Genie®
A TEREX BRAND

Service Manual

Serial Number Range

S™-3200 from S320011D - 0101

S™-3800 from S380011D - 0101

Part No. 226055
Rev B
July 2011

Introduction

Important

Read, understand and obey the safety rules and operating instructions in the *Genie S-3200 Operator's Manual* or the *Genie S-3800 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.

Technical Publications

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

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

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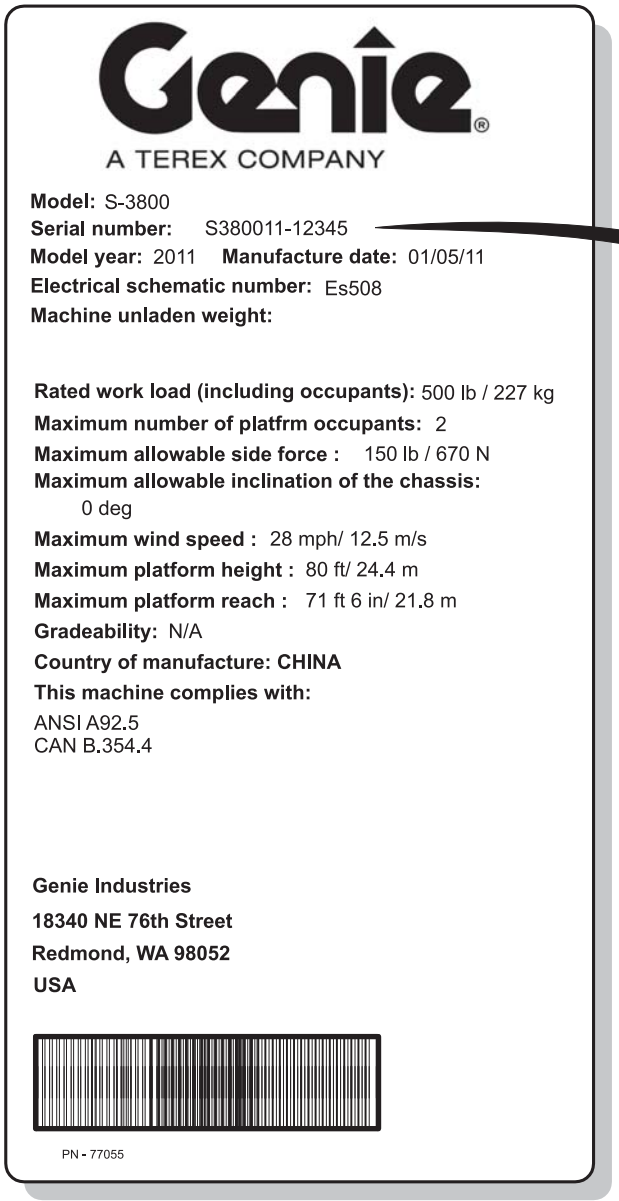
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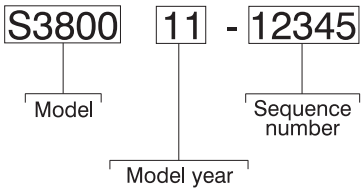
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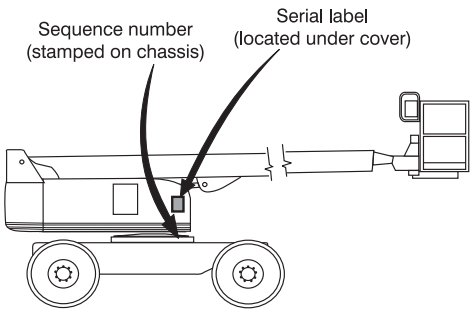
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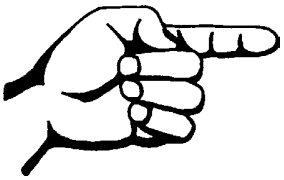
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Serial Number Legend









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Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual, and the *Genie S3200 Operator's Manual* or the *Genie S-3800 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.

SAFETY RULES

Personal Safety

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

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



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

⚠DANGER Used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION With safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

NOTICE Used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.



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



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

Workplace Safety



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



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



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



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



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



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

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Specifications

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Machine Specifications, S-3200 and S-3800 Models

Stowed dimensions	S-3200	S-3800
Length, transport position	40 ft 8 in 12.4 m	40 ft 8 in 12.4 m
Length, stowed	43 ft 0 in 13.1 m	43 ft 0 in 13.1 m
Width, axles retracted	8 ft 2 in 2.49 m	8 ft 2 in 2.49 m
Width, axles extended	11 ft 3.35 m	11 ft 3.35 m
Height, stowed maximum	10 ft 3 in 3.13 m	10 ft 6 in 3.2 m
Weight	39,760 lbs 18,035 kg	45,300 lbs 20,548 kg
Ground clearance, axle	14 in 35.6 cm	14 in 35.6 cm

Tires and wheels	S-3200	S-3800
Tire size, solid rubber	365/65D22.5	445/65D22.5
Overall tire diameter	43 in 1.09 m	46.5 in 1.18 m
Wheel diameter	30.4 in 77.3 cm	33.8 in 85.9 cm
Wheel width	14.5 in 36.8 cm	17.8 in 45 cm
Wheel lugs		10 @ 3/4 -16
Lug nut torque, dry		420 ft-lbs 570 Nm
Lug nut torque, lubricated		320 ft-lbs 434 Nm

Operational dimensions	S-3200	S-3800
Platform height, maximum	100 ft 30.48 m	120 ft 36.58 m
Working height, maximum	106 ft 32.48 m	126 ft 38.58 m
Horizontal reach maximum	73 ft 22.25 m	73 ft 22.25 m
Maximum load capacity	750 lb 340 kg	750 lb 340 kg
Turntable tailswing, axles retracted	5 ft 6 in 1.68 m	5 ft 6 in 1.68 m
Turntable tailswing axles extended	4 ft 1.22 m	4 ft 1.22 m
Wheelbase	12 ft 3.66 m	12 ft 3.66 m
Turning radius, outside, axles retracted	46 ft 5 in 14.15 m	62 ft 3 in 18.98 m
Turning radius, inside, axles retracted	36 ft 6 in 11.13 m	42 ft 4 in 12.90 m
Turning radius, outside, axles extended	30 ft 6 in 9.30 m	32 ft 1 in 9.78 m
Turning radius, inside, axles extended	16 ft 10 in 5.13 m	18 ft 6 in 5.62 m
Turntable rotation (degrees)		360° continuous
Platform rotation		160°
Maximum allowable side force (ANSI and CSA)		150 lbs 667 N
Maximum allowable side force (CE)		90 lbs 400 N
Controls		12V DC proportional

Platform dimensions	
Length	60 in 152 cm
Width	30 in 76 cm

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Fluid capacities	
Hydraulic tank	55 gallons 208 liters
Hydraulic system (including tank)	80 gallons 303 liters
Fuel tank	63 gallons 240 liters
Coolant capacity	9.1 quarts 8.6 liters
Drive hubs	47 oz 1.4 liters
Turntable rotation drive hub	93 oz 2.8 liters

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

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

Performance Specifications, S-3800 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

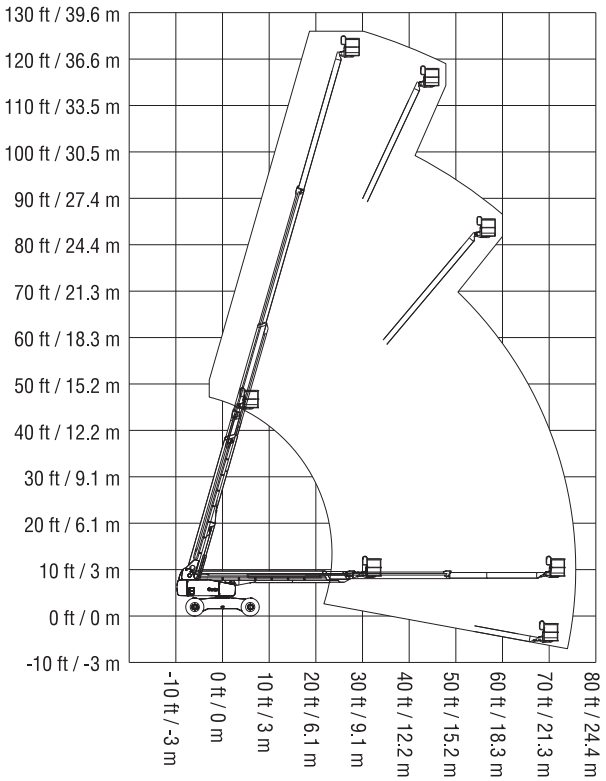
Gradeability (boom stowed)	See Operators Manual

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 extended to >100 ft / >30.5 m (time between 68° envelope limit and a fully raised position)	24 to 28 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 extended to >100 ft / >30.5 m (time between fully raised and the 65° envelope limit)	24 to 28 seconds

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Boom extend vertical, 0 to 120 ft / 0 to 36.6 m	170 to 190 seconds
Boom retract vertical, 120 ft to 0 / 36.6 m to 0	170 to 190 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



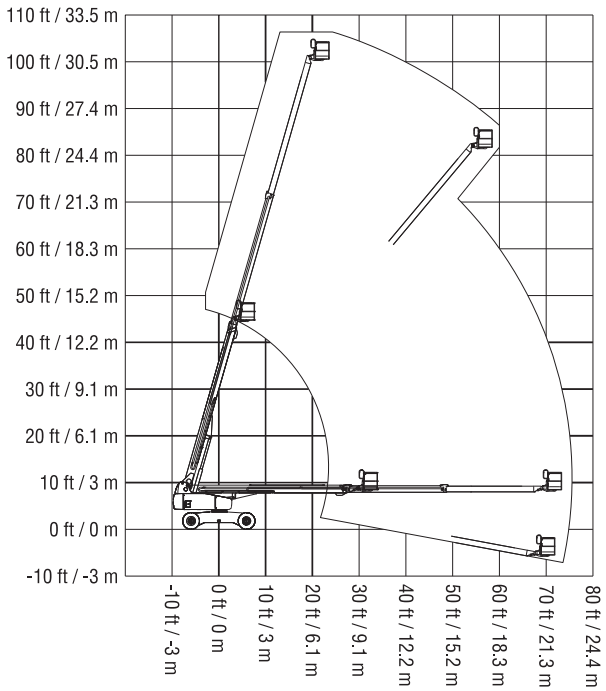
Performance Specifications, S-3200 Models

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 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

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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



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Hydraulic Oil Specifications

Hydraulic Oil Specifications	
Hydraulic oil type	Chevron Rando HD MV equivalent
Viscosity grade	Multi-viscosity
Viscosity index	200
Cleanliness level, minimum	15/13
Water content, maximum	200 ppm

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 antiwear, oxidation, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Optional fluids	
Biodegradable	Petro Canada Environ MV46 Statoil Hydra Way Bio Pa 32 BP Biohyd SE-S
Fire resistant	UCON Hydrolube HP-5046 Quintolubric 822
Mineral based	Chevron Rando HDZ 32 Shell Tellus T32 Shell Tellus T46 Chevron Aviation A

NOTICE Continued use of Chevron Aviation A hydraulic oil when ambient temperatures are consistently above 32°F / 0°C may result in component damage.

Note: Use Chevron Aviation A hydraulic oil when ambient temperatures are 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 Industries Service Department before use.

Hydraulic Component Specifications

Drive pump	
Type: bi-directional variable displacement piston pump	
Displacement	0 to 2.8 cu in 0 to 46 cc
Flow rate @ 2350 rpm, maximum	28.5 gpm 108 L/min
Drive pressure, maximum	3625 psi 250 bar
Charge pump	
Type:	gerotor
Displacement	0.85 cu in 13.9 cc
Flow rate @ 2350 rpm	9 gpm 34 L/min
Charge pressure @ 2350 rpm Neutral position	313 psi 21.5 bar
Function pump	
Type:	variable displacement piston pump
Front Section	
Displacement	0 to 1.77 cu in 0 to 29 cc
Flow rate @ 2350 rpm, maximum	17.4 gpm 65.9 L/min
Rear Section	
Displacement	0 to 1.16 cu in 0 to 19 cc
Flow rate @ 2350 rpm, maximum	11.2 gpm 42.4 L/min
Pressure, maximum continuous	3350 psi 231 bar
Standby pressure	250 psi 17 bar
Auxiliary pumps	
Type:	fixed displacement gear pump
Displacement	0.15 cu in 2.47 cc
Section 1	
Flow rate @1600 rpm	1.7 gpm 6.4 L/min
Section 2	
Flow rate @ 1600 rpm	0.3 gpm 1.14 L/min
Function manifold	
Function relief pressure (measured at TEST port)	2600 psi 179.3 bar
Platform relief pressure (measured at TEST port 2)	3000 psi 207 bar
Platform manifolds	
Platform rotate and platform level flow regulator	0.3 gpm 1.14 L/min

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Steer/Axle manifold	
Axle extend relief pressure	1800 psi 124 bar
Drive manifold	
Hot oil relief pressure:	280 psi 19.3 bar
Brakes	
Brake release pressure	145-189 psi 10-13 bar
Drive motors	
Displacement per revolution, high speed	1.2 cu in 19 cc
Displacement per revolution, low speed	2.7 cu in 45 cc
Hydraulic filters	
High pressure filter	Beta 3 ≥ 200
High pressure filter bypass pressure	102 psi 7 bar
Medium pressure filter	Beta 3 ≥ 200
Medium pressure filter bypass pressure	25 psi 1.7 bar
Hydraulic tank return filter	10 micron with 25 psi / 1.7 bar bypass
Drive motor case drain return filter	Beta 10 ≥ 2

Deutz TD2011L04i Engine

Displacement	220.9 cu in 3.62 liters
Number of cylinders	4
Bore and stroke	3.78 x 4.92 inches 96 x 125 mm
Horsepower Net intermittent @ 2400 rpm	74 / 55 kW
Induction system	turbocharged
Firing order	1 - 3 - 4 - 2
Low idle	1500 rpm 450 Hz
High idle	2350 rpm 704.8 Hz
Compression ratio	17.5:1
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	0.012 in 0.3 mm
Exhaust	0.020 in 0.5 mm

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Lubrication system	
Oil pressure, hot (at 2000 rpm)	40 to 60 psi 2.8 to 4.1 bar
Oil capacity (including filter)	12.8 quarts 12.1 liters

Oil viscosity requirements	
-22°F to 86°F / -30°C to 30°C	5W-30 (synthetic)
-4°F to 104°F / -20°C to 40°C	10W-40
Above 5°F / -15°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 temperature switch	
Installation torque	8-18 ft-lbs 11-24 Nm
Oil temperature switch point	275°F 135°C

