tr>
<tr>
<td></td>
<td>12.2 m</td>
<td>6.2 sec</td>
</tr>
<tr>
<td>4WD models</td>
<td>40 ft</td>
<td>7.6 sec</td>
</tr>
<tr>
<td></td>
<td>12.2 m</td>
<td>7.6 sec</td>
</tr>
</tbody>
</table>

**Drive speed, maximum raised or extended position**

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Speed</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>All models</td>
<td>40 ft</td>
<td>40 sec</td>
</tr>
<tr>
<td></td>
<td>12.2 m</td>
<td>40 sec</td>
</tr>
</tbody>
</table>

**Gradeability**

See Operator's Manual

---

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Hydraulic Specifications

Hydraulic Oil Specifications

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<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic oil type</td>
<td>Chevron Rando HD MV equivalent</td>
</tr>
<tr>
<td>Viscosity grade</td>
<td>Multi-viscosity</td>
</tr>
<tr>
<td>Viscosity index</td>
<td>200</td>
</tr>
<tr>
<td>Cleanliness level, minimum</td>
<td>15/13</td>
</tr>
<tr>
<td>Water content, maximum</td>
<td>200 ppm</td>
</tr>
</tbody>
</table>

Chevron Rando HD MV oil is fully compatible and mixable with Shell Donax TG (Dexron III) oils. 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 antwear, oxidation, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Optional fluids

<table>
<thead>
<tr>
<th>Type</th>
<th>Brand 1</th>
<th>Brand 2</th>
<th>Brand 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodegradable</td>
<td>Petro Canada Environ MV46</td>
<td>Statoil Hydra Way Bio Pa 32</td>
<td>BP Biohyd SE-S</td>
</tr>
<tr>
<td>Fire resistant</td>
<td>UCON Hydrolube HP-5046</td>
<td>Quintolubric 822</td>
<td></td>
</tr>
<tr>
<td>Mineral based</td>
<td>Shell Tellus T32</td>
<td>Shell Tellus T46</td>
<td>Chevron Aviation A</td>
</tr>
</tbody>
</table>

Drive pump

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>bi-directional, variable displacement piston pump</td>
</tr>
<tr>
<td>Flow rate @ 2500 rpm</td>
<td>32.4 gpm</td>
</tr>
<tr>
<td></td>
<td>122.6 L/min</td>
</tr>
<tr>
<td>Drive pressure, maximum</td>
<td>3750 psi</td>
</tr>
<tr>
<td></td>
<td>259 bar</td>
</tr>
</tbody>
</table>

Charge pump

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>gerotor</td>
</tr>
<tr>
<td>Displacement</td>
<td>0.85 cu in</td>
</tr>
<tr>
<td></td>
<td>13.9 cc</td>
</tr>
<tr>
<td>Flow rate @ 2500 rpm</td>
<td>9.2 gpm</td>
</tr>
<tr>
<td></td>
<td>34.8 L/min</td>
</tr>
<tr>
<td>Charge pressure @ 2500 rpm</td>
<td>310 psi</td>
</tr>
<tr>
<td></td>
<td>21.4 bar</td>
</tr>
</tbody>
</table>

Function pump

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>2 section tandem gear pump</td>
</tr>
<tr>
<td>Displacement - Pump 1 (inner)</td>
<td>1.4 cu in</td>
</tr>
<tr>
<td></td>
<td>23 cc</td>
</tr>
<tr>
<td>Flow rate @ 2500 rpm</td>
<td>15.3 gpm</td>
</tr>
<tr>
<td></td>
<td>58 L/min</td>
</tr>
<tr>
<td>Displacement - Pump 2 (outer)</td>
<td>0.24 cu in</td>
</tr>
<tr>
<td>(oscillate models)</td>
<td>4 cc</td>
</tr>
<tr>
<td>Flow rate @ 2500 rpm</td>
<td>2 gpm</td>
</tr>
<tr>
<td></td>
<td>7.6 L/min</td>
</tr>
</tbody>
</table>

Auxiliary pump

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>gear, fixed displacement</td>
</tr>
<tr>
<td>Displacement</td>
<td>1.75 gpm</td>
</tr>
<tr>
<td></td>
<td>2.8 L/min</td>
</tr>
</tbody>
</table>

NOTICE

Continued use of Chevron Aviation A hydraulic oil when in ambient temperatures consistently below 0°F / -18°C may result in component damage.

Note: Use Chevron Aviation A hydraulic oil when in ambient temperatures consistently below 0°F / -18°C.

Note: Use Shell Tellus T46 hydraulic oil when oil temperatures consistently exceed 205°F / 96°C.

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

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**SPECIFICATIONS**

**Function manifold**

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>System relief valve pressure</td>
<td>3000 psi / 207 bar</td>
</tr>
<tr>
<td>Steer flow regulator</td>
<td>3.5 gpm / 13.2 L/min</td>
</tr>
<tr>
<td>Jib boom / platform rotate flow regulator</td>
<td>0.6 gpm / 2.27 L/min</td>
</tr>
<tr>
<td>Oscillate relief valve pressure (@ 2500 rpm)</td>
<td>800 psi / 55 bar</td>
</tr>
</tbody>
</table>

**Drive manifold**

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot oil relief valve pressure</td>
<td>280 psi / 19.3 bar</td>
</tr>
</tbody>
</table>

**Drive motors, 4WD models**

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement per revolution, high speed</td>
<td>0.79 cu in / 13 cc</td>
</tr>
<tr>
<td>Displacement per revolution, low speed</td>
<td>1.83 cu in / 30 cc</td>
</tr>
</tbody>
</table>

**Drive motors, 2WD models**

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement per revolution, high speed</td>
<td>1.28 cu in / 20.9 cc</td>
</tr>
<tr>
<td>Displacement per revolution, low speed</td>
<td>2.14 cu in / 35 cc</td>
</tr>
</tbody>
</table>

**Hydraulic filters**

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>High pressure filter</td>
<td>Beta 3 ≥ 200</td>
</tr>
<tr>
<td>High pressure filter</td>
<td>51 psi</td>
</tr>
<tr>
<td>Medium pressure filter</td>
<td>3.5 bar</td>
</tr>
<tr>
<td>Medium pressure filter</td>
<td>Beta 3 ≥ 200</td>
</tr>
<tr>
<td>Hydraulic return filter</td>
<td>10 micron with 25 psi / 1.7 bar bypass</td>
</tr>
</tbody>
</table>

**Manifold Component Specifications**

**Plug torque**

<table>
<thead>
<tr>
<th>SAE No.</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>36 in-lbs / 4 Nm</td>
</tr>
<tr>
<td>4</td>
<td>10 ft-lbs / 13 Nm</td>
</tr>
<tr>
<td>6</td>
<td>14 ft-lbs / 19 Nm</td>
</tr>
<tr>
<td>8</td>
<td>38 ft-lbs / 51 Nm</td>
</tr>
<tr>
<td>10</td>
<td>41 ft-lbs / 55 Nm</td>
</tr>
<tr>
<td>12</td>
<td>56 ft-lbs / 76 Nm</td>
</tr>
</tbody>
</table>

**Valve coil resistance specifications**

<table>
<thead>
<tr>
<th>Valve type</th>
<th>Resistance Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solenoid valve, 3 position 4 way, 10V DC (schematic items D, V and Y)</td>
<td>5 to 7Ω</td>
</tr>
<tr>
<td>Solenoid valve, 3 position 4 way, 10V DC (schematic item BB)</td>
<td>4 to 6Ω</td>
</tr>
<tr>
<td>Solenoid valve, 2 position 3 way, 10V DC (schematic items B, C, E, F and FF)</td>
<td>5 to 7Ω</td>
</tr>
<tr>
<td>Solenoid valve, 2 position 3 way, 10V DC (schematic items KK and LL)</td>
<td>5.5 to 7.5Ω</td>
</tr>
<tr>
<td>Proportional solenoid valve, 12V DC (schematic items M and T)</td>
<td>4 to 6Ω</td>
</tr>
<tr>
<td>Proportional solenoid valve, 12V DC (schematic item Q)</td>
<td>3.7 to 5.7Ω</td>
</tr>
</tbody>
</table>

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## GM 3.0L EFI Engine

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Displacement</strong></td>
<td>181 cu in (3 liters)</td>
</tr>
<tr>
<td><strong>Number of cylinders</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bore &amp; stroke</strong></td>
<td>4 x 3.6 inches (101.6 x 91.44 mm)</td>
</tr>
<tr>
<td><strong>Horsepower</strong></td>
<td></td>
</tr>
<tr>
<td>Intermittent</td>
<td>67 @ 2300 rpm 50 kW @ 2300 rpm</td>
</tr>
<tr>
<td>Continuous</td>
<td>60 @ 2300 rpm 45 kW @ 2300 rpm</td>
</tr>
<tr>
<td><strong>Firing order</strong></td>
<td>1 - 3 - 4 - 2</td>
</tr>
<tr>
<td><strong>Low idle</strong></td>
<td>1650 rpm 386 Hz</td>
</tr>
<tr>
<td><strong>High idle</strong></td>
<td>2500 rpm 585 Hz</td>
</tr>
<tr>
<td><strong>Compression ratio</strong></td>
<td>9.25:1</td>
</tr>
<tr>
<td><strong>Compression pressure - minimum</strong></td>
<td>100 psi 6.9 bar</td>
</tr>
<tr>
<td><strong>Valve clearances</strong></td>
<td>Zero lash + 1 full turn</td>
</tr>
<tr>
<td><strong>Lubrication system</strong></td>
<td></td>
</tr>
<tr>
<td>Oil pressure, minimum</td>
<td>18 psi (operating temp. @ 2000 rpm)1.24 bar</td>
</tr>
<tr>
<td>Oil capacity</td>
<td>5 quarts (including filter) 4.7 liters</td>
</tr>
<tr>
<td><strong>Oil viscosity requirements</strong></td>
<td></td>
</tr>
<tr>
<td>Below 0°F / -17.8°C</td>
<td>5W-30</td>
</tr>
<tr>
<td>Above 0°F / -17.8°C</td>
<td>10W-30</td>
</tr>
</tbody>
</table>

Continuous improvement of our products is a Genie policy. Product specifications are subject to change without notice.
### Ford LRG-425 EFI Engine

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Displacement</strong></td>
<td>153 cu in (2.5 liters)</td>
</tr>
<tr>
<td><strong>Number of cylinders</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bore &amp; stroke</strong></td>
<td>3.78 x 3.4 inches (96.01 x 86.36 mm)</td>
</tr>
<tr>
<td><strong>Horsepower</strong></td>
<td>70 @ 2500 rpm (52 kW @ 2500 rpm)</td>
</tr>
<tr>
<td><strong>Firing order</strong></td>
<td>1 - 3 - 4 - 2</td>
</tr>
<tr>
<td><strong>Low function idle</strong></td>
<td>1600 rpm (395 Hz)</td>
</tr>
<tr>
<td><strong>High function idle</strong></td>
<td>2500 rpm (620 Hz)</td>
</tr>
<tr>
<td><strong>Compression ratio</strong></td>
<td>9.4:1</td>
</tr>
<tr>
<td><strong>Compression pressure (approx.)</strong></td>
<td>Pressure (psi or bar) of lowest cylinder must be at least 75% of highest cylinder</td>
</tr>
<tr>
<td><strong>Valve clearances</strong></td>
<td>0.035 to 0.055 inches (0.889 to 1.397 mm)</td>
</tr>
<tr>
<td><strong>Lubrication system</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Oil pressure</strong></td>
<td>40 to 60 psi (operating temperature @ 2500 rpm) 2.75 to 4.1 bar</td>
</tr>
<tr>
<td><strong>Oil capacity</strong></td>
<td>4.5 quarts (including filter) 4.3 liters</td>
</tr>
<tr>
<td><strong>Oil pressure switch</strong></td>
<td>Oil pressure switch point 7.5 psi (0.51 bar)</td>
</tr>
<tr>
<td><strong>Oil viscosity requirements</strong></td>
<td>Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator Handbook on your machine.</td>
</tr>
</tbody>
</table>

### Electronic fuel pump
- **Fuel pressure, static**: 63 psi (4.3 bar)
- **Fuel flow rate**: 0.58 gpm (2.2 L/min)

### Fuel requirement
For fuel requirements, refer to the engine Operator’s Manual on your machine.

### Ignition system
- **Spark plug type**: Motorcraft AGSF-32-FM
- **Spark plug gap**: 0.042 to 0.046 inches (1.07 to 1.17 mm)

### Engine coolant
- **Capacity**: 11.5 quarts (10.9 liters)

### Coolant temperature switch
- **Temperature switch point**: 230°F (110°C)

### Starter motor
- **Normal engine cranking speed**: 200 to 250 rpm
- **Current draw, normal load**: 140-200A
- **Current draw, maximum load**: 800A

### Alternator
- **Output**: 95A, 14.5V DC

### Battery
- **Type**: 12V DC, Group 31
- **Quantity**: 1
- **Cold cranking ampere @ 0°F**: 1000A
- **Reserve capacity @ 25A rate**: 200 minutes

Continuous improvement of our products is a Genie policy. Product specifications are subject to change without notice.
## Ford DSG-423 EFI Engine

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Displacement</strong></td>
<td>140.4 cu in (2.3 liters)</td>
</tr>
<tr>
<td><strong>Number of cylinders</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bore &amp; stroke</strong></td>
<td>3.44 x 3.7 inches (87.5 x 94 mm)</td>
</tr>
<tr>
<td><strong>Horsepower</strong></td>
<td>59 @ 2500 rpm (44 kW @ 2500 rpm)</td>
</tr>
<tr>
<td><strong>Firing order</strong></td>
<td>1 - 3 - 4 - 2</td>
</tr>
<tr>
<td><strong>Low function idle</strong></td>
<td>1600 rpm (53 Hz)</td>
</tr>
<tr>
<td><strong>High function idle</strong></td>
<td>2500 rpm (83 Hz)</td>
</tr>
<tr>
<td><strong>Compression ratio</strong></td>
<td>9.7:1</td>
</tr>
<tr>
<td><strong>Compression pressure (approx.)</strong></td>
<td>Pressure (psi or bar) of lowest cylinder must be at least 75% of highest cylinder</td>
</tr>
<tr>
<td><strong>Lubrication system</strong></td>
<td></td>
</tr>
<tr>
<td>Oil pressure (at operating temperature @ 2500 rpm)</td>
<td>29 to 39 psi (2 to 2.7 bar)</td>
</tr>
<tr>
<td>Oil capacity (including filter)</td>
<td>4 quarts (3.8 liters)</td>
</tr>
<tr>
<td>Oil pressure switch</td>
<td></td>
</tr>
<tr>
<td>Oil pressure switch point</td>
<td>7.5 psi (0.51 bar)</td>
</tr>
<tr>
<td><strong>Oil viscosity requirements</strong></td>
<td></td>
</tr>
<tr>
<td>Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator Handbook on your machine.</td>
<td></td>
</tr>
</tbody>
</table>

### SPECIFICATIONS

#### Electronic fuel pump

- **Fuel pressure, static**: 64 psi (4.4 bar)
- **Fuel flow rate**: 0.43 gpm (1.6 L/min)

#### Fuel requirement

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

#### Ignition system

- **Spark plug type**: Motorcraft AGSF-32-FEC
- **Spark plug gap**: 0.049 to 0.053 inches (1.244 to 1.346 mm)

#### Engine coolant

- **Capacity**: 10 quarts (9.5 liters)
- **Cylinder head temperature sending unit**: Fault code set temperature 280°F (138°C), Engine shut-down temperature 300°F (149°C)

#### Starter motor

- **Normal engine cranking speed**: 200 to 250 rpm
- **Current draw, normal load**: 140-200A
- **Current draw, maximum load**: 800A

#### Alternator

- **Output**: 95A, 13.8V DC

#### Battery

- **Type**: 12V DC, Group 31
- **Quantity**: 1
- **Cold cranking ampere @ 0°F**: 1000A
- **Reserve capacity @ 25A rate**: 200 minutes

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

### Deutz F3L 2011 Engine

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Displacement</strong></td>
<td>142 cu in / 2.33 liters</td>
</tr>
<tr>
<td><strong>Number of cylinders</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Bore and stroke</strong></td>
<td>3.7 x 4.4 inches / 94 x 112 mm</td>
</tr>
<tr>
<td><strong>Horsepower</strong></td>
<td>48 @ 2800 rpm / 36 kW @ 2800 rpm</td>
</tr>
<tr>
<td><strong>Firing order</strong></td>
<td>1 - 2 - 3</td>
</tr>
<tr>
<td><strong>Low idle</strong></td>
<td>1500 rpm / 313 Hz</td>
</tr>
<tr>
<td><strong>High idle</strong></td>
<td>2500 rpm / 522 Hz</td>
</tr>
<tr>
<td><strong>Compression ratio</strong></td>
<td>19:1</td>
</tr>
<tr>
<td><strong>Compression pressure</strong></td>
<td>362 to 435 psi / 25 to 30 bar</td>
</tr>
<tr>
<td><strong>Governor</strong></td>
<td>centrifugal mechanical</td>
</tr>
<tr>
<td><strong>Intake valve clearance</strong></td>
<td>0.012 in / 0.3 mm</td>
</tr>
<tr>
<td><strong>Exhaust valve clearance</strong></td>
<td>0.020 in / 0.5 mm</td>
</tr>
<tr>
<td><strong>Lubrication system</strong></td>
<td>Oil pressure: 20 to 44 psi / 1.4 to 3 bar</td>
</tr>
<tr>
<td></td>
<td>Oil capacity: 8.5 quarts / 8 liters</td>
</tr>
</tbody>
</table>

### Oil viscosity requirements

-22° F to 86° F / -30° C to 30° C: 5W-30 (synthetic)

-4° F to 90° F / -20° C to 32° C: 10W-40

Above 23° F / -5° C: 20W-50

Units ship with 15W-40. Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator Handbook on your machine.

### Oil temperature switch

Temperature switch point: 300°F / 149°C

### Oil pressure switch

Oil pressure switch point: 7 psi / 0.48 bar

### Fuel injection system

Injection pump make: Bosch

Injection pump pressure, maximum: 15000 psi / 1034 bar

Injector opening pressure: 3046 psi / 210 bar

### Fuel requirement

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

### Starter motor

Current draw, no load: 90A

Brush length, new: 0.72 in / 18.5 mm

Brush length, minimum: 0.27 in / 7 mm

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

**Battery**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>12V DC</td>
</tr>
</tbody>
</table>
| Size                           | 13 x 6\(\frac{3}{16}\) x 9\(\frac{3}{8}\) inches  
33 x 17.3 x 23.8 cm           |
| Quantity                       | 1                          |
| Cold cranking ampere           | 1000A                      |
| Reserve capacity @ 25A rate    | 200 minutes                |
| Alternator output              | 60A @ 14V DC               |
| Fan belt deflection            | 3/8 to 1/2 inch  
9 to 12 mm             |
SPECIFICATIONS

Perkins 404-22 Engine

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Displacement</strong></td>
<td>134 cu in (2.2 liters)</td>
</tr>
<tr>
<td><strong>Number of cylinders</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Bore and stroke</strong></td>
<td>3.31 x 3.94 inches (84 x 100 mm)</td>
</tr>
<tr>
<td><strong>Horsepower</strong></td>
<td>51 @ 2500 rpm (38 kW @ 2500 rpm)</td>
</tr>
<tr>
<td><strong>Firing order</strong></td>
<td>1 - 3 - 4 - 2</td>
</tr>
<tr>
<td><strong>Low idle</strong></td>
<td>1300 rpm (201 Hz)</td>
</tr>
<tr>
<td><strong>High idle</strong></td>
<td>2500 rpm (231 Hz)</td>
</tr>
<tr>
<td><strong>Compression ratio</strong></td>
<td>23.3:1</td>
</tr>
<tr>
<td><strong>Compression pressure</strong></td>
<td>426 psi (29.4 bar)</td>
</tr>
<tr>
<td><strong>Governor</strong></td>
<td>centrifugal mechanical</td>
</tr>
<tr>
<td><strong>Valve clearance, cold</strong></td>
<td></td>
</tr>
<tr>
<td>Intake</td>
<td>0.008 in (0.2 mm)</td>
</tr>
<tr>
<td>Exhaust</td>
<td>0.008 in (0.2 mm)</td>
</tr>
</tbody>
</table>

Lubrication system

- Oil pressure, cold (at 2500 rpm) 60 psi (4.1 bar)
- Oil capacity (including filter) 9.3 quarts (8.8 liters)

Oil viscosity requirements

- Below 86°F / 30°C 5W-20
- -4°F to 104°F / -20°C to 40°C 10W-30
- Above 14°F / -10°C 15W-40

Units ship with 15W-40. Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator Handbook on your machine.

Oil pressure sending unit

- Oil pressure switch point 14.2 psi (1 bar)

Fuel injection system

- Injection pump make: Zexel
- Injection pressure: 2133 psi (147 bar)

Fuel requirement

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

Alternator output 55A @ 12V DC

Fan belt deflection 3/8 in (10 mm)

Starter motor

- Current draw, no load 90A
- Brush length, new 0.7480 in (19 mm)
- Brush length, minimum 0.5 in (12.7 mm)

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### Battery

- **Type**: 12V DC
- **Size**: 13 x 6 13/16 x 9 3/8 inches, 33 x 17.3 x 23.8 cm
- **Quantity**: 1
- **Cold cranking ampere**: 1000A
- **Reserve capacity @ 25A rate**: 200 minutes

### Engine coolant

- **Capacity**: 7.7 quarts, 7.3 liters

### Coolant temperature sending unit

- **Temperature switch point**: 221° F, 105° C

### Machine Torque Specifications

#### Platform rotator

<table>
<thead>
<tr>
<th>Component</th>
<th>Torque Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-8 center bolt, GR 8</td>
<td>480 ft-lbs, 651 Nm</td>
</tr>
<tr>
<td>3/8 -16 bolts, GR 8</td>
<td>44 ft-lbs, 60 Nm</td>
</tr>
</tbody>
</table>

#### Drive motor and hubs

<table>
<thead>
<tr>
<th>Component</th>
<th>Torque Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive hub mounting bolts, lubricated</td>
<td>160 ft-lbs, 217 Nm</td>
</tr>
<tr>
<td>Drive motor mounting bolts, lubricated</td>
<td>55 ft-lbs, 75 Nm</td>
</tr>
</tbody>
</table>

#### Turntable bearing

<table>
<thead>
<tr>
<th>Component</th>
<th>Torque Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotate bearing mounting bolts, lubricated</td>
<td>180 ft-lbs, 244 Nm</td>
</tr>
</tbody>
</table>

#### Turntable rotation assembly

<table>
<thead>
<tr>
<th>Component</th>
<th>Torque Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backlash pivot plate, lubricated</td>
<td>320 ft-lbs, 433 Nm</td>
</tr>
</tbody>
</table>

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

## Hydraulic Hose and Fitting Torque Specifications

Your machine is equipped with Parker Seal-Lok® 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.

### SAE O-ring Boss Port
(tube fitting - installed into Aluminum)

<table>
<thead>
<tr>
<th>SAE Dash size</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>11 ft-lbs / 14.9 Nm</td>
</tr>
<tr>
<td>-6</td>
<td>23 ft-lbs / 31.2 Nm</td>
</tr>
<tr>
<td>-8</td>
<td>40 ft-lbs / 54.2 Nm</td>
</tr>
<tr>
<td>-10</td>
<td>69 ft-lbs / 93.6 Nm</td>
</tr>
<tr>
<td>-12</td>
<td>93 ft-lbs / 126.1 Nm</td>
</tr>
<tr>
<td>-16</td>
<td>139 ft-lbs / 188.5 Nm</td>
</tr>
<tr>
<td>-20</td>
<td>172 ft-lbs / 233.2 Nm</td>
</tr>
<tr>
<td>-24</td>
<td>208 ft-lbs / 282 Nm</td>
</tr>
</tbody>
</table>

### SAE O-ring Boss Port
(tube fitting - installed into Steel)

<table>
<thead>
<tr>
<th>SAE Dash size</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>16 ft-lbs / 21.7 Nm</td>
</tr>
<tr>
<td>-6</td>
<td>35 ft-lbs / 47.5 Nm</td>
</tr>
<tr>
<td>-8</td>
<td>60 ft-lbs / 81.3 Nm</td>
</tr>
<tr>
<td>-10</td>
<td>105 ft-lbs / 142.4 Nm</td>
</tr>
<tr>
<td>-12</td>
<td>140 ft-lbs / 190 Nm</td>
</tr>
<tr>
<td>-16</td>
<td>210 ft-lbs / 284.7 Nm</td>
</tr>
<tr>
<td>-20</td>
<td>260 ft-lbs / 352.5 Nm</td>
</tr>
<tr>
<td>-24</td>
<td>315 ft-lbs / 427.1 Nm</td>
</tr>
</tbody>
</table>

### 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.

### NOTICE

The O-rings used in the Parker Seal Lok® fittings and hose ends are custom-size O-rings. They are not standard SAE 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 that the face seal O-ring 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 per given size as shown in the table.

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

### Seal-Lok® Fittings
(hose end)

<table>
<thead>
<tr>
<th>SAE Dash size</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>18 ft-lbs / 25 Nm</td>
</tr>
<tr>
<td>-6</td>
<td>30 ft-lbs / 40 Nm</td>
</tr>
<tr>
<td>-8</td>
<td>40 ft-lbs / 55 Nm</td>
</tr>
<tr>
<td>-10</td>
<td>60 ft-lbs / 80 Nm</td>
</tr>
<tr>
<td>-12</td>
<td>85 ft-lbs / 115 Nm</td>
</tr>
<tr>
<td>-16</td>
<td>110 ft-lbs / 150 Nm</td>
</tr>
<tr>
<td>-20</td>
<td>140 ft-lbs / 190 Nm</td>
</tr>
<tr>
<td>-24</td>
<td>180 ft-lbs / 245 Nm</td>
</tr>
</tbody>
</table>
# SPECIFICATIONS

## SAE FASTENER TORQUE CHART

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

<table>
<thead>
<tr>
<th>Size</th>
<th>Material</th>
<th>LUBED</th>
<th>DRY</th>
<th>LUBED</th>
<th>DRY</th>
<th>LUBED</th>
<th>DRY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>in-lbs</td>
<td>Nm</td>
<td>in-lbs</td>
<td>Nm</td>
<td>in-lbs</td>
<td>Nm</td>
</tr>
<tr>
<td>1/4</td>
<td>Grade 5</td>
<td>80</td>
<td>9.1</td>
<td>100</td>
<td>11.3</td>
<td>110</td>
<td>12.4</td>
</tr>
<tr>
<td>28</td>
<td>Grade 8</td>
<td>90</td>
<td>10.1</td>
<td>120</td>
<td>13.5</td>
<td>120</td>
<td>13.5</td>
</tr>
<tr>
<td>5/16</td>
<td>A574</td>
<td>13</td>
<td>17.6</td>
<td>19</td>
<td>23</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>3/8</td>
<td></td>
<td>23</td>
<td>31.2</td>
<td>31</td>
<td>42</td>
<td>33</td>
<td>44.7</td>
</tr>
<tr>
<td>7/16</td>
<td></td>
<td>37</td>
<td>50.1</td>
<td>45</td>
<td>64.4</td>
<td>50</td>
<td>67.8</td>
</tr>
<tr>
<td>1/2</td>
<td></td>
<td>41</td>
<td>55.5</td>
<td>55</td>
<td>74.5</td>
<td>60</td>
<td>81.3</td>
</tr>
<tr>
<td>9/16</td>
<td></td>
<td>80</td>
<td>108.4</td>
<td>110</td>
<td>149</td>
<td>120</td>
<td>162</td>
</tr>
<tr>
<td>5/8</td>
<td></td>
<td>110</td>
<td>149</td>
<td>150</td>
<td>203</td>
<td>160</td>
<td>217</td>
</tr>
<tr>
<td>3/4</td>
<td></td>
<td>200</td>
<td>271</td>
<td>270</td>
<td>366</td>
<td>280</td>
<td>379</td>
</tr>
<tr>
<td>7/8</td>
<td></td>
<td>320</td>
<td>453</td>
<td>330</td>
<td>483</td>
<td>450</td>
<td>610</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>480</td>
<td>650</td>
<td>640</td>
<td>867</td>
<td>680</td>
<td>922</td>
</tr>
<tr>
<td>11/4</td>
<td></td>
<td>530</td>
<td>718</td>
<td>710</td>
<td>962</td>
<td>750</td>
<td>910</td>
</tr>
<tr>
<td>11/2</td>
<td></td>
<td>590</td>
<td>800</td>
<td>800</td>
<td>1071</td>
<td>790</td>
<td>970</td>
</tr>
<tr>
<td>5</td>
<td>Grade 5</td>
<td>640</td>
<td>1198</td>
<td>1200</td>
<td>1618</td>
<td>1300</td>
<td>1844</td>
</tr>
<tr>
<td>6</td>
<td>Grade 8</td>
<td>930</td>
<td>1290</td>
<td>1240</td>
<td>1681</td>
<td>1510</td>
<td>2047</td>
</tr>
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<td>A574</td>
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<td>2223</td>
<td>2190</td>
<td>2969</td>
<td>2670</td>
<td>3620</td>
</tr>
</tbody>
</table>

## METRIC FASTENER TORQUE CHART

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

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Class 4.6</th>
<th>Class 8.8</th>
<th>Class 10.9</th>
<th>Class 12.9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LUBED</td>
<td>DRY</td>
<td>LUBED</td>
<td>DRY</td>
</tr>
<tr>
<td></td>
<td>in-Nm</td>
<td>in-Nm</td>
<td>in-Nm</td>
<td>in-Nm</td>
</tr>
<tr>
<td>6</td>
<td>5.4</td>
<td>7.41</td>
<td>7.2</td>
<td>9.88</td>
</tr>
<tr>
<td>10</td>
<td>10.8</td>
<td>14.7</td>
<td>14.4</td>
<td>19.6</td>
</tr>
<tr>
<td>12</td>
<td>18.9</td>
<td>25.6</td>
<td>25.1</td>
<td>34.1</td>
</tr>
<tr>
<td>14</td>
<td>30.1</td>
<td>40.8</td>
<td>40.8</td>
<td>54.3</td>
</tr>
<tr>
<td>16</td>
<td>46.9</td>
<td>63.6</td>
<td>62.5</td>
<td>94.8</td>
</tr>
<tr>
<td>18</td>
<td>64.5</td>
<td>87.8</td>
<td>86.2</td>
<td>117</td>
</tr>
<tr>
<td>20</td>
<td>91</td>
<td>124</td>
<td>127</td>
<td>165</td>
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<td>22</td>
<td>124</td>
<td>169</td>
<td>166</td>
<td>225</td>
</tr>
<tr>
<td>24</td>
<td>157</td>
<td>214</td>
<td>210</td>
<td>285</td>
</tr>
</tbody>
</table>
This page intentionally left blank.
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. The frequency and extent of periodic examinations and tests may also depend on national regulations.

⚠️ 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 machine.

☑ Use only Genie approved replacement parts.

☑ Unless otherwise specified, perform each maintenance procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Boom in stowed position
  - Turntable rotated with the boom between the non-steer wheels
  - Turntable secured with the turntable rotation lock
  - Key switch in the off position with the key removed
  - Wheels chocked
  - All external AC power disconnected from the machine

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

Each procedure includes a description, safety information 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 Indicate, 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

Maintenance Symbols Legend

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 a cold engine will be required to perform this procedure.
- Indicates that a warm engine will be required to perform this procedure.
- Indicates that dealer service is required to perform this procedure.

Pre-delivery Preparation Report

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

Make copies of the Pre-delivery Preparation Report to use for each inspection. Store completed forms as required.

Maintenance Schedule

There are five types of maintenance inspections that must be performed according to a schedule—daily, quarterly, semi-annually, annual and two years. 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.

