Genie®
A TEREX BRAND

Service Manual

	Serial Number Range
S-100	from S100/105-136 to S10012/S10512-941
S-105	from S10011D-114 to S10015D-1000
	from S10511D-133 to S10515D-982
S-120	from S120/125-404 to S12012/S12512-3399
S-125	from S12011D-113 to S12015D-1011
	from S12511D-134 to S12515D-983

Part No. 102916
Rev F3
January 2019

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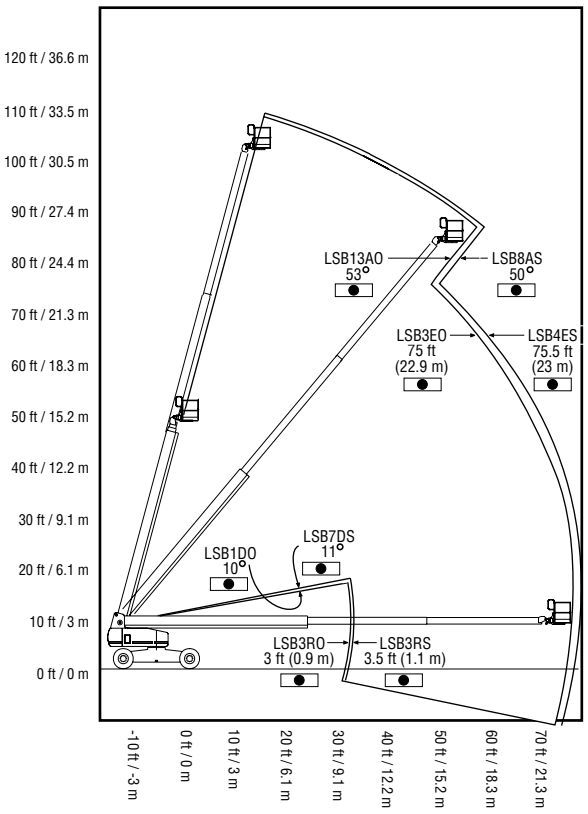
Performance Specifications, S-100 and S-105 Models

Drive speeds		
High drive speed, stowed	8.0 - 8.4 sec	36 ft / 11 m
Low drive speed, stowed	14.4 - 16.4 sec	18 ft / 5.5 m
High drive speed, non-stowed < 80 ft	18 - 20 sec	18 ft / 5.5 m
High drive speed, non-stowed > 80 ft	32.6 - 36.6 sec	18 ft / 5.5 m
Braking distance, maximum		
High range on paved surface		4 to 6 ft 1.2 to 1.8 m
Gradeability (boom stowed)	See Operator's Manual	

Boom function speeds, maximum from platform controls	
Jib boom up (S-105 models)	28 to 32 seconds
Jib boom down (S-105 models)	28 to 32 seconds
Boom up	
Boom fully retracted	80 to 88 seconds
Boom extended to >4 ft / >1.2 m (time between fully lowered and a fully raised position)	100 to 110 seconds
Boom extended to >80 ft / >24.4 m (time between 53° envelope limit and a fully raised position)	50 to 55 seconds
Boom down	
Boom fully retracted	80 to 88 seconds
Boom extended to >4 ft / >1.2 m (time between fully raised and a fully lowered position)	100 to 110 seconds
Boom extended to >80 ft / >24.4 m (time between fully raised and the 50° envelope limit)	50 to 55 seconds
Boom extend, boom fully raised 0 to 100 ft / 0 to 30.5 m	120 to 140 seconds
Boom retract, boom fully raised 100 ft to 0 / 30.5 m to 0	120 to 140 seconds
Turntable rotate, 360° boom horizontal and fully retracted	170 to 190 seconds
Turntable rotate, 360° boom horizontal and extended >0 ft / >0 m	63 to 70 seconds drive enable to drive enable
Turntable rotate, 360° boom fully raised and extended >80 ft / >24.4 m	109 to 120 seconds drive enable to drive enable
Platform rotate, 160°	18 to 22 seconds



SPECIFICATIONS

Perkins 1104D-44T

Displacement	268.5 cu in 4.4 liters
Number of cylinders	4
Bore and stroke	4.13 x 5 inches 105 x 127 mm
Horsepower net intermittent @ 2200 rpm	68 ph / 50.7KW 74 hp / 55.2 KW
Induction system	turbocharged
Firing order	1 - 3 - 4 - 2
Low idle	1300 rpm
High idle	2450 rpm
Compression ratio	18.2:1
Compression pressure pressure (psi or bar) of the lowest cylinder must be at least 75% of the highest cylinder.	
Governor	centrifugal mechanical
Valve Clearance, cold	
Intake	0.008 in 0.2 mm
Exhaust	0.018 in 0.45 mm
Lubrication system	
Oil pressure, hot (@ 2000 rpm)	40 to 60 psi 2.8 to 4.1 bar
Oil capacity (including filter)	10.4 quarts 9.8 liters
Oil viscosity requirements	
-22°F to 86°F / -30°C to 30°C	5W-20 (synthetic)
-4°F to 104°F / -20°C to 40°C	10W-40
Above 5°F / -15°C	15W-40
Unit ships with 15W-40. Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator Manual for your engine.	

Oil temperature switch	
Installation torque	8-18 ft-lbs 11-24 Nm
Pressure switch point	8 psi 0.55 bar
Oil Sensor Settings	
0 psi	10 ohms
50 psi	120 ohms
Fuel injection system	Motorpal
Transfer pump pressure	10-12 psi / 0.69-0.83 bar
Injector pressure	(4264+116 psi) / (294+8 bar)
Fuel requirement	
For fuel requirements, refer to the engine Operator Manual for your engine.	
Starter motor	
Current draw, normal load	115 A
Cranking speed	200-250 rpm
Battery - Auxiliary power units	
Type	6V DC
Quantity	2
Battery capacity, maximum	285AH
Reserve capacity @ 25A rate	745 Minutes
Battery - Engine starting and control system	
Type	12V DC, Group 31
Quantity	1
Battery capacity, maximum	1000A
Reserve capacity @ 25A rate	200 Minutes

SPECIFICATIONS

Machine Torque Specifications

Platform rotator	
1-8 center bolt, GR 5, dry	640 ft-lbs 868 Nm
1-8 center bolt, GR 5, lubricated	480 ft-lbs 651 Nm
3/8 -16 bolts, GR 8, lubricated *use blue thread-locking compound	35 ft-lbs* 47.5 Nm
Turntable rotate assembly	
Rotate bearing mounting bolts, lubricated	180 ft-lbs 244 Nm
Rotate drive hub mounting bolts, dry	380 ft-lbs 515 Nm
Rotate drive hub mounting bolts, lubricated *use blue thread-locking compound	280 ft-lbs* 380 Nm
Rotate drive motor mounting bolts, dry	110 ft-lbs 149 Nm
Rotate drive motor mounting bolts, lubricated	80 ft-lbs 108 Nm
Drive motor and hubs	
Drive hub mounting bolts, dry	269 ft-lbs 365 Nm
Drive hub mounting bolts, lubricated	202 ft-lbs 274 Nm
Drive motor mounting bolts, dry	110 ft-lbs 149 Nm
Drive motor mounting bolts, lubricated	80 ft-lbs 108 Nm
Drive hub oil plug, O-ring seal	13 ft-lbs 18 Nm

Manifold Plug Torque Specifications

Plug torque	
SAE No. 2	50 in-lbs / 6 Nm
SAE No. 4	14 ft-lbs / 18.9 Nm
SAE No. 6	23 ft-lbs / 31.2 Nm
SAE No. 8	36 ft-lbs / 48.8 Nm
SAE No. 10	62 ft-lbs / 84.1 Nm
SAE No. 12	84 ft-lbs / 113.9 Nm

Maintenance Inspection Report

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

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

☐	**Daily or 8 hour Inspection:**	**A**
☐	**Quarterly or 250 hour Inspection:**	**A+B**
☐	**Semi-annual or 500 hour Inspection:**	**A+B+C**
☐	**Annual or 1000 hour Inspection:**	**A+B+C+D**
☐	**2 Year or 2000 hour Inspection:**	**A+B+C+D+E**