Oil pressure switch	
Installation torque	8-18 ft-lbs 11-24 Nm
Oil pressure switch point	22 psi 1.5 bar

Fuel injection system	
Injection pump make	Motorpal
Injection pump pressure, maximum	15,000 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, normal load	140-200A
Cranking speed	250-350 rpm

Battery - Auxiliary power units	
Type	6V DC
Quantity	2
AH rating	285AH
Reserve capacity @ 25A rate	745 minutes

Battery - Engine starting and control system	
Type	12V DC, Group 31
Quantity	1
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	200 minutes

Alternator output	80A @ 14V DC
Fan belt deflection	$^{3}/_{8}$ to $^{1}/_{2}$ inch 9 to 12 mm

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

SPECIFICATIONS REV A

Cummins B3.3T C80 Engine

Displacement	199 cu in 3.3 liters
Number of cylinders	4
Bore and stroke	3.74 x 4.528 inches 95 x 115 mm
Horsepower	80 hp @ 2200 rpm 60 kW @ 2200 rpm
Firing order	1 - 3 - 4 - 2
Compression ratio	17.3:1
Compression pressure pressure (psi or bar) of the lowest cylinder must be at least 75% of the highest cylinder.	
Low idle rpm Frequency	1300 rpm 229.7 Hz
High idle rpm Frequency	2350 rpm 415.1 Hz
Valve clearance, cold	
Intake	0.014 in 0.35 mm
Exhaust	0.020 in 0.50 mm
Lubrication system	
Oil pressure, hot @ 2000 rpm	31 - 72.5 psi 2.14 - 4.99 bar
Oil capacity (including filter)	9 quarts 8.5 liters
Oil viscosity requirements	
Extreme operating temperatures my require the use of alternative engine oils. For oil requirements, refer to the Engine Operator Handbook on your machine.	
Injection system	
Injection pump make	Zexel
Injection pump pressure	12,000 psi 827 bar
Fuel requirement	
For fuel requirements, refer to the engine Operator's Manual on your machine.	
Alternator output	120A, 12V DC
Battery - System	
Type	12V, Group 31
Quantity	1
AH rating	109AH
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	160 minutes
Starter Motor	
Current draw, maximum	550A
Engine cranking speed, minimum	130 rpm
Battery - Engine starting	
Type	12V, Group 4D
Quantity	1
AH rating	190AH
Cold cranking ampere	1020A
Reserve capacity @ 25A rate	325 minutes
Cooling system	
Engine capacity	4.75 quarts 4.5 liters
System capacity	9.1 quarts 8.6 liters

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

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

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)

SAE Dash size	Torque
-4	14 ft-lbs / 18.9 Nm
-6	23 ft-lbs / 31.2 Nm
-8	36 ft-lbs / 48.8 Nm
-10	62 ft-lbs / 84.1 Nm
-12	84 ft-lbs / 113.9 Nm
-16	125 ft-lbs / 169.5 Nm
-20	151 ft-lbs / 204.7 Nm
-24	184 ft-lbs / 250 Nm

SAE O-ring Boss Port

(tube fitting - installed into Steel)

SAE Dash size	Torque
-4	15 ft-lbs / 20.3 Nm
-6	35 ft-lbs / 47.5 Nm
-8	60 ft-lbs / 81.3 Nm
-10	100 ft-lbs / 135.6 Nm
-12	135 ft-lbs / 183 Nm
-16	200 ft-lbs / 271 Nm
-20	250 ft-lbs / 334 Nm
-24	305 ft-lbs / 414 Nm

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

SPECIFICATIONS REV A

Seal-Lok® fittings

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

Note: The O-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)

SAE Dash size	Torque
-4	18 ft-lbs / 24.4 Nm
-6	30 ft-lbs / 40 Nm
-8	40 ft-lbs / 55 Nm
-10	60 ft-lbs / 80 Nm
-12	85 ft-lbs / 115 Nm
-16	110 ft-lbs / 150 Nm
-20	140 ft-lbs / 190 Nm
-24	180 ft-lbs / 245 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

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

SAE FASTENER TORQUE CHART

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

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

METRIC FASTENER TORQUE CHART

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

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

Scheduled Maintenance Procedures



Observe and Obey:

- ☑ Maintenance inspections shall be completed by a person trained and qualified on the maintenance of this machine.
- ☑ Scheduled maintenance inspections shall be completed daily, quarterly, six months, annually and every two years as specified on the *Maintenance Inspection Report.*

⚠WARNING Failure to perform each procedure as presented and scheduled could result in death, serious injury or substantial machine 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.
- ☑ Machines that have been out of service for a period longer than 3 months must complete the quarterly inspection.
- ☑ Unless otherwise specified, perform each procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Boom in the stowed position
  - Turntable rotated with the boom between the circle-end (yellow arrow) wheels
  - Turntable secured with the turntable rotation lock pin
  - Key switch in the off position with the key removed
  - Wheels chocked
  - All external AC power supply disconnected from the machine

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

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

Symbols Legend



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

⚠DANGER Used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION With safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE Used to indicate the presence of 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

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



Indicates that tools will be required to perform this procedure.



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



Indicates that 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 will be 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, six months, 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.

Inspection	Checklist
Daily or every 8 hours	A
Quarterly or every 250 hours	A + B
Six months or every 500 hours	A + B + C
Annual or every 1000 hours	A + B + C + D
Two years or every 2000 hours	A + B + C + D + E

Maintenance Inspection Report

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

Make copies of the *Maintenance Inspection Report* to use for each inspection. Maintain completed forms 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

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

Model

Serial number

Date

Machine owner

Inspected by (print)

Inspector signature

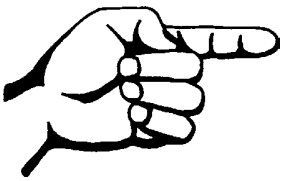
Inspector title

Inspector company

Genie Industries USA
18340 NE 76th Street
PO Box 97030
Redmond, WA 98073-9730
(425) 881-1800

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

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Rev B



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Maintenance Inspection Report

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

- Make copies of this report to use for each inspection.
- Select the appropriate checklist(s) for the type of inspection 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 - Rev 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 - Cummins models			
A-5	Hydraulic filter condition indicator			
Perform after 40 hours:				
A-6	30 Day Service			
Perform after 50 hours:				
A-7	Engine Maintenance-Deutz models			
Perform every 50 hours:				
A-8	Grease axles			
Perform every 100 hours:				
A-9	Grease rotation bearing			
Perform after 150 hours:				
A-10	Replace drive hub oil			

Checklist B - Rev A		**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

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 C - Rev A		**Y**	**N**	**R**
C-1	Engine maintenance - Deutz models			
C-2	Engine maintenance - Cummins models			
C-3	Replace air filter element			
C-4	Grease platform overload (if equipped)			
C-5	Test the platform overload (if equipped)			
Checklist D - Rev A				
D-1	Boom wear pads			
D-2	Extendable axle wear pads			
D-3	Free-wheel configuration			
D-4	Turntable rotation bearing bolts			
D-5	Rotation gear backlash			
D-6	Drive hub oil			
D-7	Turntable bearing wear			
D-8	Engine maintenance - Deutz models			
D-9	Engine maintenance - Cummins models			
D-10	Replace the hydraulic filter elements			

Checklist E - Rev A		**Y**	**N**	**R**
E-1	Replace hydraulic oil			
E-2	Engine maintenance - Cummins models			
E-3	Engine maintenance - Deutz models			
Perform every 3000 hours:				
E-4	Engine maintenance - Deutz models			
Perform every 6000 hours:				
E-5	Engine maintenance - Deutz models			
Perform every 12000 hours:				
E-6	Engine maintenance - Deutz models			
Perform every 7 years:				
E-7	Replace the Boom Extend/Retract cables			

Comments

Checklist A Procedures

REV A

A-1
Inspect the Manuals and Decals

Genie requires that this procedure be performed daily.

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 is illegible. Remove the machine from service until the manual is replaced.

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

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

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

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

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

CHECKLIST A PROCEDURES REV A

A-2
Perform Pre-operation Inspection

Genie requires that this procedure be performed daily.

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

Genie requires that this procedure be performed daily.

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.

A-4
Perform Engine Maintenance - Cummins Models



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 *Cummins B3.3 Series Operation and Maintenance Manual* (Cummins part number 3666417-00).

Cummins B3.3 Series Operation and Maintenance Manual	
Genie part number	139324

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.

A-5
Check the Hydraulic Filter Condition Indicators



Genie requires that this procedure be performed daily.

Note: Perform this procedure after the machine reaches operating temperature. The amount of time this takes will vary, depending on ambient air temperature.

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

Note: There are four hydraulic filters on the machine: one tank return filter, one medium pressure filter and two high pressure filters. All the filters have condition indicators on them, except the medium pressure filter.

1 Start the engine from the ground controls.

2 Press and release the engine idle select button to change the engine rpm to high idle.

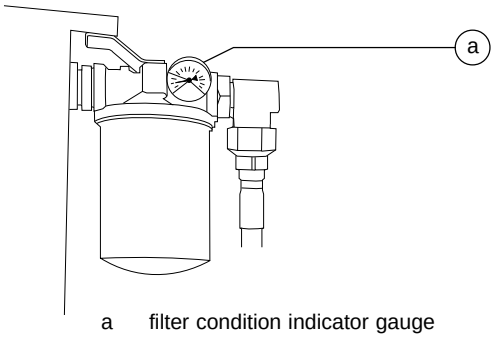
CHECKLIST A PROCEDURES REV A

Tank return filter

Note: The tank return filter indicator needle may operate in the red area when hydraulic oil is below 50° F / 10° C.

Note: If the return filter indicator needle is not operating in the green area after performing previous daily procedures, continue running engine until hydraulic oil temperature is at least 50° F / 10° C.

3 Open the ground control side turntable cover and inspect the filter condition indicator gauge.



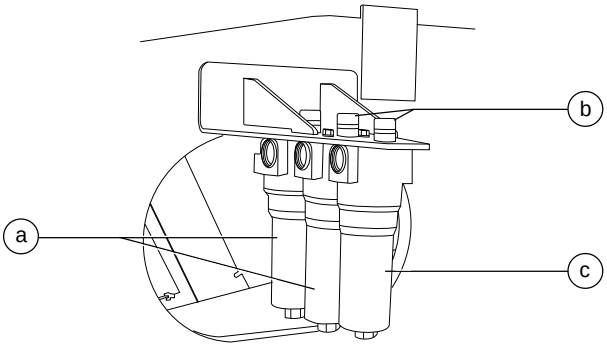
a filter condition indicator gauge

⊙ Result: The needle on the gauge should be operating in the green area. If the needle is in the red area, this indicates that the hydraulic filter is being bypassed and the filter needs to be replaced. See D-10, *Replace the Hydraulic Filter Elements.*

Medium and high pressure filters

Note: The medium and high pressure filters are mounted to the engine side bulkhead.

4 Inspect the filter condition indicators.



a high pressure filters
b filter condition indicators
c medium pressure filter

⊙ Result: The filter condition indicators should be operating with the plungers in the green area. If any of the indicators display the plunger in the red area, this indicates that a hydraulic filter is being bypassed and the filter needs to be replaced. See D-10, *Replace the Hydraulic Filter Elements.*

A-6
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. After this interval, refer to the maintenance checklists for continued scheduled maintenance.

1 Perform the following maintenance procedures:

- A-9 Grease the Turntable Rotation Bearing and Rotate Gear
- B-9 Inspect the Tires, Wheels, and Lug Nut Torque
- B-10 Check the Drive Hub Oil Level and Fastener Torque
- D-4 Check the Turntable Rotation Bearing Bolts
- D-10 Replace the Hydraulic Filter Elements

A-7
Perform Engine Maintenance - Deutz Models

Engine specifications require that this one-time procedure be performed after the first 50 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 TD2011 Operation Manual* (Deutz part number 0312 3547).

Deutz TD2011 Operation Manual	
Genie part number	139320

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.

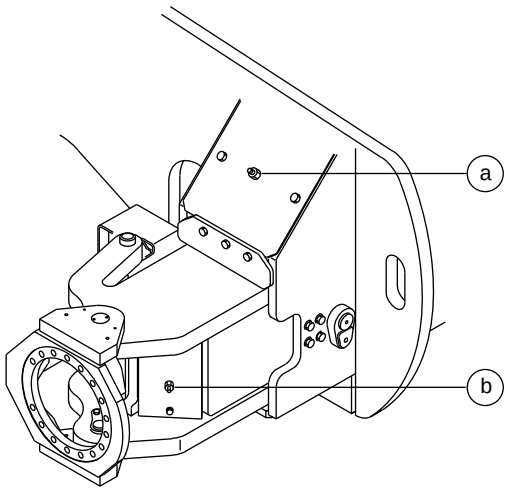
⚠WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

CHECKLIST A PROCEDURES REV A

A-8
Grease the Extendable Axles

Genie specifications require that this procedure be performed every 50 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-9
Grease the Turntable Rotation Bearing and Rotate Gear

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 Remove the turntable rotation gear cover retaining fasteners and remove the gear cover from the machine.

2 Open the ground controls side turntable side cover.

3 Locate the grease fitting below the ground control box.

4 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.

5 Apply grease to each tooth of the drive gear, located under the turntable.

6 Install the turntable rotation gear cover and retaining fasteners onto the machine.

⚠WARNING Bodily injury hazard. Contact with the turntable rotation gear could result in serious injury. Do not operate the machine if the turntable rotation gear cover is not installed.

A-10
Replace the Drive Hub Oil

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

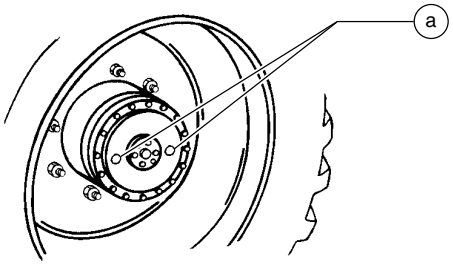
Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the drive hub oil after the first 150 hours may cause the machine to perform poorly and continued use may cause component damage.

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 Section 2, *Specifications.*

Turntable Rotate Drive Hub:

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 Section 2, *Specifications.*

1 Secure the turntable from rotating with the turntable rotation lock pin.

2 Remove the ground control side fixed turntable cover. Refer to Repair Section 5-1, *How to Remove a Fixed Turntable Cover.*

3 Tag, disconnect and plug the turntable rotate drive motor hoses at the turntable rotate drive motor and the turntable rotate drive brake hoses at the turntable rotate drive brake. Cap the fittings.