<table>
<thead>
<tr>
<th>Inspection</th>
<th>Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily or every 8 hours</td>
<td>A</td>
</tr>
<tr>
<td>Quarterly or every 250 hours</td>
<td>A + B</td>
</tr>
<tr>
<td>Semi-annually or every 500 hours</td>
<td>A + B + C</td>
</tr>
<tr>
<td>Annual or every 1000 hours</td>
<td>A + B + C + D</td>
</tr>
<tr>
<td>Two years or every 2000 hours</td>
<td>A + B + C + D + E</td>
</tr>
</tbody>
</table>

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 for a minimum of 4 years or in compliance with employer, jobsite and governmental regulations and requirements.
Pre-Delivery Preparation

Fundamentals

It is the responsibility of the 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

Make copies of this form to use for each Pre-Delivery Preparation.

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, completed
N = no, unable to complete
R = repaired

Comments

Pre-Delivery Preparation

<table>
<thead>
<tr>
<th></th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-operation inspection completed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance items completed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function tests completed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Model

Serial number

Date

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company
## Maintenance Inspection Report

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

<table>
<thead>
<tr>
<th>Daily or 8 hour Inspection:</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarterly or 250 hour Inspection:</td>
<td>A+B</td>
</tr>
<tr>
<td>Semi-annual or 500 hour Inspection:</td>
<td>A+B+C</td>
</tr>
<tr>
<td>Annual or 1000 hours Inspection:</td>
<td>A+B+C+D</td>
</tr>
<tr>
<td>2 Year or 2000 hour Inspection:</td>
<td>A+B+C+D+E</td>
</tr>
</tbody>
</table>

- 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
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1 Manuals and decals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-2 Pre-operation inspection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-3 Functions tests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-4 Engine maintenance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-5 Filter condition indicator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-6 Oscillate axle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Perform after 40 hours:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-7 30 day service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Perform every 100 hours:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-8 Inspect air filter - GM models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-9 Engine maintenance - GM, Ford and Perkins models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-10 Fuel filter/separater - Diesel models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-11 Check engine RPM - Perkins models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-12 Rotation bearing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Perform after 150 hours:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-13 Drive hub oil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Perform every 200 hours:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-14 Engine maintenance - GM and Ford models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-15 Engine maintenance - Perkins models</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Checklist B
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-1 Inspect battery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-2 Inspect electrical wiring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-3 Exhaust system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-4 Inspect air filter - Ford, Deutz and Perkins models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-5 Oil cooler and fins - Deutz models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-6 Tires and wheels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-7 Brake configuration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-8 Hub oil and torque</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-9 Engine RPM - Ford and Deutz models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-10 Ground control override</td>
<td></td>
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</tr>
<tr>
<td>B-11 Directional valve</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-12 Platform leveling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-13 Engine idle select</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-14 Fuel select - GM and Ford models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-15 Drive brakes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-16 Drive speed - stowed position</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-17 Drive speed - raised position</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-18 Alarm package</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-19 Hydraulic oil analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-20 Fuel and hydraulic tank cap venting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-21 Fuel filter element - Perkins models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-22 Boom extend/retract cables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Perform every 400 hours:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-23 Engine maintenance - Deutz models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-24 Engine maintenance - GM and Ford models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-25 Replace air filter - GM and Ford models</td>
<td></td>
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</tr>
<tr>
<td>B-26 Engine maintenance - Perkins models</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Comments

---

Part No. 77828  S-60 • S-65 • S-60 HC  3 - 5
### MAINTENANCE INSPECTION REPORT

#### Checklist C

<table>
<thead>
<tr>
<th>Item</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-3</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>C-4</td>
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<tr>
<td>C-5</td>
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<td></td>
</tr>
<tr>
<td>C-6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Perform every 600 hours:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-7</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Perform every 800 hours:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Checklist D

<table>
<thead>
<tr>
<th>Item</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-5</td>
<td></td>
<td></td>
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<td>D-6</td>
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<td></td>
</tr>
<tr>
<td>D-8</td>
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<td></td>
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</table>

**Perform every 3000 hours:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Perform every 12,000 hours:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Perform every 10 years:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Y</th>
<th>N</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Replace the Boom Extend/Retract cables**

#### Instructions

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

<table>
<thead>
<tr>
<th>Daily or 8 hour Inspection:</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarterly or 250 hour Inspection:</td>
<td>A+B</td>
</tr>
<tr>
<td>Semi-annual or 500 hour Inspection:</td>
<td>A+B+C</td>
</tr>
<tr>
<td>Annual or 1000 hours Inspection:</td>
<td>A+B+C+D</td>
</tr>
<tr>
<td>2 Year or 2000 hour Inspection:</td>
<td>A+B+C+D+E</td>
</tr>
</tbody>
</table>

- 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

#### Comments
Inspect the Manuals and Decals

Note: Genie specifications require that this procedure be performed daily or every 8 hours, 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 platform. 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 on the platform.

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 are 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 if replacement manuals or decals are needed.
CHECKLIST A PROCEDURES

A-2 Perform Pre-operation Inspection

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

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.
Perform Engine Maintenance

Note: Engine specifications require that this procedure be performed daily or every 8 hours, whichever comes first.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the Deutz FL 2011 Operation Manual (Deutz part number 0297-9929) OR the GM 3.0L Operator Handbook (GM part number 36100007) OR the Ford LRG-425 EFI Operator Handbook (Ford part number FPP 194-302) OR the Ford DSG-423 EFI Operator Handbook (EDI part number 1060020) OR the Perkins 400 Series Operation Manual (Perkins part number TPD 1443S).

Check the High Pressure Hydraulic Filter Condition Indicator

Note: Genie specifications require that this procedure be performed daily or every 8 hours, whichever comes first.

Maintaining the high pressure hydraulic filter in good condition is essential to good system performance and safe machine operation. The filter condition indicator will show when the hydraulic flow is bypassing a clogged filter. If the filter is not frequently checked and replaced, impurities will remain in the hydraulic system and cause component damage.

1. Open the engine side turntable cover.
2. Start the engine from the ground controls.
3. Change the engine idle to high rpm (rabbit symbol).
4. Visually inspect the filter condition indicator.

Result: The filter condition indicator should be operating with the plunger in the green area.

Result: If the indicator displays the plunger in the red area, this indicates that the hydraulic filter is being bypassed and the filter should be replaced. See D-6, Replace the Hydraulic Filters.
A-6
Test the Oscillate Axle
(if equipped)

Note: Genie specifications require that this procedure be performed daily or every 8 hours, whichever comes first.

Proper axle oscillation is essential to safe machine operation. If the axle oscillation system is not operating correctly, the stability of the machine is compromised and it may tip over.

1 Start the engine from the platform controls.
2 Drive the right steer tire up onto a 6 inch / 15 cm block or curb.
   Result: The three remaining tires should stay in firm contact with the ground and the chassis should remain level at all times.
3 Drive the left steer tire up onto a 6 inch / 15 cm block or curb.
   Result: The three remaining tires should stay in firm contact with the ground and the chassis should remain level at all times.
4 Drive both steer tires up onto a 6 inch / 15 cm block or curb.
   Result: The non-steer tires should stay in firm contact with the ground.

Note: If the chassis does not remain level during test, refer to Repair Procedure 7-6, How to Set Up the Oscillate Directional Valve.

A-7
Perform 30 Day Service

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

1 Perform the following maintenance procedures:
   - A-12 Grease the Turntable Bearing and Rotate Gear
   - B-6 Inspect the Tires, Wheels and Lug Nut Torque
   - B-8 Check the Drive Hub Oil Level and Fastener Torque
   - C-1 Perform Engine Maintenance - Deutz Models
   - D-2 Check the Turnable Rotation Bearing Bolts
   - D-6 Replace the Hydraulic Filters
A-8
Inspect the Engine Air Filter - GM Models

Note: Engine specifications require that this procedure be performed weekly or every 40 hours, whichever comes first. Perform this procedure more often if dusty conditions exist.

Maintaining the engine air filter in good condition is essential to good engine performance and service life. Failure to perform this procedure can lead to poor engine performance and component damage.

Note: Perform this procedure with the engine off.

1. Locate the engine air filter assembly.
2. Release the latches from the air cleaner canister end cap. Remove the end cap.
3. Remove the filter element.
4. Clean the inside of the canister and the end cap with a damp cloth.
5. Inspect the air filter element. If needed, blow from the inside out using low pressure dry compressed air, or carefully tap out dust. Replace the filter if needed.
6. Install the filter element.
7. Install the air filter canister end cap and secure the end cap latches.

Note: Be sure the discharge valve is pointing down when the cap is installed.

A-9
Perform Engine Maintenance - GM, Ford and Perkins Models

Note: Engine specifications require that this procedure be performed every 100 hours. Perform this procedure more often if dusty conditions exist or the machine is subjected to extended low idle operation.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the GM 3.0L Operator Handbook (GM part number 36100007) OR the Ford LRG-425 EFI Operator Handbook (Ford part number FPP 194-302) OR the Ford DSG-423 EFI Operator Handbook (EDI part number 1060020) OR the Perkins 400 Series Operation Manual (Perkins part number TPD 1443S).

GM 3.0L Operator Handbook
Genie part number 101095

Ford LRG 425 EFI Operator Handbook
Genie part number 84792

Ford DSG 423 EFI Operator Handbook
Genie part number 119488

Perkins 400 Series Operation Manual
Genie part number 94890
A-10
Inspect the Fuel Filter/Water Separator - Diesel Models

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

Proper maintenance of the fuel filter/water separator is essential for good engine performance. Failure to perform this procedure can lead to poor engine performance and/or hard starting, and continued use may result in component damage. Extremely dirty conditions may require this procedure be performed more often.

Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

Note: Perform this procedure with the engine off.

Perkins Models:

1. Put on protective clothing and eye wear.
2. Open the engine side turntable cover and locate the fuel filter/water separator next to the hydraulic return filter on the bulkhead.
3. Inspect the filter bowl for water buildup.
   - Result: If water is present in the filter bowl continue with steps 4 through 8.
4. Loosen the vent plug located on the fuel filter/water separator head.
5. Loosen the drain plug located at the bottom of the bowl. Allow the water to drain into a suitable container until fuel starts to come out. Immediately tighten the drain plug.
6. Tighten the vent plug.

Note: If the fuel filter/water separator is completely drained, you must prime the fuel filter/water separator before starting the engine. See C-6, Replace The Fuel Filter/Water Separator Element - Perkins Models, for instructions on how to prime the fuel filter/water separator.
7. Clean up any fuel that may have spilled.

8. Start the engine from the ground controls and check the fuel filter/water separator and vent plug for leaks.

**WARNING** Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

**DANGER** Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

Deutz Models:

1. Put on protective clothing and eye wear.

2. Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.

3. Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

**DANGER** Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

5. Loosen the drain plug located at the bottom of the filter. Allow the water to drain into a suitable container until fuel starts to come out. Immediately tighten the drain plug.

Note: Do not completely drain the filter.

6. Clean up any fuel that may have spilled.

7. Start the engine from the ground controls and check the fuel filter/water separator for leaks.

**DANGER** Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

8. Swing the engine back to its original position and install the engine pivot plate retaining fastener.
CHECKLIST A PROCEDURES

A-11
Check and Adjust the Engine RPM - Perkins Models

Note: Engine specifications require that this procedure be performed every 100 hours.

Maintaining the engine rpm at the proper setting for both low and high idle is essential to good engine performance and service life. The machine will not operate properly if the rpm is incorrect and continued use may cause component damage.

Note: This procedure will require two people.

1 Connect a tachometer to the engine. Start the engine from the ground controls and check the rpm. Refer to Section 2, Specifications.

Skip to step 3 if the low idle rpm is correct.

2 Loosen the low idle lock nut and turn the low idle adjustment screw clockwise to increase the rpm, or counterclockwise to decrease the rpm. Tighten the low idle lock nut and confirm the rpm.

3 Move the function enable toggle switch to the high idle (rabbit symbol) position and note the rpm. Refer to Section 2, Specifications.

If high idle rpm is correct, disregard adjustment step 4.

4 Loosen the yoke lock nut, then turn the high idle adjustment nut and solenoid boot counterclockwise to increase the rpm or clockwise to decrease the rpm. Tighten the yoke lock nut and recheck the rpm.

Note: Be sure the solenoid fully retracts when activating high idle.
A-12  
Grease the Turntable Rotation Bearing and Rotate Gear

Note: Genie specifications require that this procedure be performed every 100 hours of operation. Perform this procedure more often if dusty conditions exist.

Frequent application of lubrication to the turntable bearing and rotate gear is essential to good machine performance and service life. Continued use of an improperly greased bearing and gear will result in component damage.

1 Locate the grease fitting on the front turntable cover.
2 Pump grease into the turntable rotation bearing. Rotate the turntable in increments of 4 to 5 inches / 10 to 13 cm at a time and repeat this step until the entire bearing has been greased.
3 Apply grease to each tooth of the drive gear, located under the turntable.

Grease Specification

Chevron Ultra-duty grease, EP NLGI 2 (lithium based) or equivalent

A-13  
Replace the Drive Hub Oil

Note: Manufacturer drive hub specifications require that this one-time procedure be performed after the first 150 hours.

Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the drive hub oil after the first 150 hours of use may cause the machine to perform poorly and continued use may cause component damage.

1 Select the drive hub to be serviced. Drive the machine until one of the two plugs is at the lowest point.
2 Remove both plugs and drain the oil into a suitable container.
3 Drive the machine until one plug is at the top and the other is at 90 degrees.
4 Fill the hub with oil from the top hole until the oil level is even with the bottom of the side plug hole. Refer to Section 2, Specifications.
5 Install the plugs into the drive hub.
6 Repeat this procedure for the other drive hub.
Perform Engine Maintenance - GM and Ford Models

Note: Engine specifications require that this procedure be performed every 200 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the GM 3.0L Operator Handbook (GM part number 36100007) OR the Ford LRG-425 EFI Operator Handbook (Ford part number FPP 194-302) OR the Ford DSG-423 EFI Operator Handbook (EDI part number 1060020).

Perform Engine Maintenance - Perkins Models

Note: Engine specifications require that this procedure be performed every 200 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the Perkins 400 Series Operation Manual (Perkins part number TPD 1443S).

To access the engine:

1. Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
2. Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

**WARNING** Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.
Checklist B Procedures

B-1
Inspect the Battery

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

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

**WARNING**
Electrocution/burn hazard. Contact with hot or live 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. Put on protective clothing and eye wear.
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 hold downs and cable connections are tight.
4. Be sure that the battery separator wire connections are tight (if equipped).
5. Fully charge the battery(s) and allow the battery(s) to rest at least 6 hours.
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 or higher. The battery is fully charged. Proceed to step 11.

   Result: One or more battery cells display a specific gravity of 1.217 or below. Proceed to step 8.
8. Perform an equalizing charge OR fully charge the battery(s) and allow the battery(s) 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.
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 or greater. The battery is fully charged. Proceed to step 13.

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.

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**

Note: Genie specifications require 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 hot or live circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

1 Open the engine side turntable cover.

2 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.

3 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

**WARNING** Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.
4 Inspect the following areas for burnt, chafed, corroded and loose wires:
   - Engine wiring harness
   - Hydraulic manifold wiring
5 Open the ground controls side turntable cover.
6 Inspect the following areas for burnt, chafed, corroded and loose wires:
   - Inside of the ground control box
   - Hydraulic manifold wiring
7 Inspect for a liberal coating of dielectric grease at the following location:
   - All wire harnesses connectors to the ground control box
8 Start the engine from the ground controls and raise the boom above the turntable covers.
9 Inspect the turntable area for burnt, chafed and pinched cables.
10 Lower the boom to the stowed position and turn the engine off.
11 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:
   - Cable track on the primary boom
   - Cables on the primary, and jib booms
   - Jib boom/Platform rotate manifold
   - Inside of the platform control box
12 Inspect for a liberal coating of dielectric grease at the following location:
   - All wire harnesses connectors to the platform control box
13 Swing the engine back to its original position and install the engine tray retaining fastener.

B-3
Check the Exhaust System

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

Maintaining the exhaust system is essential to good engine performance and service life. Running the engine with a damaged or leaking exhaust system can cause component damage and unsafe operating conditions.

**WARNING** Bodily injury hazard. Do not inspect while the engine is running. Remove the key to secure from operation.

**CAUTION** Burn hazard. Beware of hot engine components. Contact with hot engine components may result in severe burns.

1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

**WARNING** Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

3 Be sure that all nuts and bolts are tight.
4 Inspect all welds for cracks.
5 Inspect for exhaust leaks; i.e., carbon buildup around seams and joints.
6 Swing the engine back to its original position and install the engine tray retaining fastener.
B-4
Inspect the Engine Air Filter - Ford, Deutz and Perkins Models

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

Maintaining the engine air filter in good condition is essential to good engine performance and service life. Failure to perform this procedure can lead to poor engine performance and component damage.

Note: Perform this procedure with the engine off.

1. Locate the engine air filter assembly.
2. Release the latches from the air cleaner canister end cap. Remove the end cap.
3. Remove the filter element.
4. Clean the inside of the canister and the end cap with a damp cloth.
5. Inspect the air filter element. If needed, blow from the inside out using low pressure dry compressed air, or carefully tap out dust. Replace the filter if needed.
6. Install the filter element.
7. Install the air filter canister end cap and secure the end cap latches.

Note: Be sure the discharge valve is pointing down when the cap is installed.

B-5
Check the Oil Cooler and Cooling Fins - Deutz Models

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

Maintaining the oil cooler in good condition is essential for good engine performance. Operating a machine with a damaged oil cooler may result in engine damage. Also, restricting air flow through the oil cooler will affect the performance of the cooling system.

Bodily injury hazard. Do not inspect while the engine is running. Remove the key to secure from operation.

Burn hazard. Beware of hot engine components. Contact with hot engine components may result in severe burns.

Oil cooler:

1. Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
2. Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.
3 Remove the fasteners from the engine side cover, then remove the cover.

4 Inspect the oil cooler for leaks and physical damage.

5 Clean the oil cooler of debris and foreign material.

**Cooling and fan blower fins:**

6 Inspect the fan blower fins for physical damage.

7 Clean the fan blower fins of debris and foreign material.

8 Inspect the head cooling passages and fins for physical damage or foreign material, using a flashlight.

9 Clean the cylinder head cooling passages of debris and foreign material.

10 Install the engine side cover.

11 Swing the engine back to its original position and install the engine pivot plate retaining fastener.

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**B-6 Inspect the Tires, Wheels and Lug Nut Torque**

Note: Genie specifications require 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.

**WARNING** Bodily injury hazard. An over-inflated tire can explode and could cause death or serious injury.

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

Note: The tires on some machines are foam-filled and do not need air added to them.

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

2 Check each wheel for damage, bends and cracked welds.

3 Check each lug nut for proper torque. Refer to Section 2, *Specifications*.

4 Check the pressure in each air-filled tire. Refer to Section 2, *Specifications*.
Confirm the Proper Brake Configuration

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

Proper brake configuration is essential to safe operation and good machine performance. Hydrostatic brakes and hydraulically-released, spring-applied individual wheel brakes can appear to operate normally when they are actually not fully operational.

1 Check each drive hub disconnect cap to be sure it is in the engaged position.

Check the Drive Hub Oil Level and Fastener Torque

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

Failure to maintain proper drive hub oil levels may cause the machine to perform poorly and continued use may cause component damage.

1 Drive the machine to rotate the hub until the plugs are located one on top and the other at 90 degrees.

2 Remove the plug located at 90 degrees and check the oil level.

○ Result: The oil level should be even with the bottom of the side plug hole.

3 If necessary, remove the top plug and add oil until the oil level is even with the bottom of the side plug hole.

4 Install the plug(s) into the drive hub.

5 Check the torque of the drive hub mounting bolts. Refer to Section 2, Specifications.

6 Repeat this procedure for each drive hub.
Turntable rotate drive hub

1. Remove the plug located on the side of the hub and check the oil level.

   - **Result:** The oil level should be even with the bottom of the plug hole.

2. If necessary, add oil until the oil level is even with the bottom of the plug hole.

3. Apply pipe thread sealant to the plug, and install the plug in the drive hub.

4. Check the torque of the turntable drive hub mounting fasteners. Refer to Section 2, *Specifications*. 

   ![Diagram of turntable rotate drive hub with labels a and b:]
   - a: drain/fill plug
   - b: mounting fasteners
Check and Adjust the Engine RPM - Ford and Deutz Models

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

Maintaining the engine rpm at the proper setting for both low and high idle is essential to good engine performance and service life. The machine will not operate properly if the rpm is incorrect and continued use may cause component damage.

**Ford models:**

Note: The engine rpm is controlled by the ECM and can only be adjusted by re-programming the ECM. If rpm adjustment or service is required, please contact Genie Service Department OR your local Ford dealer.

**Deutz models:**

Note: This procedure will require two people.

1. Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.

2. Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

   **WARNING** Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

3. Connect a tachometer to the engine, and then start the engine from the ground controls and check the rpm. Refer to Section 2, Specifications.

   **Skip to step 5 if the low idle rpm is correct.**

4. Loosen the low idle lock nut, then turn the low idle adjustment screw clockwise to increase the rpm or counterclockwise to decrease the rpm. Tighten the low idle lock nut and recheck the rpm.

   a. solenoid boot
   b. high idle adjustment nut
   c. yoke lock nut
   d. yoke
   e. low idle adjustment screw
   f. low idle lock nut
5 Move the function enable/rpm select toggle switch to the high idle (rabbit symbol) position at the ground controls and check the rpm. Refer to Section 2, Specifications.

If high idle rpm is correct, disregard adjustment step 6.

6 Loosen the yoke lock nut, then turn the high idle adjustment nut and solenoid boot counterclockwise to increase the rpm or clockwise to decrease the rpm. Tighten the yoke lock nut and recheck the rpm.

Note: Be sure the solenoid fully retracts when activating high idle.

7 Swing the engine back to its original position and install the engine pivot plate retaining fastener.

B-10
Test the Ground Control Override

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

A properly functioning ground control override is essential to safe machine operation. The ground control override function is intended to allow ground personnel to operate the machine from the ground controls whether or not the Emergency Stop button on the platform controls is in the on or off position. This function is particularly useful if the operator at the platform controls cannot return the boom to the stowed position.

1 Push in the platform red Emergency Stop button to the off position.

2 Start the engine from the ground controls.

3 At the ground controls, operate each boom function through a partial cycle.

○ Result: All boom functions should operate.
B-11
Check the Oscillate Directional Valve Linkage

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

Note: Perform this test only on models equipped with a oscillating axle.

Proper axle oscillation is essential to safe machine operation. If the oscillate directional valve linkage is not operating correctly, the stability of the machine is compromised and it may tip over.

1. Remove the drive chassis cover from the non-steer end of the machine.
2. Locate the oscillate directional valve inside of the non-steer axle and inspect the linkage for the following:
   - Lock nut is tight against yoke
   - Yoke clevis pins are installed
   - Cotter pins are installed through clevis pins
   - Linkage is properly attached to directional valve

B-12
Test the Platform Self-leveling

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

Automatic platform self-leveling throughout the full cycle of boom raising and lowering is essential for safe machine operation. The platform is maintained at level by the platform leveling slave cylinder which operates in a closed loop hydraulic circuit with the master cylinder located at the base of the boom.

A platform self-leveling failure creates an unsafe working condition for platform and ground personnel.

1. Start the engine from the ground controls and lower the boom into the stowed position.
2. Hold the function enable/rpm select toggle switch to either side and adjust the platform to a level position using the platform level toggle switch.
3. Raise and lower the primary boom through a full cycle.

○ Result: The platform should remain level at all times to within ±5 degrees.
B-13
Test the Engine Idle Select

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

A properly operating engine idle select switch is essential to good engine performance and safe machine operation. There are two settings.

**Foot switch activated low idle** (turtle symbol) allows the operator to control individual boom functions.

**Foot switch activated high idle** (rabbit symbol) should be used for normal machine operation. This selection activates high idle only when the foot switch is pressed down.

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

2. Start the engine from the ground controls then move and hold the function enable/rpm select toggle switch to the high idle (rabbit symbol).
   - Result: The engine should change to high idle.
3. Release the function enable/rpm select toggle switch.
   - Result: The engine should return to low idle.
4. Turn the key switch to platform controls.
5. Move the engine idle control switch to foot switch activated high idle (rabbit and foot switch symbol).
   - Result: The engine should **not** change to high idle.
6. Press down the foot switch.
   - Result: The engine should change to high idle.
7. Move the engine idle control switch to foot switch activated low idle (turtle symbol).
   - Result: The engine should change to low idle.
CHECKLIST B PROCEDURES

B-14
Test the Fuel Select Operation - GM and Ford Models

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

The ability to select and switch between gasoline and LPG fuels as needed is essential to safe machine operation. A fuel selection can be made when the engine is running or not. Switching malfunctions and/or the failure of the engine to start and run properly in both fuel modes and through all idle speeds can indicate fuel system problems that could develop into a hazardous situation.

Note: Perform this test after checking the gasoline and LPG fuel levels, and warming the engine to normal operating temperature.

1 At the platform controls, move the fuel select switch to gasoline and then move the engine idle control switch to foot switch activated high idle (rabbit and foot switch symbol).

2 Start the engine from the platform controls and allow it to run at low idle.

3 Press down the foot switch to allow the engine to run at high idle.

Result: The engine should start promptly and operate smoothly in low and high idle.

4 Release the foot switch and shut the engine off by pushing in the red Emergency Stop button in to the off position.

5 Move the fuel select switch to LPG.

6 Restart the engine and allow it to run at low idle.

7 Press down the foot switch to allow the engine to run at high idle.

Result: The engine should start promptly and operate smoothly in low and high idle.

Note: The engine may hesitate momentarily and then continue to run on the selected fuel if the fuel source is switched while the engine is running.
B-15 Test the Drive Brakes

Note: Genie specifications require 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. Hydrostatic brakes and hydraulically-released individual wheel brakes can appear to operate normally when they are actually not fully operational.

Collision hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. See B-7, Confirm the Proper Brake Configuration.

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

1 Mark a test line on the ground for reference.

2 Start the engine from the platform controls.

3 Move the engine idle control switch to foot switch activated high idle (rabbit and foot switch symbol), then lower the boom into the stowed position.

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

5 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.

6 Measure the distance between the test line and your machine reference point. Refer to Section 2, Specifications.

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

B-16
Test the Drive Speed - Stowed Position

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

Proper drive function movement 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: Select a test area that is firm, level and free of obstructions.

1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.
2 Start the engine from the platform controls.
3 Move the engine idle control switch to foot switch activated high idle (rabbit and foot switch symbol), then lower the boom into the stowed position.
4 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.
5 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.
6 Continue at full speed and note the time when the machine reference point crosses the finish line. Refer to Section 2, Specifications.

B-17
Test the Drive Speed - Raised orExtended Position

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

Proper drive function movement 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: Select a test area that is firm, level and free of obstructions.

1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.
2 Start the engine from the platform controls.
3 Move the engine idle select switch to foot switch activated high idle (rabbit and foot switch symbol).
4 Press down the foot switch and raise the primary boom above horizontal.
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 Section 2, Specifications.

8 Lower the boom to the stowed position and extend the boom 1 foot / 30 cm.

9 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.

10 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.

11 Continue at top speed and note the time when the machine reference point crosses the finish line. Refer to Section 2, Specifications.

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**B-18**

**Test the Alarm Package - Optional Equipment**

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

The alarm package includes:
- Travel alarm
- Descent alarm
- Flashing beacon

Alarms and a beacon are installed to alert operators and ground personnel of machine proximity and motion. The alarm package is installed on the turntable covers.

Note: The alarms and beacon will operate with the engine running or not running.

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

○ Result: The flashing beacon should be on and flashing.

2 Move the function enable/rpm select toggle switch to either side and activate the boom toggle switch in the down position, hold for a moment and then release it.

○ Result: The descent alarm should sound when the switch is held down.
3 S-65: Move the function enable/rpm select toggle switch to either side and activate the jib boom toggle switch in the down position, hold for a moment and then release it.

☒ Result: The descent alarm should sound when the switch is held down.

4 Turn the key switch to platform control.

☒ Result: The flashing beacon should be on and flashing.

5 Press down the foot switch. Move the boom control handle to the down position, hold for a moment and then release it.

☒ Result: The descent alarm should sound when the control handle is held down.

6 S-65: Press down the foot switch. Move the jib boom toggle switch to the down position, hold for a moment and then release it.

☒ Result: The descent alarm should sound when the control handle is held down.

7 Press down the foot switch. Move the drive control handle off center, hold for a moment and then release it. Move the drive control handle off center in the opposite direction, hold for a moment and then release it.

☒ Result: The travel alarm should sound when the drive control handle is moved off center in either direction.

---

B-19

Perform Hydraulic Oil Analysis

Note: 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 Section 2, 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. If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test. See E-1, Test or Replace the Hydraulic Oil.
B-20
Inspect the Fuel and Hydraulic Tank Cap Venting Systems

Note: Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first. Perform this procedure more often if dusty conditions exist.

Free-breathing fuel and hydraulic tank caps are essential for good machine performance and service life. A dirty or clogged tank cap may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the caps be inspected more often.

Note: Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

Note: Perform this procedure with the engine off.

1 Remove the cap from the fuel tank.
2 Check for proper venting.
   ☑ Result: Air passes through the fuel tank cap. Proceed to step 4.
   ✗ Result: If air does not pass through the cap, clean or replace the cap. Proceed to step 3.

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

3 Using a mild solvent, carefully wash the cap venting system. Dry using low pressure compressed air. Repeat this procedure beginning with step 2.
4 Install the fuel tank cap onto the fuel tank.
5 Remove the breather cap from the hydraulic tank.
6 Check for proper venting.
   ☑ Result: Air passes through the fuel tank cap. Proceed to step 8.
   ✗ Result: If air does not pass through the cap, clean or replace the cap. Proceed to step 7.

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

7 Using a mild solvent, carefully wash the cap venting system. Dry using low pressure compressed air. Repeat this procedure beginning with step 6.
8 Install the breather cap onto the hydraulic tank.
CHECKLIST B PROCEDURES

B-21
Replace the Fuel Filter Element - Perkins Models

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

Replacing the diesel fuel filter element is essential for good engine performance and service life. A dirty or clogged filter may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may required that the filter be replaced more often.

Note: Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

Note: Perform this procedure with the engine off.

1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

3 Thoroughly clean the outside surfaces of the fuel filter assembly.
4 Place a suitable container under the fuel filter element.
5 Disconnect and plug the fuel line from the fuel pump to the fuel filter element.
6 Remove the fuel filter element with a filter wrench.
7 Apply a thin layer of fuel to the new fuel filter element O-ring.
8 Install the new fuel filter element and tighten it securely by hand. Clean up any fuel that may have spilled during the installation procedure.
9 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter housing.
Bleed the fuel system:

10 Loosen the vent plug on top of the fuel injection pump.

11 Operate the priming lever or priming bulb (if equipped) of the fuel lift pump until fuel, free from air, comes from the vent plug. Tighten the vent plug.

12 Clean up any fuel that may have spilled during this procedure.

13 Operate the starter motor for intervals of 15 seconds until the engine starts.

14 Swing the engine back to its original position and install the engine pivot plate retaining fastener.

Note: It is important to allow the starter motor to cool for 30 seconds between each 15 second interval of operation.

Note: If the engine runs correctly for a short time and then stops or runs roughly, check for air in the fuel system. If there is air in the fuel system, there is probably a leak in the low pressure side of the system.

CHECKLIST B PROCEDURES

B-22
Inspect the Boom Extend/Retract Cables

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

The boom extend/retract cables are responsible for the extension and retraction of the number 3 boom tube. Inspecting for foreign objects, damage and/or improper adjustment of the boom extend/retract cables and related components on a regular basis is essential to good machine performance and safe machine operation. The boom extend and retract functions should operate smoothly and be free of hesitation, jerking and unusual noise.