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

Legend

Y = yes, acceptable

N = no, remove from service

R = repaired

Checklist A		**Y**	**N**	**R**
A-1	Inspect the manuals and decals			
A-2	Pre-operation inspection			
A-3	Perform function tests			
A-4	Engine maintenance - Perkins models			
A-5	Engine maintenance - Cummins models			
A-6	Hydraulic filter condition indicator			
Perform after 40 hours:				
A-7	30 Day Service			
Perform every 50 hours:				
A-8	Engine Maintenance-Perkins models			
Perform after 50 hours:				
A-9	Engine Maintenance-Deutz models			
Perform every 100 hours:				
A-10	Grease rotation bearing			
A-11	Grease axles			
Perform after 150 hours:				
A-12	Replace drive hub oil			

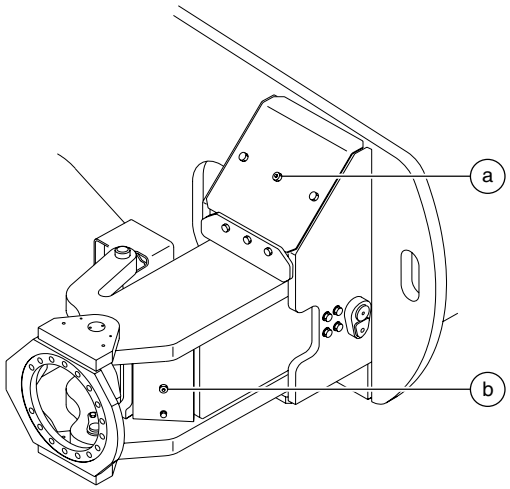
Checklist B		**Y**	**N**	**R**
B-1	Batteries			
B-2	Electrical wiring			
B-3	Oil cooler and fins - Deutz models			
B-4	Inspect air filter			
B-5	Hydraulic oil analysis			
B-6	Engine maintenance - Deutz models			
B-7	Engine maintenance - Cummins models			
B-8	Exhaust system			
B-9	Lug nut torque			
B-10	Drive hub oil level			
B-11	Drive brakes			
B-12	Engine RPM			
B-13	Key switches			
B-14	Ground control override			
B-15	Platform self-leveling			
B-16	Limit switches			
B-17	Fuel and hydraulic tank venting systems			
B-18	Engine idle select operation			
B-19	Test the drive brakes			
B-20	Drive speed - stowed position			
B-21	Drive speed - raised or extended position			
B-22	Inspect the Boom Extend/Retract Cables			

Comments

A-12
Grease the Extendable Axles

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

Frequent lubrication to the front and rear extendable axles helps to ensure the smooth operation of the axles over the lifetime of the product. Two grease fittings are added at each extending axle. One to direct grease to the top sliding wear pad and one to direct grease to the bottom sliding wear pad.



a Top wear pad grease fitting
b Side wear pad grease fitting

1 Locate the grease fittings on the extendable axles covers.

2 Thoroughly pump grease into each grease fitting. When grease is pumped into each fitting, a hose directs this lubrication to the top or bottom wear pad.

3 Cycle the extending axles in and out.

Genie recommends that the extending axles be cycled in and out at least once a week.

A-13
Replace the Drive Hub Oil

Genie specifications require that this one-time procedure be performed after the first 150 hours of operation.

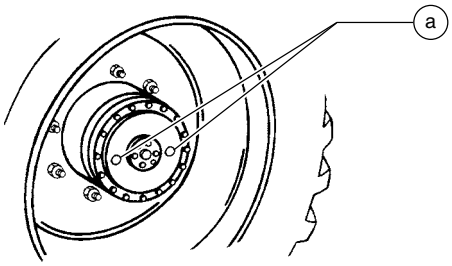
Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the drive hub oil after the first 150 hours may cause the machine to perform poorly and continued use may cause component damage.

Drive Hubs:

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. Refer to capacity specifications

3 Drive the machine to rotate the hub until the plugs are located one at the side and the other at the other side.



a drive hub plugs

4 Fill the hub with oil from either plug hole until the oil level is even with the bottom of both plug holes. Install the plugs.

5 Repeat steps 1 through 4 for all the other drive hubs.

6 Check the torque of the drive hub mounting bolts. Refer to *Specifications, Machine Torque Specifications.*

B-8
Check the Exhaust System

Genie requires 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.

NOTICE Bodily injury hazard. Beware of hot engine components. Contact with hot engine components may cause severe burns.

Cummins and Perkins models:

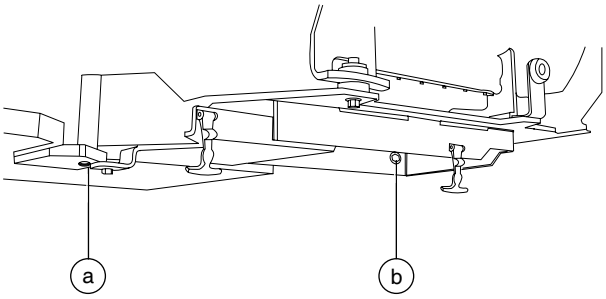
1 Be sure that all fasteners are tight.

2 Inspect all welds for cracks.

3 Inspect for exhaust leaks; i.e., carbon buildup around seams and joints.

Deutz models:

1 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



a engine pivot plate anchor hole
b engine pivot plate retaining fastener

2 Locate the engine pivot plate anchor hole at the pivot end of the engine pivot plate.

3 Install the bolt that was just removed into the anchor hole to secure the engine pivot plate from moving.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

4 Be sure that all fasteners are tight.

5 Inspect all welds for cracks.

6 Inspect for exhaust leaks; i.e., carbon buildup around seams and joints.

7 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole at the pivot end of the engine pivot plate.

8 Swing the engine pivot plate in towards the machine.

9 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

B-16
Test the Safety Envelope and Circuits

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

Testing the machine safety envelope is critical to safe machine operation. If the boom is allowed to operate when a safety switch is not functioning correctly, the machine stability is compromised and may tip over.

Note: Refer to Repair Procedure, *Limit Switch and Level Sensor Locations* for diagram showing the location of switches in this procedure.

1 Start the engine from the ground controls.

2 Raise the boom to approximately 60°.

Note: For S-100 or S-105 models, proceed to step 30.

101 feet / 30.8 m Length Safety Switch, LSB2RS:

3 Extend the boom to more than 80 feet / 24.4 m.

Machines before SN 2710:

4 Proceed to step 8.

Machines after SN 2709:

5 Push in the red Emergency Stop button to the off position.

6 Plug in the LSB2RS test jumper between the lower limit switch and the function manifold (J2 and J4 connectors on the ground control box).

7 Pull out the red Emergency Stop button to the on position and restart the engine.

8 Disconnect the 68° proximity switch LSB14AO and install a wire jumper between pin 3 and pin 4 of the Deutsch connector.

⊙ Result: ">68 DEG" should be present on the display screen at the ground controls.

9 Activate the function enable/high RPM button and extend the boom to 101 feet / 30.8 m.

⊙ Result: The engine should stop and the boom extend function should be disabled.

⊠ Result: If the engine does not stop and the boom continues to extend, the LSB2RS switch is out of adjustment or the wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

⚠WARNING Bodily injury hazard. If the boom extends to more than 101 feet / 30.8 m without stopping the engine, stop immediately and retract the boom until the boom is extended to less than 100 feet / 30.5 m. Failure to retract the boom could result in death or serious injury.

10 Using auxiliary power, retract the boom until the boom is extended to approximately 95 feet / 29 m.

11 Remove the wire jumper installed in step 8 and connect the Deutsch connector to LSB14AO.

B-22

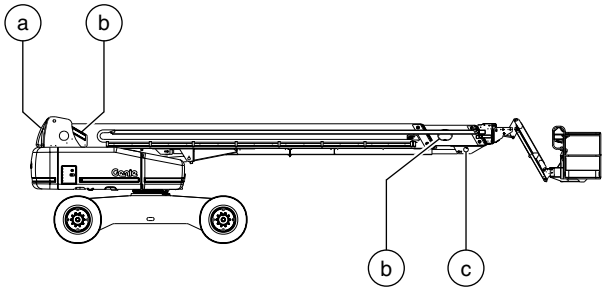
Inspect the Boom Extend/Retract Cables

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 on the S-100 and S-105, and the numbers 2 and 3 boom tubes on the S-120 and S-125. Inspecting for foreign objects, damage and/or improper adjustment of the boom extend/retract cables 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 the stowed position and the engine off.