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

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

4 Remove the turntable rotate drive hub mounting bolts and pivot bolt. Remove the turntable rotate drive hub with a suitable lifting device of ample capacity.

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

CHECKLIST A PROCEDURES REV A

5 Remove the plug from the side of the drive hub. Drain the oil from the hub into a suitable container.

6 Install the drive hub assembly onto the machine. Lubricate and torque the drive hub mounting bolts to specification. Refer to Section 2, *Specifications.*

7 Fill the drive hub with oil from the side hole until the oil level is even with the bottom of the hole. Apply pipe thread sealant to the plug. Install the plug. Refer to Section 2, *Specifications.*

8 Install the turntable rotate drive motor hoses into the turntable rotate drive motor and install the turntable rotate drive brake hose into the turntable rotate drive brake.

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

9 Adjust the turntable rotation gear backlash. See D-5, *Check the Turntable Rotation Gear Backlash.*

10 Install the ground control side fixed turntable cover onto the machine and tighten the retaining fasteners

Checklist B Procedures

REV B

B-1
Inspect the Batteries



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. There are 2 batteries on the machine. One starts the engine and the other powers the control system. The batteries are charged by the alternator through a battery separator.

⚠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.

5 Fully charge the batteries and allow the batteries 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° F / 5.5° C above 26.7° C.
- Subtract 0.004 from the reading of each cell for every 10° F / 5.5° C below 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 batteries and allow the batteries to rest at least 6 hours.

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

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

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

⊠ Result: 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 1.217. Replace the battery.

11 Check the battery acid level. If needed, replenish with distilled water 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 with baking soda.

B-2
Inspect the Electrical Wiring

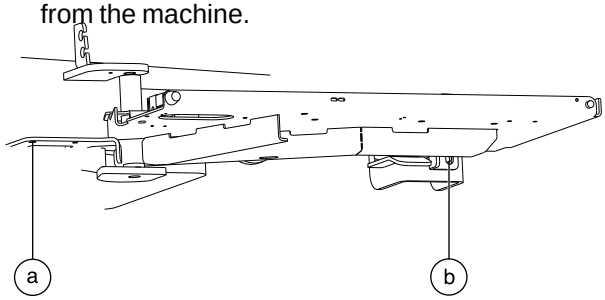
Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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

⚠WARNING Electrocution/burn hazard. Contact with 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 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

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

REV B CHECKLIST B PROCEDURES

4 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.

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

- Engine wiring harness
- Battery area wiring

6 Open the ground controls side turntable cover.

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

- Inside of the ground control box
- Hydraulic manifold wiring
- Battery area wiring
- Hydraulic oil cooler wiring

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

- All wire harness connectors to ground control box

9 Open the hydraulic manifold box covers at both sides of the drive chassis.

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

- Hydraulic manifold wiring

11 Inspect for a liberal coating of dielectric grease in the following location:

- Wire harness connectors to DCON module

12 Start the engine from the ground controls and raise the boom above the turntable covers.

NOTICE Component damage hazard. Be sure the hydraulic supply hoses to the function and drive pumps are not kinked before starting the engine.

13 Inspect the turntable area for burnt, chafed and pinched cables.

14 Lower the boom to the stowed position and turn the engine off.

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

- Cable track on the boom
- Cables on the boom, jib boom and jib boom pivot area
- Jib boom/platform rotate manifold
- Platform control box
- Inside of the platform control box

16 Inspect for a liberal coating of dielectric grease in the following location:

- All wire harness connectors to platform control box

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

18 Swing the engine pivot plate in towards the machine.

19 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.

CHECKLIST B PROCEDURES REV B

B-3
Check the Engine Oil Cooler and Cooling Fins - Deutz Models

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.

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

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

1 Open the engine side turntable cover.

Oil cooler

2 Remove the retaining fasteners from the engine side cover. Remove the cover.

3 Inspect the oil cooler for leaks and physical damage.

4 Clean the oil cooler of debris and foreign material.

Cooling and blower fins

5 Inspect the fan blower fins for physical damage.

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

7 Using a flashlight, inspect the head cooling passages and fins for physical damage or foreign material.

8 If needed, clean the cylinder head cooling passages and fins of debris and foreign material.

9 Install the engine side cover and tighten the retaining fasteners.

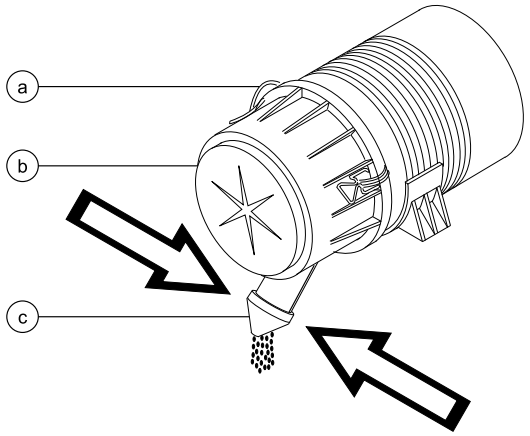
B-4
Inspect the Engine Air Filter

Genie requires 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 Open the engine side cover. Empty the dust discharge valve by pressing together the sides of the discharge slot. Clean the discharge slot as needed.



a clamp
b cannister end cap
c dust discharge valve

2 Release the latches on the air cleaner cap. Remove the end cap from the air cleaner canister.

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 slot is pointing down.

B-5
Perform Hydraulic Oil Analysis



Genie requires 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 or hydraulic filters 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.**
See E-1, *Test or Replace the Hydraulic Oil.*

CHECKLIST B PROCEDURES REV B

B-6
Perform Engine Maintenance - Deutz Models

Engine specifications require that this procedure be performed every 250 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 TD2011 Operation Manual* (Deutz part number 0312 3547).

Deutz TD2011 Operation Manual	
Genie part number	139320

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.

B-7
Perform Engine Maintenance - Cummins Models

Engine specifications require that this procedure be performed every 250 hours or 3 months.

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 *Cummins B3.3 Series Operation and Maintenance Manual* (Cummins part number 3666417-00).

Cummins B3.3 Series Operation and Maintenance Manual	
Genie part number	139324

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.

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 models:

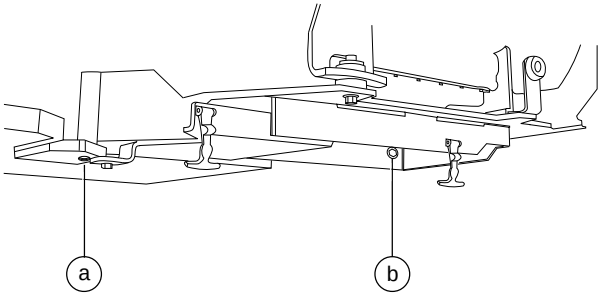
1 Be sure that all fasteners are tight.

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.

CHECKLIST B PROCEDURES REV B

B-9
Inspect the Tires, Wheels and Lug Nut Torque

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

Maintaining the tires and wheels in good condition, 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.

Note: The tires on these 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*.

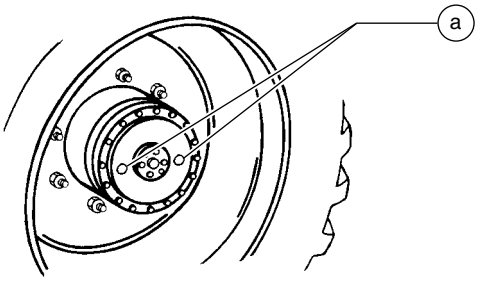
B-10
Check the Drive Hub Oil Level and Fastener Torque

Genie requires 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.

Drive hubs:

1 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

2 Remove both plugs and check the oil level.

⊙ Result: The oil level should be even with the bottom of the plug holes.

3 If necessary, add oil until the oil level is even with the bottom of the plug holes.

4 Install the plugs in the drive hub.

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

6 Repeat this procedure for each drive hub.

Turntable Rotate Drive Hub:

1 Remove the fixed turntable cover at the ground controls side of the machine.

2 Remove the power to platform plug panel upper retaining fasteners and loosen the lower retaining fasteners. Do not disconnect the wiring.

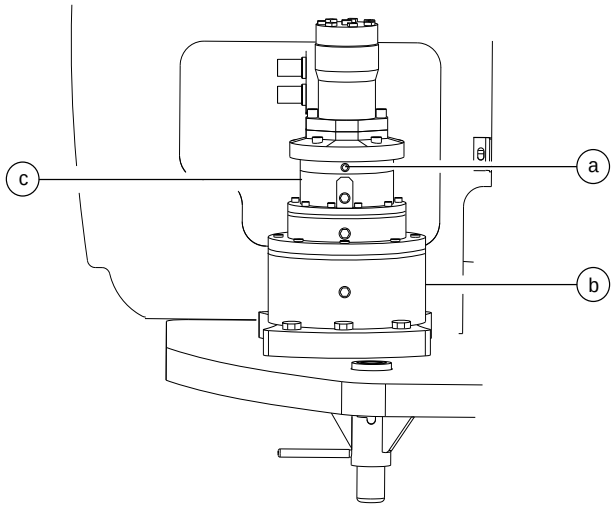
3 Support the cover with a suitable lifting device. Protect the cover from damage.

4 Remove the cover retaining fasteners. 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 supporte

5 Remove the plug located on the top of the drive brake and check the oil level.

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



a plug
b turntable rotate drive hub
c drive brake

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

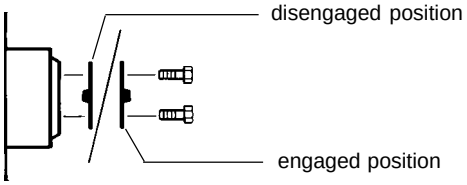
7 Install the plug into the drive hub.

B-11 Confirm the Proper Brake Configuration

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

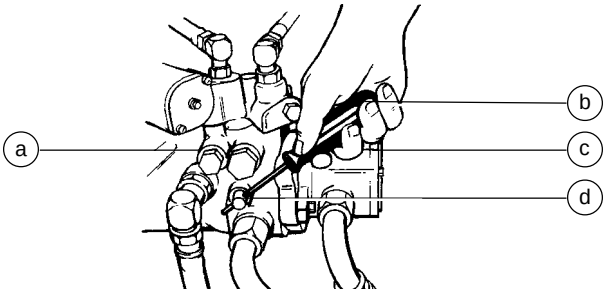
Proper brake configuration is essential to safe operation and good machine performance. Hydrostatic brakes and hydraulically-released, spring-applied individual wheel brakes can appear to operate normally when they are actually not fully operational.

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



2 Be sure the free-wheel valve on the drive pump is closed (clockwise).

Note: The free-wheel valve is located on the drive pump.



a drive pump
b screwdriver
c lift pump
d free-wheel valve

Note: The free-wheel valve should always remain closed.

B-12
Check and Adjust the Engine RPM

Genie requires 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.

Deutz models:

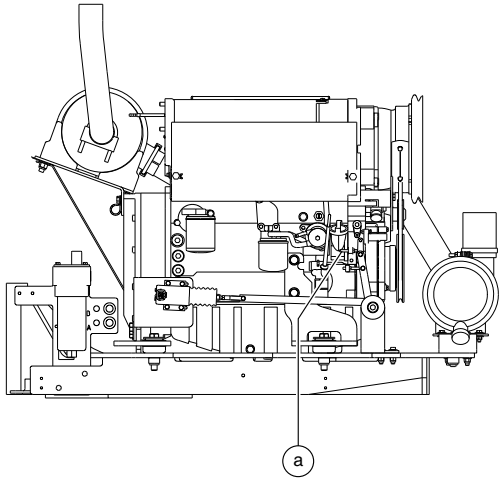
1 Start the engine from the ground controls.

2 Push one of the LCD screen buttons shown until engine rpm is displayed.

⊙ Result: Refer to Section 2, *Specifications.*

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

3 Loosen the locknut on the low idle adjustment screw.



a low idle adjustment screw

4 Adjust the low idle adjustment screw until low idle is 1500 rpm. Tighten the locknut.

5 Push and hold the function enable/high speed button. Note the engine rpm on the display.

⊙ Result: Refer to Section 2, *Specifications.*

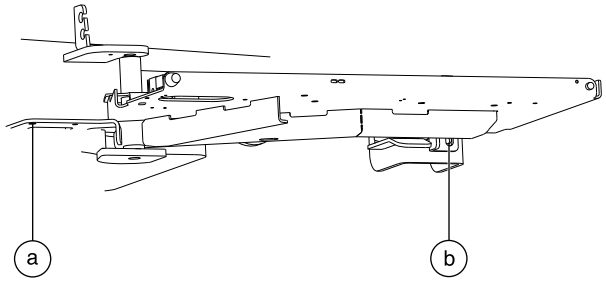
If the high idle is correct, disregard adjustment step 6.

6 Loosen the yoke lock nut. 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.

Cummins 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.

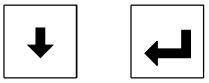
3 Install the bolt that was just removed into the anchor hole to secure the engine pivot plate from moving.

⚠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.

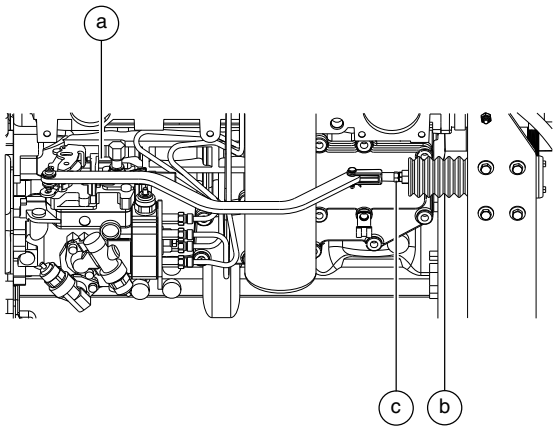
4 Start the engine from the ground controls.

NOTICE Component damage hazard. Be sure the hydraulic supply hoses to the function and drive pumps are not kinked before starting the engine.