1 Raise the boom to horizontal and fully extend the boom.

2 After the boom is fully extended, lower the boom until the platform is at chest height. Turn the machine off.

3 S-60 and S-65: Remove the boom end cover retaining fasteners and remove the cover.

S-60 HC: Remove the boom end cover from the pivot end of the boom while guiding the small cable from the string potentiometer out of the slot of the cover. Rest the cover and string potentiometer on the counterweight.

Component damage hazard. The cable from the string potentiometer can become damaged if it is kinked or pinched.
CHECKLIST B PROCEDURES

4 Remove the retaining fasteners from the access covers located on the side of the boom at the platform end of the machine. Remove the covers.

5 Visually inspect the cables and components through both inspection holes for the following:
   - Frayed or broken wire strands
   - Kinks in the cables
   - Corrosion
   - Paint or foreign materials on the cable
   - Split or cracked cable ends
   - Cables are on all pulleys
   - Extend cable break limit switch arm is centered in the pivot plate
   - Cables have equal tension
   - Cables at end of adjustment range
   - No broken or damaged pulleys
   - No unusual or excessive pulley wear
   - All fasteners in place and secure
   - **S-60 HC**: String potentiometer cable break limit switch arm is securely attached to end of cable

   Note: A flashlight and inspection mirror may be necessary to thoroughly inspect the above items.

   Note: A pulley groove gauge should be used to check the condition of the pulleys.

6 **S-60 and S-65**: Install the cover at the pivot end of the boom.

   **S-60 HC**: Install the boom end cover at the pivot end of the boom while guiding the small cable from the string potentiometer into the slot of the cover.

   **NOTICE** Component damage hazard. The cable from the string potentiometer can become damaged if it is kinked or pinched.

   Note: Be sure the cable from the string potentiometer is correctly routed around the small pulley before installing the boom end cover.

7 Install the access panels on the sides of the boom.

8 Start the engine from the ground controls and fully retract and lower the boom to the stowed position.

9 Turn the key switch to the platform controls.

10 Extend the boom approximately 2 feet / 0.6 m.

11 Retract the boom. While retracting the boom, visually inspect the number 2 and number 3 boom tubes.

   • Result: The number 2 boom tube should not move more than 1/2 inch / 13 mm before the number 3 boom tube begins to retract.

   Note: If the number 2 boom tube moves more than 1/2 inch / 13 mm before the number 3 boom tube begins to retract, the boom extend/retract cables need to be adjusted. See Repair Procedure 4-5, *How to Adjust the Boom Extend/Retract Cables.*
Perform Engine Maintenance - 
Deutz Models

Note: Engine specifications require that this procedure be performed every 400 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the Deutz FL 2011 Operation Manual (Deutz part number 0297-9929).

Deutz FL 2011 Operation Manual
Genie part number 84794

To access the engine:

1. Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.

2. Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

**WARNING** Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

Perform Engine Maintenance - 
GM and Ford Models

Note: Engine specifications require that this procedure be performed every 400 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the GM 3.0L Operator Handbook (GM part number 36100007) OR the Ford LRG-425 EFI Operator Handbook (Ford part number FPP 194-302) OR the Ford DSG-423 EFI Operator Handbook (EDI part number 1060020).

GM 3.0L Operator Handbook
Genie part number 101095

Ford LRG 425 EFI Operator Handbook
Genie part number 84792

Ford DSG 423 EFI Operator Handbook
Genie part number 119488
Replace the Engine Air Filter Element - GM and Ford Models

Note: Engine specifications require that this procedure be performed every 400 hours.

Maintaining the engine air filter in good condition is essential to good engine performance and service life. Failure to perform this procedure can lead to poor engine performance and component damage.

Note: Perform this procedure with the engine off.

1. Locate the engine air filter assembly.
2. Release the latches from the air cleaner canister end cap. Remove the end cap.
3. Remove and discard the filter element.
4. Clean the inside of the canister and the end cap with a damp cloth.
5. Install the new filter element.
6. Install the air filter canister end cap and secure the end cap latches.

Note: Be sure the discharge valve is pointing down when the cap is installed.

Perform Engine Maintenance - Perkins Models

Note: Engine specifications require that this procedure be performed every 400 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the Perkins 400 Series Operation Manual (Perkins part number TPD 1443S).

Perkins 400 Series Operation Manual
Genie part number 94890

To access the engine:

1. Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
2. Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

**WARNING** Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.
Checklist C Procedures

C-1  
Perform Engine Maintenance - Deutz Models

Note: Engine specifications require that this procedure be performed every 500 hours.

Proper engine maintenance, following the engine manufacturer’s maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the Deutz FL 2011 Operation Manual (Deutz part number 0297-9929).

Deutz FL 2011 Operation Manual  
Genie part number 84794

To access the engine:

1. Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.

2. Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

WARNING  
Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

C-2  
Grease the Platform Overload Mechanism, S-60 and S-65 (if equipped)

Note: Genie specifications require that this procedure be performed every 500 hours or six months, whichever comes first. Perform this procedure more often if dusty conditions exist.

Application of lubrication to the platform overload mechanism is essential to safe machine operation. Continued use of an improperly greased platform overload mechanism could result in the system not sensing an overloaded platform condition and will result in component damage.

1. Locate the grease fittings on each pivot pin of the platform overload assembly.

2. Thoroughly pump grease into each grease fitting.

Grease Specification

Chevron Ultra-duty grease, EP NLGI 2 (lithium based) or equivalent
Test the Platform Overload System, S-60 and S-65 (if equipped)

Note: Genie specifications require that this procedure be performed every 500 hours or six months, whichever comes first.

Testing 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.

The platform support subassembly utilizes two load support arms that are opposed in a full parallelogram link. This isolates platform loads into a shear or vertical state, which translates into a compressive load. A spring in the parallelogram link supports this purely compressive load regardless of where the load is placed in the platform.

As weight is added to the platform, the spring will compress until, when the platform is overloaded, the lower arm contacts a limit switch and thereby activating the overload signal. When adjusted correctly, the platform overload system will deactivate normal boom operation at platform capacity.

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

1 Remove all weight, tools and equipment from the platform.

Note: Failure to remove all weight, tools and accessories from the platform will result in an inaccurate test.

2 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls. Start the engine from the ground controls and level the platform. Do not turn the engine off.

3 Determine the maximum platform capacity. Refer to the machine serial plate.
4 Using a suitable lifting device, place a test weight equal to that of the available capacity one of the locations shown. Refer to Illustration 1.

☐ Result: The platform overload indicator lights should be off at both the ground and platform controls and the alarm should not sound.

☒ Result: The platform overload indicator lights are on and the alarm is sounding. Calibrate the platform overload system. Refer to Repair Procedure 2-3, *How to Calibrate the Platform Overload System, S-60 and S-65 (if equipped).*

5 Carefully move the test weight to each remaining location. Refer to Illustration 1.

☐ Result: The platform overload indicator lights should be off at both the ground and platform controls and the alarm should not sound.

☒ Result: The platform overload indicator lights are on and the alarm is sounding. Calibrate the platform overload system. Refer to Repair Procedure 2-3, *How to Calibrate the Platform Overload System, S-60 and S-65 (if equipped).*

6 Using a suitable lifting device, place an additional 50 lbs / 23 kg of weight onto the platform.

☐ Result: The alarm should sound. The platform overload indicator lights should be flashing at both the ground and platform controls.

☒ Result: The alarm does not sound and the platform overload indicator lights are not flashing. Calibrate the platform overload system. Refer to Repair Procedure 2-3, *How to Calibrate the Platform Overload System, S-60 and S-65 (if equipped).*

Note: There may be a 2 second delay before the overload indicator lights flash and the alarm sounds.

7 Carefully move the test weights to each remaining location on the platform. Refer to Illustration 1.

☐ Result: The alarm should sound. The platform overload indicator lights should be flashing at both the ground and platform controls.

☒ Result: The alarm does not sound and the platform overload indicator lights are not flashing. Calibrate the platform overload system. Refer to Repair Procedure 2-3, *How to Calibrate the Platform Overload System, S-60 and S-65 (if equipped).*

Note: There may be a 2 second delay before the overload indicator lights flash and the alarm sounds.
CHECKLIST C PROCEDURES

8 Test all machine functions from the platform controls.

☐ Result: All platform control functions should not operate.

9 Turn the key switch to ground control.

10 Test all machine functions from the ground controls.

☐ Result: All ground control functions should not operate.

11 Activate the auxiliary power toggle switch.

Note: The engine will turn off when the auxiliary power is activated.

12 Using auxiliary power, test all machine functions from the ground controls.

☐ Result: All ground control functions should operate.

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

☐ Result: The platform overload indicator lights should turn off at both the ground and platform controls and the alarm should not sound.

Note: There may be an 2 second delay before the overload indicator lights and alarm turn off.

14 Start the engine and test all machine functions from the ground controls.

☐ Result: All ground control functions should operate normally.

15 Turn the key switch to platform control.

16 Test all machine functions from the platform controls.

☐ Result: All platform control functions should operate.

Note: If the platform overload system is not operating properly, Refer to Repair Procedure 2-3, How to Calibrate the Platform Overload System, S-60 and S-65 (if equipped).

17 Using a suitable lifting device, remove the remaining test weights from the platform.
C-4
Test the Platform Load Sense System, S-60 HC

Note: Genie specifications require that this procedure be performed every 500 hours or six months, whichever comes first.

Testing the platform load sense system regularly is essential to safe machine operation. Continued use of an improperly operating platform load sense 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.

The platform support subassembly utilizes two load support arms that are opposed in a full parallelogram link. This isolates platform loads into a shear or vertical state, which translates into a compressive load. A spring in the parallelogram link supports this purely compressive load regardless of where the load is placed in the platform.

As weight is added to the platform, the spring will compress until, when the platform is overloaded, the lower arm contacts a limit switch and thereby activating the overload signal. When adjusted correctly, the platform overload system will deactivate normal boom operation at platform capacity.

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

Note: Be sure that no load sense system faults exist prior to performing this procedure.

Note: On a properly functioning machine, the LEDs on both control modules, located next to the ground control box, should be off.

Note: If your machine is equipped with any platform accessories or options, they must be removed from the platform OR the weights of those options or accessories must be subtracted from the test weights to accurately calibrate the platform load sense system.

1. Remove all weight, tools and equipment from the platform.

2. Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.
3 Start the engine from the ground controls. Do not turn the engine off.

4 Using a suitable lifting device, place an appropriate test weight equal to 750 lbs / 340.2 kg on to the center of the platform floor.

☐ Result: The amber restricted range of motion LED at the platform controls should come on and the engine should continue to run.

☒ Result: If the amber restricted range of motion LED at the platform controls does not come on, there is no alarm and the engine continues to run, the platform load sense system needs to be calibrated. See Repair Procedure 2-4, How to Calibrate the Platform Load Sense System, S-60 HC.

5 Using a suitable lifting device, place an additional appropriate test weight equal to 501 to 510 lbs / 227.2 to 231.3 kg on to the center of the platform floor. The total weight in the platform must equal 1251 to 1260 lbs / 567.4 to 571.5 kg.

☐ Result: The alarm should sound and the engine should turn off. The platform overload indicator light should be on at both the ground and platform controls. The platform load sense system is functioning properly.

☒ Result: If the alarm does not sound, the engine does not turn off or the platform indicator light does not come on at both the ground and platform controls, see Repair Procedure 2-4, How to Calibrate the Platform Load Sense System, S-60 HC.

Note: The weight in the platform must be 1200 lbs / 544.3 or less before the engine can be restarted.

6 Using a suitable lifting device, remove the test weights from the platform.

7 Push in the ground controls red Emergency Stop button to the off position, then pull the red Emergency Stop button out to the on position to reset the control system.

Recovery process from the platform controls:

Note: This procedure only operates if the platform is overloaded or enters the safety envelope.

1 With the key switch turned to platform controls, activate the auxiliary power toggle switch.

☐ Result: The boom will automatically retract until it is in the unrestricted zone.

2 Push in the platform controls red Emergency Stop button to the off position, then pull out the red Emergency Stop button to the on position to reset the system.

3 Start the engine and lower the boom to the stowed position.

Recovery process from the ground controls:

Note: This procedure only operates if the platform is overloaded or enters the safety envelope.

1 Turn the key switch to ground controls.

2 Locate the recovery toggle switch on the side of the ground control box. Activate the recovery toggle switch and the auxiliary power toggle switch at the same time.

☐ Result: The boom will automatically fully retract and then lower to the stowed position.

3 Push in the ground controls red Emergency Stop button to the off position, then pull out the red Emergency Stop button to the on position to reset the system.
C-5
Replace the Fuel Filter/Water Separator - Perkins Models

Note: Genie specifications require that this procedure be performed every 500 hours or six months, whichever comes first.

Regular replacement of the fuel filter/water separator is essential for good engine performance. Failure to perform this procedure can lead to poor engine performance and/or hard starting, and continued use may result in component damage. Extremely dirty conditions may require this procedure be performed more often.

**DANGER**
Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

Note: Perform this procedure with the engine off.

1. Open the engine side turntable cover and locate the fuel filter/water separator on the bulkhead.
2. Disconnect and plug the fuel supply hose from the fuel tank to the fuel filter/water separator.
3. Loosen the vent plug located on the fuel filter/water separator head.
4. Place a suitable container under the filter bowl. Loosen the drain plug located at the bottom of the bowl. Completely drain the fuel.
5. Rotate the filter bowl counterclockwise and remove it from the element.
6. Rotate the filter element counterclockwise and remove it from the filter head.
7. Install the bowl onto the new filter element.
8. Apply a thin layer of oil onto the element gasket. Install the filter/bowl assembly onto the filter head. Tighten the drain plug and vent plug.
CHECKLIST C PROCEDURES

9 Clean up any diesel fuel that may have spilled during the installation procedure.
10 Install the fuel supply hose from the fuel tank to the fuel filter/water separator. Tighten the clamp.
11 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter housing.

Bleed the system:

12 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
13 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

**WARNING** Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

14 Loosen the vent plug on top of the fuel injection pump.
15 Operate the priming lever or priming bulb (if equipped) of the fuel lift pump until fuel, free from air, comes from the vent plug. Tighten the vent plug.
16 Clean up any fuel that may have spilled during this procedure.
17 Operate the starter motor for intervals of 15 seconds until the engine starts.

Note: It is important to allow the starter motor to cool for 30 seconds between each 15 second interval of operation.

Note: If the engine runs correctly for a short time and then stops or runs roughly, check for air in the fuel system. If there is air in the fuel system, there is probably a leak in the low pressure side of the system.

18 Swing the engine back to its original position and install the engine pivot plate retaining fastener.
C-6
Replace the Engine Air Filter Element - Deutz and Perkins Models

Note: Engine specifications require that this procedure be performed every 500 hours or every six months, whichever comes first.

Maintaining the engine air filter in good condition is essential to good engine performance and service life. Failure to perform this procedure can lead to poor engine performance and component damage.

Note: Perform this procedure with the engine off.

1. Locate the engine air filter assembly.
2. Release the latches from the air cleaner canister end cap. Remove the end cap.
3. Remove and discard the filter element.
4. Clean the inside of the canister and the end cap with a damp cloth.
5. Install the new filter element.
6. Install the air filter canister end cap and secure the end cap latches.

C-7
Perform Engine Maintenance - Perkins Models

Note: Engine specifications require that this procedure be performed every 600 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the Perkins 400 Series Operation Manual (Perkins part number TPD 1443S).

Perkins 400 Series Operation Manual
Genie part number 94890
C-8
Perform Engine Maintenance - GM and Ford Models

Note: Engine specifications require that this procedure be performed every 800 hours.

Proper engine maintenance, following the engine manufacturer’s maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the
*GM 3.0L Operator Handbook* (GM part number 36100007) OR the
*Ford LRG-425 EFI Operator Handbook* (Ford part number FPP 194-302) OR the
*Ford DSG-423 EFI Operator Handbook* (EDI part number 1060020).

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Checklist D Procedures

D-1
Check the Boom Wear Pads

Note: Genie specifications require that this procedure be performed every 1000 hours or annually, whichever comes first.

Maintaining the boom wear pads in good condition is essential to safe machine operation. Wear pads are placed on boom tube surfaces to provide a low friction, replaceable wear pad between moving parts. Improperly shimmed wear pads or continued use of worn out wear pads may result in component damage and unsafe operating conditions.

1 Start the engine from the ground controls.

2 Raise the end of the primary boom to a comfortable working height (chest high), then extend the boom 1 foot / 30 cm.

3 Measure each wear pad. Replace the wear pad once it reaches the minimum allowable thickness. If the wear pad is still within specification, shim as necessary to obtain minimum clearance with zero binding.

4 Extend and retract the primary boom through the entire range of motion to check for tight spots that may cause binding or scraping of the boom.

Note: Always maintain squareness between the outer and inner boom tubes.

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<tr>
<th>Wear pad specifications</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top and side wear pads (platform end of boom)</td>
<td>1/2 inch / 12.7 mm</td>
</tr>
<tr>
<td>Bottom wear pads (platform end of boom)</td>
<td>5/8 inch / 15.9 mm</td>
</tr>
<tr>
<td>Top and side wear pads (pivot end of boom)</td>
<td>1/2 inch / 12.7 mm</td>
</tr>
<tr>
<td>Bottom wear pads (pivot end of boom)</td>
<td>5/8 inch / 15.9 mm</td>
</tr>
</tbody>
</table>
CHECKLIST  D  PROCEDURES

D-2
Check the Turntable Rotation Bearing Bolts

Note: Genie specifications require that this procedure be performed every 1000 hours or annually, whichever comes first.

Maintaining proper torque on the turntable bearing bolts is essential to safe machine operation. Improper bolt torque could result in an unsafe operating condition and component damage.

1. Raise the boom and place a safety chock on the lift cylinder rod. Carefully lower the boom onto the lift cylinder safety chock.

WARNING Crushing hazard. Keep hands away from cylinders and all moving parts when lowering the boom.

Note: The lift cylinder safety chock is available through Genie (Genie part number 75097).

2. Turn the engine off.

3. Be sure that each turntable mounting bolt is torqued in sequence to specifications. Refer to Section 2, Specifications.

4. Start the engine form the ground controls.

5. Raise the boom and remove the safety chock.

6. Lower the boom to the stowed position.

7. Remove drive chassis covers from both the steer end and the non-steer end of the machine.

8. Check to ensure that each lower bearing mounting bolt under the drive chassis is torqued in sequence to specifications. Refer to Section 2, Specifications.
D-3
Inspect for Turntable Bearing Wear

Note: Genie specifications require that this procedure be performed every 1000 hours or annually, whichever comes first.

Periodic inspection of turntable bearing wear is essential to safe machine operation, good machine performance and service life. Continued use of a worn turntable bearing could create an unsafe operating condition, resulting in death or serious injury and component damage.

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

1 Grease the turntable bearing. See A-12, Grease the Turntable Bearing and Rotate Gear.

2 Torque the turntable bearing bolts to specification. See D-2, Check the Turntable Rotation Bearing Bolts.

3 Start the machine from the ground controls and raise the boom to full height. Do not extend the boom.

4 Place a dial indicator between the drive chassis and the turntable at a point that is directly under, or inline with, the boom and no more than 1 inch / 2.5 cm from the bearing.

Note: To obtain an accurate measurement, place the dial indicator no more than 1 inch / 2.5 cm from the turntable rotation bearing.

5 At the dial indicator, adjust it to "zero" the indicator.

6 Fully extend the boom and lower to a horizontal position.

7 Note the reading on the dial indicator.

○ Result: The measurement is less than 0.063 inch / 1.6 mm. The bearing is good.

☒ Result: The measurement is more than 0.063 inch / 1.6 mm. The bearing is worn and needs to be replaced.
CHECKLIST  D  PROCEDURES

8  Fully retract the boom and raise the boom to full height. Visually inspect the the dial indicator to be sure the needle returns to the "zero" position.

9  Remove the dial indicator and rotate the turntable 90°.

10 Repeat steps 4 through 9 until the rotation bearing has been checked in at least four equally spaced areas 90° apart.

11 Lower the boom to the stowed position and turn the machine off.

12 Remove the dial indicator from the machine.

D-4
Replace the Drive Hub Oil

Note: Genie specifications require that this procedure be performed every 1000 hours or annually, whichever comes first.

Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the drive hub oil at yearly intervals may cause the machine to perform poorly and continued use may cause component damage.

1  Select the drive hub to be serviced. Then drive the machine until one of the two plugs is at the lowest point.

2  Remove both plugs and drain the oil.

3  Drive the machine until one plug is at the top and the other is at 90 degrees.

4  Fill the hub with oil from the top hole until the oil level is even with the bottom of the side plug hole. Refer to Section 2, Specifications.

5  Install the plugs into the drive hub.

6  Check the torque of the drive hub mounting bolts. Refer to Section 2, Specifications.

7  Repeat this procedure for each drive hub.
D-5
Check the Free-wheel Configuration

Note: Genie specifications require that this procedure be performed every 1000 hours or annually, whichever comes first.

Proper use of the free-wheel configuration is essential to safe machine operation. The free-wheel configuration is used primarily for towing. A machine configured to free-wheel without operator knowledge may cause death or serious injury and property damage.

⚠️ WARNING ⚠️ Collision hazard. Select a work site that is firm and level.

⚠️ NOTICE ⚠️ Component damage hazard. If the machine must be towed, do not exceed 2 mph / 3.2 km/h.

Non-steer Wheels: All Models
1 Chock the steer wheels to prevent the machine from rolling.
2 Center a lifting jack of ample capacity (20,000 lbs / 10,000 kg) under the drive chassis between the non-steer tires.
3 Lift the wheels off the ground and then place jack stands under the drive chassis for support.
4 Disengage the drive hubs by turning over the drive hub disconnect caps on each non-steer wheel hub.
5 Manually rotate each non-steer wheel.
6 Re-engage the drive hubs by turning over the hub disconnect caps. Rotate each wheel to check for engagement. Lift the machine and remove the jack stands.

Collision hazard. Failure to re-engage the drive hubs may cause death or serious injury and property damage.

Steer Wheels: 4WD Models
7 Chock the non-steer wheels to prevent the machine from rolling.
8 Center a lifting jack of ample capacity (20,000 lbs / 10,000 kg) under the drive chassis between the steer tires.
9 Lift the wheels off the ground and then place jack stands under the drive chassis for support.
10 Disengage the drive hubs by turning over the drive hub disconnect caps on each steer wheel hub.
CHECKLIST D PROCEDURES

11 Manually rotate each steer wheel.
   ○ Result: Each steer wheel should rotate with minimum effort.

12 Re-engage the drive hubs by turning over the hub disconnect caps. Rotate each wheel to check for engagement. Raise the machine, remove the jack stands and lower the machine.

   **WARNING** Collision hazard. Failure to re-engage the drive hubs may cause death or serious injury and property damage.

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**D-6**

Replace the Hydraulic Filters

Note: Genie requires that this procedure be performed every 1000 hours or annually, whichever comes first. Perform this procedure more often if dusty conditions exist.

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

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

Note: Perform this procedure with the engine off.

**Hydraulic return filter:**

1 Open the ground controls side turntable cover and locate the hydraulic return filter housing on top of the hydraulic tank.

2 Remove the cap from the filter housing.

3 Lift the handle on the filter element and rotate the element counterclockwise to release the element from the housing.

4 Remove the filter element from the filter housing.

5 Install the new filter element into the filter housing.
6 Push the filter element down to be sure the O-ring on the element is fully seated into the housing.
7 Rotate the filter element clockwise to lock it in place.
8 Install the filter housing cap.
9 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter housing.

**Medium and high pressure filters:**

Note: The medium pressure filter is for the charge pump and the high pressure filter is for all machine functions except the drive circuit and oscillating axle circuit.

10 Open the engine side turntable cover and locate the medium and high pressure filters near the pump.
Note: The medium pressure filter is located on the right. The high pressure filter, with filter condition indicator, is located on the left.

11 Place a suitable container under each filter.
12 Remove the filter housings by using a wrench on the nut provided on the bottom of the housings.
13 Remove the filter elements from the housings.
14 Inspect the housing seals and replace them if necessary.

15 Install the new filter elements into the housings and tighten them securely.
Note: The medium and high pressure filters use the same elements.

16 Clean up any oil that may have spilled during the installation procedure.

17 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter housings.

18 Start the engine from the ground controls.

19 Inspect the filter housings and related components to be sure that there are no leaks.
D-7
Check and Adjust the Air/LPG Mixture - GM Models

Note: Genie specifications require that this procedure be performed every 1000 hours or annually, whichever comes first.

Maintaining the proper air-to-fuel mixture during LPG operation is essential to good engine performance.

**DANGER** Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

Note: The engine should be warmed to normal operating temperature before performing this procedure.

1. Move the fuel select toggle switch to LPG fuel and start the engine from the ground controls.
2. Locate the high idle mixture adjustment screw on the LPG venturi that attaches to the air cleaner air cleaner hose.
3. Loosen the lock nut on the high idle mixture adjustment screw.
4. Load the system by activating the primary boom retract function, then move the function enable toggle switch to the high idle (rabbit symbol) position.
5. Adjust the high idle adjustment screw to obtain an air-to-fuel mixture ratio of 13.0:1 to 13.2:1, using an exhaust gas analyzer.
   
   Note: Preliminary setting is $\frac{3}{4}$ inch / 6.4 mm of threads showing. Measure from top of lock nut to top of adjustment screw.

   Note: If an exhaust gas analyzer is not available, adjust to obtain peak or optimum rpm.
6. Hold the adjustment screw and tighten the lock nut.
7. Return the function enable toggle switch to the center position.
8. Locate the low idle mixture adjustment screw on the LPG regulator.
9. Adjust the low idle mixture adjustment screw to obtain an air-to-fuel mixture ratio of 13.0:1 to 13.2:1.
   
   Note: Preliminary setting: turn low idle adjustment screw clockwise all the way in. Turn low idle adjustment screw counterclockwise $2 \frac{3}{4}$ turns.
Perform Engine Maintenance - Deutz Models

Note: Engine specifications require that this procedure be performed every 1000 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the Deutz FL 2011 Operation Manual (Deutz part number 0297-9929).

Deutz FL 2011 Operation Manual
Genie part number 84794

To access the engine:

1. Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.

2. Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.
Checklist E Procedures

E-1
Test or Replace the Hydraulic Oil

GM and Ford models: Turn the valve on the LPG tank clockwise to the off position (if equipped). Then slowly disconnect the hose from the LPG tank.

GM and Ford models: Open the clamps from the LPG tank straps and remove the LPG tank from the machine (if equipped).

Models with hydraulic tank shut-off valves:
Locate the two hydraulic tank valves at the hydraulic tank through the access hole underneath the turntable. Close the valves.

Component damage hazard. The engine must not be started with the hydraulic tank shut-off valves in the closed position or component damage will occur. If the tank valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

Place a suitable container underneath the hydraulic tank.

Remove the drain plug from the hydraulic tank.

Completely drain the tank into a suitable container. See capacity specifications.

Test or Replace the Hydraulic Oil

Note: Genie requires that this procedure be performed every 2000 hours or every two years, whichever comes first. Perform this procedure more often if dusty conditions exist.

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil and suction strainers 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.

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. 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: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

Note: Perform this procedure with the boom in the stowed position.
7 Tag, disconnect and plug the two suction hoses and supply hose for the auxiliary pump from the hydraulic tank. Cap the fittings on the tank.

Note: The hoses can be accessed through the access hole under the turntable.

8 Disconnect and plug the return filter hydraulic hose at the return filter. Cap the fitting on the filter housing.

9 Remove the ground controls side turntable cover.

10 Support the hydraulic tank with an appropriate lifting device.

11 Remove the hydraulic tank mounting fasteners.

12 Remove the hydraulic tank from the machine.

**WARNING** Crushing hazard. The hydraulic tank could become unbalanced and fall if not properly supported when removed from the machine.

13 Remove the hydraulic return filter housing mounting fasteners. Remove the hydraulic return filter housing from the hydraulic tank.

14 Remove the suction strainers from the tank and clean them using a mild solvent.

15 Rinse out the inside of the tank using a mild solvent.

16 Install the suction strainers using a thread sealant on the threads.

17 Install the drain plug using a thread sealant on the threads.

18 Install the hydraulic return filter housing onto the hydraulic tank.

19 Install the hydraulic tank onto the machine.

20 Install the two suction hoses to the suction strainers.

21 Install the supply hose for the auxiliary power unit and the return filter hose.

22 **Models with hydraulic tank shut-off valves:**

Open the two hydraulic tank valves at the hydraulic tank.

23 Fill the tank with hydraulic oil until the level is within the top 2 inches / 5 cm of the sight gauge. Do not overfill.

24 Clean up any oil that may have spilled.

25 Prime the pump. Refer to Repair Procedure 6-2, *How to Prime the Pump*.

Note: Always use pipe thread sealant when installing the suction hose fittings and the drain plug.
Perform Engine Maintenance - Deutz Models

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

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the Deutz FL 2011 Operation Manual (Deutz part number 0297-9929).

Deutz FL 2011 Operation Manual
Genie part number 84794

To access the engine:

1. Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.

2. Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

   WARNING: Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

Perform Engine Maintenance - Deutz Models

Note: Engine specifications require that this procedure be performed every 12,000 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the Deutz FL 2011 Operation Manual (Deutz part number 0297-9929).

Deutz FL 2011 Operation Manual
Genie part number 84794

To access the engine:

1. Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.

2. Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

   WARNING: Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.
E-4
Replace the Boom Extend/Retract Cables

Note: Genie specifications require that this procedure be performed every 10 years.

The boom extend/retract cables are responsible for the extension and retraction of the number 3 boom tube. Replacement of the boom extend/retract cables is essential to good machine performance and safe machine operation. The boom extend/retract functions should operate smoothly and be free of hesitation, jerking and unusual noise.

1 Replace the boom extend/retract cables. See Repair Procedure 4-5, How to Adjust the Boom Extend/Retract Cables.
Repair Procedures

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. 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.

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 the presence of 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.

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 control box contains one printed circuit board. The ALC-500 circuit board inside the platform control box controls all proportional machine functions from the platform. The joystick controllers at the platform controls utilize Hall Effect technology and require no adjustment. The operating parameters of the joysticks are stored in memory at the ECM circuit board at the platform controls. If a joystick error occurs or if a joystick is replaced, it will need to be calibrated before that particular machine function will operate. See 1-2, How to Calibrate a Joystick.

Each joystick controller should operate smoothly and provide proportional speed control over its entire range of motion.

1-1
ALC-500 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.

Note: When the ALC-500 circuit board is replaced, the joystick controllers will need to be calibrated. See 1-2, How to Calibrate a Joystick.

**How to Remove the ALC-500 Circuit Board**

1. Push in the red Emergency Stop button to the off position at both the ground and platform controls.
2. Remove the platform control box lid retaining fasteners. Open the control box lid.
3. Locate the ALC-500 circuit board mounted to the inside of the platform control box.

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

![Diagram of Platform Controls]

- a ALC-500 circuit board
- b drive/steer joystick controller
- c boom extend/retract joystick controller
- d primary boom up/down and turntable rotate left/right joystick controller
How to Calibrate a Joystick

The joysticks on this machine utilize digital Hall Effect technology for proportional control. If a joystick is disconnected or replaced, it must be calibrated before that particular machine function will operate.

Note: The joystick must be calibrated before the threshold, max-out or ramping can be set.

Note: Perform this procedure with the engine off.

1 Open the platform control box.
2 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.
3 Turn the key switch to platform control. Do not start the engine.
4 Select a joystick to calibrate.
5 Disconnect the wire harness connector from the joystick for approximately 10 seconds or until the alarm sounds. Connect the wire harness connector to the joystick.
6 Move the joystick full stroke in either direction and hold for 5 seconds.
7 Return the joystick to the neutral position, pause for a moment, then move the joystick full stroke in the opposite direction. Hold for 5 seconds and return the joystick to the neutral position.
8 Repeat this procedure for each joystick controlled machine function including the thumb rocker steer switch.