1 Remove the boom end cover from the pivot end of the boom.



a boom end cover
b side access covers
c cable ends (located underneath the boom)

2 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.

3 Visually inspect the cables and components through both inspection holes for the following:

- Frayed or broken wire strands
- Kinks or crushed cables
- Corrosion
- Paint or foreign materials on the cables
- Split or cracked cable ends
- Cables are on all pulleys
- 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

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.

4 Replace the cables if any damage is found.

5 At the pivot end of the boom, visually inspect for the following:

- The red locking bracket is securely installed over the cable adjustment bolts

6 Install the plastic cover at the pivot end of the boom and access panels on the sides of the boom.

7 Start the engine from the platform controls.

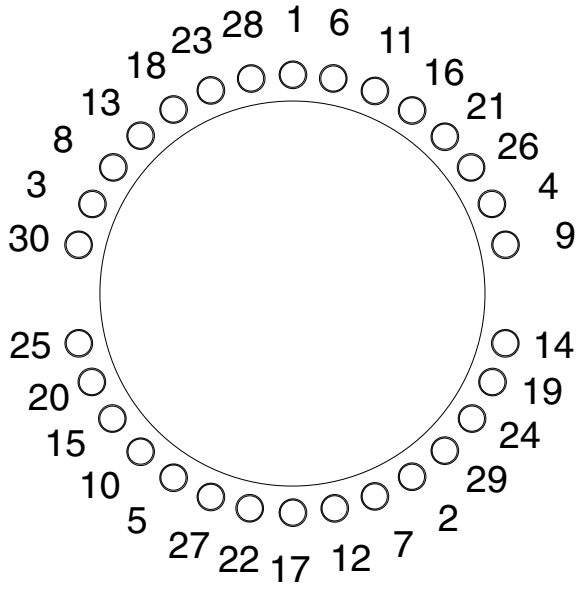
8 Extend the boom approximately 2 feet (0.6 m).

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

⊙ Result: The number 2 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.*

3 Be sure that each turntable rotation bearing mounting bolt above the turntable is torqued in sequence. Refer to *Specifications, Machine Torque Specifications.*



Bolt torque sequence

4 Raise the boom to a horizontal position.

5 Remove the safety chock and lower the boom to the stowed position.

6 Be sure that each turntable rotation bearing mounting bolt under the drive chassis is torqued in sequence. Refer to Specifications, Machine Torque Specifications.

Note: The turntable rotation bearing bolt torque sequence is the same from above the turntable and below the drive chassis.

D-5
Check the Turntable Rotation Gear Backlash

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

Properly adjusted turntable rotation gear backlash is essential for good machine performance and service life. Improperly adjusted turntable rotation gear backlash will cause the machine to perform poorly and continued use will cause component damage. The turntable rotation drive hub is mounted on the swing chassis behind the fixed side cover at the ground controls side.

Note: Be sure to check the backlash with the machine fully stowed and the counterweight at the square end of the machine.

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

1 Rotate the turntable until the boom is centered between the circle end wheels.

2 Apply approximately 20 lbs / 89 N of side force to the platform, moving the platform to one side as far as it will go.

CHECKLIST E PROCEDURES

10 Remove the hydraulic tank breather filter from the tank.

11 Remove the hydraulic tank strap retaining fasteners and remove the hydraulic tank straps from the machine.

12 Support the hydraulic tank with 2 lifting straps. Place one lifting strap at each end of the tank and attach the lifting straps to an overhead crane.

13 Remove the hydraulic tank from the machine.

⚠WARNING Crushing hazard. The hydraulic tank could become unbalanced and fall if it is not properly supported and secured to the overhead crane when it is removed from the machine.

14 Remove the hydraulic tank return filter from the hydraulic tank return filter head.

15 Remove the case drain filter from the case drain filter head.

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

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

18 Install the suction strainers using pipe thread sealant on the pipe threads.

19 Install the drain plug using pipe thread sealant on the pipe threads.

Note: Always use pipe thread sealant on all pipe threads.

20 Install the hydraulic tank onto the machine.

21 Install the hydraulic tank retaining straps and install the hydraulic tank retaining fasteners.

22 Install the horn and horn retaining fasteners onto the machine. Connect the wiring.

23 Install the ground control box assembly and assembly retaining fasteners onto the machine.

24 Install the two suction hoses and the supply hose for the auxiliary power unit onto the machine.

25 Install the case drain hose onto the return filter head.

26 Install the T-fitting and 2 hoses connected to it to the hydraulic tank return filter head.

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

28 Apply pipe thread sealant to the threads of the hydraulic tank filter mount.

29 Install a new tank breather filter onto the filter mount and tighten it securely by hand.

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

31 Install a new tank case drain return filter onto the filter mount and tighten it securely by hand.

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

33 Install a new tank return filter onto the filter mount and tighten it securely by hand.

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

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

36 Open the hydraulic tank shut-off valves.

NOTICE Component damage hazard. Be sure to open the two hydraulic tank shutoff valves and prime the pump after installing the hydraulic tank. Refer to Repair Procedure, *How to Prime the Pumps*.

37 Install the turntable side cover.

DISPLAY MODULE

Screen or Menu	Procedure	Description	Range or Selection
Default Reset	With key switch OFF, press and hold the ↵ button and turn the key switch to the ON position. Release the ↵ button and press − − ↓ ↓	Reset drive functions Reset boom function speeds Reset lift function ramps Reset all (Contact Genie Industries Service Department before using this option) Clear all safety switch faults	(YES/NO) (YES/NO) (YES/NO) (YES/NO) (YES/NO)
Overload Recovery	With key switch OFF, press and hold the ↵ button and turn the key switch to the ON position. Release the ↵ button and press + − − +	Clear Overload Recovery	A passcode is required to clear the message
Options	With key switch OFF, press and hold the ↵ button and turn the key switch to the ON position. Release the ↵ button and press − − + +	Limit boom height to 100 ft / 80 ft AC generator Alarm Lift / drive cutouts Auxiliary drive Proximity kill switch Platform overload sensing Work lights Flashing beacon Drive lights Disable steer mode change while driving Rocker joystick steering Generator off delay (0-10 sec)	(100 FT / 80 FT) (NONE, BELT, HYD) (NO, MOTION, TRAVEL, DESCENT, TRAVEL AND DESCENT)(0, 1, 2, 3, 4, 5) (NO, DRIVE CUTOUT WHILE NOT STOWED, LIFTING OR DRIVING) (YES/NO) (NONE/PROX) (NONE/PLTFS) (YES/NO) (YES/NO) (YES/NO) (YES/NO) (YES/NO) (0 TO 10 SECONDS, 2 IS THE DEFAULT. SHOWN ONLY WHEN HYD GEN IS SELECTED)

2 Press and hold the enter button ↵ on the ground control panel while turning the key switch to ground controls. Hold the enter button for approximately 5 seconds.

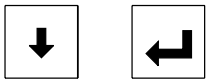
3 Press the plus button + twice, then press the minus button − twice.

4 Press the scroll button ↓ until the function to be adjusted is displayed.

5 Press the plus button + to increase the speed or press the minus button − to decrease the speed.

6 Press the enter button ↵ to save the setting in memory.

7 Push one of the LCD screen buttons shown until EXIT is displayed.



8 Press the plus + button to select YES and then press the enter button ↵.

9 Continue to perform this procedure until the machine function speed meets specification. Refer to *Specifications* for function speeds.

How to Adjust the Function 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 Press and hold the enter button ↵ on the ground control panel while turning the key switch to ground controls. Hold the enter button for approximately 5 seconds.

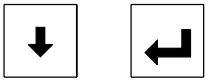
3 Press the plus button + twice, then press the scroll button ↓ twice.