5 Push one of the LCD screen buttons shown until engine rpm is displayed.



⊙ Result: Refer to Section 2, *Specifications.*



Perkins models
a low idle adjustment screw
b solenoid boot
c yoke lock nut

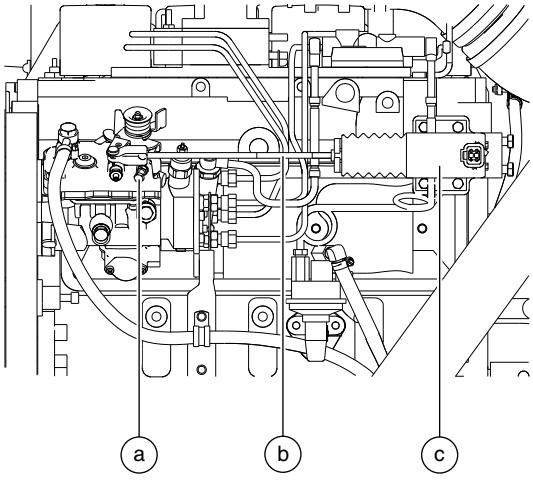
CHECKLIST B PROCEDURES REV B

Skip to step 7 if the low idle rpm is correct.

6 Loosen the low idle lock nut. 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.

7 Push and hold the function enable/high speed button. Note the engine rpm on the display.

⊙ Result: Refer to Section 2, *Specifications.*



Cummins models
a low idle adjustment screw
b solenoid cable
c rpm solenoid

If the high idle is correct, disregard adjustment step 8.

8 **Cummins models:** Turn the high idle solenoid boot counterclockwise to increase the rpm or clockwise to decrease the rpm. Recheck the rpm.

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

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

10 Swing the engine pivot plate in towards the machine.

11 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-13
Test the Key Switches

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

Proper key switch action and response is essential to safe machine operation. Failure of either key switch to function properly could cause a hazardous operating situation.

There are two key switches on the machine - the Main key switch and the Service Bypass/Recovery key switch.

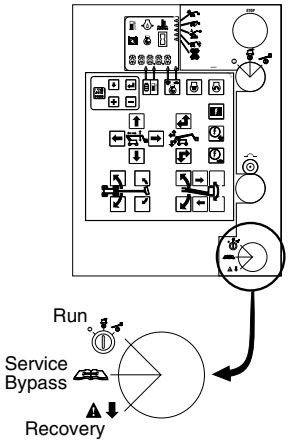
The Main key switch controls machine operation from the ground or platform controls.

When the Service Bypass/Recovery key switch is turned to the **service bypass** position, the primary boom can be raised while the axles are retracted. This feature of the machine is especially helpful for storage purposes or when loading the machine for transport.

Note: When the boom is raised with the axles retracted, the boom cannot be rotated past either circle-end wheel.

When the Service Bypass/Recovery key switch is turned and held to the **recovery** position, the auxiliary power units will turn on and fully retract the boom and then lower the boom. This feature of the machine is especially helpful if the operator in the platform cannot lower the boom, if the platform controls become inoperative or for returning the machine to a safe position when the safety switches have been tripped.

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



1 Open the ground controls side turntable side cover.

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

3 At the ground controls, turn the service bypass/recovery key switch to the run position.

4 Turn the main key switch to ground control, start the engine and then turn the key switch to **platform control**.

5 Check any machine function from the **ground controls**.

⊙ Result: The machine functions should **not** operate.

6 Turn the main key switch to ground control.

7 Check any machine function from the **platform controls**.

⊙ Result: The machine functions should **not** operate.

8 Turn the main key switch to the off position.

⊙ Result: The engine should stop and no functions should operate.

9 Turn the main key switch to ground control and start the engine.

10 Attempt to raise the primary boom.

⊙ Result: The boom should not raise.

Note: The primary boom will not raise until the axles are fully extended.

11 Remove the key from the main key switch and insert the key into the service bypass/recovery key switch.

Note: The main key switch should remain in the ground control position.

12 Turn the service bypass/recovery key switch to the service bypass position.

13 Raise the boom.

⊙ Result: The boom should raise.

14 Remove the key from the service bypass/recovery key switch and insert the key into the main key switch.

15 Turn the main key switch to the off position.

16 Remove the key from the main key switch and insert the key into the service bypass/recovery key switch.

17 Turn and hold the service bypass/recovery key switch to the recovery position.

⊙ Result: The boom should return to the stowed position.

18 Turn the service bypass/recovery key switch to the run position.

19 Remove the key from the service bypass/recovery key switch and insert the key into the main key switch.

20 Turn the main key switch to the off position.

21 Close the turntable side cover.

B-14
Test the Ground Control Override

Genie requires 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 red Emergency Stop button at 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 red Emergency Stop button at the platform controls 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.

Note: The boom will not raise past horizontal and the boom will not extend more than 12 inches / 30.5 cm unless both axles are fully extended.

REV B CHECKLIST B PROCEDURES

B-15
Test the Platform Self-leveling

Genie requires 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 level by the communication between the platform level sensor and the turntable level sensor. If the platform becomes out of level, the computer at the ground controls will open the appropriate solenoid valve(s) at the platform manifold to maintain a level platform.
A platform self-leveling failure creates an unsafe working condition for platform and ground personnel.

1 Start the engine from the platform controls and extend the axles.

2 Turn the key switch to ground controls.

3 Push and hold a function enable/speed select button and fully retract the boom.

4 Push and hold a function enable/speed select button and adjust the platform to a level position using the platform level up/down buttons.

5 Push and hold a function enable/speed select button and fully raise the boom.

⊙ Result: The platform should remain level at all times to within ±2 degrees.

Note: If the platform becomes out of level, the tilt alarm will sound and the Platform Not Level Indicator will flash at the ground controls. The platform level up/down buttons will only work in the direction that will level the platform. Level the platform until the indicator light turns off.

6 Push and hold a function enable/speed select button and fully lower the boom.

⊙ Result: The platform should remain level at all times to within ±2 degrees.

Note: If the platform becomes out of level, the tilt alarm will sound and the Platform Not Level Indicator will flash at the ground controls. The platform level up/down buttons will only work in the direction that will level the platform. Level the platform until the indicator light turns off.

CHECKLIST B PROCEDURES REV B

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 Section 8-2, *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-3200 models, proceed to step 28.

101 feet / 30.8 m Length Safety Switch, LSB2RS:

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

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

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

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

7 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.

8 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.

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

10 Remove the wire jumper installed in step 7 and connect the Deutsch connector to LSB14AO.

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

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

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

65° Angle Safety Switch, LSB9AS:

14 Raise the boom to the maximum angle.

15 Fully extend the boom.

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

17 Activate the function enable/high RPM button and lower the boom to 65°.

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

⊠ Result: If the engine does not stop and the boom continues to lower to less than 65°, the LSB9AS switch is out of adjustment or the wiring is faulty and will need to be replaced or repaired. See Repair Section.

⚠WARNING Bodily injury hazard. If the boom lowers to less than 65° without stopping the engine, stop immediately and raise the boom until the boom is elevated to greater than 68°. Failure to raise the boom could result in death or serious injury.

18 Measure the angle of the boom.

⊙ Result: The angle of the boom should be greater than 65°.

19 Using auxiliary power, raise the boom until the boom angle is greater than 68°.

20 Remove the wire jumper installed in step 16 and connect the Deutsch connector to LSB14AO.

21 With the key switch off, press and hold the [↵] button and turn the key switch to the on position. Release the [↵] button after five seconds and press the [–][–][↓][↓] buttons.

22 Press the [↓] button until CLEAR ALL SAFETY SWITCH FAULTS appears.

23 Select YES, then press the [↵] button.

24 Press the [↓] button until EXIT appears.

25 Select YES, then press the [↵] button.

26 Restart the engine.

50° Angle Safety Switch, LSB8AS:

27 Lower the boom to approximately 60°.

28 Extend the boom to approximately 95 feet / 28.96 m.

29 Disconnect the 53° proximity switch LSB13AO and install a wire jumper between pin 3 and pin 4 of the Deutsch connector.

CHECKLIST B PROCEDURES REV B

30 Activate the function enable/high RPM button and lower the boom to 50°.

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

☒ Result: If the engine does not stop and the boom continues to lower to less than 50°, the LSB8AS 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 lowers to less than 50° without stopping the engine, stop immediately and raise the boom until the boom is elevated togreater than 53°. Failure to raise the boom could result in death or serious injury.

31 Measure the angle of the boom.

⊙ Result: the angle of the boom should be greater than 50°.

32 Using auxiliary power, raise the boom until the boom angle is greater than 53°.

33 Remove the wire jumper installed in step 29 and connect the Deutsch connector to LSB13AO.

34 With the key switch off, press and hold the ↵ button and turn the key switch to the on position. Release the ↵ button after five seconds and press the – – ↓ ↓ buttons.

35 Press the ↓ button until CLEAR ALL SAFETY SWITCH FAULTS appears.

36 Select YES, then press the ↵ button.

37 Press the ↓ button until EXIT appears.

38 Select YES, then press the ↵ button.

39 Restart the engine, retract the boom so it is extended less than 75 feet / 22.9 m and then lower the boom sufficient to gain access to LSB3EO.

Note: LSB3EO is located on top of boom tube number 2 at the platform end of the machine.

76 feet / 23.2 m Length Safety Switch, LSB4ES:

40 Disconnect the 75 feet / 22.9 m safety switch LSB3EO.

41 Start the engine and activate the function enable/high RPM button and extend the boom to 76 feet / 23.2 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 LSB4ES 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 76 feet / 23.2 m without stopping the engine, stop immediately and retract the boom until the boom is extended to less than 75 feet / 22.9 m. Failure to retract the boom could result in death or serious injury.

42 Using auxiliary power, retract the boom until the boom is extended to less than 75 feet / 22.9 m.

43 Re-connect the harness plug to LSB3EO.

44 With the key switch off, press and hold the [↵] button and turn the key switch to the on position. Release the [↵] button after five seconds and press the [−] [−] [↓] [↓] buttons.

45 Press the [↓] button until CLEAR ALL SAFETY SWITCH FAULTS appears.

46 Select YES, then press the [↵] button.

47 Press the [↓] button until EXIT appears.

48 Select YES, then press the [↵] button.

Cable Break Safety Switch, LSB6S:

49 Start the engine and activate the function enable/high RPM button and retract the boom until the boom is extended to less than 2 feet / 0.6 m.

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

51 Remove the arm from the cable break limit switch LSB6S.

Note: LSB6S is located at the end of the boom tubes at the pivot end of the boom.

52 Place the arm removed in step 51 back on the LSB6S switch 180° opposite its original position. Rotate the head of the switch 45° clockwise and activate the function enable/high RPM button and attempt to extend the boom.

⊙ Result: The boom extend function should be disabled.

☒ Result: If the boom extends, the LSB6S switch or wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

⚠WARNING Bodily injury hazard. If the boom extends at all, stop immediately and retract the boom until the boom is extended to less than 2 feet / 0.6 m. Failure to retract the boom could result in death or serious injury.

53 Activate the function enable/high RPM button and attempt to retract the boom.

⊙ Result: The boom retract function should be enabled.

⊙ Result: If the boom does not retract, the LSB6S switch or wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

CHECKLIST B PROCEDURES REV B

54 Allow the switch to return to its neutral position, then rotate the head of the switch 45° counter clockwise and activate the function enable/high RPM button and attempt to extend the boom.

⊙ Result: The boom extend function should be disabled.

⊠ Result: If the boom extends, the LSB6S switch or wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

⚠WARNING Bodily injury hazard. If the boom extends at all, stop immediately and retract the boom until the boom is extended to less than 2 feet (0.6 m). Failure to retract the boom could result in death or serious injury.

55 Reinstall the arm onto LSB6S in its original position.

Axle Extend Safety Switch, LSAX1ES and LSAX2ES and

3 feet / 0.9 m Safety Switch, LSB3RS and

11° Angle Safety Switch, LSB7DS:

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

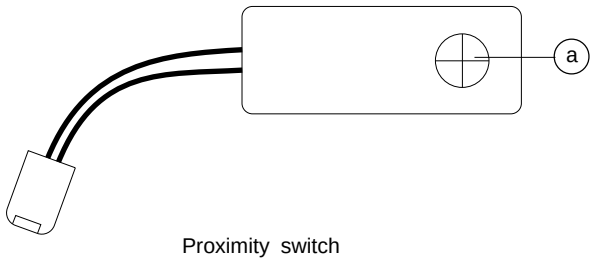
57 Retract both axles approximately 1 foot / 0.3 m.

58 Remove the access cover from each axle.

59 Disconnect the square-end axle extend safety switch LSAX1ES and install a wire jumper between pin 3 and pin 4 of the deutsch connector.

60 Place a metal washer over the target area of the axle extend proximity switch LSAX1EO and place a metal washer over the target area of the axle extend proximity switch LSAX2EO to close the contacts.

⊙ Result: The axle extend indicator light at the ground and platform controls should be illuminated.



Proximity switch
a target area

61 Activate the function enable/high RPM button and attempt to extend the boom.

⊙ Result: The boom should not extend to more than 3 feet / 0.9 m.

⊠ Result: If the boom extends to more than 3 feet / 0.9 m, the LSAX1ES or LSAX2ES switch are 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 3 feet / 0.9 m, stop immediately and retract the boom until the boom is extended to less than 2 feet / 0.6 m. Failure to retract the boom could result in death or serious injury.

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CHECKLIST B PROCEDURES

62 Activate the function enable/high RPM button and attempt to raise the boom.

⊙ Result: The boom should not raise to more than 11°.

⊠ Result: If the boom continues to raise, the LSAX1ES or LSAX2ES switch are 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 raises to more than 11°, stop immediately and lower the boom until the boom is less than 11°. See Repair Section. Failure to retract the boom could result in death or serious injury.

63 Remove the wire jumper installed in step 59 and connect the Deutsch connector to LSAX1ES.

64 Disconnect the circle-end axle extend safety switch LSAX2ES and install a wire jumper between pin 3 and pin 4 of the Deutsch connector.

65 Activate the function enable/high RPM button and attempt to extend the boom.

⊙ Result: The boom should not extend to more than 3 feet / 0.9 m.

⊠ Result: If the boom extends to more than 3 feet / 0.9 m, the LSAX1ES or LSAX2ES switch are 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 3 feet / 0.9 m, stop immediately and retract the boom until the boom is extended to less than 2 feet / 0.6 m. Failure to retract the boom could result in death or serious injury.

66 Activate the function enable/high RPM button and attempt to raise the boom.

⊙ Result: The boom should not raise to more than 11°.

⊠ Result: If the boom continues to raise, the LSAX1ES or LSAX2ES switch are 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 raises to more than 11°, stop immediately and lower the boom until the boom is less than 11°. Failure to lower the boom could result in death or serious injury.

67 Remove the wire jumper installed in step 64 and connect the Deutsch connector to LSAX2ES.

CHECKLIST B PROCEDURES REV B

B-17
Inspect the Fuel and Hydraulic Tank Cap Venting Systems

Genie specifications require 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.

⚠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 Remove the cap from the fuel tank.