Result: The alarm should sound indicating successful joystick calibration.

Note: No machine function should operate while performing the joystick calibration procedure.
PLATFORM CONTROLS

How to Adjust the Joystick Threshold Setting

The threshold setting of a joystick is the minimum output at which a function proportional valve can open and allow the function to operate.

Note: Perform this procedure with the boom in the stowed position.

1. Pull out the red Emergency Stop button to the on position at both the ground and platform controls.
2. Turn the key switch to platform control. Do not start the engine.
3. Push in the platform controls red Emergency Stop button to the off position.
4. Do not press down the foot switch.
5. Move and hold the drive enable toggle switch in the right position and pull out the red Emergency Stop button to the on position.
6. When the alarm sounds, release the drive enable toggle switch.
7. Momentarily activate the drive enable toggle switch in the right direction 8 times.
   - Result: There should be a pause and the alarm should sound 8 times indicating that the machine is in threshold calibration mode.
8. Start the engine from the platform controls and press down the foot switch.
9. Select a boom function joystick to set the threshold.
10. Slowly move the joystick off center in either direction just until the function begins to move.
11. Slowly move the joystick back to the neutral position. Just before the function stops moving, move the drive enable toggle switch to either side to set the threshold.
   - Result: The alarm should sound indicating a successful calibration.
12. Repeat steps 9 through 11 for each boom joystick controlled machine function (boom up/down, boom extend/retract and turntable rotate).
13. Return the joystick to the neutral position and wait for approximately 10 seconds to allow the settings to be saved.
   - Result: The alarm should sound indicating that the settings have been saved in memory.
Note: Do not operate any machine function during the 10 second waiting time.
14. Cycle the red Emergency Stop button off, then back on.
How to Adjust the Joystick
Max-out Setting

The max-out setting of a joystick controls the maximum speed of a joystick-controlled machine function. Whenever a hydraulic cylinder, drive motor or hydraulic pump is replaced, the max-out setting should be adjusted to maintain optimum performance. The max-out settings on the joystick can be changed to compensate for hydraulic pump wear to maintain peak performance from the machine.

Note: Perform this procedure with the boom in the stowed position.

1. Pull out the red Emergency Stop button to the on position at both the ground and platform controls.
2. Turn the key switch to platform control. Do not start the engine.
3. Push in the platform controls red Emergency Stop button to the off position.
4. Do not press down the foot switch.
5. Move and hold the drive enable toggle switch in the right position and pull out the red Emergency Stop button to the on position.
6. When the alarm sounds, release the drive enable toggle switch.
7. Momentarily activate the drive enable toggle switch in the right direction 4 times.

Result: There should be a pause and the alarm should sound 4 times indicating that the machine is in max-out calibration mode.

8. Start the engine from the platform controls and press down the foot switch.
9. Start a timer and activate the machine function that needs to be adjusted. Record the time it takes for that function to complete a full cycle (ie; boom up).
10. Compare the machine function time with the function times listed in Section 2, Specifications. Determine whether the function time needs to increase or decrease.
11. While the joystick is activated, adjust the max-out setting to achieve the proper function cycle time. Momentarily move the drive enable toggle switch in the right direction to increase the function speed or momentarily move the drive enable toggle switch in the left direction to decrease the function speed.

Note: Each time the drive enable toggle switch is momentarily moved, the function speed will change in 2% increments.

12. Repeat steps 9 through 11 for each joystick controlled machine function.
13. Return the joystick to the neutral position and wait for approximately 10 seconds to allow the settings to be saved.

Result: The alarm should sound indicating that the settings have been saved in memory.

Note: Do not operate any machine function during the 10 second waiting time.

14. Cycle the red Emergency Stop button off, then back on.
PLATFORM CONTROLS

How to Adjust the Joystick Ramp Rate Setting

The ramp rate setting of a joystick controls the time at which it takes for the joystick to reach maximum output, when moved out of the neutral position. The ramp rate settings of a joystick can be changed to compensate for hydraulic pump wear to maintain peak performance from the machine.

Note: Perform this procedure with the boom in the stowed position.

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

2 Turn the key switch to platform control. Do not start the engine.

3 Push in the platform controls red Emergency Stop button to the off position.

4 Do not press down the foot switch.

5 Move and hold the drive enable toggle switch in the right position and pull out the red Emergency Stop button to the on position.

6 When the alarm sounds, release the drive enable toggle switch.

7 Momentarily activate the drive enable toggle switch in the right direction 6 times.

☐ Result: There should be a pause and the alarm should sound 6 times indicating that the machine is in ramp rate calibration mode.

☒ Result: The alarm does not sound. Repeat steps 3 through 7.

8 Start the engine from the platform controls and press down the foot switch.

9 Start a timer and simultaneously move the joystick in either direction full stroke. Note how long it takes the function to reach maximum speed. This is the ramp rate.

10 Compare the function ramp rate time with the table and determine whether the ramp rate time needs to increase or decrease.

11 Release the foot switch.

12 Activate the joystick and adjust the ramp rate. Momentarily move the drive enable toggle switch in the right direction to increase the time or momentarily move the drive enable toggle switch in the left direction to decrease the time.

Note: Each time the drive enable toggle switch is momentarily moved, the time will change in 5% increments from a default of 100%, with a minimum of 50% and a maximum of 150%.

13 Repeat steps 9 through 11 for each joystick controlled machine function.

14 Return the joystick to the neutral position and wait for approximately 10 seconds to allow the settings to be saved.

☐ Result: The alarm should sound indicating that the settings have been saved in memory.

☒ Result: The alarm does not sound. The minimum or maximum adjustment has been obtained. No changes can be saved.

Note: Do not operate any machine function during the 10 second waiting time.

15 Cycle the red Emergency Stop button off, then back on.
### Ramp rate (factory settings)

<table>
<thead>
<tr>
<th>Mode</th>
<th>Acceleration</th>
<th>Deceleration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boom up/down</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>transition accelerate</td>
<td>1 second</td>
<td></td>
</tr>
<tr>
<td>transition decelerate</td>
<td>10 seconds</td>
<td></td>
</tr>
<tr>
<td>S ramp accelerate</td>
<td>1 second</td>
<td></td>
</tr>
<tr>
<td>S ramp decelerate</td>
<td>0.45 second</td>
<td></td>
</tr>
<tr>
<td><strong>Boom extend/retract</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>accelerate</td>
<td>2 seconds</td>
<td></td>
</tr>
<tr>
<td>decelerate</td>
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<td></td>
</tr>
<tr>
<td><strong>Turntable rotate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>accelerate</td>
<td>2 seconds</td>
<td></td>
</tr>
<tr>
<td>decelerate</td>
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<tr>
<td><strong>Drive</strong></td>
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<tr>
<td>accelerate</td>
<td>2 seconds</td>
<td></td>
</tr>
<tr>
<td>decelerate to neutral</td>
<td>0.5 second</td>
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</tr>
<tr>
<td>decelerate, change of direction</td>
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<td></td>
</tr>
<tr>
<td>decelerate, coasting</td>
<td>0.75 second</td>
<td></td>
</tr>
<tr>
<td>decelerate, braking</td>
<td>1 second</td>
<td></td>
</tr>
<tr>
<td>decelerate, shift from low to high speed</td>
<td>1 second</td>
<td></td>
</tr>
<tr>
<td>decelerate, shift from high to low speed</td>
<td>4 seconds</td>
<td></td>
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</table>
Platform Components

2-1 Platform Leveling Slave Cylinder

The slave cylinder and the rotator pivot are the two primary supports for the platform. The slave cylinder keeps the platform level through the entire range of boom motion. It operates in a closed-circuit hydraulic loop with the master cylinder. The slave cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Platform Leveling Slave Cylinder

Note: Before cylinder removal is considered, bleed the slave cylinder to be sure there is no air in the closed loop.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

1. Extend the boom until the slave cylinder barrel-end pivot pin is accessible.
2. Raise the boom slightly and place blocks under the platform for support.
3. Lower the boom until the platform is resting on the blocks just enough to support the platform.
4. Remove the pin retaining fastener from the slave cylinder rod-end pivot pin. Use a soft metal drift to drive the rod-end pivot pin out. **WARNING** Crushing hazard. **S-65**: The jib boom could fall when the slave cylinder rod-end pivot pin is removed if not properly supported.
5. Remove the external snap rings from the barrel-end pivot pin.
6. Use a soft metal drift to drive the barrel-end pivot pin out.
7. Carefully pull the cylinder out of the boom to access the hydraulic hoses.
8. Tag, disconnect and plug the hydraulic hoses from the slave cylinder. Cap the fittings on the cylinder. **WARNING** Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

How to Bleed the Slave Cylinder

Note: Do not start the engine. Use auxiliary power for this procedure.

1. Simultaneously activate the boom up function and the platform level up function until the boom is fully raised.
2. Simultaneously activate the boom down function and the platform level down function until the boom is fully lowered.
2-2
Platform Rotator

The platform rotator is a hydraulically activated helical gear assembly used to rotate the platform 160 degrees.

How to Remove the Platform Rotator

Component damage hazard. Mark the platform mounting weldment and the rotator flange before removing the platform mounting weldment. The platform mounting weldment must be replaced in the exact same position on the rotator flange as it was before removal. If a new rotator is installed or the rotator is disassembled, proper alignment can be achieved by rotating the rotator all the way to the left and then installing the platform mounting weldment all the way in the left position.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

2 S-60 HC: Tag and disconnect the electrical connector from the platform load sense module.

3 Tag, disconnect and plug the hydraulic hoses from the platform rotator manifold. Cap the fittings on the rotator.

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

4 S-65: Support the jib boom leveling arms and the platform mounting weldment with an appropriate lifting device. Do not apply any lifting pressure.

5 Remove the mounting bolts from the platform mounting weldment. Remove the center bolt and slide the platform mounting weldment off of the platform rotator.

**WARNING** Crushing hazard. The platform mounting weldment could become unbalanced and fall if not properly supported when removed from the machine.

6 Support the platform rotator with an appropriate lifting device. Do not apply any lifting pressure.

S-60:

7 Support the rod end of the platform leveling slave cylinder. Protect the cylinder rod from damage.

Note: S-60 HC: If the load sense components are disassembled and/or removed from the platform support, the platform load sense system will need to be calibrated. See 2-4, How to Calibrate the Platform Load Sense System, S-60 HC.
PLATFORM COMPONENTS

8 Remove the pivot pin retaining fasteners from both the slave cylinder rod-end pivot pin and the rotator pivot pin.

9 Use a soft metal drift to remove both pivot pins. Remove the platform rotator from the machine.

⚠️ CAUTION Crushing hazard. The platform rotator may become unbalanced and fall if not properly supported.

Note: When installing the platform rotator fasteners, torque the fasteners to specifications.

S-65:

7 Remove the pin retaining fasteners from the jib boom and jib boom leveling arms to platform rotator pivot pins. Do not remove the pins.

8 Support the jib boom leveling arms.

9 Use a soft metal drift to drive both pins out, then remove the platform rotator from the machine.

⚠️ CAUTION Bodily injury hazard. The jib boom leveling arms may fall if not properly supported.

10 Lower the jib boom leveling arms.

⚠️ CAUTION Crushing hazard. The platform rotator may become unbalanced and fall if not properly supported.

Note: When installing the platform rotator fasteners, torque the fasteners to specifications.

How to Bleed the Platform Rotator

Note: This procedure will require two people. Do not start the engine. Use auxiliary power for this procedure.

1 Move the function enable toggle switch to either side and activate the platform rotate toggle switch to the right then the left through two platform rotation cycles, then hold the switch to the right position until the platform is fully rotated to the right.

Before serial number 9154:

2 Connect a clear hose to the top bleed valve. Place the other end of the hose in a container to collect any drainage. Secure the container to the boom.

3 Open the top bleed valve on the rotator, but do not remove it.

—-
4 Move the function enable toggle switch to either side and hold the platform rotate toggle switch to the left position until the platform is fully rotated to the left. Continue holding the toggle switch until air stops coming out of the bleed valve. Close the bleed valve.

**WARNING**  Crushing hazard. Keep clear of the platform during rotation.

5 Connect the clear hose to the bottom bleed valve and open the valve. Do not remove the bleed valve.

6 Move the function enable toggle switch to either side and hold the platform rotate toggle switch to the right position until the platform is fully rotated to the right. Continue holding the toggle switch until air stops coming out of the bleed valve. Close the bleed valve.

**WARNING**  Crushing hazard. Keep clear of the platform during rotation.

7 Remove the hose from the bleed valve and clean up any hydraulic oil that may have spilled.

8 Rotate the platform fully in both directions and inspect the bleed valves for leaks.

**After serial number 9153:**

2 Place a suitable container underneath the platform rotator.

3 Open the top bleed screw on the rotator, but do not remove it.

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

4 Move the function enable toggle switch to either side and hold the platform rotate toggle switch to the left position until the platform is fully rotated to the left. Continue holding the toggle switch until air stops coming out of the bleed valve. Close the bleed valve.

**WARNING**  Crushing hazard. Keep clear of the platform during rotation.

5 Open the bottom bleed screw on the rotator, but do not remove it.

**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 Move the function enable toggle switch to either side and hold the platform rotate toggle switch to the right position until the platform is fully rotated to the right. Continue holding the toggle switch until air stops coming out of the bleed screw. Close the bleed screw.

**WARNING**  Crushing hazard. Keep clear of the platform during rotation.

7 Clean up any hydraulic oil that may have spilled.

8 Rotate the platform fully in both directions and inspect the bleed screws for leaks.
2-3
Platform Overload System, S-60 and S-65 (if equipped)

How to Calibrate the Platform Overload System

Calibration of the platform overload system is essential to safe machine operation. Continued use of an improperly calibrated platform overload system could result in the system failing to sense an overloaded platform. The stability of the machine is compromised and it could tip over.

Note: For S-60 HC models, refer to Repair Procedure 2-4, Platform Load Sense System, S-60 HC.

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

1. Turn the key switch to platform control. Start the engine and level the platform.

2. Determine the maximum platform capacity. Refer to the machine serial plate.

3. Remove all weight, tools and accessories from the platform.

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

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

5. Move the platform up and down by hand, so it bounces approximately 2.5 to 5 cm / 1 to 2 inches. Allow the platform to settle.

Result: The overload indicator lights are off and the alarm does not sound. Proceed to step 6.

Result: The overload indicator lights are flashing at the platform and ground controls, and the alarm is sounding. Slowly tighten the load spring adjustment nut in a clockwise direction in 10° increments until the overload indicator light turns off, and the alarm does not sound. Proceed to step 8.

Note: The platform will need to be moved up and down and allowed to settle between each adjustment.

Note: There may be a 2 second delay before the platform overload indicator light and alarm responds.

6. Move the platform up and down by hand, so it bounces approximately 2.5 to 5 cm / 1 to 2 inches. Allow the platform to settle.

Result: The overload indicator lights are off at the platform and ground controls, and the alarm does not sound. Slowly loosen the load spring adjustment nut in a counterclockwise direction in 10° increments until the overload indicator light flashes at both the platform and ground controls, and the alarm sounds. Proceed to step 7.

Result: The overload indicator lights are flashing at the platform and ground controls, and the alarm is sounding. Repeat this procedure beginning with step 5.

Note: The platform will need to be moved up and down and allowed to settle between each adjustment.

Note: There may be a 2 second delay before the platform overload indicator lights and alarm responds.
Move the platform up and down by hand, so it bounces approximately 2.5 to 5 cm / 1 to 2 inches. Allow the platform to settle.

- **Result:** The overload indicator lights are off and the alarm does not sound. Proceed to step 8.

- **Result:** The overload indicator lights are flashing at the platform and ground controls, and the alarm is sounding. Repeat this procedure beginning with step 5.

**Note:** There may be a 2 second delay before the platform overload indicator light and alarm responds.

Add an additional 10 lb / 4.5 kg test weight to the platform.

- **Result:** The overload indicator light is flashing at both the ground and platform controls, and the alarm is sounding. Proceed to step 9.

- **Result:** The overload indicator light is off at both the ground and platform controls, and the alarm does not sound. Remove the additional 10 lb / 4.5 kg test weight. Repeat this procedure beginning with step 6.

**Note:** There may be a 2 second delay before the platform overload indicator light and alarm responds.

Test all machine functions from the platform controls.

- **Result:** All platform control functions should not operate.

Using a suitable lifting device, lift the test weight off the platform floor.

- **Result:** The platform overload indicator light should be off at both the ground and platform controls and the alarm should not sound.

**Note:** There may be a 2 second delay before the overload indicator lights and alarm turn off.

Test all machine functions from the ground controls.

- **Result:** All ground control functions should operate normally.

Turn the key switch to platform control.

Test all machine functions from the platform controls.

- **Result:** All platform control functions should operate normally.
How to Calibrate the Platform Load Sense System

Proper calibration of the load sense system is essential to safe machine operation. Continued use of an improperly calibrated load sense system could result in the system failing to sense an overloaded platform. The stability of the machine is compromised and it could tip over.

Note: For S-60 and S-65 models, refer to Repair Procedure 2-3, Platform Overload System, S-60 and S-65 (if equipped).

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

Note: The platform overload system will not allow partial calibration and must be completed in its entirety.

1. At the ground controls, turn the key switch to the off position and push in the red Emergency Stop button to the off position. Pull out the red Emergency Stop button to the on position at the platform controls.

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

3. Open the ground control box and locate the calibration toggle switch near the relays.

   Note: If either the operational and/or safety controller has been replaced or if the software has been updated, restore the system to the default settings and then continue to step 4. See How to Restore the Default Settings. Otherwise, continue to step 4 to enter calibration mode.

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

   ⊗ Result: The alarm sound for approximately 2 seconds.

How to Restore the System Default Settings

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

   ⊗ Result: The alarm should sound a long tone.

2. Activate and hold the calibration toggle switch for 5 seconds.

   ⊗ Result: The alarm should sound a tone for 1 second.

3. Push in the red Emergency Stop button to the off position.
5 Activate and release the calibration toggle switch 3 times within 2 seconds after the alarm sounds to enter calibration mode.

○ Result: The alarm should sound for 1 second indicating the first calibration step was accepted. The green LED on the operational controller should be blinking fast and the red LED should be blinking twice indicating that step 2 of calibration is next.

☒ Result: The alarm did not sound and the green LED on the operational controller is not blinking fast. Repeat this procedure beginning with step 1.

Note: Once calibration mode is entered and begun, there is a 8 minute time limit between each calibration step. If any one step passes the 8 minute time limit, the system will time out and the calibration process will need to be repeated beginning with step 1.

6 Start the engine from the ground controls.

<table>
<thead>
<tr>
<th>Operational Control Module LED Status</th>
<th>Description</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green and red LEDs not flashing</td>
<td>System is calibrated</td>
<td></td>
</tr>
<tr>
<td>Green LED flashing rapidly</td>
<td>System is in calibration mode</td>
<td></td>
</tr>
<tr>
<td>Red LED flashing with pauses</td>
<td>Indicates next calibration step (ie; 2, 3, etc)</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety Control Module LED Status</th>
<th>Description</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green and red LEDs not flashing</td>
<td>System is calibrated</td>
<td></td>
</tr>
<tr>
<td>Green and red LEDs flashing alternately</td>
<td>System is not calibrated</td>
<td></td>
</tr>
</tbody>
</table>
PLATFORM COMPONENTS

7 Raise the boom until the distance, when measured between the centers of the pivot pins shown, equals 108.75 inches / 276 cm ± 0.75 inch / 19 mm.

**WARNING** Crushing hazard. Keep clear of all moving parts of the boom while the boom is raising. Do not attempt to measure between the pivot pins while the boom is moving.

8 Activate the calibration toggle switch inside the ground control box 1 time.

○ Result: The alarm should sound for 1 second indicating the second calibration step was accepted. The green LED on the operational controller should be blinking fast and the red LED should be blinking three times indicating that step 3 of calibration is next.

9 Raise the boom until the distance, when measured between the centers of the pivot pins shown, equals 167.25 inches / 424.8 cm ± 0.75 inch / 19 mm.

**WARNING** Crushing hazard. Keep clear of all moving parts of the boom while the boom is raising. Do not attempt to measure between the pivot pins while the boom is moving.

10 Activate and release the calibration toggle switch inside the ground control box 1 time.

○ Result: The alarm should sound for 1 second indicating the third calibration step was accepted. The green LED on the operational controller should be blinking fast and the red LED should be blinking four times indicating that step 4 of calibration is next.

11 Fully raise and extend the boom.

12 Activate and release the calibration toggle switch inside the ground control box 1 time.

○ Result: The alarm should sound for 1 second indicating the fourth calibration step was accepted. The green LED on the operational controller should be blinking fast and the red LED should be blinking five times indicating that step 5 of calibration is next.

13 Fully retract and lower the boom to the stowed position.

14 Using a suitable lifting device, place an appropriate test weight equal to 750 lbs / 340.2 kg on to the center of the platform floor.

Note: If your machine is equipped with any platform accessories or options, they must be removed from the platform OR the weights of those options or accessories must be subtracted from the test weights to accurately calibrate the platform load sense system.
15 Activate and release the calibration toggle switch inside the ground control box 1 time.

- Result: The alarm should sound for 1 second indicating the fifth calibration step was accepted. The green LED on the operational controller should be blinking fast and the red LED should be blinking six times indicating that step 6 of calibration is next.

16 Using a suitable lifting device, place an additional test weight equal to 510 lbs / 231.3 kg on to the center of the platform floor. The total weight in the platform must equal 1260 lbs / 571.5 kg.

17 Activate and release the calibration toggle switch inside the ground control box 1 time.

- Result: The alarm should sound for 1 second indicating the sixth calibration step was accepted. The engine may turn off and the alarm may sound indicating an overloaded platform.

18 At the ground controls, push in the red Emergency Stop button to the off position, then pull out the red Emergency Stop button to the on position to reset the system.

19 Visually inspect the LEDs on the controllers.

- Result: All LEDs on both controllers should be off indicating the platform load sense system is calibrated.

20 Using a suitable lifting device, remove the test weights from the platform.

21 Pull out the red Emergency Stop button to the on position at the ground controls and visually inspect the LEDs on the operational and safety controllers.

- Result: Both the green and red LEDs on both controllers should be off indicating the system is calibrated.

Note: If an LED is blinking on either controller, the load sense system is not calibrated correctly or a fault may exist. Refer to Section 5, Fault Codes to determine the system fault.
Jib Boom Components, S-65

3-1 Jib Boom

How to Remove the Jib Boom

Note: Perform this procedure with the boom in the stowed position.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

1. Remove the platform.
2. Remove the platform mounting weldment.
3. Remove the hose and cable cover from the side of the jib boom.
4. Remove the hose and cable clamp from the jib boom pivot pin. Lay all hoses and cables to the side.

Component damage hazard. Hoses and cables can become damaged if they are kinked or pinched.

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

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. Attach a lifting strap from an overhead crane to the jib boom assembly.
7. Place blocks under the platform leveling cylinder for support. Protect the cylinder rod from damage.
8. Remove the pin retaining fastener from the slave cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

WARNING Crushing hazard. The jib boom could fall when the slave cylinder rod-end pivot pin is removed if not properly attached to the overhead crane.

9. Remove the pin retaining fastener from the jib boom bellcrank to primary boom pivot pin.
10. Use a soft metal drift to remove the pin and carefully remove the jib boom assembly from the primary boom.

WARNING Crushing hazard. The jib boom could become unbalanced and fall when removed from the machine if not properly attached to the overhead crane.
3-2
Jib Boom Lift Cylinder

How to Remove the Jib Boom Lift Cylinder

Note: Perform this procedure with the boom in the stowed position.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

1 Raise the jib boom slightly and place blocks under the platform mounting weldment. Then lower the jib boom until the platform is resting on the blocks just enough to support the platform.

Note: Do not rest the entire weight of the boom on the blocks.

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

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

4 Use a soft metal drift to tap the jib boom lift cylinder rod-end pivot pin half way out. Then lower one of the leveling arms to the ground. Tap the pin the other direction and lower the opposite leveling arm. Do not remove the pin.

5 Support the jib boom lift cylinder with a lifting device.

6 Remove the pin retaining fastener from the jib boom lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the barrel-end pin and let the cylinder hang down.

WARNING Crushing hazard. The platform and jib boom could become unbalanced and fall when the jib boom barrel-end pivot pin is removed if not properly supported.

7 Attach a lifting strap from an overhead crane to the lug on the rod end of the jib boom lift cylinder.

8 Use a soft metal drift to remove the jib boom lift cylinder rod-end pin. Remove the cylinder from the machine.

WARNING Crushing hazard. The jib boom lift cylinder could become unbalanced and fall when removed from the machine if not properly attached to the overhead crane.

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.
Boom Components

4-1 Cable Track

The primary boom cable track guides the cables and hoses running up the boom. It can be repaired link by link without removing the cables and hoses that run through it. Removing the entire primary boom cable track is only necessary when performing major repairs that involve removing the primary boom.

How to Remove the Cable Track, S-60

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

1 Raise the boom to a horizontal position.

2 Locate the cables from the boom cable track to the platform control box. Number each cable and its entry location at the platform control box.

3 Disconnect the cables from the platform control box.

4 Remove the electrical outlet box bracket mounting fasteners. Remove the outlet box and lay it to the side.

5 Remove the hose and cable clamp from the platform support.

6 Tag, disconnect and plug the hydraulic hoses from the counterbalance valve manifold located on the platform rotator. Cap the fittings on the manifold.

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 Tag, disconnect and plug the platform leveling slave cylinder hydraulic hoses from the bulkhead fittings on the side of the primary boom. Cap the bulkhead fittings.

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 Locate all electrical cables under the boom at the pivot end that enter the cable track.

9 Tag and disconnect the electrical connectors for all cables that enter the cable track.

10 Remove the retaining fasteners from the electrical connector receptacles for the cables that enter the cable track.
11 Carefully pull the cables and connector receptacles out of the primary boom.

12 Tag, disconnect and plug all hydraulic hoses that enter the cable track from the bulkhead fittings at the pivot end of the boom.

**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.

13 Pull the hydraulic hoses out of the primary boom.

14 Place blocks in between the upper and lower cable tracks and secure the upper and lower tracks together.

**WARNING** Crushing hazard. If the upper and lower cable tracks are not properly secured together, the cable track could become unbalanced and fall when removed from the machine.

15 Attach a strap from an overhead crane to the cable track.

16 Remove the cotter pin from the cable track pull tube at the platform end of the boom.

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

**NOTICE** Component damage hazard. The cable track can be damaged if it is twisted.

17 Remove the cable track pull tube guide fasteners from the cable track guide at the platform end of the boom. Remove the cable track guide from the boom.

18 Remove the cable track mounting fasteners that attach the lower cable track to the primary boom.

19 Carefully remove the cable track from the machine and place it on a structure capable of supporting it.
How to Remove the Cable Track, S-65

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

1. Open the platform control box.
2. Tag and disconnect the foot switch wiring from the terminal strip inside the platform control box. Pull the wiring out of the platform control box.
3. Raise the boom to a horizontal position.
4. Disconnect the wire connectors from the bottom of the platform control box.

Note: When installing the wire connectors to the bottom of the platform control box, match the color of the connectors to those on the control box to be sure they are installed in the correct location.

5. Remove the mounting fasteners from the power to platform outlet box bracket. Lay the outlet box and bracket assembly off to the side.
6. Remove the hose and cable clamps from the platform support and jib boom.

7. Tag, disconnect and plug the platform leveling slave cylinder hydraulic hoses from the bulkhead fittings on the side of the primary boom. Cap the bulkhead fittings.

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

8. Tag, disconnect and plug the hydraulic hoses from the "V1" and "V2" ports of the jib boom/platform rotate 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.

9. Remove the hose and cable cover from the side of the jib boom.
10. Locate all electrical cables under the boom at the pivot end that enter the cable track.
11. Tag and disconnect the electrical connectors for all cables that enter the cable track.
12. Remove the retaining fasteners from the electrical connector receptacles for the cables that enter the cable track.
13 Carefully pull the cables and connector receptacles out of the primary boom.

14 Tag, disconnect and plug all hydraulic hoses that enter the cable track from the bulkhead fittings at the pivot end of the boom.

**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.

15 Pull the hydraulic hoses out of the primary boom.

16 Remove the cotter pin from the upper cable track at the platform end of the boom.

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

17 Remove the cable track pull tube guide fasteners from the cable track guide at the platform end of the boom. Remove the cable track guide from the boom.

18 Place blocks in between the upper and lower cable tracks and secure the upper and lower tracks together.

**WARNING** Crushing hazard. If the upper and lower cable tracks are not properly secured together, the cable track could become unbalanced and fall when removed from the machine.

19 Attach a lifting strap from an overhead crane to the cable track.

20 Remove the mounting fasteners that attach the lower cable track to the boom.

21 Carefully remove the cable track from the machine and place it on a structure capable of supporting it.

**WARNING** Crushing hazard. The cable track could become unbalanced and fall if not properly attached to the overhead crane.

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

**NOTICE** Component damage hazard. The cable track can be damaged if it is twisted.
BOOMCOMPONENTS

How to Repair the Cable Track

Component damage hazard. The boom cable track can be damaged if it is twisted.

Note: A cable track repair kit is available through the Genie Parts Department, part no. 77896. The kit includes a 4 link section of cable track.

1 Visually inspect the cable track and determine which 4 link section needs to be replaced.

2 Carefully remove the snap rings from each end of the damaged section of cable track.

3 Remove the retaining fasteners from the upper black rollers from the 4 link section of cable track to be replaced. Remove the rollers.

4 Lift up the hoses and cables and carefully remove the damaged 4 link section of cable track.

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

5 Remove the upper rollers from the replacement section of cable track.

6 Lift up the hoses and cables and carefully insert the new 4 link section of cable track.

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

7 Connect the ends of the replacement cable track section to the existing cable track using the snap rings.

8 Install the rollers onto the new section of cable track.

9 Operate the boom extend/retract function through a full cycle to ensure smooth operation of the new section of cable track.
BOOM COMPONENTS

- **a** short link arm to boom pivot pin
- **b** boom
- **c** boom lift cylinder rod-end pivot pin
- **d** boom lift cylinder
- **e** long link arm (ground controls side)
- **f** long link arm (engine side)
- **g** long link arm to turntable pivot pin
- **h** master cylinder cam
- **i** master cylinder cam link
- **j** short link arm to turntable pivot pin
- **k** long link arm to boom pivot pin
- **l** master platform level cylinder
- **m** short link arm weldment
BOOM COMPONENTS

4-2
Boom

How to Remove the Boom

**WARNING** Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

1. Remove the jib boom. See 3-1, How to Remove the Jib Boom.

2. Remove the cable track. See 4-1, How to Remove the Cable Track.

3. Raise the boom until the short and long link arm to boom pivot pins are above the turntable covers.

4. Place a block of wood measuring 4 x 4 x 60 inches / 10 x 10 x 152 cm under the long link arm, across the turntable covers.

5. Slowly lower the boom until the long link arm contacts the wood block. Do not rest the entire weight of the boom on the block. Turn the machine off.

**NOTICE** Component damage hazard. The turntable covers can become damaged if the weight of the boom is allowed to rest on the block.

6. Place wood blocks between the short link arm and the turntable weldment for support.

7. Attach lifting straps from a 5 ton / 5000 kg overhead crane to each end of the boom. Support the boom. Do not apply any lifting pressure.

8. Support and secure the rod end of the boom lift cylinder to a second overhead crane or similar lifting device.

9. Remove the lift cylinder rod-end pivot pin retaining fasteners. Use a soft metal drift to remove the pin.

**WARNING** The boom could fall if not properly supported when the lift cylinder rod-end pivot pin is removed.

10. Using auxiliary power, activate the boom down function so the cylinder will retract. Retract the cylinder just enough until the rod end of the cylinder will clear the mounting bracket on the boom. Turn the machine off.