4 Press the scroll button ↓ until the function to be adjusted is displayed.

5 Press the plus button + to increase the ramp rate or press the minus button − to decrease the ramp rate.

6 Press the enter button ↵ to save the setting in memory.

7 Push one of the LCD screen buttons shown until EXIT is displayed.



8 Press the plus + button to select YES and then press the enter button ↵.

Specifications

Ramp rate (factory settings)	
Turntable rotate	
accelerate	2 seconds
decelerate	0.25 second
Primary boom up/down	
accelerate	3 seconds
decelerate	0..25 second
Primary boom extend/retract	
accelerate	2 seconds
decelerate	0.25 second
Jib boom up/down	
accelerate	2 seconds
decelerate	0.25 second
Drive	
accelerate	2 seconds

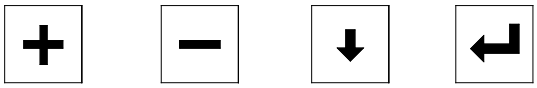
2-6 Platform Overload Recovery Message (software V3.14 and later)

If the ground controls LCD screen displays OVERLOAD RECOVERY, the emergency lowering system has been used while the platform was overloaded.

How to Clear the Platform Overload Recovery Message

Note: This message shall be cleared by a person trained and qualified on the troubleshooting and repair of this machine.

Note: Use the following chart to identify the description of each LCD screen control button used in this procedure.



Plus Minus Previous Enter

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

2 Press and hold the **enter** button on the ground sontrol panel while turning the key switch to ground controls. Hold the **enter** button for approximately 5 seconds.

3 Press the buttons on the ground controls in the following sequence: **(plus)(minus)(minus)(plus)**.

4 Press the **enter** or **previous** button on the LCD screen until CLEAR OVERLOAD RECOVERY is displayed.

5 Press the **plus** button or **minus** button to select YES. Then press the buttons in following sequence: **(plus)(plus)(plus)(minus)** and press the **enter** button to accept.

Note: The passcode buttons **(plus)(plus)(plus)(minus)** must be entered in the proper sequence before the **enter** button is pressed.

6 Press the **enter** or **previous** button on the LCD screen until EXIT is displayed.

7 Press the **plus** button or **minus** button to select YES and then press the **enter** button.

8 Turn the key switch to the off position.

16 Tag and disconnect the wiring connector from the cable break limit switch.

17 Tag, disconnect and plug the hydraulic hoses from the primary boom extension 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.

18 Attach a second overhead 10 ton / 10,000 kg crane to the pivot end of the boom for support. Do not apply any lifting pressure.

19 Remove the pin retaining fastener from the boom pivot pin. Do not remove the pin.

20 Use a soft metal drift to remove the boom pivot pin.

NOTICE Component damage hazard. Be careful not to damage the boom envelope limit switch(s) located on the inside of the engine side turntable riser when removing the boom assembly. The boom envelope switch(s) can be damaged even if the damage is not visible.

21 Carefully remove the boom assembly from the machine and place it on a structure capable of supporting it.

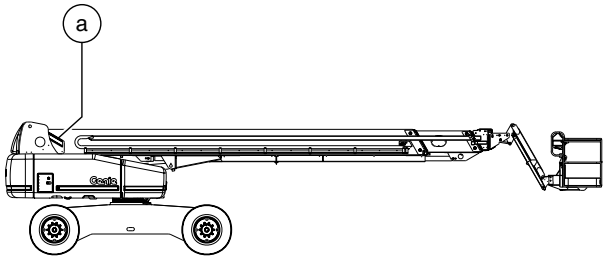
⚠WARNING Crushing hazard. The boom may become unbalanced and fall when it is removed from the machine if it is not properly supported by the overhead cranes.

How to Disassemble the Boom, S-120 and S-125 Models

Note: Complete disassembly of the boom is only necessary if the outer or inner boom tubes must be replaced. The primary boom extension cylinder can be removed without completely disassembling the boom. See 4-4, *How to Remove the Primary Extension Cylinder*.

1 Remove the boom. See 4-2, *How to Remove the Boom*.

2 Remove the retaining fasteners from the access covers on both sides of the boom at the pivot end. Remove the access covers.

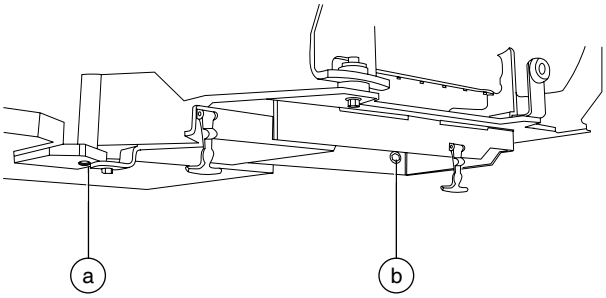


a side access covers

3 Secure the number 2 and number 3 boom tubes together with a strap or chain to prevent them from moving.

4 Remove the cable clamp from the cable break limit switch wiring.

11 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



a engine pivot plate anchor hole
b engine pivot plate retaining fastener

12 Locate the engine pivot plate anchor hole at the pivot end of the engine pivot plate.

13 Install the bolt that was just removed into the anchor hole to secure the engine pivot plate from moving.

⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate anchor hole to secure it from moving could result in death or serious injury.

14 Remove the pin retaining fastener from the barrel-end pivot pin. Do not remove the pin.

15 Support the boom lift cylinder with an overhead crane.

16 Use a slide hammer to remove the boom lift cylinder barrel-end pivot pin through the access hole in the engine side turntable riser.

17 With the boom lift cylinder being supported by the overhead crane, pull the boom lift cylinder toward the platform until it is out.

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

NOTICE Component damage hazard. Be careful not to damage the proximity and/or limit switches when removing the boom lift cylinder.

NOTICE Component damage hazard. The cables and hydraulic hoses can be damaged if the boom lift cylinder is pulled across them.

How to Remove a Fixed Turntable Cover

1 **Ground controls side:** Remove the top retaining fasteners from the power to platform plug panel and loosen the bottom retaining fasteners. Do not disconnect the wiring.

2 Support the cover with a suitable lifting device. Protect the cover from damage.

3 Remove the cover mounting fasteners.

4 Carefully remove the cover from the machine.

⚠WARNING Crushing hazard. The turntable cover may become unbalanced and fall when it is removed from the machine if it is not properly supported.

⚠WARNING Bodily injury hazard. Safety decals are essential to safe machine operation. Failure to replace all safety and instructional decals could result in death or serious injury. If a turntable cover must be replaced, be sure that all appropriate safety and instructional decals are applied to the new cover.

Note: Alignment adjustments may be necessary when a new cover is installed.

2 Activate the limit switch. Connect the leads from an ohmmeter or continuity tester to the deutsch connector terminals in the combination listed below and check for continuity.

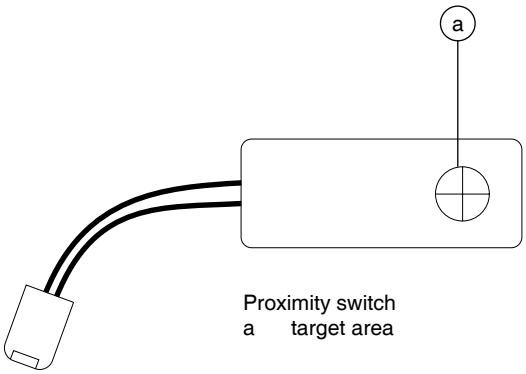
terminal 1 to 2	no continuity (infinite Ω)
terminal 3 to 4	no continuity (infinite Ω)
terminal 1 to 3 and 4	no continuity (infinite Ω)
terminal 2 to 3 and 4	no continuity (infinite Ω)
terminal 5 to 6	no continuity (infinite Ω)

Proximity Switch:

1 Connect the leads from an ohmmeter or continuity tester to the deutsch connector terminals in the combination listed below and check for continuity.

terminal 3 to 4	no continuity (infinite Ω)

2 Locate the target area of the proximity switch.



Proximity switch
a target area

3 Place a piece of ferrous metal (steel, iron, etc.) in front of the target area so it is no more than $^1/_2$ inch / 12.7 mm away from the target area of the proximity switch.