2 Check for proper venting.

⊙ Result: Air passes through the fuel tank cap. Procced 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 hydraulic tank cap. Procced 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.

B-18
Test the Engine Idle Select Operation

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

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

Low idle (turtle symbol) allows the operator to control multiple boom and/or drive functions simultaneously, though at reduced speed. This setting maintains a consistent low idle.

High idle (rabbit symbol) allows the operator to control multiple boom and/or drive functions simultaneously. This setting maintains a consistent high idle.

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

1 Turn the key switch to ground controls.

2 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.

4 Push and release the rpm select button until high rpm is selected (rabbit symbol).

⊙ Result: The engine should change to high idle.

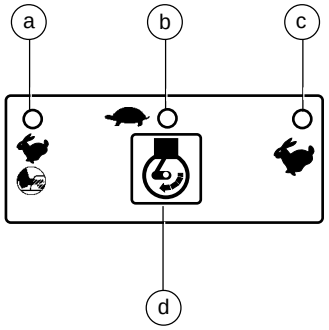
5 Push and release the rpm select button until low rpm is selected (turtle symbol).

⊙ Result: The engine should return to low idle.

6 Turn the key switch to platform controls.

7 At the platform controls, press the engine idle select button until high idle (rabbit symbol) is selected.

⊙ Result: The engine should change to high idle.



a foot switch activated high idle indicator light
b low idle indicator light
c high idle indicator light
d engine rpm select button

8 Press the engine idle select button until low idle (turtle symbol) is selected.

⊙ Result: The engine should change to low idle.

9 Press the engine idle select button until the foot switch activated high idle (rabbit and foot switch symbol) is selected.

⊙ Result: The engine should **not** change to high idle.

10 Press down the foot switch.

⊙ Result: The engine should change to high idle.

CHECKLIST B PROCEDURES REV B

B-19
Test the Drive Brakes



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

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

⚠WARNING Collision hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. Refer to B-11, *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 Press the engine rpm select button until the foot switch activated high idle (rabbit and foot switch symbol) is selected, 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 controller 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*.

B-20
Test the Drive Speed - Stowed Position



Genie requires 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.

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

1 Create start and finish lines by marking two lines on the ground 36 feet / 11 m apart.

2 Start the engine from the platform controls.

3 Press the engine rpm select button until the foot switch activated high idle (rabbit and foot switch symbol) is selected. 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*.

REV B CHECKLIST B PROCEDURES

B-21
Test the Drive Speed - Raised or Extended Position



Genie requires 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 36 feet / 11 m apart.

2 Start the engine from the platform controls.

3 Press the engine idle select button until the foot switch activated high idle (rabbit and foot switch symbol) is selected.

4 Raise the boom until the engine rpm switches to low speed.

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 below horizontal.

9 Extend the boom approximately 4 feet / 1.2 m.

10 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.

11 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.

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

13 Raise the boom to a horizontal position.

14 Extend the boom until the raise boom LED and envelope alarm are activated.

15 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.

16 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.

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

CHECKLIST B PROCEDURES REV B

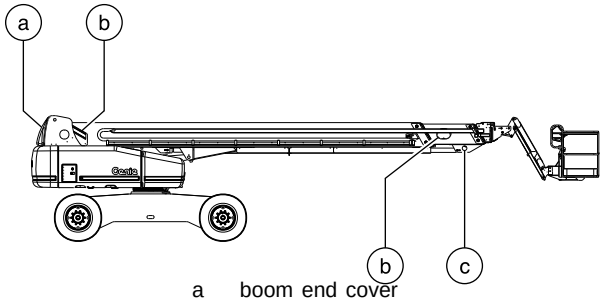
B-22
Inspect the Boom Extend/ Retract Cables

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-3200, and the numbers 2 and 3 boom tubes on the S-3800. 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 0.5 in / 13 mm before the number 3 boom tube begins to retract.

Note: If the number 2 boom tube moves more than 0.5 in / 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.*

Checklist C Procedures

REV A

C-1
Perform Engine Maintenance - Deutz Models



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 TD2011 Operation Manual* (Deutz part number 0312 3547).

Deutz TD2011 Operation Manual
Genie part number 139320

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
Perform Engine Maintenance - Cummins Models



Engine specifications require that this procedure be performed every 500 hours or 6 months, 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 *Cummins B3.3 Series Operation and Maintenance Manual* (Cummins part number 3666417-00).

Cummins B3.3 Series Operation and Maintenance Manual
Genie part number 139324

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 REV A

C-3
Replace the Engine Air Filter Element



Engine specifications require that this procedure be performed every 500 hours or 6 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 Release the latches on the air cleaner cap. Remove the end cap from the air cleaner canister.

2 Remove the filter element.

3 Use a damp cloth to wipe the filter sealing surface and the inside of the outlet tube. Make sure that all contaminant is removed before the filter is inserted.

4 Check new filter element gasket for damage before installing.

5 Install the new filter element.

6 Install the end cap on the canister and secure.

Note: Be sure the discharge slot is pointing down.

C-4
Grease the Platform Overload Mechanism (if equipped)



Genie specifications require that this procedure be performed every 500 hours or 6 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 using a multipurpose grease.

C-5
Test the Platform Overload System (if equipped)

Genie specifications require that this procedure be performed every 500 hours or 6 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 stablity could be compromised resulting in the machine tipping over.

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 inaccurate test.

4 Using a suitable lifting device, place an appropriate test weight equal to that of the maximum platform capacity in one of the locations shown. Refer to Illustration 1.

⊙ Result: The platform overload indicator light should be off at both the ground and platform controls.

⊠ Result: The platform overload indicator lights are on and the alarm is sounding. Calibrate the platform overload system. Refer to Repair Section 2-4, *Calibrate the Platform Overload System (if equipped)*.

5 Carefully move the test weight to each remaining location.

⊙ Result: The platform overload indicator light should be off at both the ground and platform controls.

⊠ Result: The platform overload indicator lights are on and the alarm is sounding. Calibrate the platform overload system. Refer to Repair Section 2-4, *Calibrate the Platform Overload System (if equipped)*.

6 Using a suitable lifting device, place an additional weight of 75 lbs / 34 kg onto the platform:

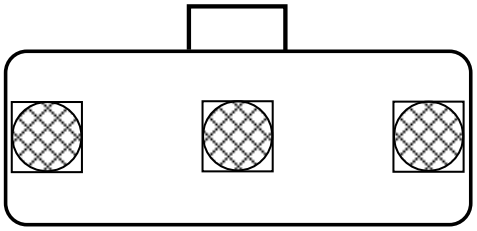
⊙ Result: The alarm should sound. The platform overload indicator light should be flashing at the platform controls and PLATFORM OVERLOAD should be displayed on the LCD screen at the ground controls.

⊠ Result: The alarm is not sounding and the platform overload indicator light is not flashing and PLATFORM OVERLOAD is not displayed on the LCD screen at the ground controls. Calibrate the platform overload system. Refer to Repair Section 2-4, *Calibrate the Platform Overload System (if equipped)*.

Note: There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

Illustration 1

CHECKLIST C PROCEDURES REV A



7 Carefully move the test weights to each remaining location in the platform.

⊙ Result: The alarm should sound. The platform overload indicator light should be flashing at the platform controls and PLATFORM OVERLOAD should be displayed on the LCD screen at the ground controls.

⊠ Result: The alarm is not sounding and the platform overload indicator light is not flashing and PLATFORM OVERLOAD is not displayed on the LCD screen at the ground controls. Calibrate the platform overload system. Refer to Repair Section 2-4, *Calibrate the Platform Overload System (if equipped).*

Note: There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

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.

Note: Machine functions should still operate with auxiliary power at the ground controls.

11 Lift the test weights off the platform floor using a suitable lifting device.

⊙ Result: The platform overload indicator light and alarm should turn off at both the ground and platform controls.

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

12 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should operate normally.

13 Turn the key switch to platform control.

14 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 Section 2-4, *Calibrate the Platform Overload System (if equipped).*

Checklist D Procedures

REV A

D-1
Check the Boom Wear Pads

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 boom to a comfortable working height (chest high). Stop the engine.

3 Remove the protective covers from the platform end of each boom tube.

4 Measure each wear pad.

Boom wear pad specifications Minimum thickness	0.5 inch / 12.7 mm

5 Replace any wear pad if it is less than specification. If a wear pad is not less than specification, shim as necessary to obtain minimum clearance with zero binding.

Note: The minimum shim clearance for the boom wear pads is 0.030 in / 0.76 mm and the maximum allowable shim clearance is 0.090 in / 2.29 mm.

Note: If the wear pads are still within specification, refer to Repair Section 4-2, *How to Shim the Boom.*

6 Remove the boom end cover retaining fasteners at the pivot end of the boom. Remove the boom end cover from the machine.

7 Remove the boom side inspection cover retaining fasteners from the boom at the pivot end of the boom. Remove the boom inspection cover from the machine to access boom 3 wear pads.

8 Measure each wear pad at the pivot end of the boom.

Boom wear pad specifications Minimum thickness	0.5 in / 12.7 mm

9 Replace any wear pad if it is less than specification. If a wear pad is not less than specification, shim as necessary to obtain minimum clearance with zero binding.

10 Extend and retract the boom through the entire range of motion to check for tight spots that may cause binding of the boom tubes.

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

CHECKLIST D PROCEDURES REV A

D-2
Check the Extendable Axle Wear Pads

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

Maintaining the axle wear pads in good condition is essential to safe machine operation. Wear pads are placed on axle 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.

Note: Be sure that the axles are fully extended before attempting this procedure.

1 Start the engine from the platform controls and extend the axles.

2 Measure each wear pad.

Extendable axle wear pad specifications	0.438 in
Minimum thickness	11.1 mm

3 Replace any wear pad if it is less than specification. If a wear pad is not less than specification, shim as necessary to obtain minimum clearance and no drag.

Note: If the wear pads are still within specification. Refer to Repair Section 13-6, *How to Shim the Extendable Axles.*

Note: Keep axle lubricated. See A-8*, Grease the Extendable Axles*.

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

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

D-3
Check the Free-wheel Configuration

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.

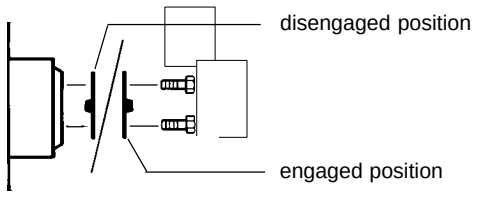
NOTICE Component damage hazard. If the machine must be towed, do not exceed 2 mph / 3.2 km/h.

1 Chock both of the wheels at the circle-end of the machine to prevent the machine from rolling.

2 Place a lifting jack of ample capacity (35,000 lbs / 16,000 kg) under each of the steer yokes at the square-end of the machine.

3 Lift the wheels off the ground and place blocks under the drive chassis for support.

4 Disengage the drive hubs by turning over the drive hub disconnect caps on each wheel hub at the square-end of the machine.



5 Manually rotate each wheel at the square-end of the machine.

⊙ Result: Each wheel at the square-end of the machine should rotate with minimum effort.

6 Re-engage the drive hubs by turning over the drive hub disconnect caps. Rotate each wheel to check for engagement. Lift the machine and remove the blocks. Lower the machine.

⚠WARNING Collision hazard. Failure to re-engage the drive hubs could result in death or serious injury and property damage.

7 Chock both of the wheels at the square-end of the machine to prevent the machine from rolling.

8 Place a lifting jack of ample capacity (35,000 lbs / 16,000 kg) under each of the steer yokes at the circle-end of the machine.

9 Lift the wheels off the ground and place blocks under the drive chassis for support.

10 Disengage the drive hubs by turning over the drive hub disconnect caps on each wheel hub at the circle-end of the machine.

11 Manually rotate each wheel at the circle-end of the machine.

⊙ Result: Each wheel at the circle-end of the machine should rotate with minimum effort.

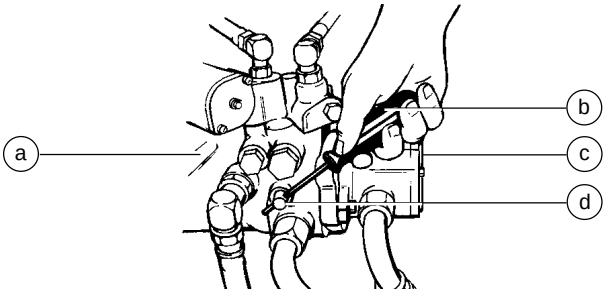
12 Re-engage the drive hubs by turning over the drive hub disconnect caps. Rotate each wheel to check for engagement. Lift the machine and remove the blocks. Lower the machine.

⚠WARNING Collision hazard. Failure to re-engage the drive hubs could result in death or serious injury and property damage.

All models:

13 Be sure the free-wheel valve on the drive pump is closed (clockwise).

Note: The free-wheel valve is located on the drive pump, and should always remain closed.



a drive pump
b screwdriver
c lift pump
d free-wheel valve

CHECKLIST D PROCEDURES REV A

D-4

Check the Turntable Rotation Bearing Bolts

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.

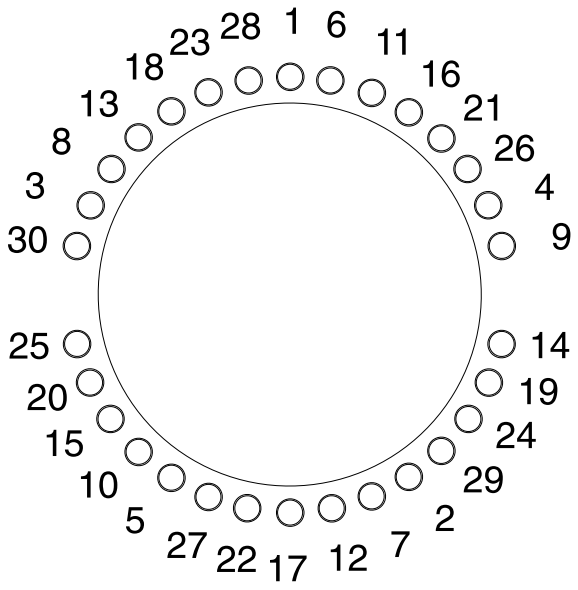
1 Raise the boom to a horizontal position.

2 Install a safety chock onto the hydraulic lift cylinder extension rod. Carefully lower the boom onto the lift cylinder safety chock.

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

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

3 Be sure that each turntable rotation bearing mounting bolt above the turntable is torqued in sequence. Refer to Section 2, *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 Section 2, *Specifications.*

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

REV A

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.