**WARNING** Crushing hazard. The boom lift cylinder could fall if not properly supported and secured to the lifting device.
11 Using the overhead crane, carefully lower the boom lift cylinder and allow it to rest on the boom rest pad. Protect the cylinder rod from damage.

12 **S-60 and S-65:** Remove the boom end cover retaining fasteners and remove the cover.

**S-60 HC:** Remove the boom end cover from the pivot end of the boom while guiding the small cable from the string potentiometer out of the slot of the cover. Rest the cover and string potentiometer on the counterweight.

**NOTICE** Component damage hazard. The cable from the string potentiometer can become damaged if it is kinked or pinched.

13 **S-60 HC:** Remove the string potentiometer cable break limit switch mounting fasteners.

14 **S-60 HC:** Remove the pulley retaining plate from the string potentiometer pulley bracket. Carefully remove the string potentiometer cable and limit switch assembly from the boom.

15 Tag, disconnect and plug the boom extension 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.

16 Tag and disconnect the electrical connector for the cable break limit switch.

17 Tag and disconnect all boom wire harness electrical connectors located at the pivot end of the boom.

18 Support the platform leveling master cylinder. Remove the master cylinder rod-end pivot pin retaining fasteners. Place a rod through the pin and twist to remove. Carefully lower the master cylinder down.

19 Tag, disconnect and plug the hydraulic hoses from the bulkhead fittings at the pivot end of the boom. Cap the bulkhead fittings.

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

20 Remove the external snap rings from both boom pivot pins at the short and long link arms. Do not remove the pins.

21 Using the overhead crane, adjust the boom as necessary to relieve pressure from the pivot pins.

22 Use a soft metal drift to remove each boom pivot pin. Carefully remove the boom assembly from the machine and place it on a structure capable of supporting it.

**WARNING** Crushing hazard. The boom could fall if not properly supported by the overhead crane when each boom pivot pin is removed.

**CAUTION** Crushing hazard. The long and short link arms may fall if not properly supported when the boom pivot pins are removed.
BOOM COMPONENTS

4-3

Boom Lift Cylinder

The boom lift cylinder raises and lowers the boom. The boom lift cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Boom Lift Cylinder

Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

1 Raise the boom to a horizontal position.

2 Attach a 5 ton / 5000 kg overhead crane to the boom at the platform end for support. Do not lift the boom.

3 Support and secure both ends of the boom lift cylinder to a second overhead crane or similar lifting device.

4 Remove the pin retaining fastener from the boom lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

**WARNING** Crushing hazard. The boom will fall if not properly supported when the primary boom rod-end pivot pin is removed.

5 Using auxiliary power, activate the boom down function so the cylinder will retract. Retract the cylinder just enough until the rod end of the cylinder will clear the mounting bracket on the boom. Turn the machine off.

6 Tag, disconnect and plug the 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.

7 Remove the pin retaining fasteners from the boom lift cylinder barrel-end pivot pins. Do not remove the pins.

8 Use a slide hammer to remove the barrel-end pivot pins.

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

9 Move the boom lift cylinder towards the counterweight end of the machine. Rotate the boom lift cylinder until the barrel-end pivot pin bores will clear the boom linkage.

10 Carefully remove the boom lift cylinder from the machine.

**WARNING** Crushing hazard. The boom lift cylinder could become unbalanced and fall if not properly supported and secured to the lifting device.
Boom Extension Cylinder

The boom extension cylinder is located inside the boom assembly and incorporates cables and pulleys that are responsible for extending the number 3 boom tube. The primary boom extension cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Boom Extension Cylinder

**WARNING** Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

Note: Perform this procedure with the boom fully retracted.

1. Raise the boom to a horizontal position.

2. **S-60 and S-65:** Remove the boom end cover retaining fasteners and remove the cover.

3. **S-60 HC:** Remove the boom end cover from the pivot end of the boom while guiding the small cable from the string potentiometer out of the slot of the cover. Rest the cover and string potentiometer on the counterweight.

   **NOTICE** Component damage hazard. The cable from the string potentiometer can become damaged if it is kinked or pinched.

4. **S-60 HC:** Remove the string potentiometer cable break limit switch mounting fasteners.

5. **S-60 HC:** Remove the pulley retaining plate from the string potentiometer pulley bracket. Carefully remove the string potentiometer cable and limit switch assembly from the boom.

6. Fully loosen the lock nuts on the extend cables. Do not remove the nuts.

7. Loosen the retract cable nut at the platform end of the boom. Pull the cable rod from the support and let it hang down.
8 Remove the cable guard fasteners and remove the cable guard.

9 Locate the retaining plates that secure the retract cables to the inside of the number 3 boom tube.

10 Remove the cable retaining plates and pull the retract cables off of the pulleys. Lay the cables flat and out of the way.

11 Remove the fasteners from the retaining blocks from the extension cylinder saddle. Remove the blocks.

Note: Access the fasteners through the access hole in the outer boom tube at the pivot end.

12 Disconnect the wire connector to the extend cable break limit switch.

13 Remove the retaining fasteners that secure the extend cable mounting plates to the inside of the number 1 boom tube.
14 Pull back on the extend cable mounting plate until it clears the blocks welded to the inside of the number 1 boom tube.

15 Lift up the extend cable mounting plate and push the extend cables towards the platform to create slack in the cables. Rest the cable and bracket assembly on top of the extend cylinder.

16 Locate the lower extend cable bracket on the bottom of the number 3 boom tube.

17 Remove the lower extend cable bracket mounting fasteners and pull back on the bracket to release it from the number 3 boom tube.

18 While pushing the lower extend cable bracket towards the platform, pull the extend cable mounting plate towards the pivot end of the boom.

19 Secure the extend cable bracket and cables to the cylinder to prevent them from falling off when removing the cylinder.

20 Remove the external snap rings from the extension cylinder pin at the pivot end of the boom.

21 Use a soft metal drift to remove the pin.

22 Tag, disconnect and plug the boom extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

23 Attach a lifting strap from a 5 ton / 5000 kg overhead crane to the lug at the rod end of the boom extension cylinder.

24 Lift the boom extension cylinder with the crane until it clears the cylinder saddle inside the number 2 boom tube.

25 Carefully support and slide the extension cylinder out of the boom.

**WARNING** Crushing hazard. The extension cylinder could fall when removed from the boom if not properly supported.

**NOTICE** Component damage hazard. Be careful not to damage the cable break limit switch.

**NOTICE** Component damage hazard. Be careful not to damage the counterbalance valves on the primary boom extension cylinder when removing the cylinder from the boom.

Note: During removal of the extension cylinder, the overhead crane strap will need to be carefully adjusted for proper balancing.

**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.
BOOM COMPONENTS

4-5
Boom Extend/Retract Cables

How to Adjust the Boom Extend/Retract Cables

The boom extend/retract cables are responsible for the extension and retraction of the number 3 boom tube. Proper adjustment of the boom extend/retract cables and related components on a regular basis is essential to good machine performance and safe machine operation. The boom extend and retract functions should operate smoothly and be free of hesitation, jerking and unusual noise.

Note: Perform this procedure with the boom in a horizontal position.

1 Fully retract the boom.

2 S-60 and S-65: Remove the boom end cover retaining fasteners and remove the cover.

S-60 HC: Remove the boom end cover from the pivot end of the boom while guiding the small cable from the string potentiometer out of the slot of the cover. Rest the cover and string potentiometer on the counterweight.

Component damage hazard. The cable from the string potentiometer can become damaged if it is kinked or pinched.

3 Inspect the threaded ends of the boom extend cables. The threads must be clean and in good condition with no damaged threads.

4 Adjust the extend cable adjustment nuts until approximately 1.5 inches / 4 cm of threads are visible past the nylock nut.

Note: If the cables have been replaced, be sure the adjustment nuts have been replaced. Do not re-use the existing nuts.

5 Extend the boom until there is approximately 3 feet / 1 m of travel left. Do not fully extend the boom.

6 Locate the retract cable adjustment nut on the bottom of the number 1 boom tube at the platform end of the boom.

7 Using a dial type torque wrench, torque the retract cable adjustment nut to 32-36 ft lbs / 43-49 Nm using gentle and steady torque.

8 Retract and extend the boom approximately 3 feet / 1 m two times and stop during the extension cycle. This will create slack in the retract cables.

Note: Be sure to not fully extend the boom. Stop when there is approximately 3 feet / 1 m of travel left.

9 Repeat steps 7 and 8 two to three times.

10 Fully extend the boom then retract the boom approximately 12 inches / 30 cm.

11 At the pivot end of the boom, visually inspect the boom extend cables for even cable droop or sag.

Note: If the boom extend cables are uneven, tighten the boom extend cable adjustment nut at the pivot end of the boom for the appropriate cable.
12 Visually inspect the cable break limit switch arm to be sure the wheel of the limit switch arm is centered in the notch of the pivot plate.

Note: If the boom extend cables are adjusted evenly, the wheel of the limit switch arm should be centered in the notch of the pivot plate.

13 Install the boom end cover at the pivot end of the boom.

14 Fully retract and lower the boom to the stowed position.

How to Replace the Boom Extend/Retract Cables

Note: The cable pulleys must also be replaced when replacing the cables.

1 Remove the boom extension cylinder. See 4-4, How to Remove the Boom Extension Cylinder.

Boom extend cables:

2 Remove the cables from the lower boom extend cable bracket that attaches to the number 3 boom tube.

3 Remove the rue rings and clevis pins from the boom extend cables located near the extend cable break limit switch.

4 Remove the external snap rings from the boom extend cable pulley pivot pin. Use a soft metal drift to remove the pin.

Note: When driving the pivot pin out, be sure to drive it from the shaped end of the pin.

5 Remove the pulley and boom extend cables from the extension cylinder assembly. Discard the old cables and pulleys.

6 Route the new boom extend cables through the boom extend pulley bracket.

7 Install the new boom extend cable pulley, pivot pin and snap rings.

Note: Be sure the boom extend cables are routed through the grooves of the pulley and the upper wear pad on the extension cylinder.

8 Install the boom extend cable clevis pins and rue rings to the pivot plate near the cable break limit switch.

9 Install the boom extend cables to the lower extend cable bracket that mounts to the number 3 boom tube.
BOOMCOMPONENTS

Boom retract cables:

10 Remove the cotter pins and clevis pins from the boom retract cables at the platform end of the boom.

Note: Always use a new cotter pin when installing a clevis pin.

11 Remove the wear pad fasteners from the upper wear pads on the number 1 boom tube. Remove the wear pads.

Note: Pay attention to the location of each wear pad and the quantity of shims for each one.

12 Attach a lifting strap from an overhead crane to the platform end of the boom.

13 Raise the boom using the overhead crane and place a wood block under the number 2 boom tube between the number 1 and number 2 boom tubes for support. This will create clearance between the boom tubes to remove the retract cables.

14 Attach the cable pulling tool or a rope to one of the boom retract cables at the pivot end of the boom.

Note: A cable pulling tool is available through Genie Parts Department (Genie part no. 94510)

15 At the platform end of the boom, pull on the boom retract cable that has the rope attached to it.

16 Pull the old cable completely out of the boom tube. Discard the old boom retract cable.

17 Remove the rope from the old cable and securely attach the rope to the same end of the new boom retract cable.

18 At the pivot end of the boom, carefully pull the rope with the new retract cable attached.

19 Pull the new cable towards the pivot end of the boom until the end of the cable is at the end of the boom tube. Remove the rope.

20 Repeat steps 14 through 19 for the other boom retract cable.

21 At the platform end of the boom, install the retract cables, clevis pins and new cotter pins to the adjustment plate.

22 Remove and discard the old boom retract pulleys from the pivot end of the boom extension cylinder.

23 Install the new boom retract pulleys to the pivot end of the boom extension cylinder.

24 Install the boom extension cylinder assembly into the boom.

Note: Before lowering the extension cylinder into the saddles of the number 1 boom tube, wrap the boom retract cables around the pulleys.

25 Adjust the boom extend/retract cables. See 4-5, How to Adjust the Boom Extend/Retract Cables.
Platform Leveling Master Cylinder

The master cylinder acts as a pump for the slave cylinder. It’s part of the closed circuit hydraulic loop that keeps the platform level through the entire range of boom motion. The master cylinder is located at the pivot end of the boom.

How to Remove the Platform Leveling Master Cylinder

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

1. Raise the boom until the master cylinder is above the turntable covers.

2. Tag, disconnect and plug the master 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.

3. Place a 2 x 4 x 48 inches / 5 x 10 x 120 cm block of wood across the turntable covers. Position the block under the master cylinder.

4. Remove the pin retaining fastener from the master cylinder rod-end pivot pin.

5. Place a rod through the rod-end pivot pin and twist to remove the pin. Lower the rod end of the master cylinder onto the block.

6. Remove the pin retaining fastener from the barrel-end pivot pin.

7. Place a rod through the barrel-end pivot pin and twist to remove the pin.

8. Remove the master cylinder from the machine.
5-1
RPM Adjustment - Ford and Deutz Models

Refer to Maintenance Procedure B-9, Check and Adjust the Engine RPM - Ford and Deutz Models.

5-2
RPM Adjustment - Perkins Models

Refer to Maintenance Procedure A-11, Check and Adjust the Engine RPM - Perkins Models.

5-3
Flex Plate

The flex plate acts as a coupler between the engine and the pump. It is bolted to the engine flywheel and has a splined center to drive the pump.

Two different styles of flex plates have been used in the production of your machine model. Type "A" flex plates utilize a flex plate installed onto the flywheel of the engine and a separate coupler installed onto the pump splined shaft.

Type "B" flex plates combines the pump coupler, as part of the flex plate, which is installed onto the engine flywheel.

Type "A"
(flexplate with separate coupler)

Type "B"
(flexplate with coupler combined)
How to Remove the Flex Plate

Deutz models:

1. Remove the tailpipe bracket mounting fasteners from the engine bell housing.
2. Support the drive pump assembly with an appropriate lifting device.
3. Remove all of the engine bell housing fasteners.
4. Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

5. Remove the flex plate mounting fasteners. Remove the flex plate from the flywheel.

GM models:

1. Remove the muffler clamp at the exhaust pipe.
2. Remove the muffler bracket to bell housing fasteners. Remove the muffler and bracket assembly.
3. Disconnect the electrical connector for the crankshaft position sensor located at the bottom of the bell housing.
4. Support the engine with a suitable lifting device. Do not lift it.
5. Remove the engine plate to vibration isolator fasteners.
6. Remove the engine mounting plate to bell housing fasteners.

**NOTICE** Component damage hazard. The engine could fall and the crankshaft position sensor can become damaged if the engine is not properly supported when the fasteners are removed.

7. Slide the engine mounting plate towards the pump as far as it will go.
8. Support the drive pump assembly with an appropriate lifting device.
9. Remove all of the engine bell housing fasteners.
10. Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

11. Remove the flex plate mounting fasteners. Remove the flex plate from the flywheel.
ENGINES

Ford LRG-425 EFI models:
1. Disconnect the electrical connector for the oxygen sensor at the tailpipe. Do not remove the oxygen sensor.
2. Remove the engine oil dipstick fasteners from the muffler bracket. Remove the dipstick from the engine.
3. Remove the muffler retaining fasteners from the exhaust pipe.
4. Support the muffler and bracket assembly with an overhead crane or other suitable lifting device.
5. Remove the muffler bracket mounting fasteners. Carefully remove the muffler and bracket assembly from the engine.
6. Support the engine with a suitable lifting device. Do not lift it.
7. Remove the engine plate to vibration isolator fasteners.
8. Remove the engine mounting plate to bell housing fasteners.
9. Raise the engine slightly to take the weight off of the engine mounting plate.
10. Slide the engine mounting plate towards the pump as far as it will go.
11. Support the drive pump assembly with an appropriate lifting device.
12. Remove all of the engine bell housing fasteners.
13. Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

14. Remove the flex plate mounting fasteners. Remove the flex plate from the flywheel.

Ford DSG-423 EFI models:
1. Disconnect the electrical connectors from both oxygen sensors at the tailpipe and exhaust manifold. Do not remove the oxygen sensors.
2. Remove the exhaust pipe fasteners at the muffler.
3. Support the muffler and bracket assembly with a suitable lifting device.
4. Remove the muffler bracket mounting fasteners from the bell housing. Carefully remove the muffler and bracket assembly from the engine.
5. Support the engine with an overhead crane or other suitable lifting device. Do not lift it.
6. Remove the engine mounting plate to bell housing fasteners.
7. Raise the engine slightly using the overhead crane and place a block of wood under the oil pan for support.
8. Support the drive pump assembly with an overhead crane or other suitable lifting device. Do not apply any lifting pressure.
9. Remove all of the engine bell housing retaining fasteners.
10. Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

11. Remove the flex plate mounting fasteners. Remove the flex plate from the flywheel.
Perkins models:

1. Remove the fuel filter/water separator mounting fasteners.
2. Remove the fuel filter/water separator and lay it to the side. Do not disconnect the hoses.
3. Support the drive pump assembly with an appropriate lifting device.
4. Remove all of the engine bell housing fasteners.
5. Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

6. Remove the flex plate mounting fasteners. Remove the flex plate from the flywheel.

**How to Install a Type "A" Flex Plate**

1. Install the flex plate onto the engine flywheel with the raised spline towards the pump.

2. **Ford models:** Torque the flex plate mounting bolts in sequence to 14 ft-lbs / 19 Nm. Then torque the flex plate mounting bolts in sequence to 20 ft-lbs / 27 Nm.

   **GM models:** Torque the flex plate mounting bolts in sequence to 22 ft-lbs / 30 Nm. Then torque the flex plate mounting bolts in sequence to 31 ft-lbs / 42 Nm.

   **Deutz models:** Torque the flex plate mounting bolts in sequence to 28 ft-lbs / 38 Nm. Then torque the flex plate mounting bolts in sequence to 40 ft-lbs / 54 Nm.

   **Perkins models:** Torque the flex plate mounting bolts in sequence to 49 ft-lbs / 66 Nm. Then torque the flex plate mounting bolts in sequence to 70 ft-lbs / 95 Nm.
ENGINES

3 Install the pump coupler onto the pump shaft with the set screw toward the pump. Leave the appropriate gap between coupler and pump end plate for your engine.

4 Apply Loctite® removable thread sealant to the pump coupler set screw. Torque the set screw to 61 ft-lbs / 83Nm.

5 Proceed to Repair Procedure, How to Install the Pump and Bell Housing Assembly.

---

**How to Install a Type "B" Flex Plate**

1 Install the flex plate onto the engine flywheel with the rubber vibration isolators towards the pump.

2 Apply Loctite® removable thread sealant to the flex plate fasteners and loosely install the fasteners.

3 **Deutz models:** Torque the flex plate mounting bolts in sequence to 28 ft-lbs / 38Nm. Then torque the flex plate mounting bolts in sequence to 40 ft-lbs / 54Nm.

**Ford and Perkins models:** Torque the flex plate mounting bolts in sequence to 14 ft-lbs / 19Nm. Then torque the flex plate mounting bolts in sequence to 20 ft-lbs / 27Nm.

4 Apply a high viscosity coupling grease (Genie part number 128025) to the splines of the pump shaft and flex plate.

---

**Grease Specification**

Shell Alvania® Grease CG, NLGI 0/1 or equivalent.
How to Install the Pump and Bell Housing Assembly

1. Install the pump and bell housing assembly.

**Ford LRG-425 and Deutz models:** Torque the bell housing mounting bolts labeled "C" in sequence to 28 ft-lbs / 38 Nm. Then torque the bell housing mounting bolts labeled "C" in sequence to 40 ft-lbs / 54 Nm.

**Ford DSG-423 models:** Torque the bell housing mounting bolts labeled "A" and "B" in sequence to 28 ft-lbs / 38 Nm and the mounting bolts labeled "C" to 49 ft-lbs / 66 Nm. Then torque the bell housing mounting bolts labeled "A" and "B" in sequence to 40 ft-lbs / 54 Nm and the mounting bolts labeled "C" to 70 ft-lbs / 95 Nm.

**Perkins models:** Torque the bell housing mounting bolts labeled "B" in sequence to 28 ft-lbs / 38 Nm and the mounting bolts labeled "A" to 49 ft-lbs / 66 Nm. Then torque the bell housing mounting bolts labeled "B" in sequence to 40 ft-lbs / 54 Nm and the mounting bolts labeled "A" to 70 ft-lbs / 95 Nm.

**GM models:** Torque the bell housing mounting bolts in sequence to 28 ft-lbs / 38 Nm. Then torque the bell housing mounting bolts in sequence to 40 ft-lbs / 54 Nm.

**NOTICE**
Component damage hazard.

**Type "A" flexplate:** When installing the pump, do not force the pump coupler into the flexplate or damage to the pump shaft seal may occur.

**NOTICE**
Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.
ENGINES

Ford LRG-425 EFI models

Ford DSG-423 EFI models

Perkins models

GM models

Deutz models
How to Retrieve Engine Fault Codes

GM models:
When an engine malfunction is detected by the Electronic Control Module (ECM), a fault code is recorded and the check engine light will turn on at the ground controls. Special equipment is required to retrieve fault codes stored within the ECM. Contact the Genie Service Department for assistance in retrieving fault codes.

Note: If the check engine light is on and the engine is stopped, tag the machine and remove from service. Contact service personnel immediately.

Note: If the check engine light is on and the engine is still running, contact service personnel within 24 hours.

Ford models:
The ECM constantly monitors the engine by the use of sensors on the engine. The ECM also uses signals from the sensors to initiate sequential fuel injection and make constant and instantaneous changes to ignition timing, fuel delivery and throttle position to maintain the engine’s running condition at its highest efficiency while at the same time keeping exhaust emissions to a minimum. When a sensor fails or returns signals that are outside of set parameters, the ECM will store a fault code in memory that relates to the appropriate sensor and will turn on the Check Engine Light.

Refer to Section 5, How to Retrieve Engine Fault Codes for your specific model of engine. Use the Fault Code Chart within Section 5 to aid in identifying the fault.
Hydraulic Pumps

6-1 Function Pump

How to Remove the Function Pump

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

1 Models without hydraulic tank shut-off valves: Remove the drain plug from the hydraulic tank and completely drain the tank into a suitable container. See capacity specifications.

Models with hydraulic tank shut-off valves: Locate the two hydraulic tank valves at the hydraulic tank through the access hole underneath the turntable. Close the valves.

Component damage hazard. The engine must not be started with the hydraulic tank shut-off valves in the closed position or component damage will occur. If the tank valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

2 Tag, disconnect and plug the function pump hydraulic hoses. Cap the fittings on the pump.

\[WARNING\] 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.

3 Remove the pump mounting bolts. Carefully remove the pump.

Models without hydraulic tank shut-off valves:

\[NOTICE\] Component damage hazard. Be sure to fill the hydraulic tank to specification and prime the pump after installing the pump.

Models with hydraulic tank shut-off valves:

\[NOTICE\] Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the pump.

![open and closed valves]
6-2
Drive Pump

The drive pump is a bi-directional variable displacement piston pump. The pump output is controlled by the electro-proportional controller, located on the pump. The only adjustment that can be made to the pump is the neutral or null adjustment. Any internal service to the pump should only be performed at an authorized Eaton Hydraulics center. Call Genie Industries Service Department to locate your local authorized service center.

How to Remove the Drive Pump

<table>
<thead>
<tr>
<th>NOTICE</th>
<th>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 and cause severe component damage. Dealer service is recommended.</th>
</tr>
</thead>
</table>

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

1 Disconnect the electrical connection at the electro-proportional controller located on the drive pump.

2 Models without hydraulic tank shut-off valves: Remove the drain plug from the hydraulic tank and completely drain the tank into a suitable container. See capacity specifications.

Models with hydraulic tank shut-off valves: Locate the two hydraulic tank valves at the hydraulic tank through the access hole underneath the turntable. Close the valves.

<table>
<thead>
<tr>
<th>NOTICE</th>
<th>Component damage hazard. The engine must not be started with the hydraulic tank shut-off valves in the closed position or component damage will occur. If the tank valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.</th>
</tr>
</thead>
</table>

3 Tag and disconnect and plug the hydraulic hoses from the drive and function pumps. Cap the fittings on the pumps.

<table>
<thead>
<tr>
<th>WARNING</th>
<th>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.</th>
</tr>
</thead>
</table>

open                                closed
HYDRAULIC PUMPS

4 Support the pump with a lifting device and remove the two drive pump mounting fasteners.
5 Carefully pull the drive pump out until the pump coupler separates from the flex plate.
6 Remove the drive pump from the machine.

Component damage hazard. The hydraulic pump may become unbalanced and fall if not properly supported.

Component damage hazard. When installing the pump, do not force the pump coupler into the flex plate or damage to the pump shaft seal may occur.

Models without hydraulic tank shut-off valves:

Component damage hazard. Be sure to fill the hydraulic tank to specification and prime the pump after installing the pump.

Models with hydraulic tank shut-off valves:

Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the pump.

How to Prime the Pump

1 Connect a 0 to 600 psi / 0 to 50 bar pressure gauge to the test port on the drive pump.
2 Remove the safety pin (if equipped) from the engine pivot plate latch.

Note: The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

3 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.
4 GM and Ford models: Close the valve on the LPG tank then disconnect the hose from the tank. Move the fuel select switch to the LPG position.

Perkins models: Disconnect the engine wiring harness from the fuel solenoid at the injector pump.

Deutz models: Hold the manual fuel shutoff valve clockwise to the closed position.

![Diagram](image-url)
5 Have another person crank the engine with the starter motor for 15 seconds, wait 15 seconds, then crank the engine an additional 15 seconds or until the pressure reaches 320 psi / 22 bar.

6 **GM and Ford models:** Connect the LPG hose to the LPG tank and open the valve on the tank. Move the fuel select switch to the gasoline position.

   **Perkins models:** Connect the engine wiring harness to the fuel solenoid.

   **Deutz models:** Release the manual fuel shutoff valve.

7 Start the engine from the ground controls and check for hydraulic leaks.
# Function Manifold Components

The function manifold is located underneath the ground controls side turntable cover.

<table>
<thead>
<tr>
<th>Index No.</th>
<th>Description</th>
<th>Schematic Item</th>
<th>Function</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Counterbalance valve ..................</td>
<td>H</td>
<td>Platform level down</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
</tr>
<tr>
<td>2</td>
<td>Counterbalance valve ..................</td>
<td>G</td>
<td>Platform level up</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
</tr>
<tr>
<td>3</td>
<td>Proportional solenoid valve ..........</td>
<td>M</td>
<td>Boom extend/retract</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
</tr>
<tr>
<td>4</td>
<td>Solenoid valve, 2 position 3 way ...</td>
<td>C</td>
<td>Boom retract</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
</tr>
<tr>
<td>5</td>
<td>Solenoid valve, 2 position 3 way ...</td>
<td>B</td>
<td>Boom extend</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
</tr>
<tr>
<td>6</td>
<td>Solenoid valve, 3 position 4 way ...</td>
<td>D</td>
<td>Turntable rotate</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
</tr>
<tr>
<td>7</td>
<td>Proportional solenoid valve ..........</td>
<td>T</td>
<td>Boom up/down circuit</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
</tr>
<tr>
<td>8</td>
<td>Solenoid valve, 3 position 4 way ...</td>
<td>BB</td>
<td>Steer left/right</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
</tr>
<tr>
<td>9</td>
<td>Check valve, 30 psi / 2 bar ..........</td>
<td>I</td>
<td>Differential sensing circuit, platform rotate left and jib boom up (S-65)</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
</tr>
<tr>
<td>10</td>
<td>Check valve, 30 psi / 2 bar ..........</td>
<td>J</td>
<td>Differential sensing circuit, platform rotate right and jib boom down (S-65)</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
</tr>
<tr>
<td>11</td>
<td>Check valve ................................</td>
<td>N</td>
<td>Differential sensing circuit, boom extend/retract</td>
<td>10-12 ft-lbs / 14-16 Nm</td>
</tr>
<tr>
<td>12</td>
<td>Solenoid valve, 2 position 3 way ...</td>
<td>F</td>
<td>Boom down</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
</tr>
<tr>
<td>13</td>
<td>Solenoid valve, 2 position 3 way ...</td>
<td>E</td>
<td>Boom up</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
</tr>
<tr>
<td>14</td>
<td>Check valve ................................</td>
<td>O</td>
<td>Differential sensing circuit, turntable rotate</td>
<td>10-12 ft-lbs / 14-16 Nm</td>
</tr>
<tr>
<td>15</td>
<td>Check valve ................................</td>
<td>R</td>
<td>Differential sensing circuit, boom up/down</td>
<td>10-12 ft-lbs / 14-16 Nm</td>
</tr>
<tr>
<td>16</td>
<td>Priority flow regulator valve, 3.5 gpm / 13.2 L/min</td>
<td>AA</td>
<td>Steer left/right circuit</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
</tr>
<tr>
<td>17</td>
<td>Differential sensing valve, 110 psi / 7.6 bar</td>
<td>S</td>
<td>Boom up/down circuit</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
</tr>
<tr>
<td>18</td>
<td>Differential sensing valve, 150 psi / 10.3 bar</td>
<td>P</td>
<td>Turntable rotate circuit</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
</tr>
</tbody>
</table>

This list continues. Please turn the page
MANIFOLDS
## Function Manifold Components, continued

<table>
<thead>
<tr>
<th>Index No.</th>
<th>Description</th>
<th>Schematic Item</th>
<th>Function</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Check valve, 5 psi / 0.3 bar .......... A ..........</td>
<td>Blocks flow from auxiliary pump to function pump ..........</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Relief valve, 3000 psi / 206.8 bar ..... K ..........</td>
<td>System relief ..........</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Flow control valve, 0.1 gpm / 0.38 L/min ................. DD ......</td>
<td>Bleeds off differential sensing valves to tank ..........</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Differential sensing valve, 150 psi / 10.3 bar .................. CC ......</td>
<td>Differential sensing circuit, meters flow to functions ..........</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Check valve .................. W ......</td>
<td>Differential sensing circuit, platform level up ..........</td>
<td>10-12 ft-lbs / 14-16 Nm</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Check valve .................. X ......</td>
<td>Differential sensing circuit, platform level down ..........</td>
<td>10-12 ft-lbs / 14-16 Nm</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Proportional solenoid valve ........ Q ..........</td>
<td>Turntable rotate left/right ..........</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Flow control valve, 0.6 gpm / 2.27 L/min ...................... Z ......</td>
<td>Platform rotate and jib boom (S-65) ..........</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Check valve, 30 psi / 2 bar ........ EE ......</td>
<td>Platform rotate and jib boom circuit (S-65) (prevents hydraulic hoses from draining back to tank) ..........</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Differential sensing valve, 110 psi / 7.6 bar ............. L ......</td>
<td>Boom extend/retract circuit ..........</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Needle valve .................. U ......</td>
<td>Platform level circuit ..........</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Solenoid valve, 3 position 4 way ...... V ....</td>
<td>Platform level up/down ..........</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Solenoid valve, 3 position 4 way ...... Y ....</td>
<td>Platform rotate and jib boom up/down (S-65) ..........</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
<td></td>
</tr>
</tbody>
</table>
7-2
Valve Adjustments - Function Manifold

How to Adjust the System Relief Valve

Note: Perform this procedure with the boom in the stowed position.

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

2. Start the engine from the ground controls.

3. Hold the function enable/rpm select toggle switch to the high idle position. Activate and hold the boom retract toggle switch with the boom fully retracted.

4. Observe the pressure reading on the pressure gauge. Refer to Section 2, Specifications.

5. Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item K).

6. Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

**WARNING** Tip-over hazard. Do not adjust the relief valve higher than specified.

7. Repeat steps 2 through 5 and recheck relief valve pressure.

8. Remove the pressure gauge.
7-3
Jib Boom / Platform Rotate Manifold Components

<table>
<thead>
<tr>
<th>Index No.</th>
<th>Description</th>
<th>Schematic Item</th>
<th>Function</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solenoid valve, 2 position 3 way FF</td>
<td>FF</td>
<td>Platform rotate/jib boom select</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
</tr>
</tbody>
</table>
# Brake/Two-Speed Manifold Components

The brake/two-speed manifold is mounted near the turntable rotator.

<table>
<thead>
<tr>
<th>Index No.</th>
<th>Description</th>
<th>Schematic Item</th>
<th>Function</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Orifice, 0.025 inch / 0.64 mm</td>
<td>JJ</td>
<td>Brake release</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
</tr>
<tr>
<td>2</td>
<td>Solenoid valve, 2 position 3 way</td>
<td>KK</td>
<td>Brake release</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
</tr>
<tr>
<td>3</td>
<td>Solenoid valve, 2 position 3 way</td>
<td>LL</td>
<td>Two-speed motor shift</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
</tr>
<tr>
<td>4</td>
<td>Check valve</td>
<td>II</td>
<td>Brake release circuit</td>
<td>20-25 ft-lbs / 27-34 Nm</td>
</tr>
</tbody>
</table>
MANIFOLDS

## 7-5
### Turntable Rotation Manifold Components

The turntable rotation manifold is mounted to the turntable rotation motor.

<table>
<thead>
<tr>
<th>Index No.</th>
<th>Description</th>
<th>Schematic Item</th>
<th>Function</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Counterbalance valve ..................</td>
<td>MM</td>
<td>Turntable rotate right</td>
<td>35-40 ft-lbs / 47-54 Nm</td>
</tr>
<tr>
<td>2</td>
<td>Counterbalance valve ..................</td>
<td>NN</td>
<td>Turntable rotate left</td>
<td>35-40 ft-lbs / 47-54 Nm</td>
</tr>
<tr>
<td>3</td>
<td>Shuttle valve, 2 position 3 way ......</td>
<td>OO</td>
<td>Turntable rotation brake release .....</td>
<td>10-13 ft-lbs / 14-18 Nm</td>
</tr>
<tr>
<td>4</td>
<td>Orifice, 0.030 inch / 0.76 mm .......</td>
<td>PP</td>
<td>Brake release circuit</td>
<td></td>
</tr>
</tbody>
</table>

(located inside port)
7-6
Oscillate Directional Valve Components

The oscillate directional valve is mounted inside the drive chassis at the non-steer end.

<table>
<thead>
<tr>
<th>Index No.</th>
<th>Description</th>
<th>Function</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cap</td>
<td>Breather</td>
<td>20-25 ft-lbs / 27-33 Nm</td>
</tr>
<tr>
<td>2</td>
<td>Spool valve</td>
<td>Directional control</td>
<td></td>
</tr>
</tbody>
</table>
MANIFOLDS

How to Set Up the Oscillate Directional Valve

Note: Adjustment of the oscillate directional valve linkage is only necessary when the linkage or valve has been replaced.

1. Lower the boom to the stowed position.
2. Use a "bubble type" level to be sure the floor is completely level.

**WARNING** Tip-over hazard. Failure to perform this procedure on a level floor could compromise the stability of the machine resulting in the machine tipping over.

3. Check the tire pressure in all four tires and add air if needed to meet specification.

Note: The tires on some machines are foam-filled and do not need air added to them.

4. Remove the drive chassis cover and the non-steer axle covers.
5. Place a "bubble type" level across the drive chassis non-steer end. Check to be sure the drive chassis is completely level.
6. Remove the heim joint retaining fastener from the axle.

7. To level the drive chassis, start the engine and push up or pull down on the threaded rod until the machine is completely level.
8. Verify that the ground and drive chassis are completely level.
9. Adjust the heim joint until the hole lines up with the retaining fastener hole in the axle.
10. Install the heim joint to the axle and tighten the jam nut.
11. Check to be sure the drive chassis is completely level.
12. Measure the distance between the drive chassis and the non-steer axle on both sides (from the inside of the drive chassis).

Note: If the distance is not equal and the adjustment to the linkage was completed with the ground and drive chassis level, repeat steps 6 through 11 OR consult the Genie Service Department.
7-7
Valve Adjustments - Oscillate Relief Valve

How to Adjust the Oscillate Relief Valve Pressure

1. Remove the drive chassis cover from the non-steer end of the machine.

2. Connect a 0 to 2000 psi / 0 to 150 bar pressure gauge to the diagnostic nipple located near the oscillate directional valve.

3. Disconnect the directional valve linkage, by removing the heim joint and retaining fastener from the axle.

4. Start the engine from the platform controls. Move the engine idle toggle switch to the maintained high idle position.

5. With the engine running in high rpm, manually activate the valve and observe the pressure reading on the pressure gauge. Refer to Section 2, Specifications.

6. Turn the engine off.

7. Locate the relief valve on the directional valve and remove the cap.

8. Adjust the internal screw. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.

**WARNING** Tip-over hazard. Do not adjust the relief valve higher than specified.

9. Repeat steps 4 through 7 and manually activate the valve to confirm the valve pressure.

10. Turn the engine off, remove the pressure gauge and assemble the directional valve linkage.

11. Install the cover on the non-steer end of the drive chassis.
MANIFOLDS

7-8
Drive Oil Diverter Manifold Components (welder option)

The oil diverter manifold is mounted to the hydraulic generator located in the engine compartment.

<table>
<thead>
<tr>
<th>Index No.</th>
<th>Description</th>
<th>Schematic Item</th>
<th>Function</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Directional Valve</td>
<td>CU</td>
<td>Diverter valve</td>
<td>80-90 ft-lbs / 108-122 Nm</td>
</tr>
<tr>
<td>2</td>
<td>Orifice disc, 0.030 inch / 0.080 cm</td>
<td>CV</td>
<td>Delays shift to drive</td>
<td>35-40 ft-lbs / 47-54 Nm</td>
</tr>
<tr>
<td>3</td>
<td>Solenoid valve</td>
<td>CW</td>
<td>Pilot valve to diverter</td>
<td>35-40 ft-lbs / 47-54 Nm</td>
</tr>
<tr>
<td>4</td>
<td>Relief valve</td>
<td>CX</td>
<td>Charge pressure circuit</td>
<td>35-40 ft-lbs / 47-54 Nm</td>
</tr>
<tr>
<td>5</td>
<td>Check valve</td>
<td>CY</td>
<td>Prevents oil to generator</td>
<td>35-40 ft-lbs / 47-54 Nm</td>
</tr>
</tbody>
</table>
7-9
Traction Manifold Components, 2WD

The traction manifold is mounted inside the drive chassis at the non-steer end.

<table>
<thead>
<tr>
<th>Index No.</th>
<th>Description</th>
<th>Schematic Item</th>
<th>Function</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Relief valve, 280 psi / 19.3 bar .......... TT ........</td>
<td>Charge pressure circuit ....................</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Flow divider/combiner valve ............. WW ......</td>
<td>Controls flow to drive motors in forward and reverse ..........</td>
<td>90-100 ft-lbs / 122-136 Nm</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Check valve ....................................... SS .........</td>
<td>Drive circuit .......................................</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Check valve ....................................... XX .........</td>
<td>Drive circuit .......................................</td>
<td>30-35 ft-lbs / 41-47 Nm</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Shuttle valve, 3 position 3 way ........... UU ........</td>
<td>Charge pressure circuit that directs hot oil out of low pressure side of drive pump ....................</td>
<td>50-55 ft-lbs / 68-75 Nm</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Orifice, 0.070 inch / 1.78 mm ............ VV ........</td>
<td>Drive motor circuit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MANIFOLDS
**7-10**

**Valve Adjustments, 2WD Traction Manifold**

**How to Adjust the Charge Pressure Relief Valve**

1. Connect a 0 to 600 psi / 0 to 50 bar pressure gauge to the test port on the drive pump.
2. Hold the charge pressure relief valve and remove the cap (item TT).
3. Turn the internal hex socket clockwise fully until it stops. Install the cap.
4. Start the engine and move and hold the function enable/rpm select toggle switch to the high rpm (rabbit symbol) position. Note the reading on the pressure gauge.
5. Turn the engine off.
6. Remove the pressure gauge from the drive pump. Connect the gauge to the test port located on the traction manifold.
7. Start the engine from the platform controls. Press down the foot switch and slowly move the drive control handle off center just until the machine begins to move. Note the reading on the pressure gauge. Turn the machine off.
8. Hold the charge pressure relief valve and remove the cap (item TT).
9. Adjust the internal hex socket until the pressure reading on the gauge is 30 psi / 2 bar less than the pressure reading on the pump. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.
10. Repeat steps 7 through 9 until the pressure reading at the drive manifold is 30 psi / 2 bar less than the pressure reading at the pump.
11. Turn the engine off and remove the pressure gauge.
### 7-11
#### Traction Manifold Components, 4WD

The traction manifold is mounted inside the drive chassis at the non-steer end.

<table>
<thead>
<tr>
<th>Index No.</th>
<th>Description</th>
<th>Schematic Item</th>
<th>Function</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Check valve ................................</td>
<td>TT</td>
<td>Steer end drive motor circuit .......</td>
<td>35-40 ft-lbs / 14-16 Nm</td>
</tr>
<tr>
<td>2</td>
<td>Check valve ................................</td>
<td>SS</td>
<td>Non-steer end drive motor circuit ....</td>
<td>35-40 ft-lbs / 14-16 Nm</td>
</tr>
<tr>
<td>3</td>
<td>Flow divider/combiner valve ..........</td>
<td>AB</td>
<td>Controls flow to flow divider/combiner valves 11 and 13</td>
<td>80-90 ft-lbs / 108-122 Nm</td>
</tr>
<tr>
<td>4</td>
<td>Check valve ................................</td>
<td>AF</td>
<td>Non-steer end drive motor circuit ....</td>
<td>60-70 ft-lbs / 81-95 Nm</td>
</tr>
<tr>
<td>5</td>
<td>Orifice, 0.040 inch / 1 mm ...........</td>
<td>AC</td>
<td>Equalizes pressure on both sides of flow divider/combiner valve 3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Orifice, 0.040 inch / 1 mm ...........</td>
<td>AE</td>
<td>Equalizes pressure on both sides of flow divider/combiner valve 11</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Orifice, 0.040 inch / 1 mm ...........</td>
<td>WW</td>
<td>Equalizes pressure on both sides of flow divider/combiner valve 13</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Check valve ................................</td>
<td>AG</td>
<td>Steer end drive motor circuit .......</td>
<td>60-70 ft-lbs / 81-95 Nm</td>
</tr>
<tr>
<td>9</td>
<td>Check valve ................................</td>
<td>ZZ</td>
<td>Steer end drive motor circuit .......</td>
<td>35-40 ft-lbs / 14-16 Nm</td>
</tr>
<tr>
<td>10</td>
<td>Shuttle valve, 3 position 3 way ......</td>
<td>VV</td>
<td>Charge pressure circuit that directs hot oil out of low pressure side of drive pump</td>
<td>80-90 ft-lbs / 108-122 Nm</td>
</tr>
<tr>
<td>11</td>
<td>Flow divider/combiner valve ..........</td>
<td>AD</td>
<td>Controls flow to steer end drive motors in forward and reverse</td>
<td>80-90 ft-lbs / 108-122 Nm</td>
</tr>
<tr>
<td>12</td>
<td>Check valve ................................</td>
<td>YY</td>
<td>Non-steer end drive motor circuit ....</td>
<td>35-40 ft-lbs / 14-16 Nm</td>
</tr>
<tr>
<td>13</td>
<td>Flow divider/combiner valve ..........</td>
<td>XX</td>
<td>Controls flow to non-steer end drive motors in forward and reverse</td>
<td>80-90 ft-lbs / 108-122 Nm</td>
</tr>
<tr>
<td>14</td>
<td>Relief valve, 280 psi / 19.3 bar ......</td>
<td>UU</td>
<td>Charge pressure circuit ..........</td>
<td>35-40 ft-lbs / 14-16 Nm</td>
</tr>
</tbody>
</table>
MANIFOLDS

1. TT
2. SS
3. AB
4. AF
5. AC
6. AE
7. WW
8. AG
9. ZZ
10. VV
11. AD
12. YY
13. XX
14. UU
Valve Adjustments, 4WD Traction Manifold

How to Adjust the Charge Pressure Relief Valve

1. Connect a 0 to 600 psi / 0 to 50 bar pressure gauge to the test port on the drive pump.
2. Hold the charge pressure relief valve and remove the cap (item UU).
3. Turn the internal hex socket clockwise fully until it stops. Install the cap.
4. Start the engine and move and hold the function enable/rpm select toggle switch to the high rpm (rabbit symbol) position. Note the reading on the pressure gauge.
5. Turn the engine off.
6. Remove the pressure gauge from the drive pump. Connect the gauge to the test port located on the traction manifold.
7. Start the engine from the platform controls. Press down the foot switch and slowly move the drive control handle off center just until the machine begins to move. Note the reading on the pressure gauge. Turn the machine off.
8. Hold the charge pressure relief valve and remove the cap (item UU).
9. Adjust the internal hex socket until the pressure reading on the gauge is 30 psi / 2 bar less than the pressure reading on the pump. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.
10. Repeat steps 7 through 9 until the pressure reading at the drive manifold is 30 psi / 2 bar less than the pressure reading at the pump.
11. Turn the engine off and remove the pressure gauge.
Valve Coils

How to Test a Coil

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

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

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

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

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

- **Result:** The resistance should be within specification, plus or minus 30%.
- **Result:** If the resistance is not within specification, plus or minus 30%, replace the coil.

### Valve Coil Resistance Specification

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solenoid valve, 3 position 4 way, 10V DC (schematic items D, V and Y)</td>
<td>5 to 7Ω</td>
</tr>
<tr>
<td>Solenoid valve, 3 position 4 way, 10V DC (schematic item BB)</td>
<td>4 to 6Ω</td>
</tr>
<tr>
<td>Solenoid valve, 2 position 3 way, 10V DC (schematic items B, C, E, F and FF)</td>
<td>5 to 7Ω</td>
</tr>
<tr>
<td>Solenoid valve, 2 position 3 way, 10V DC (schematic items KK and LL)</td>
<td>5.5 to 7.5Ω</td>
</tr>
<tr>
<td>Proportional solenoid valve, 12V DC (schematic items M and T)</td>
<td>4 to 6Ω</td>
</tr>
<tr>
<td>Proportional solenoid valve, 12V DC (schematic item Q)</td>
<td>3.7 to 5.7Ω</td>
</tr>
</tbody>
</table>
How to Test a Coil Diode

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

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

1. Test the coil for resistance. See, *How to Test a Coil*.

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

   **Resistor, 10Ω**
   Genie part number 27287

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

3. Set a multimeter to read DC current.

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

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

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

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

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

   - Result: Both current readings are greater than 0 mA and are different by a minimum of 20%. The coil is good.
   - Result: If one or both of the current readings are 0 mA, or if the two current readings do not differ by a minimum of 20%, the coil and/or its internal diode are faulty and the coil should be replaced.
Turntable Rotation Components

8-1
Turntable Rotation Assembly

How to Remove the Turntable Rotation Assembly

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

Note: Perform this procedure with the machine on a firm and level surface.

1 Secure the turntable from rotating with the turntable rotation lock pin.

Note: The turntable rotation lock pin is located next to the boom rest pad.

2 Tag, disconnect and plug the hydraulic hoses from the turntable rotation 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.

3 Loosen the backlash pivot plate and adjustment bolts.

4 Attach a suitable lifting device to the lifting eyes on the drive hub assembly.

5 Remove the backlash pivot plate mounting bolts. Carefully remove the drive hub assembly from the machine.

**WARNING** Crushing hazard. The turntable could rotate unexpectedly when the rotation drive hub assembly is removed if the turntable is not secured with the turntable rotation lock pin.

**WARNING** Crushing hazard. The turntable rotation drive hub assembly could become unbalanced and fall when removed from the machine if not properly supported.
When installing the drive hub assembly:

6 Install the drive hub. Torque the backlash pivot plate to specification. Refer to Section 2, Specifications.

7 Adjust turntable rotation gear backlash. See How to Adjust the Turntable Rotation Gear Backlash.

How to Adjust the Turntable Rotation Gear Backlash

The turntable rotation drive hub is mounted on an adjustable plate that controls the gap between the rotation motor pinion gear and the turntable bearing ring gear.

Note: Perform this procedure with the boom between the non-steer end tires and with the machine on a firm and level surface.

1 Secure the turntable from rotating with the turntable rotation lock pin.

Note: The turntable rotation lock pin is located next to the boom rest pad.

2 Loosen the backlash pivot plate mounting fasteners.

3 Push the backlash pivot plate towards the turntable as far as possible (this will push the rotation gear into the turntable bearing ring gear).

4 Loosen the lock nut on the adjustment bolt.

5 Turn the adjustment bolt clockwise until it contacts the backlash pivot plate.

6 Turn the adjustment bolt 1/2 turn counterclockwise. Tighten the lock nut on the adjustment bolt.

7 Rotate the backlash pivot plate away from the turntable until it contacts the adjustment bolt. Then torque the mounting fasteners on the backlash pivot plate to specification. Refer to Section 2, Specifications.

8 Rotate the turntable through an entire rotation. Check for tight spots that could cause binding. Readjust if necessary.
Axle Components

9-1 Oscillating Axle Cylinders

The oscillating axle cylinders extend and retract between the drive chassis and the axle to maintain a level chassis while driving over uneven terrain. The cylinders are equipped with counterbalance valves to prevent movement in the event of a hydraulic hose failure.

How to Remove an Oscillate Axle Cylinder

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

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, Hydraulic Hose and Fitting Torque Specifications.

1 Rotate the turntable until the boom is between the steer tires.

2 Tag, disconnect and plug the oscillating axle cylinder hydraulic hoses. Cap the fittings on the cylinder.

3 Remove the pin retaining fasteners from the rod-end pivot pin. Use a soft metal drift to remove the pin.

4 Attach a lifting strap from an overhead crane to the barrel end of the oscillating cylinder.

5 Remove the pin retaining fasteners from the barrel-end pivot pin. Use a soft metal drift to remove the pin.

6 Remove the cylinder from the machine.

**WARNING** Crushing hazard. The oscillate cylinder could become unbalanced and fall if not properly attached to the overhead crane when removed from the machine.

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

- Read, understand and obey the safety rules and operating instructions printed in the *Genie S-60 and S-65 Operator’s Manual* or the *Genie S-60 HC 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 shortcuts 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** Electrocuton/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.

Note: Perform all troubleshooting on a firm level surface.

Note: Two persons will be required to safely perform some troubleshooting procedures.
Fault Code Chart - Control System

How to Retrieve Control System Fault Codes

Note: At least one fault code is present when the alarm at the platform controls produces two short beeps every 30 seconds for 10 minutes.

Note: Perform this procedure with the engine off, the key switch turned to platform controls and the red Emergency Stop button pulled out to the on position at both the ground and platform controls.

1 Open the platform control box lid.

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

2 Locate the red and yellow fault LEDs on the ALC-500 circuit board inside the platform control box. Do not touch the circuit board.

NOTICE Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. If the circuit board does need to be handled, maintain firm contact with a metal part of the machine that is grounded at all times when handling the printed circuit board OR use a grounded wrist strap.

3 Determine the error source: The red LED indicates the error source and will flash two separate codes. The first code will indicate the first digit of the two digit code, flashing once per second. It will then pause for 1.5 seconds and flash the second digit once per 0.5 second.

Note: When the red LED is flashing the code, the yellow LED will be on solid.

4 Determine the error type: The yellow LED indicates the error type and will flash two separate codes. The first code will indicate the first digit of the two digit code, flashing once per second. It will then pause for 1.5 seconds and flash the second digit once per 0.5 second.

Note: When the yellow LED is flashing the code, the red LED will be on solid.

5 Use the fault code table on the following pages to aid in troubleshooting the machine by pinpointing the area or component affected.
## FAULT CODES

<table>
<thead>
<tr>
<th>Error Source</th>
<th>Error Type</th>
<th>Condition</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 Boom 1 Joystick (primary boom up/down)</td>
<td>11 Value at 5V</td>
<td>Function is inoperative until joystick is calibrated. Alarm sounds indicating fault.</td>
<td>Cycle power off, then on and problem should be corrected.</td>
</tr>
<tr>
<td></td>
<td>12 Value too high</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 Value too low</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 Value at 0V</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 Not calibrated</td>
<td>Function is inoperative until joystick is calibrated.</td>
<td>Calibrate joystick</td>
</tr>
<tr>
<td></td>
<td>18 Just calibrated</td>
<td>Initiate 1-second beep of alarm.</td>
<td>Self-clearing. (transient)</td>
</tr>
<tr>
<td>22 Boom 1 directional valves</td>
<td>21 Fault</td>
<td>Valve is operating outside of operational limits. Alarm sounds indicating fault.</td>
<td>Cycle power off, then on and problem should be corrected.</td>
</tr>
<tr>
<td>23 Boom 1 flow control valve</td>
<td>12 Value too high</td>
<td>Valve is operating outside of operational limits. Alarm sounds indicating fault.</td>
<td>Cycle power off, then on and problem should be corrected.</td>
</tr>
<tr>
<td></td>
<td>15 Value too low</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 Not calibrated</td>
<td>Normal function <strong>except</strong> threshold for one or both directions is zero.</td>
<td>Calibrate valve thresholds</td>
</tr>
<tr>
<td></td>
<td>18 Just calibrated</td>
<td></td>
<td>Self-clearing. (transient)</td>
</tr>
<tr>
<td>31 Boom 2 Joystick (secondary boom up/down or primary boom extend/retract)</td>
<td>11 Value at 5V</td>
<td>Joystick is operating outside of operational limits. Alarm sounds indicating fault.</td>
<td>Cycle power off, then on and problem should be corrected.</td>
</tr>
<tr>
<td></td>
<td>12 Value too high</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 Value too low</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 Value at 0V</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 Not calibrated</td>
<td>Function is inoperative until joystick is calibrated.</td>
<td>Calibrate joystick</td>
</tr>
<tr>
<td></td>
<td>18 Just calibrated</td>
<td>Initiate 1 second beep of alarm.</td>
<td>Self-clearing. (transient)</td>
</tr>
<tr>
<td>32 Boom 2 directional valves</td>
<td>21 Fault</td>
<td>Valve is operating outside of operational limits. Alarm sounds indicating fault.</td>
<td>Cycle power off, then on and problem should be corrected.</td>
</tr>
<tr>
<td>Error Source</td>
<td>Error Type</td>
<td>Condition</td>
<td>Solution</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
<td>-----------</td>
<td>----------</td>
</tr>
<tr>
<td>Boom 2 flow control valve</td>
<td>Value too high</td>
<td>Valve is operating outside of operational limits. Alarm sounds indicating fault.</td>
<td>Cycle power off, then on and problem should be corrected.</td>
</tr>
<tr>
<td></td>
<td>Value too low</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not calibrated</td>
<td>Normal function except threshold for one or both directions is zero.</td>
<td>Calibrate valve thresholds</td>
</tr>
<tr>
<td></td>
<td>Just calibrated</td>
<td>Self-clearing. (transient)</td>
<td></td>
</tr>
<tr>
<td>Turntable rotate joystick</td>
<td>Value at 5V</td>
<td>Joystick is operating outside of operational limits. Alarm sounds indicating fault.</td>
<td>Cycle power off, then on and problem should be corrected.</td>
</tr>
<tr>
<td></td>
<td>Value too high</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value too low</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value at 0V</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not calibrated</td>
<td>Function is inoperative until joystick is calibrated.</td>
<td>Calibrate joystick</td>
</tr>
<tr>
<td></td>
<td>Just calibrated</td>
<td>Initiate 1-second beep of alarm.</td>
<td>Self-clearing. (transient)</td>
</tr>
<tr>
<td>Turntable rotate directional valves</td>
<td>Fault</td>
<td>Valve is operating outside of operational limits. Alarm sounds indicating fault.</td>
<td>Cycle power off, then on and problem should be corrected.</td>
</tr>
<tr>
<td>Turntable rotate flow control valve</td>
<td>Value too high</td>
<td>Valve is operating outside of operational limits. Alarm sounds indicating fault.</td>
<td>Cycle power off, then on and problem should be corrected.</td>
</tr>
<tr>
<td></td>
<td>Value too low</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not calibrated</td>
<td>Normal function except threshold for one or both directions is zero.</td>
<td>Calibrate valve thresholds</td>
</tr>
<tr>
<td></td>
<td>Just calibrated</td>
<td>Self-clearing. (transient)</td>
<td></td>
</tr>
<tr>
<td>Drive enable toggle switch</td>
<td>Fault</td>
<td>Drive enable function is inoperative.</td>
<td>Cycle power off, then on and problem should be corrected.</td>
</tr>
</tbody>
</table>
# Fault Codes

<table>
<thead>
<tr>
<th>Error Source</th>
<th>Error Type</th>
<th>Condition</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>51 Drive joystick</td>
<td>11 Value at 5V</td>
<td>Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.</td>
<td>Power up controller with problem corrected.</td>
</tr>
<tr>
<td></td>
<td>12 Value too high</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 Value too low</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 Value at 0V</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 Not calibrated</td>
<td>Joystick speed and direction frozen at zero and neutral.</td>
<td>Calibrate joystick</td>
</tr>
<tr>
<td></td>
<td>18 Just calibrated</td>
<td>Initiate 1-second beep of alarm.</td>
<td>Self-clearing. (transient)</td>
</tr>
<tr>
<td>53 Drive flow valve (EDC)</td>
<td>12 Value too high</td>
<td>Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.</td>
<td>Power up controller with problem corrected.</td>
</tr>
<tr>
<td></td>
<td>15 Value too low</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 Not calibrated</td>
<td>Normal function except threshold for one or both directions is zero.</td>
<td>Calibrate valve thresholds</td>
</tr>
<tr>
<td></td>
<td>18 Just calibrated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>54 Drive brake valve</td>
<td>21 Fault</td>
<td>Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.</td>
<td>Power up controller with problem corrected.</td>
</tr>
<tr>
<td></td>
<td>12 Value too high</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 Value too low</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 Value at 0V</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 Not calibrated</td>
<td>Joystick speed and direction frozen at zero and neutral.</td>
<td>Calibrate Joystick</td>
</tr>
<tr>
<td></td>
<td>18 Just calibrated</td>
<td>Initiate 1-second beep of alarm.</td>
<td>Self-clearing. (transient)</td>
</tr>
</tbody>
</table>
Ford LRG-425 EFI Engine

How to Retrieve Ford Engine Fault Codes

The ECM constantly monitors the engine by the use of sensors on the engine. The ECM also uses signals from the sensors to initiate sequential fuel injection and make constant and instantaneous changes to ignition timing, fuel delivery and throttle position to maintain the engine’s running condition at its highest efficiency while at the same time keeping exhaust emissions to a minimum. When a sensor fails or returns signals that are outside of set parameters, the ECM will store a fault code in memory that relates to the appropriate sensor and will turn on the Check Engine Light.

Note: Perform this procedure with the key switch in the off position.

1 Open the ground controls side cover and locate the run/test toggle switch on the side of the ground control box.
2 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.
3 Quickly activate and release the start toggle switch/button. Do not start the engine.
4 Move and hold the run/test toggle switch to the test position.
5 Continue to hold the run/test toggle switch in the test position and count the blinks.

Note: Before the fault codes are displayed, the check engine light will blink a code 123 three times. After the fault codes, the check engine light will blink a code 123 three times again indicating the end of the stored codes.

Note: If any fault codes are present, the ECM will blink a three digit code three times for each code stored in memory. It will blink the first digit of a three digit code, pause, blink the second digit, pause, and then blink the third digit. For example: the check engine light blinks 5 consecutive times, blinks 3 times and then 1 time. That would indicate code 531.

Note: Once a fault code has been retrieved and the repair has been completed, the ECM memory must be reset to clear the fault code from the ECM. See How to Clear Engine Fault Codes from the ECM.

How to Clear Engine Fault Codes from the ECM

Note: Perform this procedure with the engine off and the key switch in the off position.

1 Open the engine side turntable cover and locate the battery.
2 Disconnect the negative battery cable from the battery for a minimum of 5 minutes.