4 Connect the leads from an ohmmeter or continuity tester to the deutsch connector terminals in the combination listed below and check for continuity.

terminal 3 to 4	continuity (zero Ω)

5 Move the piece of ferrous metal (steel, iron, etc.) so it is more than $^1/_2$ inch / 12.7 mm away from the target area of the proximity switch.

6 Connect the leads from an ohmmeter or continuity tester to the deutsch connector terminals in the combination listed below and check for continuity.

terminal 3 to 4	no continuity (infinite Ω)

How to Adjust the Limit Switches

Note: Perform this procedure on a flat and level area and free from obstructions.

1 Fully retract the boom.

2 Place a digital protractor or digital level on top of the boom tube.

9-3
Auxiliary Pump

How to Test the Auxiliary Pump

The auxiliary pump is a 2-section, gear-type pump. Pump number 1 is the pump section closest to the pump motor and pump number 2 is the pump section that is farther from the pump motor. Each section of the pump has its own relief valve located within the pump body.

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

1 Disconnect and plug the high pressure hydraulic hose from pump number 1.

⚠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.

2 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the high pressure port on pump number 1.

3 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position.

4 Activate any function using auxiliary power.

⊙ Result: If the pressure gauge reads 2500 psi / 172 bar, immediately stop. The pump is good.

⊠ Result: If pressure fails to reach 2500 psi / 172 bar, the internal relief valve setting is incorrect or the pump is bad and will need to be serviced or replaced.

5 Turn the key switch to the OFF position.

6 Remove the pressure gauge and reconnect the hydraulic hose.

7 Disconnect the hydraulic hose from the high pressure port from pump number 2.

8 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the high pressure port on pump number 2.

9 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position.

10 Activate any function using auxiliary power.

⊙ Result: If the pressure gauge reads 3000 psi / 207 bar, immediately stop. The pump is good.

⊠ Result: If pressure fails to reach 3000 psi / 207 bar, the internal relief valve setting is incorrect or the pump is bad and will need to be serviced or replaced.

11 Remove the pressure gauge and reconnect the hydraulic hose.

10-3
Valve Adjustments - Function Manifold, S-100 and S-105 Models

How to Adjust the Function Manifold Relief Valve

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

1 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the test port on the function manifold.

2 Start the engine from the ground controls.

3 Simultaneously push and hold the function enable/high speed button and the boom retract button with the boom fully retracted. Observe the pressure reading on the pressure gauge. Refer to Specifications, *Hydraulic Oil Specifications.*

4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item FI).

5 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.

6 Repeat steps 2 through 5 to confirm the relief valve pressure.

How to Adjust the Boom Extend Relief Valve

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

1 Connect a 0 to 3000 psi / 0 to 207 bar pressure gauge to the test port on the function manifold.

2 Start the engine from the ground controls.

3 Fully raise and extend the boom.

4 Simultaneously push and hold the function enable/high speed button and the boom extend button with the boom fully extended. Observe the pressure reading on the pressure gauge. Refer to Specifications, *Hydraulic Specifications.*

5 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item FA).

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 6 to confirm the relief valve pressure.

10-7
Function Manifold Components, S-120 and S-125 Models
(from serial number 575)

The function manifold is mounted to the turntable next to the ground controls.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid Valve Assembly, 3 position 4 way, DO3, 12V DC	BD	Boom up/down	30-35 in-lbs / 3-4 Nm
2	Solenoid Valve, 2 position 3 way	AA	Auxiliary drive/steer selector	25-27 ft-lbs / 34-37 Nm
3	Check Valve, 5 psi / 0.34 bar	AE	Blocks flow from pump 2 to auxiliary pump	12-14 ft-lbs / 16.3-19 Nm
4	Flow Regulator Valve, 3 gpm / 11.36 L/min	AD	Priority flow to platform	23-25 ft-lbs / 31.2-33.9 Nm
5	Check Valve, 10 psi / 0.69 bar	AB	Blocks flow from pump 1 and 2 to auxiliary pump	18-20 ft-lbs / 25-27 Nm
6	Solenoid Valve, 3 position 4 way	BC	Turntable rotate control, left/right	25-27 ft-lbs / 34-37 Nm
7	Proportional Solenoid Valve	BG	Turntable rotate, proportional speed control	18-20 ft-lbs / 25-27 Nm
8	Differential Sensing Valve, 230 psi / 15.9 bar	BP	Directs flow to functions	33-37 ft-lbs / 45-50 Nm
9	Check Valve	BL	Turntable rotate load sense check	12-14 ft-lbs / 16.3-19 Nm
10	Proportional Solenoid Valve	BB	Boom extend/retract proportional speed control	33-37 ft-lbs / 45-50 Nm
11	Check Valve, 5 psi / 0.34 bar	AF	Blocks flow from auxiliary pump, ports 2A and 3A to pump 2	25-27 ft-lbs / 34-37 Nm
12	Diagnostic Nipple	TP	Testing	
13	Relief Valve, 3000 psi / 206.8 bar	AC	Platform manifold pressure limit	18-20 ft-lbs / 25-27 Nm

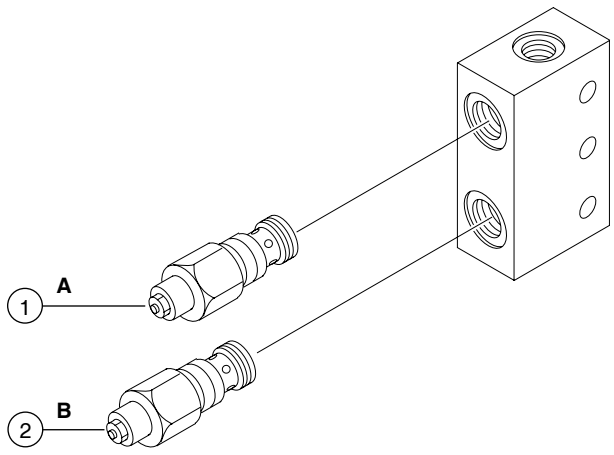
This list continues on the next page.

10-12
Proportional Valves - Platform Manifold

Note: When a proportional valve cartridge or coil is replaced or moved to a different valve cartridge or cavity, the proportional valve cartridge or coil will need to be calibrated. See 1-3, *How to Calibrate a Joystick.*

10-13
Platform Rotate Counterbalance Valve Manifold Components

Index No.	Description	Schematic Item	Function	Torque
1	Counterbalance valve	A	Platform rotate left	37-44 ft-lbs / 50-60 Nm
2	Counterbalance valve	B	Platform rotate right	37-44 ft-lbs / 50-60 Nm



10-18
Traction Manifold Components
(S-100/105- to serial number 290)
(S-120/125- to serial number 1194)

The drive manifold is mounted inside the drive chassis at the circle end of the machine.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	DA	2 speed control	25-30 ft-lbs / 38-41 Nm
2	Flow regulator valve, 2 gpm / 7.57 L/min	DB	Drive slip limit, rear	35-40 ft-lbs / 47-54 Nm
3	Flow divider/combiner valve	DC	Controls flow to rear drive motors in forward and reverse	130-140 ft-lbs / 176-190 Nm
4	Flow regulator valve, 2 gpm / 7.57 L/min	DD	Drive slip limit, front	35-40 ft-lbs / 47-54 Nm
5	Flow divider/combiner valve	DE	Controls flow to front drive motors in forward and reverse	130-140 ft-lbs / 176-190 Nm
6	Flow divider/combiner valve	DF	Controls flow to front and rear flow divider combiner valves (items DC and DE)	130-140 ft-lbs / 176-190 Nm
7	Check valve	DG	Anti-cavitation	35-40 ft-lbs / 47-54 Nm
8	Check valve	DH	Anti-cavitation	35-40 ft-lbs / 47-54 Nm
9	Flow regulator valve, 2.7 gpm / 10.22 L/min	DI	Drive slip limit, front and rear	35-40 ft-lbs / 47-54 Nm
10	Check valve	DJ	Anti-cavitation	35-40 ft-lbs / 47-54 Nm
11	Check valve	DK	Anti-cavitation	35-40 ft-lbs / 47-54 Nm

This list continues. Please turn the page.