3 Using a feeler guage, measure the gap between the swing hub pinion gear and the turntable rotation bearing at the center tooth. The gap should be meaured on one side of the pinion gear on the center tooth.

Note: The pinion gear can be accessed on the outside of the chassis under the pinion gear guard.

⊙ Result: The gap is between 0.010 in / 0.254 mm and 0.022 in / 0.559 mm. The backlash is within tolerance.

⊠ Result: The gap is less than 0.010 in / 0.254 mm or more than 0.022 inch / 0.559 mm. The backlash needs to be adjusted. Refer to Repair Section 12-1, *Turntable Rotation Hydraulic Motor and Drive Hub.*

4. After the backlash has been set, place a tape measure approximately 2 feet / 0.6 m, perpendicular to the boom, on the ground under the rotator.

Note: Fasten a straight edge on the side of the rotator using tape so one end is just above the tape measure.

5. Apply approximately 20 lbs / 89 N of side force to the platform, moving the rotator to the left as far as it will go. Move the tape measure so the straight edge on the rotator measures 0 m.
6. Apply approximately 20 lbs / 89 N of side force to the platform, moving the rotator to the right as far as it will go.
7. Note the distance on the tape measure the rotator has moved.

⊙ Result: The rotator movement does not exceed 2 inches / 51 mm. The backlash is in tolerence.

⊠ Result: The side-to-side rotator movement exceeds 2 inches / 51 mm. The turntable drive hub may need service. Contact Genie Industries Service Department.

D-6
Replace the Drive Hub Oil

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

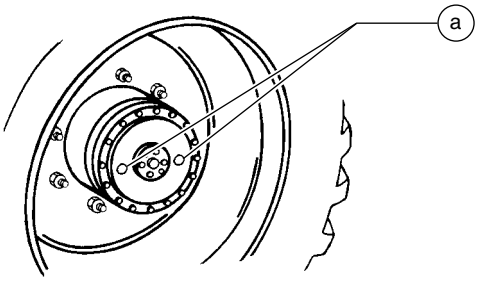
Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the drive hub oil at yearly intervals may cause the machine to perform poorly and continued use may cause component damage.

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 Section 2, *Specifications.*

Turntable Rotate Drive Hub:

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 Section 2, *Specifications.*

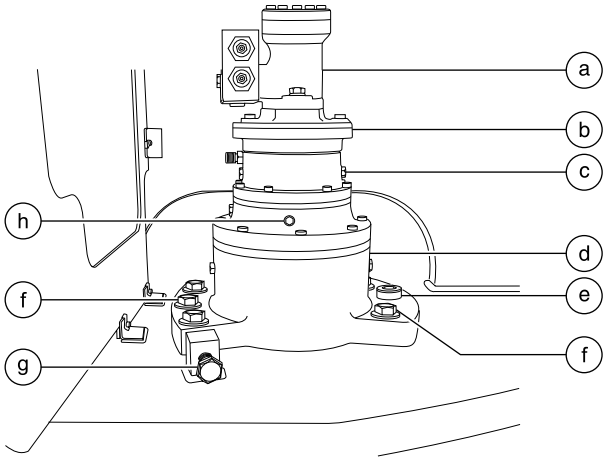
1 Secure the turntable from rotating with the turntable rotation lock pin.

2 Remove the ground control side fixed turntable cover. Refer to Repair Section 5-1, *How to Remove a Fixed Turntable Cover.*

3 Tag, disconnect and plug the turntable rotate drive motor hoses at the turntable rotate drive motor and the turntable rotate drive brake hoses at the turntable rotate drive brake. Cap the fittings.

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

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



a drive motor
b brake drain plug
c drive hub drain plug
d drive hub
e pivot bolt
f mounting bolt
g adjustment bolt with lock nut
h drive brake

4 Remove the turntable rotate drive hub mounting bolts and pivot bolt. Remove the turntable rotate drive hub with a suitable lifting device of ample capacity.

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

5 Remove the plug from the side of the drive hub. Drain the oil from the hub into a suitable container.

6 Install the drive hub assembly onto the machine. Lubricate and torque the drive hub mounting bolts to specification. Refer to Section 2, *Specifications.*

7 Fill the drive hub with oil from the side hole until the oil level is even with the bottom of the hole. Apply pipe thead sealant to the plug. Install the plug. refer to Section 2, Specifications.

8 Install the turntable rotate drive motor hoses into the turntable rotate drive motor and install the turntable rotate drive brake hose into the turntable rotate drive brake.

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

9 Adjust the turntable rotation gear backlash. See D-5, *Check the Turntable Rotation Gear Backlash*.

10 Install the ground control side fixed turntable cover onto the machine and tihten the retaining fasteners.

D-7
Inspect for Turntable Bearing Wear




Genie requires 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.

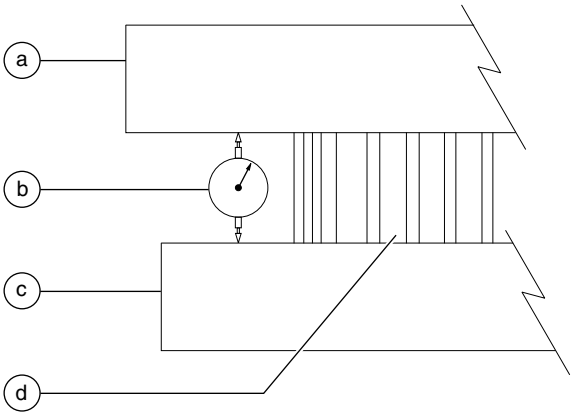
1 Grease the turntable bearing. See A-9, *Grease the Turntable Bearing and Rotate Gear.*

2 Torque the turntable bearing bolts to specification. See D-5, *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.



a turntable
b dial indicator
c drive chassis
d 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 0.055 inch / 1.4 mm. The bearing is good.

⊠ Result: The measurement is more than 0.055 inch / 1.4 mm. The bearing is worn and needs to be replaced.

8 Fully retract the boom and raise the boom to full height. Visually inspect 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-8
Perform Engine Maintenance - Deutz Models

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 TD2011 Operation Manual* (Deutz part number 0312 3547).

Deutz TD2011 Operation Manual	
Genie part number	139320

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 D PROCEDURES REV A

D-9
Perform Engine Maintenance - Cummins Models

Engine specifications require that this procedure be performed every 1000 hours or annually, 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 *Cummins B3.3 Series Operation and Maintenance Manual* (Cummins part number 3666417-00).

Cummins B3.3 Series Operation and Maintenance Manual	
Genie part number	139324

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.

D-10
Replace the Hydraulic Filter Elements

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

Replacement of the hydraulic tank return filter 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 filter be replaced more often.

Tank Return Filter:

NOTICE Burn hazard. Beware of hot oil. Contact with hot oil may cause severe burns.

Note: Perform this procedure with the engine off.

1 Open the ground controls side turntable side cover and locate the tank return filters.

2 Place a suitable container under the hydraulic tank return filters.

3 Remove each filter with an oil filter wrench.

4 Apply a thin layer of clean oil to the new oil filter gaskets.

5 Install the new hydraulic return filter element and tighten it securely by hand. Clean up any oil that may have spilled during the installation procedure.

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

7 Start the engine from the ground controls.

8 Inspect the filters and related components to be sure that there are no leaks.

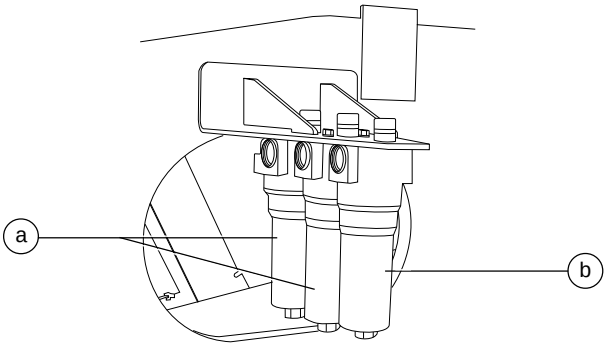
Medium and High Pressure Hydraulic Filters:

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

Note: The medium pressure filter is for the charge pump and the high pressure filters are for the drive circuit.

Note: Perform this procedure with the engine off.

1 Open the engine side turntable cover and locate the three filters mounted to the bulkhead.



a high pressure filters
b medium pressure filter

2 Place a suitable container under the filters.

3 Remove the filter housing by using a wrench on the nut provided on the bottom of the housing.

4 Remove the filter element from the housing.

5 Inspect the housing seal and replace it if necessary.

6 Install the new medium pressure filter element into the housing and tighten it securely.

7 Install the new high pressure filter elements into the housings and tighten them securely.

8 Clean up any oil 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 housings.

10 Start the engine from the ground controls.

11 Inspect the filter housings and related components to be sure that there are no leaks.

Checklist E Procedures

REV A

E-1
Test or Replace the Hydraulic Oil

Genie specifications require that this procedure be performed every 2000 hours or 2 years, whichever comes first.

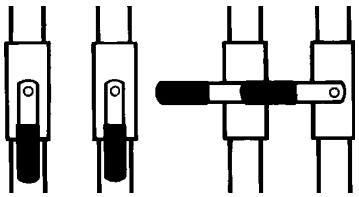
Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil and suction strainers may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more frequently.

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: Perform this procedure with the boom in the stowed position and the axles extended.

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 Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the ground controls side turntable side cover. Refer to Repair Section 5-1, *How to Remove a Hinged Turntable Cover.*



open closed

2 Close the two hydraulic shut-off valves located at the hydraulic tank.

NOTICE Component damage hazard. The engine must not be started with the hydraulic tank shutoff 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.

3 Remove the drain plug from the hydraulic tank and allow all of the oil from the tank to drain into a suitable container. Refer to Section 2, *Specifications.*

4 Remove the ground controls support bracket retaining fasteners and remove the ground control box assembly from the machine.

NOTICE Component damage hazard. Be sure to properly support the ground control box. Do not allow the ground control box to hang by the wiring or cables.

5 Tag and disconnect the wires from the horn. Remove the horn retaining fasteners and remove the horn from the machine.

6 Tag, disconnect and plug the two suction hoses that are attached to the hydraulic tank shut-off valves. Cap the fittings.

7 Tag, disconnect and plug the supply hose for the auxiliary power unit. Cap the fitting on the hydraulic tank.

8 Tag, disconnect and plug the case drain hose at the return filter. Cap the fitting on the return filter head.

9 Disconnect and plug the T-fitting located at the return filter with the 2 hoses connected to it. Cap the fitting on the return filter head.

10 Remove the hydraulic tank breather filter from the tank.

REV A CHECKLIST E PROCEDURES

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 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 Section 9-2, *How to Prime the Pumps*.

37 Install the turntable side cover.

CHECKLIST E PROCEDURES REV A

E-2
Perform Engine Maintenance - Cummins Models



Engine specifications require that this procedure be performed every 2000 hours or 2 years, 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 *Cummins B3.3 Series Operation and Maintenance Manual* (Cummins part number 3666417-00).

Cummins B3.3 Series Operation and Maintenance Manual
Genie part number 139324

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-3
Perform Engine Maintenance - Deutz Models



Engine specifications require that this procedure be performed every 2 years.

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 TD2011 Operation Manual* (Deutz part number 0312 3547).

Deutz TD2011 Operation Manual
Genie part number 139320

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
Perform Engine Maintenance - Deutz Models



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 TD2011 Operation Manual* (Deutz part number 0312 3547).

Deutz TD2011 Operation Manual	
Genie part number	139320

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-5
Perform Engine Maintenance - Deutz Models



Engine specifications require that this procedure be performed every 6000 hours or 5 years, 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 TD2011 Operation Manual* (Deutz part number 0312 3547).

Deutz TD2011 Operation Manual	
Genie part number	139320

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 REV A

E-6
Perform Engine Maintenance - Deutz Models



Engine specifications require that this procedure be performed every 12000 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 TD2011 Operation Manual* (Deutz part number 0312 3547).

Deutz TD2011 Operation Manual	
Genie part number	139320

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-7
Replace the Boom Extend/ Retract Cables



Genie specifications require that this procedure be performed every 7 years.

The boom extend/retract cables are responsible for the extension and retraction of the number 3 boom tube on the S-3200, and the numbers 2 and 3 boom tubes on the S-3800. 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 cables. Refer to Repair Procedure 4-5, *How to Replace the Boom Extend/Retract Cables.*

Repair Procedures

Observe and Obey:

- ☑ Repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.

Before Repairs Start:

- ☑ Read, understand and obey the safety rules and operating instructions in the *Genie S-3200 Operator's Manual and the Genie S-3800 Operator's Manual.*
- ☑ Be sure that all necessary tools and parts are available and ready for use.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Use only Genie approved replacement parts.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - · Machine parked on a firm, level surface
  - · Boom in the stowed position
  - · Turntable rotated with the boom between the circle-end wheels
  - · Turntable secured with the turntable rotation lock pin
  - · Key switch in the OFF position with the key removed
  - · Wheels chocked
  - · All external AC power supply disconnected from the machine

About This Section

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

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

Symbols Legend

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

⚠DANGER Used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION With safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

NOTICE Used to indicate the presence of 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.

Display Module

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This table lists the various screens and menu options of the operating software. Some display menus are for informational purpose only, while others can be changed to alter the machine operating parameters.

The key switch must be in the OFF position before entering the programming mode.

Use the ↓ or ↵ buttons to scroll through the screens.

To change parameter values, use the + button (to increase) or the − button (to decrease) or to select a setting. Press the ↵ button to save the new value to memory. An audible beep will indicate a save to memory.

You must exit the programming mode for the changes to take effect.

To Exit Programming Mode:

Use the scroll button ↓ to scroll through the menu until the screen displays EXIT, then press the plus button + once, and change NO to YES, then press the enter button ↵ once to accept change.

Note: If Programming mode is not exited properly, all machine programming may be lost.