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

3 Connect the negative battery cable to the battery.
## Fault Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>Closed Loop Multiplier High (LPG)</td>
<td>Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR there are vacuum leaks or exhaust leaks.</td>
<td>Repair wiring and/or connections OR replace sensor OR repair vacuum and exhaust leaks.</td>
</tr>
<tr>
<td>112</td>
<td>HO2S Open/Inactive (Bank 1)</td>
<td>Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty.</td>
<td>Repair wiring and/or connections OR replace sensor.</td>
</tr>
<tr>
<td>113</td>
<td>HO2S Open/Inactive (Bank 2)</td>
<td>Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty.</td>
<td>Repair wiring and/or connections OR replace sensor.</td>
</tr>
<tr>
<td>114</td>
<td>Post-cat oxygen sensor open</td>
<td>The post cat Heated Oxygen Sensor wiring and/or connections are open or shorted OR sensor is cold, non-responsive or inactive for 60 seconds or longer.</td>
<td>Repair wiring and/or connections OR replace the post cat oxygen sensor.</td>
</tr>
<tr>
<td>121</td>
<td>Closed Loop Multiplier High (Gasoline)</td>
<td>Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR there are vacuum leaks or exhaust leaks OR fuel pressure is low OR the fuel injectors need cleaning or replacing.</td>
<td>Repair wiring and/or connections OR replace sensor OR repair any vacuum and exhaust leaks OR test the fuel pressure OR clean or replace the fuel injectors.</td>
</tr>
<tr>
<td>122</td>
<td>Closed Loop Multiplier Low (Gasoline)</td>
<td>MAP, IAT or ECT sensors not in correct position OR wiring and/or connections for sensors open or shorted OR sensor is faulty OR one or more fuel injectors are stuck open OR there is electro-magnetic interference from a faulty crankshaft and/or camshaft position sensor.</td>
<td>Adjust or replace sensors OR clean or repair fuel injectors.</td>
</tr>
<tr>
<td>124</td>
<td>Closed Loop Multiplier Low (LPG)</td>
<td>Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR fuel quality is poor OR fuel system components may be faulty.</td>
<td>Repair wiring and/or connections OR replace sensor OR replace fuel OR test and repair the fuel system components.</td>
</tr>
<tr>
<td>133</td>
<td>Gasoline cat monitor</td>
<td></td>
<td>Repair exhaust leaks OR there is an emissions compliance issue. Contact Ford Power Products for assistance.</td>
</tr>
<tr>
<td>134</td>
<td>LPG cat monitor</td>
<td>There are exhaust leaks OR the catalyst system efficiency is below the acceptable level.</td>
<td>Repair exhaust leaks OR there is an emissions compliance issue. Contact Ford Power Products for assistance.</td>
</tr>
<tr>
<td>135</td>
<td>NG cat monitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>141</td>
<td>Adaptive Lean Fault - High Limit (Gasoline)</td>
<td>Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR there are vacuum or exhaust leaks OR one or more fuel injectors are stuck closed OR fuel quality is poor OR fuel pressure is too low.</td>
<td>Repair heated oxygen sensor wiring and/or connections OR replace sensor OR repair vacuum and exhaust leaks OR test the fuel pressure OR clean or replace the fuel injectors.</td>
</tr>
<tr>
<td>142</td>
<td>Adaptive Rich Fault - Low Limit (Gasoline)</td>
<td>MAP, IAT or ECT sensors not in correct position OR wiring and/or connections for sensors open or shorted OR sensor is faulty OR one or more fuel injectors are stuck closed OR there is electro-magnetic interference from a faulty crankshaft and/or camshaft position sensor.</td>
<td>Adjust or replace sensors OR clean or repair fuel injectors.</td>
</tr>
<tr>
<td>143</td>
<td>Adaptive Lean High (LPG)</td>
<td>Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR there are vacuum leaks or exhaust leaks OR fuel quality is poor OR fuel system components may be faulty.</td>
<td>Repair wiring and/or connections OR replace sensor OR repair any vacuum and exhaust leaks OR replace fuel OR test and repair the fuel system components.</td>
</tr>
<tr>
<td>144</td>
<td>Adaptive Lean Low (LPG)</td>
<td>Engine wire harness may have an intermittent short to 5V DC or 12V DC OR fuel system components may be faulty.</td>
<td>Repair short in engine wire harness OR test and repair the fuel system components.</td>
</tr>
</tbody>
</table>
## Fault Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>161</td>
<td>System Voltage Low</td>
<td>Battery is faulty OR alternator is not charging OR battery supply wire to ECM is open or shorted.</td>
<td>Replace battery OR repair alternator OR repair battery supply wire to ECM.</td>
</tr>
<tr>
<td>162</td>
<td>System Voltage High</td>
<td>Alternator is overcharging the battery when engine RPM is greater than 1500 rpm.</td>
<td>Repair or replace the alternator.</td>
</tr>
<tr>
<td>211</td>
<td>IAT High Voltage</td>
<td>IAT sensor wiring and/or connections are open or shorted OR sensor is faulty OR engine intake air temperature is too cold.</td>
<td>Repair wiring and/or connections OR replace sensor OR direct warmer air into air intake.</td>
</tr>
<tr>
<td>212</td>
<td>IAT Low Voltage</td>
<td>IAT sensor wiring and/or connections are open or shorted OR sensor is faulty OR engine intake air temperature is too hot.</td>
<td>Repair wiring and/or connections OR replace sensor OR direct cooler air into air intake.</td>
</tr>
<tr>
<td>213</td>
<td>IAT Higher Than Expected (1)</td>
<td>Air intake temperature is greater than 200° F with the engine greater than 1000 rpm OR air intake system has leaks OR IAT sensor is faulty.</td>
<td>Check air intake system for damage and proper routing of air intake components OR replace the IAT sensor.</td>
</tr>
<tr>
<td>214</td>
<td>IAT Higher Than Expected (2)</td>
<td>Air intake temperature is greater than 210° F with the engine greater than 1000 rpm OR air intake system has leaks OR IAT sensor is faulty.</td>
<td></td>
</tr>
<tr>
<td>215</td>
<td>Oil Pressure Low</td>
<td>Faulty oil pressure sensor OR sensor wiring and/or connections open or shorted OR engine oil level too low.</td>
<td>Replace oil pressure sensor OR repair sensor wiring and/or connections OR refill engine oil level to specification.</td>
</tr>
<tr>
<td>221</td>
<td>CHT/ECT High Voltage</td>
<td>Engine cooling system is malfunctioning OR sensor wires and/or connections open or shorted OR sensor is faulty.</td>
<td>Repair engine cooling system problems OR repair open or shorted wiring to sensor OR replace sensor.</td>
</tr>
<tr>
<td>222</td>
<td>CHT/ECT Low Voltage</td>
<td>Engine cooling system is malfunctioning and overheating the engine OR sensor wires and/or connections open or shorted OR sensor is faulty OR coolant level is low.</td>
<td></td>
</tr>
<tr>
<td>223</td>
<td>CHT Higher Than Expected (1)</td>
<td>Coolant temperature at the cylinder head is 240° F. Engine cooling system is malfunctioning and overheating the engine OR sensor wires and/or connections open or shorted OR sensor is faulty OR coolant level is low.</td>
<td>Repair engine cooling system problems OR repair open or shorted wiring to sensor OR replace sensor OR refill engine coolant level to specification.</td>
</tr>
<tr>
<td>224</td>
<td>CHT Higher Than Expected (2)</td>
<td>Coolant temperature at the cylinder head is 250° F. Engine cooling system is malfunctioning and overheating the engine OR sensor wires and/or connections open or shorted OR sensor is faulty OR coolant level is low.</td>
<td></td>
</tr>
<tr>
<td>231</td>
<td>MAP High Pressure</td>
<td>Open or shorted wiring and/or connections to MAP sensor OR sensor is faulty.</td>
<td>Repair wiring and/or connections to sensor OR replace MAP sensor.</td>
</tr>
<tr>
<td>232</td>
<td>MAP Low Voltage</td>
<td>Open or shorted wiring and/or connections to MAP sensor OR sensor is faulty.</td>
<td></td>
</tr>
<tr>
<td>234</td>
<td>BP High Pressure</td>
<td>MAP sensor is faulty OR ECM is faulty.</td>
<td>Replace MAP sensor OR replace the ECM.</td>
</tr>
<tr>
<td>235</td>
<td>BP Low Pressure</td>
<td>MAP sensor is faulty OR ECM is faulty.</td>
<td></td>
</tr>
<tr>
<td>242</td>
<td>Crank Sync Noise</td>
<td>Crankshaft position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.</td>
<td>Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace sensor.</td>
</tr>
<tr>
<td>243</td>
<td>Never Crank Synced At Start</td>
<td>Crankshaft position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.</td>
<td></td>
</tr>
<tr>
<td>244</td>
<td>Camshaft Sensor Loss</td>
<td>Crankshaft position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.</td>
<td></td>
</tr>
</tbody>
</table>

---

**Section 5 • Fault Codes**

February 2012
**FAULT CODES**

<table>
<thead>
<tr>
<th>Code</th>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>245</td>
<td>Knock Sensor Open</td>
<td>Knock sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.</td>
<td>Repair wiring and/or connections to knock sensor OR replace knock sensor.</td>
</tr>
<tr>
<td>253</td>
<td>Excessive Knock Signal</td>
<td>Knock sensor wiring and/or connections open or shorted OR there is excessive engine vibration OR sensor is faulty.</td>
<td>Check for excessive engine vibration OR repair wiring and/or connections to knock sensor OR replace knock sensor.</td>
</tr>
<tr>
<td>254</td>
<td>Camshaft Sensor Noise</td>
<td>Camshaft position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.</td>
<td>Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace sensor.</td>
</tr>
<tr>
<td>311</td>
<td>Injector Driver #1 Open</td>
<td>Open wiring and/or connections to fuel injector #1 OR fuel injector #1 is faulty OR ECM is faulty.</td>
<td>Repair wiring and/or connections to fuel injector #1 OR replace fuel injector #1 OR replace the ECM.</td>
</tr>
<tr>
<td>312</td>
<td>Injector Driver #1 Shorted</td>
<td>Wiring and/or connections to fuel injector #1 is shorted OR fuel injector #1 is faulty OR ECM is faulty.</td>
<td>Repair wiring and/or connections to fuel injector #1 OR replace fuel injector #1 OR replace the ECM.</td>
</tr>
<tr>
<td>313</td>
<td>Injector Driver #2 Open</td>
<td>Open wiring and/or connections to fuel injector #2 OR fuel injector #2 is faulty OR ECM is faulty.</td>
<td>Repair wiring and/or connections to fuel injector #2 OR replace fuel injector #2 OR replace the ECM.</td>
</tr>
<tr>
<td>314</td>
<td>Injector Driver #2 Shorted</td>
<td>Wiring and/or connections to fuel injector #2 is shorted OR fuel injector #2 is faulty OR ECM is faulty.</td>
<td>Repair wiring and/or connections to fuel injector #2 OR replace fuel injector #2 OR replace the ECM.</td>
</tr>
<tr>
<td>315</td>
<td>Injector Driver #3 Open</td>
<td>Open wiring and/or connections to fuel injector #3 OR fuel injector #3 is faulty OR ECM is faulty.</td>
<td>Repair wiring and/or connections to fuel injector #3 OR replace fuel injector #3 OR replace the ECM.</td>
</tr>
<tr>
<td>316</td>
<td>Injector Driver #3 Shorted</td>
<td>Wiring and/or connections to fuel injector #3 is shorted OR fuel injector #3 is faulty OR ECM is faulty.</td>
<td>Repair wiring and/or connections to fuel injector #3 OR replace fuel injector #3 OR replace the ECM.</td>
</tr>
<tr>
<td>321</td>
<td>Injector Driver #4 Open</td>
<td>Open wiring and/or connections to fuel injector #4 OR fuel injector #4 is faulty OR ECM is faulty.</td>
<td>Repair wiring and/or connections to fuel injector #4 OR replace fuel injector #4 OR replace the ECM.</td>
</tr>
<tr>
<td>322</td>
<td>Injector Driver #4 Shorted</td>
<td>Wiring and/or connections to fuel injector #4 is shorted OR fuel injector #4 is faulty OR ECM is faulty.</td>
<td>Repair wiring and/or connections to fuel injector #4 OR replace fuel injector #4 OR replace the ECM.</td>
</tr>
<tr>
<td>351</td>
<td>Fuel Pump Loop Open or High Side Short to Ground</td>
<td>Open wiring and/or connections to fuel pump OR fuel pump power shorted to ground OR fuel pump is faulty.</td>
<td>Repair wiring and/or connections to fuel pump OR replace fuel pump.</td>
</tr>
<tr>
<td>352</td>
<td>Fuel Pump High Side Shorted to Power</td>
<td>Wiring and/or connections to fuel pump shorted to power OR fuel pump is faulty.</td>
<td>Repair wiring and/or connections to fuel pump OR replace fuel pump.</td>
</tr>
<tr>
<td>353</td>
<td>MegaJector Delivery Pressure Higher Than Expected</td>
<td>Fuel pressure too high OR LPG lockoff not opening completely OR the line between the MegaJector and carburetor is kinked or restricted or is leaking OR engine cooling system is not operating properly OR MegaJector is faulty.</td>
<td>Check fuel pressure OR repair LPG lockoff OR repair the line between the MegaJector and carburetor OR repair engine cooling system OR replace the MegaJector.</td>
</tr>
<tr>
<td>354</td>
<td>MegaJector Delivery Pressure Lower Than Expected</td>
<td>Fuel pressure too low OR LPG lockoff not opening completely OR the line between the MegaJector and carburetor is kinked or restricted or is leaking OR engine cooling system is not operating properly OR MegaJector is faulty.</td>
<td>Check CAN circuits for continuity and shorts to power or ground and for continuity and repair as necessary OR replace the MegaJector.</td>
</tr>
<tr>
<td>355</td>
<td>MegaJector Communication Lost</td>
<td>The ECM doesn't get any response from the MegaJector, or an incorrect response for 500ms period or longer.</td>
<td>Check CAN circuits for continuity and shorts to power or ground and for continuity and repair as necessary OR replace the MegaJector.</td>
</tr>
<tr>
<td>361</td>
<td>MegaJector Voltage Supply High</td>
<td>The MegaJector detects voltage greater than 18 volts for 5 seconds anytime the engine is cranking or running.</td>
<td>Repair charging system OR replace the MegaJector.</td>
</tr>
<tr>
<td>362</td>
<td>MegaJector Voltage Supply Low</td>
<td>The MegaJector detects voltage less than 9.5 volts for 5 seconds anytime the engine is cranking or running.</td>
<td>Repair VBAT power or ground circuit to ECM and MegaJector OR replace battery OR repair charging system OR replace the MegaJector.</td>
</tr>
<tr>
<td>Code</td>
<td>Problem</td>
<td>Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>363</td>
<td>MegaJector Internal Actuator Fault Detection</td>
<td>The MegaJector detects an internal fault. Open or short in power, ground or CAN circuits.</td>
<td>Check Power, Ground and CAN circuits at MegaJector and all connections and repair as necessary OR MegaJector has an internal fault. Contact Ford Power Products for assistance.</td>
</tr>
<tr>
<td>364</td>
<td>MegaJector Internal Circuity Fault Detection</td>
<td>The MegaJector detects an internal circuitry failure. Open or short in power, ground or CAN circuits.</td>
<td>Check Power, Ground and CAN circuits at MegaJector and all connections and repair as necessary OR MegaJector has an internal fault. Contact Ford Power Products for assistance.</td>
</tr>
<tr>
<td>365</td>
<td>MegaJector Internal Communication Fault Detection</td>
<td>The MegaJector detects an internal communications failure. Open or short in power, ground or CAN circuits.</td>
<td>Check Power, Ground and CAN circuits at MegaJector and all connections and repair as necessary OR MegaJector has an internal fault. Contact Ford Power Products for assistance.</td>
</tr>
<tr>
<td>411</td>
<td>Coil Driver #1 Open</td>
<td>Open wiring and/or connections to ignition coil #1 OR ignition coil #1 is faulty.</td>
<td>Repair wiring and/or connections to ignition coil #1 OR replace ignition coil #1.</td>
</tr>
<tr>
<td>412</td>
<td>Coil Driver #1 Shorted</td>
<td>Wiring and/or connections to ignition coil #1 shorted OR ignition coil #1 is faulty</td>
<td>Repair wiring and/or connections to ignition coil #1 OR replace ignition coil #1.</td>
</tr>
<tr>
<td>413</td>
<td>Coil Driver #2 Open</td>
<td>Open wiring and/or connections to ignition coil #2 OR ignition coil #2 is faulty.</td>
<td>Repair wiring and/or connections to ignition coil #2 OR replace ignition coil #2.</td>
</tr>
<tr>
<td>414</td>
<td>Coil Driver #2 Shorted</td>
<td>Wiring and/or connections to ignition coil #2 shorted OR ignition coil #2 is faulty</td>
<td>Repair wiring and/or connections to ignition coil #2 OR replace ignition coil #2.</td>
</tr>
<tr>
<td>511</td>
<td>FPP1 High Voltage</td>
<td>Not used.</td>
<td>If this fault appears on your machine, contact the Genie Industries Service Department.</td>
</tr>
<tr>
<td>512</td>
<td>FPP1 Low Voltage</td>
<td>Not used.</td>
<td>If this fault appears on your machine, contact the Genie Industries Service Department.</td>
</tr>
<tr>
<td>513</td>
<td>FPP1 Higher than IVS Limit</td>
<td>Not used.</td>
<td>If this fault appears on your machine, contact the Genie Industries Service Department.</td>
</tr>
<tr>
<td>514</td>
<td>FPP1 Lower than IVS Limit</td>
<td>Not used.</td>
<td>If this fault appears on your machine, contact the Genie Industries Service Department.</td>
</tr>
<tr>
<td>521</td>
<td>FPP2 High Voltage</td>
<td>Not used.</td>
<td>If this fault appears on your machine, contact the Genie Industries Service Department.</td>
</tr>
<tr>
<td>522</td>
<td>FPP2 High Voltage</td>
<td>Not used.</td>
<td>If this fault appears on your machine, contact the Genie Industries Service Department.</td>
</tr>
<tr>
<td>531</td>
<td>TPS1 (Signal Voltage) High</td>
<td>The #1 throttle position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR throttle position sensor #1 is faulty.</td>
<td>Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace throttle position sensor #1.</td>
</tr>
<tr>
<td>532</td>
<td>TPS1 (Signal Voltage) Low</td>
<td>The #1 throttle position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR throttle position sensor #1 is faulty.</td>
<td>Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace throttle position sensor #1.</td>
</tr>
<tr>
<td>533</td>
<td>TPS2 (Signal Voltage) High</td>
<td>The #2 throttle position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR throttle position sensor #2 is faulty.</td>
<td>Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace throttle position sensor #2.</td>
</tr>
<tr>
<td>534</td>
<td>TPS2 (Signal Voltage) Low</td>
<td>The #2 throttle position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR throttle position sensor #2 is faulty.</td>
<td>Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace throttle position sensor #2.</td>
</tr>
<tr>
<td>535</td>
<td>TPS1 Higher than TPS2</td>
<td>The throttle position sensor wiring and/or connections for either TPS1 or TPS2 open or shorted OR there is a poor system ground connection OR one or both throttle position sensors are faulty.</td>
<td>Be sure engine harness wiring and connections are in place and secure OR repair wiring and/or connections to one or both TPS sensors OR replace one or both TPS sensors.</td>
</tr>
<tr>
<td>536</td>
<td>TPS1 Lower than TPS2</td>
<td>The throttle position sensor wiring and/or connections for either TPS1 or TPS2 open or shorted OR there is a poor system ground connection OR one or both throttle position sensors are faulty.</td>
<td>Be sure engine harness wiring and connections are in place and secure OR repair wiring and/or connections to one or both TPS sensors OR replace one or both TPS sensors.</td>
</tr>
<tr>
<td>537</td>
<td>Throttle Unable to Open</td>
<td>Governor actuator is stuck closed OR wiring and/or connections open or shorted OR governor actuator is faulty.</td>
<td>Repair wiring and/or connections to governor actuator OR replace the governor actuator.</td>
</tr>
<tr>
<td>538</td>
<td>Throttle Unable to Close</td>
<td>Governor actuator is stuck open OR wiring and/or connections open or shorted OR governor actuator is faulty.</td>
<td>Repair wiring and/or connections to governor actuator OR replace the governor actuator.</td>
</tr>
<tr>
<td>545</td>
<td>Governor Interlock Failure</td>
<td>Engine harness wiring and/or connections open or shorted OR there is a poor system ground connection OR ECM is faulty.</td>
<td>Repair wiring and/or connections in engine harness OR replace the ECM.</td>
</tr>
</tbody>
</table>
## Fault Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>551</td>
<td>Max Governor Speed Override</td>
<td>ECM needs to be re-programmed OR throttle is sticking open OR there are air leaks between the throttle body and cylinder head.</td>
<td>Re-program ECM OR repair binding throttle operation OR repair any air leaks between the throttle body and cylinder head.</td>
</tr>
<tr>
<td>552</td>
<td>FPP1 Low Voltage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>553</td>
<td>FPP1 Higher than IVS Limit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>611</td>
<td>COP Failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>612</td>
<td>Invalid Interrupt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>613</td>
<td>A/D Loss</td>
<td>Loose wire connections to ECM OR ECM is faulty.</td>
<td>Locate and repair any engine harness wiring damage or shorts to ECM to be sure they are secure OR replace ECM.</td>
</tr>
<tr>
<td>614</td>
<td>RTI 1 Loss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>615</td>
<td>Flash Checksum Invalid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>616</td>
<td>RAM Failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>631</td>
<td>External 5V DC Ref Lower than Expected</td>
<td>Engine harness wiring and/or connections open or shorted to ground OR there is a faulty engine sensor OR ECM is faulty.</td>
<td>Locate and repair any engine harness wiring damage or shorts OR locate and troubleshoot or repair faulty engine sensor OR replace ECM.</td>
</tr>
<tr>
<td>632</td>
<td>External 5V DC Ref Higher than Expected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>655</td>
<td>RTI 2 Loss</td>
<td>Loose wire connections to ECM OR ECM is faulty.</td>
<td>Locate and repair any engine harness wiring damage or shorts to ECM to be sure they are secure OR replace ECM.</td>
</tr>
<tr>
<td>656</td>
<td>RTI 3 Loss</td>
<td>Loose wire connections to ECM OR ECM is faulty.</td>
<td></td>
</tr>
</tbody>
</table>
Ford DSG-423 EFI Engine

How to Retrieve Ford Engine Fault Codes

The ECM constantly monitors the engine by the use of sensors on the engine. The ECM also uses signals from the sensors to initiate sequential fuel injection and make constant and instantaneous changes to ignition timing, fuel delivery and throttle position to maintain the engine’s running condition at its highest efficiency while at the same time keeping exhaust emissions to a minimum. When a sensor fails or returns signals that are outside of set parameters, the ECM will store a fault code in memory that relates to the appropriate sensor and will turn on the Check Engine Light.

Note: Perform this procedure with the key switch in the off position.

1 Open the ground controls side cover and locate the run/test toggle switch on the side of the ground control box.

2 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.

3 Quickly activate and release the start toggle switch/button. Do not start the engine.

4 Move and hold the run/test toggle switch to the test position.

Result: The check engine light should turn on. The check engine light should begin to blink.

5 Continue to hold the run/test toggle switch in the test position and count the blinks.

Note: Before the fault codes are displayed, the check engine light will blink a code 123 three times. After the fault codes, the check engine light will blink a code 123 three times again indicating the end of the stored codes.

Note: If any fault codes are present, the ECM will blink a three digit code three times for each code stored in memory. It will blink the first digit of a three digit code, pause, blink the second digit, pause, and then blink the third digit. For example: the check engine light blinks 5 consecutive times, blinks 3 times and then 1 time. That would indicate code 531.

Note: Once a fault code has been retrieved and the repair has been completed, the ECM memory must be reset to clear the fault code from the ECM. See How to Clear Engine Fault Codes from the ECM.

How to Clear Engine Fault Codes from the ECM

Note: Perform this procedure with the engine off and the key switch in the off position.

1 Open the engine side turntable cover and locate the battery.

2 Disconnect the negative battery cable from the battery for a minimum of 5 minutes.

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

3 Connect the negative battery cable to the battery.
## FAULT CODES

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>CL (closed loop) high LPG</td>
</tr>
<tr>
<td>112</td>
<td>EGO open / lazy pre-cat 1</td>
</tr>
<tr>
<td>113</td>
<td>EGO open / lazy pre-cat 2/post-cat 1</td>
</tr>
<tr>
<td>114</td>
<td>EGO open / lazy post-cat 1</td>
</tr>
<tr>
<td>115</td>
<td>EGO open / lazy post-cat 2</td>
</tr>
<tr>
<td>121</td>
<td>CL (closed loop) high gasoline bank 1</td>
</tr>
<tr>
<td>122</td>
<td>CL (closed loop) low gasoline bank 1</td>
</tr>
<tr>
<td>124</td>
<td>CL (closed loop) low LPG</td>
</tr>
<tr>
<td>133</td>
<td>Gasoline catalyst monitor 1</td>
</tr>
<tr>
<td>134</td>
<td>LPG catalyst monitor</td>
</tr>
<tr>
<td>141</td>
<td>AL (adaptive learning) high gasoline bank 1</td>
</tr>
<tr>
<td>142</td>
<td>AL (adaptive learning) low gasoline bank 1</td>
</tr>
<tr>
<td>143</td>
<td>AL (adaptive learning) high LPG</td>
</tr>
<tr>
<td>144</td>
<td>AL (adaptive learning) low LPG</td>
</tr>
<tr>
<td>161</td>
<td>Battery voltage high</td>
</tr>
<tr>
<td>162</td>
<td>Battery voltage low</td>
</tr>
<tr>
<td>163</td>
<td>AUX analog PD1 high</td>
</tr>
<tr>
<td>164</td>
<td>AUX analog PD1 low</td>
</tr>
<tr>
<td>165</td>
<td>AUX analog PU3 high</td>
</tr>
<tr>
<td>166</td>
<td>AUX analog PU3 low</td>
</tr>
<tr>
<td>167</td>
<td>AUX analog PUD1 high</td>
</tr>
<tr>
<td>168</td>
<td>AUX analog PUD1 low</td>
</tr>
<tr>
<td>171</td>
<td>AUX analog PUD2 high</td>
</tr>
<tr>
<td>172</td>
<td>AUX analog PUD2 low</td>
</tr>
<tr>
<td>173</td>
<td>AUX analog PUD3 high</td>
</tr>
<tr>
<td>174</td>
<td>AUX analog PUD3 low</td>
</tr>
<tr>
<td>181</td>
<td>AUX DIG1 high</td>
</tr>
<tr>
<td>182</td>
<td>AUX DIG1 low</td>
</tr>
<tr>
<td>183</td>
<td>AUX DIG2 high</td>
</tr>
<tr>
<td>184</td>
<td>AUX DIG2 low</td>
</tr>
<tr>
<td>185</td>
<td>AUX DIG3 high</td>
</tr>
<tr>
<td>186</td>
<td>AUX DIG3 low</td>
</tr>
<tr>
<td>211</td>
<td>IAT (intake air temperature) high voltage</td>
</tr>
<tr>
<td>212</td>
<td>IAT (intake air temperature) low voltage</td>
</tr>
<tr>
<td>213</td>
<td>IAT (intake air temperature) higher than expected 1</td>
</tr>
<tr>
<td>214</td>
<td>IAT (intake air temperature) higher than expected 2</td>
</tr>
<tr>
<td>215</td>
<td>Oil pressure low</td>
</tr>
<tr>
<td>221</td>
<td>ECT/CHT (engine/cylinder head temp) high voltage</td>
</tr>
<tr>
<td>222</td>
<td>ECT/CHT (engine/cylinder head temp) low voltage</td>
</tr>
<tr>
<td>223</td>
<td>CHT higher than expected 1</td>
</tr>
<tr>
<td>224</td>
<td>CHT higher than expected 2</td>
</tr>
<tr>
<td>225</td>
<td>ECT higher than expected 1</td>
</tr>
<tr>
<td>226</td>
<td>ECT higher than expected 2</td>
</tr>
<tr>
<td>231</td>
<td>MAP (manifold absolute pressure) high pressure</td>
</tr>
<tr>
<td>232</td>
<td>MAP (manifold absolute pressure) low pressure</td>
</tr>
<tr>
<td>234</td>
<td>BP (barometric pressure) high pressure</td>
</tr>
<tr>
<td>235</td>
<td>BP (barometric pressure) low pressure</td>
</tr>
<tr>
<td>242</td>
<td>Crank sync noise</td>
</tr>
<tr>
<td>243</td>
<td>Never crank synced at start</td>
</tr>
<tr>
<td>244</td>
<td>Cam loss</td>
</tr>
<tr>
<td>245</td>
<td>Cam sync noise</td>
</tr>
<tr>
<td>246</td>
<td>Crank loss</td>
</tr>
<tr>
<td>253</td>
<td>Knock 1-2 sensor open 1</td>
</tr>
<tr>
<td>254</td>
<td>Knock 1-2 excessive signal 1</td>
</tr>
</tbody>
</table>
### FAULT CODES

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>261</td>
<td>FP (fuel pressure) high voltage</td>
</tr>
<tr>
<td>262</td>
<td>FP (fuel pressure) low voltage</td>
</tr>
<tr>
<td>271</td>
<td>FT (fuel temperature) gasoline high voltage</td>
</tr>
<tr>
<td>272</td>
<td>FT (fuel temperature) gasoline low voltage</td>
</tr>
<tr>
<td>273</td>
<td>FT (fuel temperature) gaseous fuel high voltage</td>
</tr>
<tr>
<td>274</td>
<td>FT (fuel temperature) gaseous fuel low voltage</td>
</tr>
<tr>
<td>311</td>
<td>Injector loop open OR low-side short to ground 1</td>
</tr>
<tr>
<td>312</td>
<td>Injector coil shorted 1</td>
</tr>
<tr>
<td>313</td>
<td>Injector loop open OR low-side short to ground 2</td>
</tr>
<tr>
<td>314</td>
<td>Injector coil shorted 2</td>
</tr>
<tr>
<td>315</td>
<td>Injector loop open OR low-side short to ground 3</td>
</tr>
<tr>
<td>316</td>
<td>Injector coil shorted 3</td>
</tr>
<tr>
<td>321</td>
<td>Injector loop open OR low-side short to ground 4</td>
</tr>
<tr>
<td>322</td>
<td>Injector coil shorted 4</td>
</tr>
<tr>
<td>351</td>
<td>FPump motor loop open OR high-side shorted to ground</td>
</tr>
<tr>
<td>352</td>
<td>FPump motor high-side shorted to power</td>
</tr>
<tr>
<td>353</td>
<td>EPR delivery pressure higher than expected</td>
</tr>
<tr>
<td>354</td>
<td>EPR delivery pressure lower than expected</td>
</tr>
<tr>
<td>355</td>
<td>EPR comm lost</td>
</tr>
<tr>
<td>359</td>
<td>Fuel run-out longer than expected</td>
</tr>
<tr>
<td>361</td>
<td>EPR voltage supply high</td>
</tr>
<tr>
<td>362</td>
<td>EPR voltage supply low</td>
</tr>
<tr>
<td>363</td>
<td>EPR internal actuator fault detection</td>
</tr>
<tr>
<td>364</td>
<td>EPR internal circuitry fault detection</td>
</tr>
<tr>
<td>365</td>
<td>EPR internal comm fault detection</td>
</tr>
<tr>
<td>411</td>
<td>Primary loop open OR low-side short to ground 1</td>
</tr>
<tr>
<td>412</td>
<td>Primary coil shorted 1</td>
</tr>
<tr>
<td>413</td>
<td>Primary loop open OR low-side short to ground 2</td>
</tr>
<tr>
<td>414</td>
<td>Primary coil shorted 2</td>
</tr>
<tr>
<td>415</td>
<td>Primary loop open OR low-side short to ground 3</td>
</tr>
<tr>
<td>416</td>
<td>Primary coil shorted 3</td>
</tr>
<tr>
<td>421</td>
<td>Primary loop open OR low-side short to ground 4</td>
</tr>
<tr>
<td>422</td>
<td>Primary coil shorted 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>531</td>
<td>TPS1 (throttle position sensor) high voltage</td>
</tr>
<tr>
<td>532</td>
<td>TPS1 (throttle position sensor) low voltage</td>
</tr>
<tr>
<td>533</td>
<td>TPS2 (throttle position sensor) high voltage</td>
</tr>
<tr>
<td>534</td>
<td>TPS2 (throttle position sensor) low voltage</td>
</tr>
<tr>
<td>535</td>
<td>TPS1 (throttle position sensor) higher than TPS2</td>
</tr>
<tr>
<td>536</td>
<td>TPS1 (throttle position sensor) lower than TPS2</td>
</tr>
<tr>
<td>537</td>
<td>Unable to reach higher TPS (throttle position sensor)</td>
</tr>
<tr>
<td>538</td>
<td>Unable to reach lower TPS (throttle position sensor)</td>
</tr>
<tr>
<td>539</td>
<td>TPS 1-2 simultaneous voltages</td>
</tr>
<tr>
<td>541</td>
<td>AUX analog PU1 high</td>
</tr>
<tr>
<td>542</td>
<td>AUX analog PU1 low</td>
</tr>
<tr>
<td>543</td>
<td>AUX analog PU2 high</td>
</tr>
<tr>
<td>544</td>
<td>AUX analog PU2 low</td>
</tr>
<tr>
<td>551</td>
<td>Max govern speed override</td>
</tr>
<tr>
<td>552</td>
<td>Fuel rev limit</td>
</tr>
<tr>
<td>553</td>
<td>Spark rev limit</td>
</tr>
<tr>
<td>611</td>
<td>COP failure</td>
</tr>
<tr>
<td>612</td>
<td>Invalid interrupt</td>
</tr>
<tr>
<td>613</td>
<td>A/D loss</td>
</tr>
<tr>
<td>614</td>
<td>RTI 1 loss</td>
</tr>
<tr>
<td>615</td>
<td>Flash checksum invalid</td>
</tr>
</tbody>
</table>
## Fault Codes

For further engine fault code troubleshooting and diagnostic information, refer to the *Ford DSG-423 EFI Service Manual* (EDI part number 1060040). Genie part number 119494.