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.

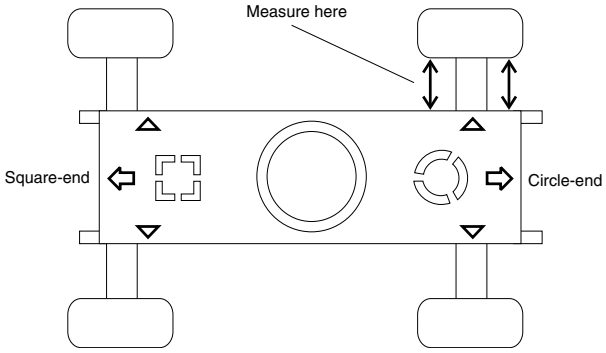
Circle-end steer sensors:

8 At the platform controls, press the square-end steer mode button.

9 Locate the steer sensor on top of the yoke pivot pin.

10 Loosen the steer sensor cover retaining fasteners. Do not remove them.

11 Rotate the steer sensor cover either clockwise or counterclockwise. Measure the distance between the inside of tire and the chassis side plate on both sides of the axle.



12 Repeat step 4 until the tire is parallel with the chassis.

13 Tighten the steer sensor cover fasteners.

14 Repeat steps 9 through 13 for the other circle-end steer sensor.

13-2
Yoke and Hub

How to Remove the Yoke and Hub

The yoke installation utilizes bushings and a thrust washer that may require periodic replacement. There is a steer sensor mounted to the upper yoke pivot pin.

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

1 Remove the hose hanger bracket retaining fasteners mounted to the top of the yoke. Remove the hose hanger bracket from the machine.

2 Tag, disconnect and plug the hydraulic hoses from the drive motor and brake assembly. Cap the fittings on the drive motor and brake.

⚠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.

DIAGNOSTIC CODES

Error Source	Error Type	Effects	Recovery Actions
Primary Boom Ext/Ret Flow Valve	Not calibrated	Normal function except threshold for one or the other direction is zero, Display message on LCD	Calibrate Thresholds
	Just calibrated	Initiate one second beep of audible warning device	Self-clearing (transient)
	Value at 5.0 V	Limited Speed and Direction frozen at zero and neutral, Alarm sounds	Power up controller with problem corrected
	Value Too High		
	Value Too Low		
	Value at 0 V		
Primary Boom Up/Down Flow Valve	Not calibrated	Normal function except threshold for one or the other direction is zero, Display message on LCD	Calibrate Thresholds
	Just calibrated	Initiate one second beep of audible warning device	Self-clearing (transient)
	Value at 5.0 V	Limited Speed and Direction frozen at zero and neutral, Alarm sounds	Power up controller with problem corrected
	Value Too High		
	Value Too Low		
	Value at 0 V		
Primary Boom Extend Valve	Fault Check	Limited Speed and Direction frozen at zero and neutral, Alarm sounds	Power up controller with problem corrected
Primary Boom Retract Valve			
Primary Boom Up Valve			
Primary Boom Down Valve			
Engine Speed	Range Check (underspeed)	Display message on LCD	Power up controller with problem corrected
Oil Pressure	Range Check (low oil pressure)		
Water/Oil Temp	Range Check (high temperature)		
Water/Oil Temp Sensor	Fault Check	Display message on LCD	Power up controller with problem corrected
Oil Pressure Sensor			
Axle Extend/Retract Buttons	Fault Check (both buttons pressed)	Axle Extend/Retract disabled, display message on LCD	Power up controller with problem corrected
Axle Valves	Fault Check	Limited Speed and Direction frozen at zero and neutral, Alarm sounds	Power up controller with problem corrected

DEUTZ TD 2.9 L4 ENGINE FAULT CODES

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier
KWP = Keyword Protocol

SPN	FMI	KWP	Description
51	3	1019	EGR-Valve, short circuit to battery
51	3	1024	Position sensor error of actuator EGR-Valve; signal range check high
51	3	1226	EGR-Valve; short circuit to battery (A02)
51	3	1227	EGR-Valve; short circuit to battery (A67)
51	4	1020	EGR-Valve; short circuit to ground
51	4	1025	Position sensor error of actuator EGR-Valve; signal range check low
51	4	1228	EGR-Valve; short circuit to ground (A02)
51	4	1229	EGR-Valve; short circuit to ground (A67)
51	4	1232	Actuator error EGR-Valve; Voltage below threshold
51	5	1015	Actuator error EGR-Valve; signal range check low
51	5	1017	Actuator EGR-Valve; open load
51	5	1023	Actuator error EGR-Valve; signal range check low
51	5	1223	Actuator EGR-Valve; open load
51	6	1014	Actuator error EGR-Valve; signal range check high
51	6	1022	Actuator error EGR-Valve; signal range check high
51	6	1224	Actuator EGR-Valve; over current
51	6	1230	Actuator error EGR-Valve; Overload by short-circuit
51	7	1016	Actuator position for EGR-Valve not plausible
51	11	1231	Actuator error EGR-Valve; Power stage over temp due to high current
51	12	1018	Actuator EGR-Valve; powerstage over temperature
51	12	1021	Mechanical actuator defect EGR-Valve
51	12	1225	Actuator EGR-Valve; over temperature
94	1	474	Low fuel pressure; warning threshold exceeded
94	1	475	Low fuel pressure; shut off threshold exceeded
94	3	472	Sensor error low fuel pressure; signal range check high
94	4	473	Sensor error low fuel pressure; signal range check low
97	3	464	Sensor error water fuel; signal range check high
97	4	465	Sensor error water fuel; signal range check low
97	12	1157	Water in fuel level prefilter; maximum value exceeded

DEUTZ TD 2.9 L4 ENGINE FAULT CODES

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier
KWP = Keyword Protocol

SPN	FMI	KWP	Description
523768	9	283	Timeout Error of CAN-Receive-Frame Active TSC1AR
523769	9	284	Timeout Error of CAN-Receive-Frame Passive TSC1AR
523770	9	285	Timeout Error of CAN-Receive-Frame Passive TSC1DE
523776	9	291	Timeout Error of CAN-Receive-Frame TSC1TE active
523777	9	292	Passive Timeout Error of CAN-Receive-Frame TSC1TE; Setpoint
523778	9	293	Active Timeout Error of CAN-Receive-Frame TSC1TR
523779	9	294	Passive Timeout Error of CAN-Receive-Frame TSC1TR
523788	12	299	Timeout Error of CAN-Transmit-Frame TrbCH; Status Wastegate
523793	9	202	Timeout Error of CAN-Receive-Frame UAA10; AGS sensor service message
523794	9	203	Timeout Error of CAN-Receive-Frame UAA11; AGS sensor data
523895	13	559	Check of missing injector adjustment value programming (IMA) injector 1 (in firing order)
523896	13	560	Check of missing injector adjustment value programming (IMA) injector 2 (in firing order)
523897	13	561	Check of missing injector adjustment value programming (IMA) injector 3 (in firing order)
523898	13	562	Check of missing injector adjustment value programming (IMA) injector 4 (in firing order)
523910	6	1261	Air Pump; over current
523913	3	74	Sensor error glow plug control diagnostic line voltage; signal range check high
523913	4	75	Sensor error glow plug control diagnostic line voltage; signal range check low
523914	3	78	Glow plug control; short circuit to battery
523914	4	79	Glow plug control; short circuit to ground
523914	5	76	Glow plug control; open load
523914	5	1216	Glow plug control release line; short circuit error
523914	11	1217	Glow plug control; internal error
523914	12	77	Glow plug control; powerstage over temperature
523919	2	1378	Sensor air pump airpressure; plausibility error
523920	2	1379	Sensor exhaust gas back pressure burner; plausibility error