Screen or Menu	Procedure	Description	Range or Selection
Boom Function Speeds	With the key switch OFF, press and hold the ↵ button and turn the key switch to the ON position. Release the ↵ button and press +↵ +↵ −↵ −↵.	Boom up speed % (stowed)	120% max, 10% min, 100% (default)
		Boom down speed % (stowed)	120% max, 10% min, 100% (default)
		Boom up speed % (<75ft)	80% max, 10% min, 60% (default)
		Boom down speed % (<75ft)	80% max, 10% min, 60% (default)
		Boom up speed % (>75ft)	35% max, 10% min, 29% (default)
		Boom down speed % (>75ft)	35% max, 10% min, 29% (default)
		Boom up speed % (>100ft)	25% max, 10% min, 20% (default)
		Boom down speed % (>100ft)	25% max, 10% min, 30% (default)
		Boom extend speed %	60% max, 10% min, 60% (default)
		Boom retract speed %	40% max, 10% min, 35% (default)
		Turntable rotate speed% (<75ft)	120% max, 50% min, 100% (default)
		Turntable rotate speed % (>75ft)	120% max, 50% min, 100% (default)

REV A DISPLAY MODULE

Screen or Menu	Procedure	Description	Range or Selection
Operator	Default	Hour meter (on power up) Engine speed Engine oil pressure PSI (English) Engine oil pressure kPa (metric) Engine temperature °F (English) Engine temperature °C (metric) Turntable level sensor X° Turntable level sensor Y° Platform level sensor Battery voltage	Engine temperature is not displayed until engine is above 100°F / 38°C
Machine Status	With key switch on, press the +⌋ and −⌋ at the same time.	Hydraulic pressure PSI (English) Hydraulic pressure kPa (metric) Boom angle Axle status	
Unit of Measure, Language and engine selection	With the key switch OFF, press and hold the ↵⌋ button and turn the key switch to the ON position. Release the ↵⌋ button and press +⌋ −⌋ −⌋ +⌋.	Metric/English measurements Language selection	Use +/- buttons to change English, German, French, Spanish, Portuguese, Italian, Dutch and Swedish.
Drive Functions	With the key switch OFF, press and hold the ↵⌋ button and turn the key switch to the ON position. Release the ↵⌋ button and press +⌋ +⌋ ↵⌋ ↵⌋.	Drive output max forward % Drive output max reverse % Elevated drive (>75 ft / 24 m)% Elevated drive (<75 ft / 24 m) % Stowed drive % Drive acceleration % Drive deceleration % Speed limit on steer angle	100% max, 10% min, 100% (default) 100% max, 10% min, 90% (default) 120% max, 50% min, 100% (default) 120% max, 50% min, 100% (default) 120% max, 50% min, 100% (default) 125% max, 25% min, 100% (default) 125% max, 25% min, 100% (default) 100% max, 0% min, 50% (default)

DISPLAY MODULE REV A

Screen or Menu	Procedure	Description	Range or Selection
Lift Function Ramp Settings	With the key switch OFF, press and hold the ↵ button and turn the key switch to the ON position. Release the ↵ button and press +↵ +↵ ↓↵ ↓↵.	Boom up/down ramp acceleration % Boom up/down ramp deceleration % Boom extend/retract ramp deceleration % Turntable rotate ramp acceleration % Turntable rotate ramp deceleration %	5000 max, 100 min, 5000 (5.0 sec) default 2600 max, 500 min, 500 (0.5 sec) default 1600 max, 100 min, 500 (0.5 sec) default 5000 max, 100 min, 2000 (2.0 sec) default 3000 max, 100 min, 250 (0.25 sec) default
Valve Calibration	With the key switch OFF, press and hold the ↵ button and turn the key switch to the ON position. Release the ↵ button and press −↵ −↵ ↵↵ ↵↵.	Reset drive valve defaults Reset boom up/down valve defaults Reset boom extend/retract valve defaults Reset turntable rotate valve defaults Allow boom up/down speed calibration Allow boom extend/retract speed calibration Allow turntable rotate speed calibration Reset drive joystick defaults Reset boom up/down joystick defaults Reset boom extend/retract joystick defaults Reset turntable rotate joystick defaults Reset steer joystick defaults	(YES/NO) (YES/NO) (YES/NO) (YES/NO) (YES/NO) (YES/NO) (YES/NO) (YES/NO) (YES/NO) (YES/NO) (YES/NO) (YES/NO)

REV A DISPLAY MODULE

Screen or Menu	Procedure	Description	Range or Selection
Level Sensor Calibration	With the key switch OFF, press and hold the ↵ button and turn the key switch to the ON position. Release the ↵ button and press +↵↵+.	Set unit level to gravity Turntable Y-axis millivolts per degree Turntable X-axis millivolts per degree Platform level to gravity Platform millivolts per degree	(YES/NO) (YES/NO)
Default Reset	With the 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 functions speed 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)
Options	With the 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/75ft AC Generator Option: Alarm Option: Lift/drive cutouts: Auxiliary drive Proximity kill switch OR platform overload: Work lights Flashing beacon Drive lights Disable steer mode change while driving Rocker joystick steering Generator off delay (0-10 sec)	(NOLT, 100 FT, 75 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, PROXIMITY, PLATFORM OVERLOAD) (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)

Platform Controls

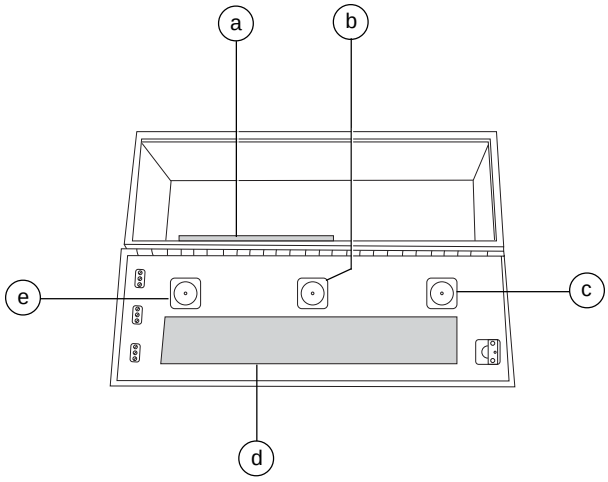
REV A

The platform controls contains two printed circuit boards:

The **membrane circuit board** is mounted to the underside of the control box lid which contains the LEDs and touch-sensitive buttons for machine functions. The membrane circuit board sends the input from the operator to the platform controls ECM circuit board. The ECM circuit board sends the data to the turntable control box for processing.

The **platform controls ECM circuit board** communicates with the turntable controls. 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 turntable controls. If a joystick controller error occurs or if a joystick is replaced, it will need to be calibrated before that particular machine function will operate. See 1-3, *How to Calibrate a Joystick Controller.*

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



a platform ECM circuit board
b boom extend/retract joystick controller
c drive/steer joystick controller
d membrane circuit board
e boom up/down and turntable rotate left/right joystick controller

1-1 Circuit Boards

Note: When an ECM circuit board is replaced, the joystick controllers will need to be calibrated. See 1-3, *How to Calibrate a Joystick Controller.*

How to Remove the ECM Circuit Board

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

2 Remove the platform control box mounting fasteners. Remove the platform control box from the machine.

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

3 Locate the cables that connect to the bottom of the control box. Number each cable and its location at the control box.

4 Disconnect the cables from the bottom of the platform control box.

5 Remove the control cable plug retaining fasteners from the bottom of the platform control box.

6 Remove the platform control box lid retaining fasteners. Open the control box lid.

7 Locate the ECM circuit board mounted to the inside of the platform control box.

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

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

8 Remove the ECM circuit board mounting fasteners.

9 Carefully remove the ECM circuit board from the platform control box.

How to Remove the Membrane Circuit Board

1 Push in the 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 membrane circuit board mounted to the inside of the platform control box lid.

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

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

4 Carefully disconnect the two ribbon cables from the membrane circuit board.

5 Remove the membrane circuit board retaining fasteners.

6 Carefully remove the membrane circuit board from the platform control box lid.

1-2 Membrane Decal

How to Replace the Membrane Decal

The membrane decal is a special decal that consists of a decal with an electronic membrane on the backside. The membrane contains touch sensitive areas that, when pushed, activates the machine functions. The membrane buttons activate machine functions similar to toggle switches, but do not have any moving parts.

1 Push in the 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 Carefully disconnect the two ribbon cables from the membrane circuit board.

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

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

4 Close the control box lid.

5 Remove the decal from the platform control box.

6 Carefully remove the membrane decal from the platform control box while guiding the ribbon cables out of the control box lid.

7 Remove any decal adhesive from the control box lid with a mild solvent.

Note: Do not allow any solvent to come in contact with the membrane circuit board.

8 Install the new membrane decal (Genie part number 50810) while guiding the ribbon cables through the control box lid.

Note: Be sure that all LED locations on the membrane decal align with the LED's on the membrane circuit board.

9 Install a new platform controls decal (Genie part number 65182) over the membrane decal.

10 Open the control box lid and carefuly connect the ribbon cables from the membrane decal to the membrane circuit board.

1-3 Joysticks

How to Calibrate a Joystick

The joystick controllers on this machine utilize digital Hall Effect technology for proportional control. If a joystick controller 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 ramp rate can be set.

Note: It is possible to reset multiple joystick defaults before exiting the programming mode.

Note: After each joystick is calibrated, check the display at the ground control box. There should be no calibration faults shown on the display. If calibration faults exist, repeat steps 1 through 8 for that joystick controlled function.

Note: Contact Genie Industries Service Department before using the reset all joystick default option.

Note: Perform this procedure with the engine off.

The calibration procedure for each joystick begins on the next page.

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Drive functions:

Note: If the calibration fault is already displayed at the ground box begin with step 6.

1 Turn the key switch to the off position. Confirm the red Emergency Stop button at the platform and ground controls is in the on position.

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

3 Press the minus button [−] twice, then press the enter button [↵] twice.

4 Use the scroll button [↓] to scroll through the menu until RESET DRIVE JOYSTICK DEFAULTS is displayed. Press the [+] button to select YES, then press the [↵] button.

5 Exit programming mode.

Note: To exit programming mode, use the scroll button [↓] to scroll through the menu until the screen displays exit, then press the plus button [+] once, change the NO to YES, and press the enter button [↵].

6 Do not start the engine.

7 Locate the drive/steer joystick.

8 Move the drive/steer joystick full stroke in the forward direction and hold for 5 seconds, then return to the center or neutral position.

9 Move the drive/steer joystick full stroke in the reverse direction and hold for 5 seconds, then return to the center or neutral position.

⊙ Result: The alarm at the ground controls should sound for a successful calibration.

⊠ Result: If the alarm does not sound, repeat the calibration procedure, beginning with step 1.

Steer functions:

Note: If the calibration fault is already displayed at the ground box begin with step 6.

1 Turn the key switch to the off position. Confirm the red Emergency Stop button at the platform and ground controls is in the on position.

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

3 Press the minus button [−] twice, then press the enter button [↵] twice.

4 Use the scroll button [↓] to scroll through the menu until RESET STEER JOYSTICK DEFAULTS is displayed. Press the [+] button to select YES, then press the [↵] button.

5 Exit programming mode.

Note: To exit programming mode, use the scroll button [↓] to scroll through the menu until the screen displays exit, then press the plus button [+] once, change the NO to YES, and press the enter button [↵].

6 Do not start the engine.

7 Locate the drive/steer joystick.

8 Move the drive/steer joystick full stroke in the left direction and hold for 5 seconds, then return to the center or neutral position.

9 Move the drive/steer joystick full stroke in the right direction and hold for 5 seconds, then return to the center or neutral position.

⊙ Result: The alarm at the ground controls should sound for a successful calibration.

⊠ Result: If the alarm does not sound, repeat the calibration procedure, beginning with step 1.

Primary boom extend/retract functions:

Note: If the calibration fault is already displayed at the ground box begin with step 6.

1 Turn the key switch to the off position. Confirm the red Emergency Stop button at the platform and ground controls is in the on position.

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

3 Press the minus button [−] twice, then press the enter button [↵] twice.

4 Use the scroll button [↓] to scroll through the menu until RESET PRIMARY BOOM EXTEND/RETRACT JOYSTICK DEFAULTS is displayed. Press the [+] button to select YES, then press the [↵] button.

5 Exit programming mode.

Note: To exit programming mode, use the scroll button [↓] to scroll through the menu until the screen displays exit, then press the plus button [+] once, change the NO to YES, and press the enter button [↵].

6 Do not start the engine.

7 Locate the primary boom/turntable rotate joystick.

8 Move the primary boom extend/retract joystick full stroke in the extend direction and hold for 5 seconds, then return to the center or neutral position.

9 Move the primary boom extend/retract joystick full stroke in the retract direction and hold for 5 seconds, then return to the center or neutral position.

⊙ Result: The alarm at the ground controls should sound for a successful calibration.

⊠ Result: If the alarm does not sound, repeat the calibration procedure, beginning with step 1.

Primary boom up/down functions:

Note: If the calibration fault is already displayed at the ground box begin with step 6.

1 Turn the key switch to the off position. Confirm the red Emergency Stop button at the platform and ground controls is in the on position.

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

3 Press the minus button [−] twice, then press the enter button [↵] twice.

4 Use the scroll button [↓] to scroll through the menu until RESET PRIMARY BOOM UP/DOWN JOYSTICK DEFAULTS is displayed. Press the [+] button to select YES, then press the [↵] button.

5 Exit programming mode.

Note: To exit programming mode, use the scroll button [↓] to scroll through the menu until the screen displays exit, then press the plus button [+] once, change the NO to YES, and press the enter button [↵].

6 Do not start the engine.

7 Locate the primary boom/turntable rotate joystick.

8 Move the boom/turntable rotate joystick full stroke in the up direction and hold for 5 seconds, then return to the center or neutral position.

9 Move the boom/turntable rotate joystick full stroke in the down direction and hold for 5 seconds, then return to the center or neutral position.

⊙ Result: The alarm at the ground controls should sound for a successful calibration.

⊠ Result: If the alarm does not sound, repeat the calibration procedure, beginning with step 1.

Turntable rotate functions:

Note: If the calibration fault is already displayed at the ground box begin with step 6.

1 Turn the key switch to the off position. Confirm the red Emergency Stop button at the platform and ground controls is in the on position.

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

3 Press the minus button [−] twice, then press the enter button [↵] twice.

4 Use the scroll button [↓] to scroll through the menu until RESET TURNTABLE ROTATE JOYSTICK DEFAULTS is displayed. Press the [+] button to select YES, then press the [↵] button.

5 Exit programming mode.

Note: To exit programming mode, use the scroll button [↓] to scroll through the menu until the screen displays exit, then press the plus button [+] once, change the NO to YES, and press the enter button [↵].

6 Do not start the engine.

7 Locate the primary boom/turntable rotate joystick.

8 Move the boom/turntable joystick full stroke in the left direction and hold for 5 seconds, then return to the center or neutral position.

9 Move the boom/turntable joystick full stroke in the right direction and hold for 5 seconds, then return to the center or neutral position.

⊙ Result: The alarm at the ground controls should sound for a successful calibration.

⊠ Result: If the alarm does not sound, repeat the calibration procedure, beginning with step 1.

How to Reset a Proportional Valve Coil Default (software version 2.00 and above)

Note: Software version 2.00 requires the use of Web GPI to perform this procedure.
Refer to 5-5, *Software*.