### Ford DSG 423 EFI Operator Handbook
Genie part number 119488

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>616</td>
<td>RAM failure</td>
</tr>
<tr>
<td>631</td>
<td>5VE1 low voltage</td>
</tr>
<tr>
<td>632</td>
<td>5VE1 high voltage</td>
</tr>
<tr>
<td>633</td>
<td>5VE2 high voltage</td>
</tr>
<tr>
<td>634</td>
<td>5VE2 low voltage</td>
</tr>
<tr>
<td>635</td>
<td>5VE1-5VE2 simultaneous out-of-range</td>
</tr>
<tr>
<td>641</td>
<td>Rx inactive</td>
</tr>
<tr>
<td>642</td>
<td>Rx noise</td>
</tr>
<tr>
<td>643</td>
<td>Invalid packet format</td>
</tr>
<tr>
<td>644</td>
<td>Shutdown request</td>
</tr>
<tr>
<td>646</td>
<td>CAN Tx failure</td>
</tr>
<tr>
<td>647</td>
<td>CAN Rx failure</td>
</tr>
<tr>
<td>648</td>
<td>CAN address conflict failure</td>
</tr>
<tr>
<td>655</td>
<td>RTI 2 loss</td>
</tr>
<tr>
<td>656</td>
<td>RTI 3 loss</td>
</tr>
<tr>
<td>711</td>
<td>Relay control ground short</td>
</tr>
<tr>
<td>712</td>
<td>Relay coil open</td>
</tr>
<tr>
<td>713</td>
<td>Relay coil short to power</td>
</tr>
<tr>
<td>714</td>
<td>Fpump relay control ground short</td>
</tr>
<tr>
<td>715</td>
<td>Fpump relay coil open</td>
</tr>
<tr>
<td>716</td>
<td>Fpump relay coil short to power</td>
</tr>
<tr>
<td>721</td>
<td>Start relay control ground short</td>
</tr>
<tr>
<td>722</td>
<td>Start relay coil open</td>
</tr>
<tr>
<td>723</td>
<td>Start relay coil short to power</td>
</tr>
<tr>
<td>731</td>
<td>PWM1-gauge1 open / ground short</td>
</tr>
<tr>
<td>732</td>
<td>PWM1-gauge1 short to power</td>
</tr>
<tr>
<td>733</td>
<td>PWM2-gauge2 open / ground short</td>
</tr>
<tr>
<td>734</td>
<td>PWM2-gauge2 short to power</td>
</tr>
<tr>
<td>735</td>
<td>PWM3-gauge3 open / ground short</td>
</tr>
<tr>
<td>736</td>
<td>PWM3-gauge3 short to power</td>
</tr>
<tr>
<td>741</td>
<td>PWM4 open / ground short</td>
</tr>
<tr>
<td>742</td>
<td>PWM4 short to power</td>
</tr>
<tr>
<td>743</td>
<td>PWM5 open / ground short</td>
</tr>
<tr>
<td>744</td>
<td>PWM5 short to power</td>
</tr>
<tr>
<td>761</td>
<td>MIL (malfunction indicator light) control ground short</td>
</tr>
<tr>
<td>762</td>
<td>MIL (malfunction indicator light) open</td>
</tr>
<tr>
<td>763</td>
<td>MIL (malfunction indicator light) control short to power</td>
</tr>
<tr>
<td>771</td>
<td>Tach output ground short</td>
</tr>
<tr>
<td>772</td>
<td>Tach output short to power</td>
</tr>
<tr>
<td>1629</td>
<td>J1939 TSC1 message receipt lost</td>
</tr>
<tr>
<td>1630</td>
<td>J1939 ETC message receipt lost</td>
</tr>
</tbody>
</table>
How to Retrieve Platform Load Sense System Fault Codes

Note: Perform this procedure with the engine off, the key switch turned to ground controls and the red Emergency Stop buttons pulled out to the on position at both the ground and platform controls.

1. Open the ground controls side turntable cover.

2. Locate the operational and safety controllers near the ground control box.

3. Determine whether a safety or operational fault exists by visually inspecting which controller has flashing LEDs.

Note: If the LEDs are flashing on both controllers, determine the fault code on one controller at a time.

4. **Determine the error source:** The red LED indicates the error source and will flash two separate codes. The first code will indicate the first digit of the two digit code, flashing once per second. It will then pause for 1.5 seconds and flash the second digit once per 0.5 second.

5. **Determine the error type:** The green LED indicates the error type and will flash two separate codes. The first code will indicate the first digit of the two digit code, flashing once per second. It will then pause for 1.5 seconds and flash the second digit once per 0.5 second.

6. Use the fault code table on the following pages to aid in troubleshooting the machine by pinpointing the area or component affected.
## Fault Codes

<table>
<thead>
<tr>
<th>Error Source</th>
<th>Error Type</th>
<th>Condition</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 System Checks</td>
<td>11 Safety envelope reached</td>
<td>Power relays disengaged.</td>
<td>Use recovery switch and APU from the ground controls to recover the machine to stowed position or within the operating envelope.</td>
</tr>
<tr>
<td>12 Platform load greater than 1250 pounds</td>
<td>Power relays disengaged.</td>
<td>Remove weight from platform until load is 1200 lbs / 544 kg or less.</td>
<td></td>
</tr>
<tr>
<td>13 CAN communication failure</td>
<td>Power relays disengaged.</td>
<td>Repair CAN bus wiring and/or connections.</td>
<td></td>
</tr>
<tr>
<td>14 Sensor power failure</td>
<td>Power relays disengaged.</td>
<td>Use recovery switch and APU from the ground controls to recover the machine to stowed position or within the operating envelope.</td>
<td></td>
</tr>
<tr>
<td>21 Angle sensor not active</td>
<td>Power relays disengaged.</td>
<td>Inspect boom angle sensor for proper operation and be sure it is connected to boom properly OR replace boom angle sensor.</td>
<td></td>
</tr>
<tr>
<td>22 String potentiometer not active</td>
<td>Power relays disengaged.</td>
<td>Inspect string potentiometer for proper operation and be sure it is connected to boom properly OR replace string potentiometer.</td>
<td></td>
</tr>
<tr>
<td>23 Power relay output short high</td>
<td>Power relays disengaged. Relay wiring open or shorted to voltage.</td>
<td>Repair system wiring and/or connections.</td>
<td></td>
</tr>
<tr>
<td>24 Power relay output short low</td>
<td>Power relays disengaged. Relay wiring open or shorted to ground.</td>
<td>Repair system wiring and/or connections.</td>
<td></td>
</tr>
<tr>
<td>25 Directional relay output short high</td>
<td>Boom up/down and extend/retract inoperative. Relay wiring open or shorted to voltage.</td>
<td>Repair system wiring and/or connections.</td>
<td></td>
</tr>
<tr>
<td>26 Output short low</td>
<td>Boom up/down and extend/retract inoperative. Relay wiring open or shorted to ground.</td>
<td>Repair system wiring and/or connections.</td>
<td></td>
</tr>
</tbody>
</table>
## FAULT CODES

<table>
<thead>
<tr>
<th>Error Source</th>
<th>Error Type</th>
<th>Condition</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>21 String Potentiometer</strong></td>
<td>Sensor tolerance fault</td>
<td>Power relays disengaged.</td>
<td>Repair wiring and/or connections OR replace string potentiometer and calibrate overload system.</td>
</tr>
<tr>
<td>Operational sensor (C167PSL)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>11 Output short high</strong></td>
<td></td>
<td>Power relays disengaged. String potentiometer wiring open or shorted to voltage.</td>
<td>Repair wiring and/or connections OR replace string potentiometer and calibrate overload system.</td>
</tr>
<tr>
<td><strong>12 Value too high</strong></td>
<td></td>
<td>Power relays disengaged. String potentiometer wiring open or shorted to voltage.</td>
<td>Repair wiring and/or connections OR replace string potentiometer and calibrate overload system.</td>
</tr>
<tr>
<td><strong>15 Value too low</strong></td>
<td></td>
<td>Power relays disengaged. String potentiometer wiring open or shorted to ground.</td>
<td>Repair wiring and/or connections OR replace string potentiometer and calibrate overload system.</td>
</tr>
<tr>
<td><strong>16 Output short low</strong></td>
<td></td>
<td>Power relays disengaged. String potentiometer wiring open or shorted to ground.</td>
<td>Repair wiring and/or connections OR replace string potentiometer and calibrate overload system.</td>
</tr>
<tr>
<td><strong>17 Not calibrated</strong></td>
<td></td>
<td>Boom range of motion is limited.</td>
<td>Calibrate the platform load sense system.</td>
</tr>
<tr>
<td><strong>18 Just calibrated</strong></td>
<td></td>
<td>used to clear diagnostic</td>
<td>Self-clearing.</td>
</tr>
<tr>
<td>Error Source</td>
<td>Error Type</td>
<td>Condition</td>
<td>Solution</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
<td>-----------</td>
<td>----------</td>
</tr>
<tr>
<td>22 String Potentiometer Safety Sensor (C166PSL)</td>
<td>Sensor tolerance fault</td>
<td>Power relays disengaged</td>
<td>Repair wiring and/or connections OR replace string potentiometer and calibrate overload system.</td>
</tr>
<tr>
<td>11</td>
<td>Output short high</td>
<td>Power relays disengaged. String potentiometer wiring open or shorted to voltage.</td>
<td>Repair wiring and/or connections OR replace string potentiometer and calibrate overload system.</td>
</tr>
<tr>
<td>12</td>
<td>Value too high</td>
<td>Power relays disengaged. String potentiometer wiring open or shorted to voltage.</td>
<td>Repair wiring and/or connections OR replace string potentiometer and calibrate overload system.</td>
</tr>
<tr>
<td>15</td>
<td>Value too low</td>
<td>Power relays disengaged. String potentiometer wiring open or shorted to ground OR string potentiometer is faulty.</td>
<td>Repair wiring and/or connections OR replace string potentiometer and calibrate overload system.</td>
</tr>
<tr>
<td>16</td>
<td>Output short low</td>
<td>Power relays disengaged. String potentiometer wiring open or shorted to ground.</td>
<td>Repair wiring and/or connections OR replace string potentiometer and calibrate overload system.</td>
</tr>
<tr>
<td>17</td>
<td>Not calibrated</td>
<td>Boom range of motion is limited.</td>
<td>Calibrate the platform load sense system.</td>
</tr>
<tr>
<td>18</td>
<td>Just calibrated</td>
<td>Used to clear diagnostic codes.</td>
<td>Self-clearing.</td>
</tr>
<tr>
<td>21</td>
<td>Inconsistent</td>
<td>Checks operational and safety sensor values against each other.</td>
<td>Repair wiring and/or connections OR replace string potentiometer and calibrate overload system.</td>
</tr>
</tbody>
</table>
## FAULT CODES

<table>
<thead>
<tr>
<th>Error Source</th>
<th>Error Type</th>
<th>Condition</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ID</strong></td>
<td>Name</td>
<td><strong>ID</strong></td>
<td>Name</td>
</tr>
<tr>
<td>31</td>
<td>Boom Angle Operational Sensor (C123PBS)</td>
<td>5</td>
<td>Sensor tolerance fault</td>
</tr>
<tr>
<td>11</td>
<td>Output short high</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Value too high</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Value too low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Output short low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Not calibrated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Just calibrated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error Source</td>
<td>Error Type</td>
<td>Condition</td>
<td>Solution</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
<td>-----------</td>
<td>----------</td>
</tr>
<tr>
<td>32</td>
<td>Boom Angle Safety Sensor (C141PBS)</td>
<td>Sensor tolerance fault</td>
<td>Power relays disengaged.</td>
</tr>
<tr>
<td>11</td>
<td>Output short high</td>
<td></td>
<td>Power relays disengaged. Boom angle sensor wiring open or shorted to voltage.</td>
</tr>
<tr>
<td>12</td>
<td>Value too high</td>
<td></td>
<td>Power relays disengaged. Boom angle sensor wiring open or shorted to voltage OR sensor is out of operating range.</td>
</tr>
<tr>
<td>15</td>
<td>Value too low</td>
<td></td>
<td>Power relays disengaged. Boom angle sensor wiring open or shorted to ground OR sensor is out of operating range.</td>
</tr>
<tr>
<td>16</td>
<td>Output short low</td>
<td></td>
<td>Power relays disengaged. Boom angle sensor wiring open or shorted to ground.</td>
</tr>
<tr>
<td>17</td>
<td>Not calibrated</td>
<td></td>
<td>Boom range of motion is limited.</td>
</tr>
<tr>
<td>18</td>
<td>Just calibrated</td>
<td></td>
<td>Used to clear diagnostic codes.</td>
</tr>
<tr>
<td>21</td>
<td>Inconsistent</td>
<td></td>
<td>Checks operational and safety sensor values against each other.</td>
</tr>
</tbody>
</table>
# Fault Codes

<table>
<thead>
<tr>
<th>Error Source</th>
<th>Error Type</th>
<th>Condition</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load Cell Operational</td>
<td>41</td>
<td>Sensor tolerance fault</td>
<td>Repair wiring and/or connections OR replace platform load cell and calibrate overload system.</td>
</tr>
<tr>
<td>ID 5 Operational (C175LDS)</td>
<td>5</td>
<td>Sensor tolerance fault</td>
<td>Repair wiring and/or connections OR replace platform load cell and calibrate overload system.</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Output short high</td>
<td>Repair wiring and/or connections OR replace platform load cell and calibrate overload system.</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Value too high</td>
<td>Repair wiring and/or connections OR replace platform load cell and calibrate overload system OR remove excess weight from platform.</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Value too low</td>
<td>Repair wiring and/or connections OR replace platform load cell and calibrate overload system. Check for binding of the overload component linkage and be sure platform is not touching the ground or being supported from underneath.</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Output short low</td>
<td>Repair wiring and/or connections OR replace platform load cell and calibrate overload system.</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Not calibrated</td>
<td>Calibrate the platform load sense system.</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>Just calibrated</td>
<td>Self-clearing.</td>
</tr>
</tbody>
</table>
### Fault Codes

<table>
<thead>
<tr>
<th>Error Source</th>
<th>Error Type</th>
<th>Condition</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID 42 Load Cell Safety (C94LDS)</td>
<td>ID 5 Sensor tolerance fault</td>
<td>Power relays disengaged.</td>
<td>Repair wiring and/or connections OR replace platform load cell and calibrate overload system.</td>
</tr>
<tr>
<td>ID 11 Output short high</td>
<td></td>
<td>Power relays disengaged. Load cell wiring open or shorted to voltage.</td>
<td>Repair wiring and/or connections OR replace platform load cell and calibrate overload system.</td>
</tr>
<tr>
<td>ID 12 Value too high</td>
<td></td>
<td>Power relays disengaged. Load cell wiring open or shorted to voltage.</td>
<td>Repair wiring and/or connections OR replace platform load cell and calibrate overload system OR remove excess weight from platform.</td>
</tr>
<tr>
<td>ID 15 Value too low</td>
<td></td>
<td>Power relays disengaged. Load cell wiring open or shorted to ground.</td>
<td>Repair wiring and/or connections OR replace platform load cell and calibrate overload system OR remove excess weight from platform.</td>
</tr>
<tr>
<td>ID 16 Output short low</td>
<td></td>
<td>Power relays disengaged. Load cell wiring open or shorted to ground.</td>
<td>Repair wiring and/or connections OR replace platform load cell and calibrate overload system.</td>
</tr>
<tr>
<td>ID 17 Not calibrated</td>
<td></td>
<td>Boom range of motion is limited.</td>
<td>Calibrate the platform load sense system.</td>
</tr>
<tr>
<td>ID 18 Just calibrated</td>
<td></td>
<td>Used to clear diagnostic codes.</td>
<td>Self-clearing.</td>
</tr>
<tr>
<td>ID 21 Inconsistent</td>
<td></td>
<td>Checks operational and safety sensor values against each other.</td>
<td>Repair wiring and/or connections OR replace platform load cell and calibrate overload system.</td>
</tr>
</tbody>
</table>
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.

General Repair Process

1. Malfunction discovered
2. Identify symptoms
3. Troubleshoot
4. Return to service
   - problem solved
   - inspect and test
   - problem still exists
5. Perform repair

Schematics
Hydraulic Symbols Legend

- **Pump**
  - fixed displacement
- **Motor**
  - bi-directional
- **Motor**
  - 2-speed, bi-directional
- **Pump prime mover**
  - (engine or motor)
- **Double acting cylinder**
- **Check valve**
- **Relief valve**
  - with pressure setting
- **Pilot operated 3 position, 3 way, shuttle valve**
- **Relief valve**
  - with pressure setting
- **Flow divider/combiner valve**
  - with pressure balancing orifice and flow percentages
- **Pilot operated 3 position, 3 way, shuttle valve**
- **Differential sensing valve**
- **Solenoid operated proportional valve**
- **Brake**
  - Pilot operated 3 position, 3 way, shuttle valve
- **Flow divider/combiner valve**
  - with pressure balancing orifice and flow percentages
- **2 position, 2 way solenoid valve**
- **Shut off valve**
- **Filter with bypass valve relief setting**
- **Pump**
  - bi-directional, variable displacement
- **Filter with bypass valve relief setting**
- **Motor bi-directional**
- **Motor**
  - 2-speed, bi-directional
- **Needle valve**
- **25 psi (1.7 bar)**
- **Orifice with size**
  - 0.038" (0.89 mm)
- **Solenoid operated 3 position, 4 way, directional valve**
- **Check valve**
- **Priority flow regulator valve**
- **Differential sensing valve**
- **Solenoid operated 2 position, 3 way, shuttle valve**
- **Flow divider/combiner valve**
  - with pressure balancing orifice and flow percentages
- **200 psi (13.8 bar)**
- **Counterbalance valve**
  - with pressure and pilot ratio
- **Solenoid operated 3 position, 4 way, proportional directional valve**
- **Needle valve**
- **Shut off valve**
Ford Engine Relay Layout

Ford LRG-425 EFI (before serial number 14054)

Ford DSG-423 EFI (after serial number 14053)
Limit Switch Location Legend

- Boom Extend Limit Switch (LS2)
- Boom Speed Reduction Limit Switch (LS17)
- Cable Tension Limit Switch (LS5)
- Drive Enable Limit Switch (LS3)
- Boom Angle Limit Switch (LS1)
Electrical Schematic, S-60 HC
(from serial number 12800)
Electrical Schematic, S-60 HC
(from serial number 12800)

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Section 6 • Schematics

NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION.
Chassis Wiring Diagram, S-60 HC
(from serial number 12800)
Ground Control Box Terminal Strip Wiring Diagram, S-60 HC (from serial number 12800)
Ground Control Box Terminal Strip Wiring Diagram, S-60 HC
(from serial number 12800)
Ford LRG-425 EFI Engine Wire Harness
Ford DSG-423 EFI Engine Wire Harness
Electrical Schematic, S-60
GM 3.0L Models
Electrical Schematic, S-60
GM 3.0L Models
Ground Control Box Terminal Strip Wiring Diagram, S-60
GM 3.0L Models
Platform Control Box Switch Panel Wiring Diagram, S-60
GM 3.0L Models
Electrical Schematic, S-65
GM 3.0L Models
Ground Control Box Terminal Strip Wiring Diagram, S-65
GM 3.0L Models
Ground Control Box Terminal Strip Wiring Diagram, S-65
GM 3.0L Models

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>SWITCH</th>
<th>LIMIT SWITCH</th>
<th>EXTEND</th>
<th>+12V DC</th>
<th>POWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS64</td>
<td>C3, C4</td>
<td>C7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Ground Control Box Terminal Strip Wiring Diagram, S-65**

**GM 3.0L Models**

**FUNCTION HARNESS**

**ENG**

**OPTIONS**

**NOTE: DASHED LINES INDICATE OPTION WIRES**

**GROUND BOLT**

- **BA**
- **8**
- **7**
- **37**
- **22**
- **32**
- **41**
- **33**
- **25**
- **27**
- **29**
- **36**
- **37**
- **39**
- **46**

- **132132 PLATFORM OVERLOAD LS**

- **PART**
- **NO.**
- **77828**
Platform Control Box Wiring Diagram, S-65
GM 3.0L Models
Electrical Schematic, S-60
Ford LRG-425 EFI Models (before serial number 11880)
Electrical Schematic, S-60
Ford LRG-425 EFI Models (before serial number 11880)

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NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION.
2. C1B & C1P - GRAY; C2B & C2P - BLACK;
3. C3B & C3P - GREEN; C4B & C4P - BROWN.
Electrical Schematic, S-60
Ford LRG-425 EFI Models (before serial number 11880)
Electrical Schematic, S-60
Ford LRG-425 EFI Models (from serial number 11880 to 14053)
Electrical Schematic, S-60
Ford LRG-425 EFI Models (from serial number 11880 to 14053)
Electrical Schematic, S-60
Ford DSG-423 EFI Models (after serial number 14053)
Electrical Schematic, S-60
Ford DSG-423 EFI Models (after serial number 14053)

NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION. C1B & C1P - GRAY; C2B & C2P - BLACK; C3B & C3P - GREEN; C4B & C4P - BROWN.
Electrical Schematic, S-60
Ford DSG-423 EFI Models (after serial number 14053)

1. All limit switches shown with boom in stowed position.
2. Rocker steer option only.
Electrical Schematic, S-60
Ford DSG-423 EFI Models (after serial number 14053)
Ground Control Box Terminal Strip Wiring Diagram, S-60
Ford LRG-425 EFI Models (before serial number 11880)
Ground Control Box Switch Panel Wiring Diagram, S-60
Ford LRG-425 EFI Models (before serial number 11880)
Ground Control Box Terminal Strip Wiring Diagram, S-60
Ford Models (after serial number 11879)
Ground Control Box Terminal Strip Wiring Diagram, S-60
Ford Models (after serial number 11879)
Ground Control Box Switch Panel Wiring Diagram, S-60
Ford Models (after serial number 11879)
Platform Control Box Wiring Diagram, S-60
Ford Models

- A1: FOOT SWITCH CONNECTOR
- A2: CR27 CONTROL RELAY (CE OPTION)
- A3: CR30 CONTROL RELAY (CE OPTION)
- A4: LS18 LOAD SENSE LIMIT SWITCH
- A5: C19JSV GR/WH TS7
- A6: C134PWR RD LS18 RD-TILT
- A7: C1P(GY)
- A8: 19/18 CONTROL CABLE

- B1: C7P-3
- B2: C3P(GR)
- B3: C4P(BR)
- B4: C28TTA RD/BK C1P-2
- B5: C29MS RD/WH C1P-3
- B6: C5TRR WH/BK C3P-5
- B7: C32BRK WH/RD C1P-6
- B8: C4TRL WH C3P-4
- B9: C37SCW BL/BK C1P-11
- B10: C3PBF RD/WH C3P-3
- B11: C36SCC BL C1P-10
- B12: C2PBD RD/BK C3P-2
- B13: C31REV WH/BK C1P-5
- B14: C1PBU RD C3P-1
- B15: C30FWD WH C1P-4

- C1: 19/18 CONTROL CABLE
- C2: 12V DC BATTERY
- C3: F.S.
- C4: JIB
- C5: BOOM
- C6: LS18(CE)
- C7: OPTION

Note: Wire connects to JC3-6 for steer rocker switch option.
Electrical Schematic, S-65
Ford LRG-425 EFI Models (before serial number 11880)
Electrical Schematic, S-65
Ford LRG-425 EFI Models (before serial number 11880)

1. All limit switches shown with boom in stowed position.
2. Rocker steer option only.
Electrical Schematic, S-65
Ford LRG-425 EFI Models (before serial number 11880)
Electrical Schematic, S-65
Ford LRG-425 EFI Models (from serial number 11880 to 14053)
Electrical Schematic, S-65
Ford DSG-423 EFI Models (after serial number 14053)
Ground Control Box Terminal Strip Wiring Diagram, S-65
Ford LRG-425 EFI Models (before serial number 11880)
Ground Control Box Switch Panel Wiring Diagram, S-65
Ford LRG-425 EFI Models (before serial number 11880)
Ground Control Box Terminal Strip Wiring Diagram, S-65
Ford Models (after serial number 11879)
Ground Control Box Switch Panel Wiring Diagram, S-65
Ford Models (after serial number 11879)

Part No. 77828  S-60 • S-65 • S-60 HC
Ground Control Box Switch Panel Wiring Diagram, S-65
Ford Models (after serial number 11879)
Platform Control Box Switch Panel Wiring Diagram, S-65
Ford Models
Electrical Schematic, S-60
Deutz F3L-2011 Models (before serial number 11880)
Electrical Schematic, S-60
Deutz F3L-2011 Models (after serial number 11879)
Electrical Schematic, S-60
Deutz F3L-2011 Models (after serial number 11879)

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NOTES:

CE AND PLATFORM OVERLOAD OPTION ONLY.
Electrical Schematic, S-60
Deutz F3L-2011 Models (after serial number 11879)
Electrical Schematic, S-60, CE Models
Deutz F3L-2011 Models (before serial number 11880)
Electrical Schematic, S-60, CE Models
Deutz F3L-2011 Models (before serial number 11880)

NOTES:
1. CE AND PLATFORM OVERLOAD OPTION ONLY.
Electrical Schematic, S-60, CE Models
Deutz F3L-2011 Models (before serial number 11880)
Electrical Schematic, S-60, CE Models
Deutz F3L-2011 Models (after serial number 11879)
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Deutz F3L-2011 Models (before serial number 11880)
Ground Control Box Switch Panel Wiring Diagram, S-60, CE Models
Deutz F3L-2011 Models (before serial number 11880)
Ground Control Box Terminal Strip Wiring Diagram, S-60, CE Models
Deutz F3L-2011 Models (after serial number 11879)

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Ground Control Box Switch Panel Wiring Diagram, S-60, CE Models
Deutz F3L-2011 Models (after serial number 11879)
Electrical Schematic, S-65
Deutz F3L-2011 Models (before serial number 11880)
Electrical Schematic, S-65
Deutz F3L-2011 Models (before serial number 11880)

NOTES:
☐ CE AND PLATFORM OVERLOAD OPTION ONLY.

20 AWG,
15A, 12V DC
INSULATED WIRE,
15A, 12V DC
Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)
Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)

NOTES:
- CE AND PLATFORM OVERLOAD OPTION ONLY.

- CB AND PLATFORM OVERLOAD OPTION ONLY.
Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)

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NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION.
2. ROCKER STEER OPTION ONLY.
3. NOT SPECIFIED - UNKNOWN.

Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)

February 2012 Section 6 • Schematics

NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION.
2. ROCKER STEER OPTION ONLY.
3. NOT SPECIFIED - UNKNOWN.

Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)

February 2012 Section 6 • Schematics

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Electrical Schematic, S-65
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February 2012 Section 6 • Schematics

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Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)

February 2012 Section 6 • Schematics

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1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION.
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Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)

February 2012 Section 6 • Schematics

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2. ROCKER STEER OPTION ONLY.
3. NOT SPECIFIED - UNKNOWN.

Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)

February 2012 Section 6 • Schematics

NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION.
2. ROCKER STEER OPTION ONLY.
3. NOT SPECIFIED - UNKNOWN.

Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)

February 2012 Section 6 • Schematics

NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION.
2. ROCKER STEER OPTION ONLY.
3. NOT SPECIFIED - UNKNOWN.

Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)

February 2012 Section 6 • Schematics

NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION.
2. ROCKER STEER OPTION ONLY.
3. NOT SPECIFIED - UNKNOWN.

Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)

February 2012 Section 6 • Schematics

NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION.
2. ROCKER STEER OPTION ONLY.
3. NOT SPECIFIED - UNKNOWN.

Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)

February 2012 Section 6 • Schematics

NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION.
2. ROCKER STEER OPTION ONLY.
3. NOT SPECIFIED - UNKNOWN.
Electrical Schematic, S-65
Deutz F3L-2011 Models (after serial number 11879)
Electrical Schematic, S-65, CE Models
Deutz F3L-2011 Models (before serial number 11880)
Electrical Schematic, S-65, CE Models
Deutz F3L-2011 Models (after serial number 11879)

[Diagram of electrical schematic]

NOTES:
- CE and platform overload option only.

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Electrical Schematic, S-65, CE Models
Deutz F3L-2011 Models (after serial number 11879)
Ground Control Box Terminal Strip Wiring Diagram, S-65
Deutz F3L-2011 Models (before serial number 11880)

FUNCTION HARNESS

NOTE: DASHED LINES INDICATE OPTION WIRES
Ground Control Box Switch Panel Wiring Diagram, S-65
Deutz F3L-2011 Models (before serial number 11880)
Ground Control Box Terminal Strip Wiring Diagram, S-65
Deutz F3L-2011 Models (after serial number 11879)
Ground Control Box Switch Panel Wiring Diagram, S-65
Deutz F3L-2011 Models (after serial number 11879)
Ground Control Box Terminal Strip Wiring Diagram, S-65, CE Models, Deutz F3L-2011 Models (before serial number 11880)
Ground Control Box Terminal Strip Wiring Diagram, S-65, CE Models
Deutz F3L-2011 Models (before serial number 11880)

NOTE: DASHED LINES INDICATE OPTION WIRES
Ground Control Box Switch Panel Wiring Diagram, S-65, CE Models
Deutz F3L-2011 Models (after serial number 11879)
Platform Control Box Wiring Diagram, S-65
Deutz F3L-2011 Models
Platform Control Box Switch Panel Wiring Diagram, S-65
Deutz F3L-2011 Models
Electrical Schematic, S-60
Perkins 404-22 Models (before serial number 11880)
Electrical Schematic, S-60
Perkins 404-22 Models (after serial number 11879)
Electrical Schematic, S-60
Perkins 404-22 Models (after serial number 11879)

Notes:
1. All limit switches shown with boom in stowed position.
2. Rocker steer option only.

Part No. 77828 S-60 • S-65 • S-60 HC
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Electrical Schematic, S-60
Perkins 404-22 Models (after serial number 11879)
Ground Control Box Terminal Strip Wiring Diagram, S-60
Perkins 404-22 Models (before serial number 11880)
Ground Control Box Terminal Strip Wiring Diagram, S-60
Perkins 404-22 Models (before serial number 11880)
Ground Control Box Switch Panel Wiring Diagram, S-60
Perkins 404-22 Models (before serial number 11880)

Part No. 77828 S-60 • S-65 • S-60 HC
February 2012 Section 6 • Schematics

NOTE: DASHED LINES INDICATE OPTION WIRES
Ground Control Box Terminal Strip Wiring Diagram, S-60
Perkins 404-22 Models (after serial number 11879)
Ground Control Box Terminal Strip Wiring Diagram, S-60
Perkins 404-22 Models (after serial number 11879)
Ground Control Box Switch Panel Wiring Diagram, S-60
Perkins 404-22 Models (after serial number 11879)
Platform Control Box Switch Panel Wiring Diagram, S-60
Perkins 404-22 Models
Perkins 404-22 Models (before serial number 11880)

For the electrical schematic of the Perkins 404-22 Models, please refer to the image provided. The schematic includes various components such as limit switches, joystick control cards, and other electrical components that are essential for the operation of the equipment.

NOTES:
1. All limit switches shown with boom in stowed position.
2. Rocker steer option only.
Electrical Schematic, S-65
Perkins 404-22 Models (before serial number 11880)
Electrical Schematic, S-65
Perkins 404-22 Models (after serial number 11879)
Electrical Schematic, S-65
Perkins 404-22 Models (after serial number 11879)

NOTES:
CE AND PLATFORM OVERLOAD OPTION ONLY.
Electrical Schematic, S-65
Perkins 404-22 Models (after serial number 11879)
Ground Control Box Terminal Strip Wiring Diagram, S-65
Perkins 404-22 Models (before serial number 11880)

NOTE: DASHED LINES INDICATE OPTION WIRES
Ground Control Box Terminal Strip Wiring Diagram, S-65
Perkins 404-22 Models (after serial number 11879)
Ground Control Box Switch Panel Wiring Diagram, S-65
Perkins 404-22 Models (after serial number 11879)
Platform Control Box Wiring Diagram, S-65
Perkins 404-22 Models
Belt Driven Generator Wiring Diagram
1. Turning on the Generator supplies current to the high idle relay through the diode switching the engine to high RPM. In addition the diode between TB45 and TB29 supplies power to the motor stroke valve switching the motors to high speed/low torque mode.

2. The SX controller is turned ON supplying power to bypass valve and the change over relay. The EDC valve is switched over to the output of the SX controller.

3. When the AC generator is turned OFF the SX module will ramp the output to the EDC to threshold preventing cavitation to the hydraulic motor powering the generator. When threshold is reached the bypass valve is turned OFF.
Hydraulic Schematic, 12kW Hydraulic Generator Option
Hydraulic Schematic, 4WD Models
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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