PERKINS 854F-34T ENGINE FAULT CODE

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

SPN	FMI	Description	Refer to Engine Manual
2791	5	Engine Exhuast Gas Recirculation (EGR) Value Control: Current Below Normal	Motorized Value - Test
2791	6	Engine Exhuast Gas Recirculation (EGR) Value Control: Current Above Normal	Motorized Value - Test
2791	7	Engine Exhuast Gas Recirculation (EGR) Value Control: Not Responding Properly	Motorized Value - Test
2797	6	Engine Injector Group 1: Current Above Normal	Injector Solenoid Circuit - Test
2797	7	Engine Injector Group 1: Not Responding Property	Injector Solenoid Circuit - Test
2798	6	Engine Injector Group 2: Current Above Normal	Injector Solenoid Circuit - Test
2840	12	ECU Instance: Failure	ECM Memory - Test
2840	14	ECU Instance: Special Instruction	Electrical Power Supply - Test
2880	2	Engine Operator Primary Intermediate Speed Select: Erratic, Intermittent, or Incorrect	Throttle Switch Circuit - Test
2880	3	Engine Operator Primary Intermediate Speed Select: Voltage Above Normal	Throttle Switch Circuit - Test
2880	4	Engine Operator Primary Intermediate Speed Select: Voltage Below Normal	Throttle Switch Circuit - Test
2970	2	Accelerator Pedal 2 Low Idle Switch: Erratic, Intermittent, or Incorrect	Idle Validation Switch Circuit - Test
3217	3	After treatment #1 Intake 02: Voltage Above Normal	Oxygen Level - Test
3217	4	After treatment #1 Intake 02: Voltage Below Normal	Oxygen Level - Test
3217	5	After treatment #1 Intake 02: Current Below Normal	Oxygen Level - Test
3217	6	After treatment #1 Intake 02: Current Above Normal	Oxygen Level - Test
3217	12	After treatment #1 Intake 02: Failure	Oxygen Level - Test
3217	13	After treatment #1 Intake 02: Out of Calibration	Oxygen Level - Test
3217	15	After treatment #1 Intake 02: High - least severe (1)	Oxygen Level - Test

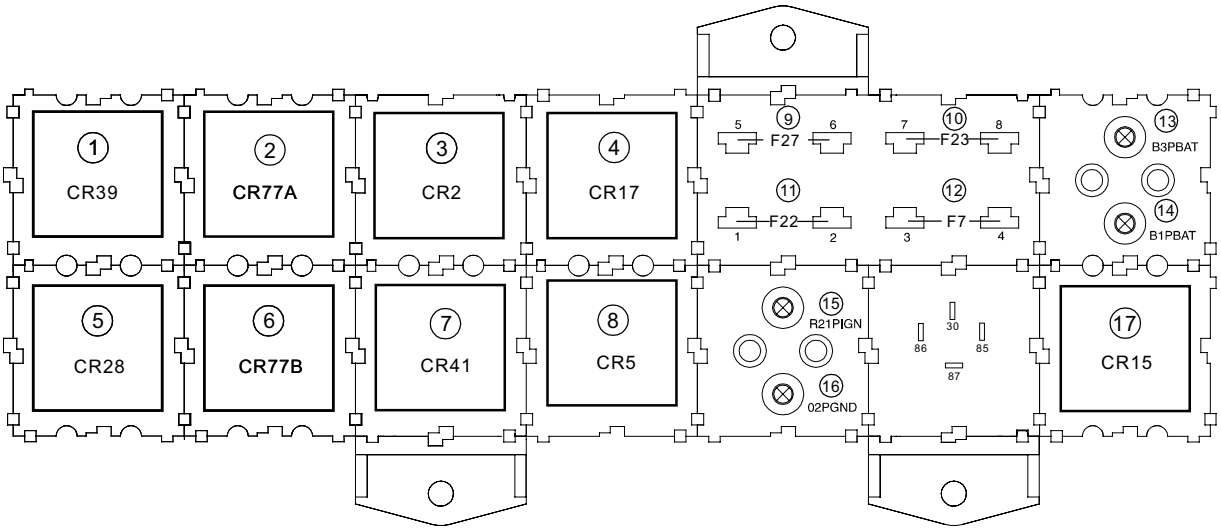
WIRE CIRCUIT LEGEND

Color	Circuit #	Primary function
RD	1	Primary boom up drive
RD/BK	2	Primary boom down drive
RD/WH	3	Primary boom up/dwn FC proportional valve drive
WH	4	Turntable rotate left valve drive
WH/BK	5	Turntable rotate right valve drive
WH/RD	6	Turntable rotate FC proportional valve drive
BK	7	Primary boom extend
BK/WH	8	Primary boom retract
BK/RD	9	Primary boom Extend/Retract proportional valve drive
BL	10	Secondary boom up valve drive
BL/BK	11	Secondary boom down valve drive
BL/WH	12	Secondary boom up/dwn FC proportional valve drive
BL/RD	13	Drive enable
OR	14	Platform level up valve
OR/BK	15	Platform level down valve
OR/RD	16	Platform up/dwn FC proportional valve drive
GN	17	Platform rotate left valve driver
GN/BK	18	Platform rotate right valve driver
GN/WH	19	Jib select valve driver circuit
RD	20	12V battery supply
WH	21	12V ignition supply
BK	22	Keyswitch power to platform ESTOP
WH	23	Power to platform
RD	24	Power to warning senders
WH/BK	25	Power to oil pressure sender
WH/RD	26	Power to temp sender
RD	27	Auxiliary power
RD/BK	28	Platform level alarm
RD/WH	29	Drive motor shift (speed)
WH	30	Forward/EDC-A
WH/BK	31	Reverse/EDC-B
WH/RD	32	Brake
BK	33	Start
BK/WH	34	Start aid (glow plug or choke)
BK/RD	35	High engine speed select
BL	36	Steer clockwise
BL/BK	37	Steer counterclockwise
BL/WH	38	Gas
BL/RD	39	LP
OR	40	Limit switch signal stowed
OR/BK	41	RPM signal
OR/RD	42	Boom retracted signal
GN	43	Jib up
GN/BK	44	Jib down
GN/WH	45	AC Generator
WH	46	Drive horn
WH/BK	47	Output power enable
WH/RD	48	Work lamp
WH/BK	49	Motion lamp
BL	50	Auxiliary boom
BL/WH	51	Auxiliary steer
BL/RD	52	Auxiliary platform
WH/BK	53	Boom envelope safety valve cutoff
BK/WH	54	Power to safety interlock switches (engine)
GN/BK	55	Axle oscillation
RD	56	Foot switch/TCON estop power
RD/WH	57	Boom down safety interlock
RD/BK	58	Safety interlock to engine
GN/WH	59	Chain break circuit
GN/WH	60	Axle extend
GN	61	Axle retract
OR	62	Boom stowed (safety)
OR/RD	63	Power to boom envelope safety switch

This list continues on the next page.

Engine Relay and Fuse Panel Legend - Deutz TD2.9 Models

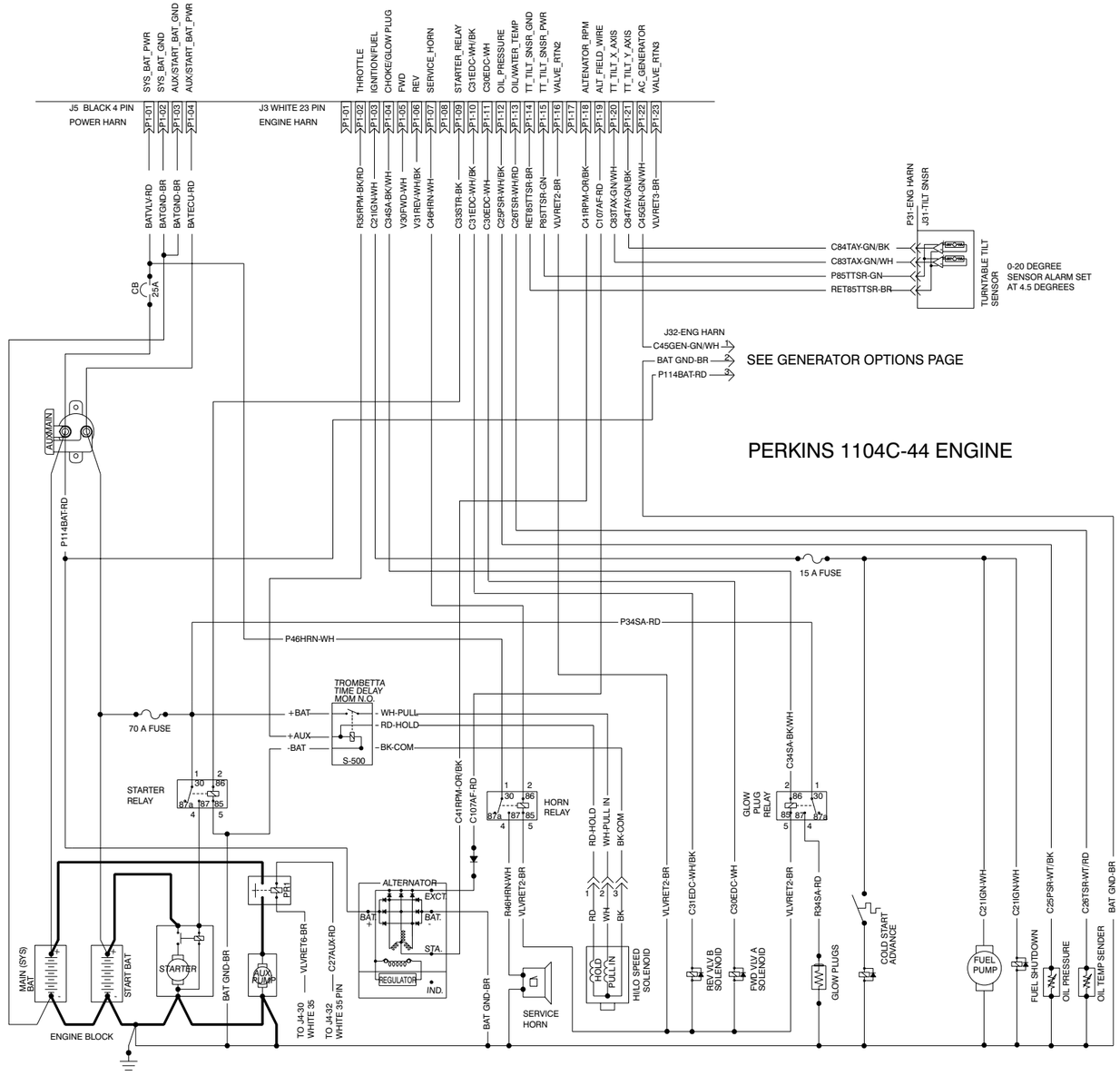
Deutz TD2.9 Models



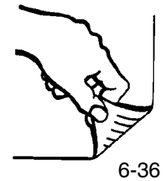
Number	Component	Description
1	CR39	Engine Shutdown
2	CR77A	PCE # 1
3	CR2	Engine Alt. Relay
4	CR17	Hydraulic Oil Cooler / Fan Relay
5	CR28	Fuel Pump
6	CR77B	PCE#2
7	CR41	Flashing Beacon Relay
8	CR5	Horn Relay
9	F27	Fuse, 20A, RPM Solenoid
10	F23	Fuse, 30A, Eng / Start / Fuel
11	F22	Fuse, 60A, Glow Plug
12	F7	Fuse, 20A, Hydraulic Oil Cooler / Horn
13	B3BAT	Fused Power from B1
14	B1BAT	Power from Battery
15	R21PIGN	Ignition
16	02PGND	Ground
17	CR17	Glow Plug Relay

Engine Options- Perkins

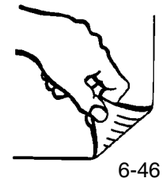
S-100/105 (from serial number 219 to 247)
S-120/125 (from serial number 933 to 984)



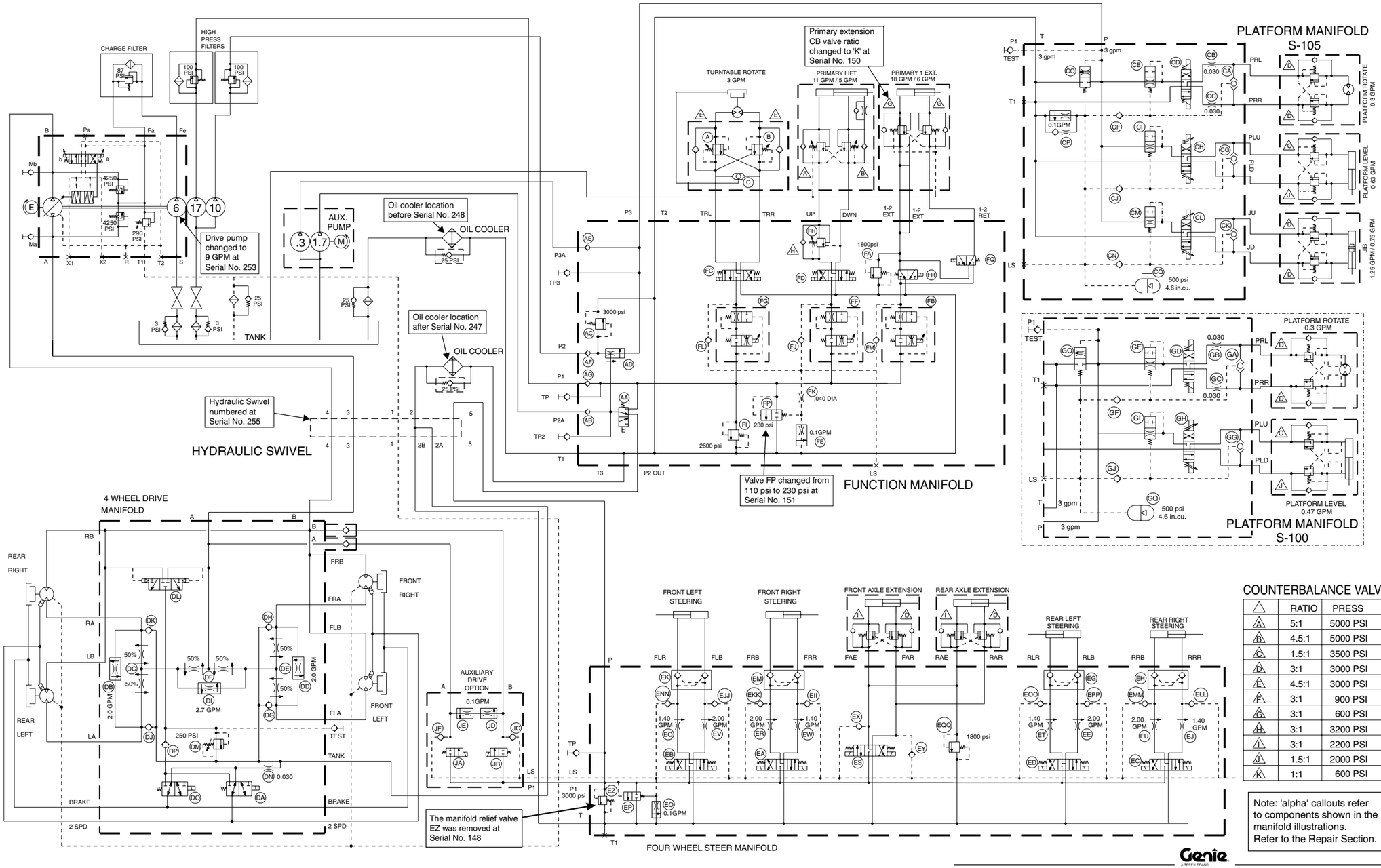
Electrical Schematic - Generator Options



Deutz TD2011L04i Engine Electrical Schematic



Hydraulic Schematic, S-100 • S-105 Models
(from serial number 137 to serial number 290)



COUNTERBALANCE VALVE

	RATIO	PRESS
A	5:1	5000 PSI
B	4.5:1	5000 PSI
C	1.5:1	3500 PSI
D	3:1	3000 PSI
E	4.5:1	3000 PSI
F	3:1	900 PSI
G	3:1	600 PSI
H	3:1	3200 PSI
I	3:1	2200 PSI
J	1.5:1	2000 PSI
K	1:1	600 PSI

Note: 'alpha' callouts refer to components shown in the manifold illustrations. Refer to the Repair Section.

Hydraulic Schematic, S-120 • S-125 Models
(from serial number 1195 to serial number 2634)