Note: This procedure only needs to be performed if a proportional valve has been replaced.

Note: After the valve coil defaults have been set, each machine function threshold and default function speed must be set. See *How to Set the Function Thresholds and Default Function Speeds.*

1 Open Web GPI and connect to the TCON.

2 Select the valve screen of the proportional valve you want to reset.

Note: Choices are: Propel (drive) valve reset; Boom up/down valve reset; Boom extend/retract valve reset; or TT rotate valve reset.

3 Press "set Defaults" and enter the level 2 password (obtained from field service personnel).

4 Enter "0" (zero) into the threshold boxes.

5 Press "send" and enter the level 2 password (obtained from field service personnel).

6 Disconnect from the TCON and proceed with calibration.

How to Set the Function Thresholds and Function Speeds

Note: Before the threshold and default function speeds can be set, the boom function proportional valve coil defaults must be set first.
See *How to Reset a Proportional Valve Coil Default.*

Note: If a boom function proportional valve coil has not been replaced and just want to reset the function speed to original factory settings, begin with step 10.

1 Start the engine from the platform controls.

2 Press down the foot switch.

Note: Be sure the engine rpm is set to foot switch activated high idle.

Function threshold:

3 Select a joystick controlled function that needs to have the threshold set.

4 Slowly move the joystick off center in either direction just until the machine function starts to move, then move the joystick very slowly towards the neutral or center position just before the machine function stops.
Do not let go of the joystick.

5 While holding the joystick in position, press the engine start button at the platform controls to set the joystick controller threshold.

6 Slowly move the joystick off center in the opposite direction just until the machine function starts to move, then move the joystick very slowly towards the neutral or center position just before the machine function stops.
Do not let go of the joystick.

7 While holding the joystick in position, press the engine start button at the platform controls to set the joystick controller threshold.

8 Repeat steps 3 through 7 for each joystick controlled machine function (boom up/down and turntable rotate left/right, boom extend/retract, and drive forward/reverse).

9 Once all the joystick controllers have been calibrated, push in the Emergency Stop button at the platform controls to save the settings in memory.

Note: The red Emergency Stop button at the platform controls must be pushed in to the off position following calibration of the joystick controllers to save the settings in memory.

10 At the ground controls, turn the key switch to the off position, wait a moment and then turn the key switch to platform controls.

11 Check the display at the ground controls to be sure there are no calibration faults.

Note: There should be no calibration faults shown on the display. If calibration faults exist, repeat this procedure.

Function speeds:

Note: Be sure the machine is in the stowed position and the boom is rotated between the circle end tires.

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

12 Start the engine from the platform controls.

13 Select a boom function that needs the function speed set.

14 **Boom up/down functions:** Starting in the stowed position, move the joystick full stroke in the up direction. When the alarm sounds, move the joystick in the opposite direction full stroke until the alarm sounds again. Return the joystick to center.

Boom extend/retract functions: Raise the boom until the low-speed drive function is enabled. Move the joystick full stroke in the extend direction. When the alarm sounds, move the joystick in the opposite direction full stroke until the alarm sounds again. Return the joystick to center.

Turntable rotate functions: Raise the boom until the low-speed drive function is enabled. Move the joystick full stroke to the left (cw) until the drive enable light turns on. Then move the joystick full stroke to the right (ccw). When the alarm sounds, move the joystick in the opposite direction full stroke until the alarm sounds again. Return the joystick to center.

15 Once all the joystick controllers have been calibrated, push in the red Emergency Stop button at the platform controls to save the settings in memory.

Note: The red Emergency Stop button at the platform controls must be pushed in to the off position following calibration of the joystick controllers to save the settings in memory.

16 At the ground controls, turn the key switch to the off position, wait a moment and then turn the key switch to platform controls.

17 Check the display at the ground controls to be sure there are no calibration faults.

Note: There should be no calibration faults shown on the display. If calibration faults exist, repeat this procedure.

How to Adjust the Function Speeds

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.

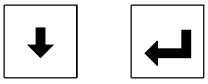
3 Press the plus button [+] twice, then press the minus button [−] twice.

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 Section 2, *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.

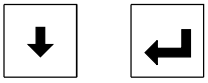
3 Press the plus button [+] twice, then press the scroll button [↓] twice.

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	5 seconds
decelerate	0.5 second
Primary boom extend/retract	
accelerate	4 seconds
decelerate	0.5 second
Drive	
accelerate	2 seconds

Platform Components

REV A

2-1 Platform

How to Remove the Platform

1 Separate the foot switch quick disconnect plug.

2 Support the platform with an appropriate lifting device.

3 Locate the cables that connect to the bottom of the control box. Number each cable and its location at the platform control box.

4 Disconnect the cables from the bottom of the platform control box.

5 Remove the platform control box mounting fasteners. Remove the platform control box and set it aside.

6 Remove the air line to platform bracket retaining fasteners (if equipped).

7 Remove the weld cables from the platform (if equipped).

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

8 Remove the platform mounting fasteners and remove the platform from the machine.

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

2-2 Platform Leveling Cylinder

The platform leveling cylinder keeps the platform level through the entire range of boom motion. The platform is maintained level to the turntable. The ECM at the ground controls compares the difference in readings between the platform angle sensor and the turntable level sensor. The ECM at the ground controls sends a signal to the platform controls to open or close the appropriate platform level proportional valve on the platform manifold to maintain a level platform. The platform leveling cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Platform Leveling Cylinder

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 Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Extend the boom until the platform leveling cylinder barrel-end pivot pin is accessible.

2 Raise the boom slightly and place blocks under the platform.

3 Lower the 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.

4 Tag, disconnect and plug the hydraulic hoses from the platform leveling cylinder at the bulkhead fittings located inside the boom tube at the platform end and connect them together using a connector. Cap the bulkhead fittings on the boom tube.

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

5 Remove the pin retaining fastener from the platform leveling cylinder rod-end pivot pin. Do not remove the pin.

6 Remove the external snap ring from the barrel-end pivot pin. Do not remove the pin.

7 Support the platform leveling cylinder with a suitable lifting device. Protect the cylinder rod from damage.

8 Use a soft metal drift to remove the rod-end pivot pin.

⚠WARNING Crushing hazard. The platform (S-100 and S-120 models) or jib boom (S-105 and S-125 models) will fall when the platform leveling cylinder rod-end pivot pin is removed if it is not properly supported.

⚠CAUTION Crushing hazard. The platform leveling cylinder will fall if it is not properly supported when the rod-end pivot pin is removed.

NOTICE Component damage hazard. The platform leveling cylinder rod can become damaged if it is allowed to fall.

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

10 Carefully pull the platform leveling cylinder out of the boom.

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

How to Bleed the Platform Leveling Cylinder

Note: Do not start the engine. Use auxiliary power for all machine functions in this procedure.

Note: The boom must remain below 10° to properly perform this procedure.

1 Raise the boom to a horizontal position.

2 Activate auxiliary power.

3 Push the platform level up and down buttons through two complete platform leveling cycles to remove any air that might be in the system.

2-3 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

NOTICE 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 on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the platform. See 2-1, *How to Remove the Platform*.

2 Disconnect the electrical connector from the platform angle sensor.

3 Tag, disconnect and plug the hydraulic hoses from the "V1" and "V2" ports on platform rotator 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.

4 Remove the platform manifold mounting fasteners. Lay the platform manifold to the side.

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

5 Remove the power to platform cover plate from the electrical outlet box. Do not disconnect the wiring.

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

6 Remove the power to platform electrical outlet box from the platform and lay it to the side.

7 Remove the weld cable from the platform (if equipped).

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

8 Support the platform mounting weldment, but do not apply any lifting pressure.

9 Remove the eight mounting bolts from the platform mounting weldment.

10 Remove the center bolt and slide the platform mounting weldment off of the platform rotator.

⚠WARNING Crushing hazard. The platform mounting weldment may become unbalanced and fall if it is not properly supported.

11 Support the platform rotator. Do not apply any lifting pressure.

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

13 Remove the pin retaining fastener from the platform level cylinder rod-end connecting link pivot pin and the platform rotator pivot pin. Do not remove the pins.

14 Use a soft metal drift to remove both pins and remove the platform rotator from the machine.

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

NOTICE Component damage hazard. The platform angle sensor is a very sensitive instrument. It can be damaged internally if the platform rotator is dropped or sustains any physical shock, even if the damage is not visible.

How to Bleed the Platform Rotator

Note: Do not start the engine. Use auxiliary power for all machine functions in this procedure.

1. Rotate the platform full right, then full left until air is completely out of the rotator. Bleeding the valve is not necessary.

2-4 Platform Level Sensor

The platform level sensor is mounted to the side of the platform rotator. The platform level sensor is monitored by the control system to maintain a level platform throughout boom range of motion. If a platform level sensor is replaced, it must be calibrated prior to machine operation.

How to Calibrate the Platform Level Sensor

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

1 Secure a digital level to one of the side railings of the platform.

2 Start the machine and level the platform to gravity. Push the red Emergency stop button in to stop the engine.

2 Press and hold the enter button [↵] on the ground control panel while pulling out the red Emergency Stop button.

3 Press the plus button [+], then press the enter button [↵] twice before again pressing the plus button [+].

4 Press the enter button [↵] three timees until PLATFORM LEVEL TO GRAVITY is displayed on the LCD screen.

5 Press the plus button [+] once.

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

7 Push one of the LCD screen buttons shown until PLATFORM LEVEL SENSOR MV PER DEGREE is displayed.





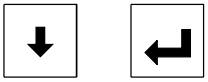
8 Confirm that the number shown on the display is the same as that shown on the data sheet supplied with the new platform level sensor.

⊙ Result: If the number shown on the display is the same as that shown on the data sheet supplied with the new platform level sensor, continue to step 10.

⊠ Result: If the number shown on the display is **not** the same as that shown on the data sheet supplied with the new platform level sensor, continue to step 9.

9 Press the plus [+] button or the minus [–] button to correct the display to match the data sheet. Then press the enter button [↵] to save the setting in memory.

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



11 Press the plus [+] button to select YES and then press the enter button [↵].

2-5 Platform Overload System

The platform overload system is designed to prevent the machine from continuing to operate when the load in the platform exceeds maximum rated capacity. Refer to the machine serial label for maximum capacity information.

If maximum platform capacity is exceeded, the alarm will sound at the platform controls and the platform overload indicator lights will flash at both the ground and platform controls. The ground and platform controls will become disabled. Before normal machine operation can continue, the excess load will need to be removed from the platform.

If the excess load cannot be removed or if the operator at the platform controls is unable to correct the overloaded condition, another person at the ground controls can operate the machine using auxiliary power. There will be limited control of boom functions from the ground controls when using auxiliary power. Auxiliary power can be used to correct the overloaded platform condition in order to resume normal, safe operation of the machine.

How to Calibrate the Platform Overload System (if equipped)

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: 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 enter 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 alarm should be off. The platform overload indicator light should be off at the platform controls and there should be no error message on the LCD display at the ground controls. Proceed to step 6.

⊠ Result: The alarm is sounding. The platform overload indicator light is flashing at the platform controls and "PLATFORM OVERLOAD" should be displayed on the LCD screen at the ground controls. 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 alarm should be off. The platform overload indicator light should be off at the platform controls and there should be no error message on the LCD display at the ground controls. 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 alarm should be sounding. The platform overload indicator light should be flashing at the platform controls and "PLATFORM OVERLOAD" should be displayed on the LCD screen at the ground controls. 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.

7 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 alarm should be off. The platform overload indicator light should be off at the platform controls and there should be no error message on the LCD display at the ground controls. 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.

8 Add an additional test weight to the platform: 12 lb / 5.4 kg.

⊙ Result: The alarm should be sounding. The platform overload indicator light should be flashing at the platform controls and "PLATFORM OVERLOAD" should be displayed on the LCD screen at the ground controls. Proceed to step 9.

⊠ Result: The alarm should be off. The platform overload indicator light should be off at the platform controls and there should be no error message on the LCD display at the ground controls. Remove the additional 12 lb / 5.4 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.

9 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should not operate.

10 Turn the key switch to ground control.

11 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should not operate.

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

⊙ Result: The alarm should be off. The platform overload indicator light should be off at the platform controls and there should be no error message on the LCD display at the ground controls.

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

13 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should operate normally.

14 Turn the key switch to platform control.

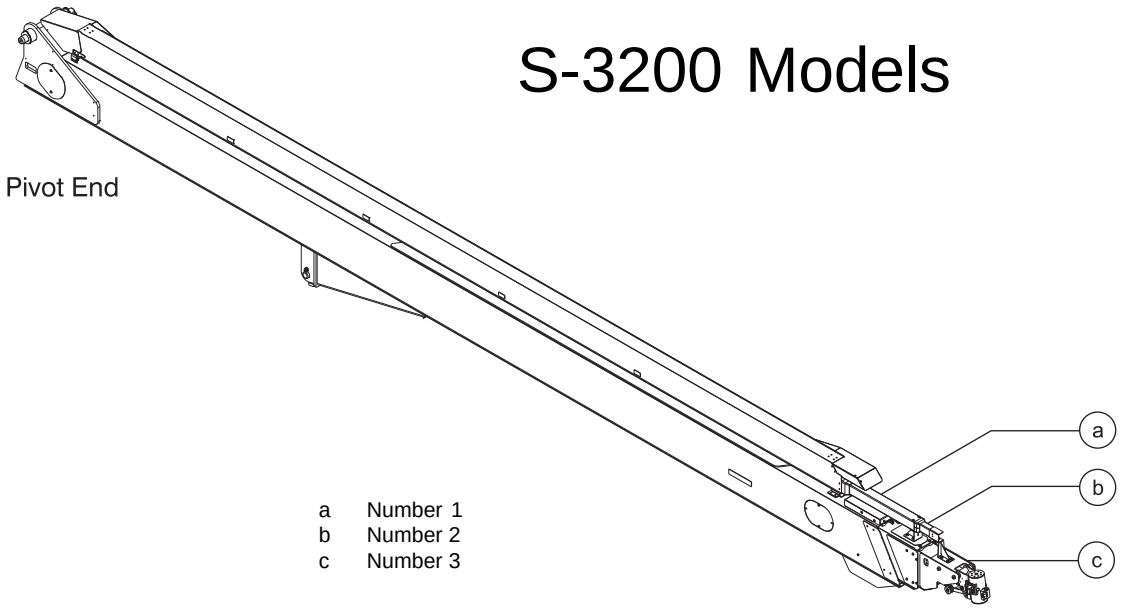
15 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should operate normally.

Boom Components

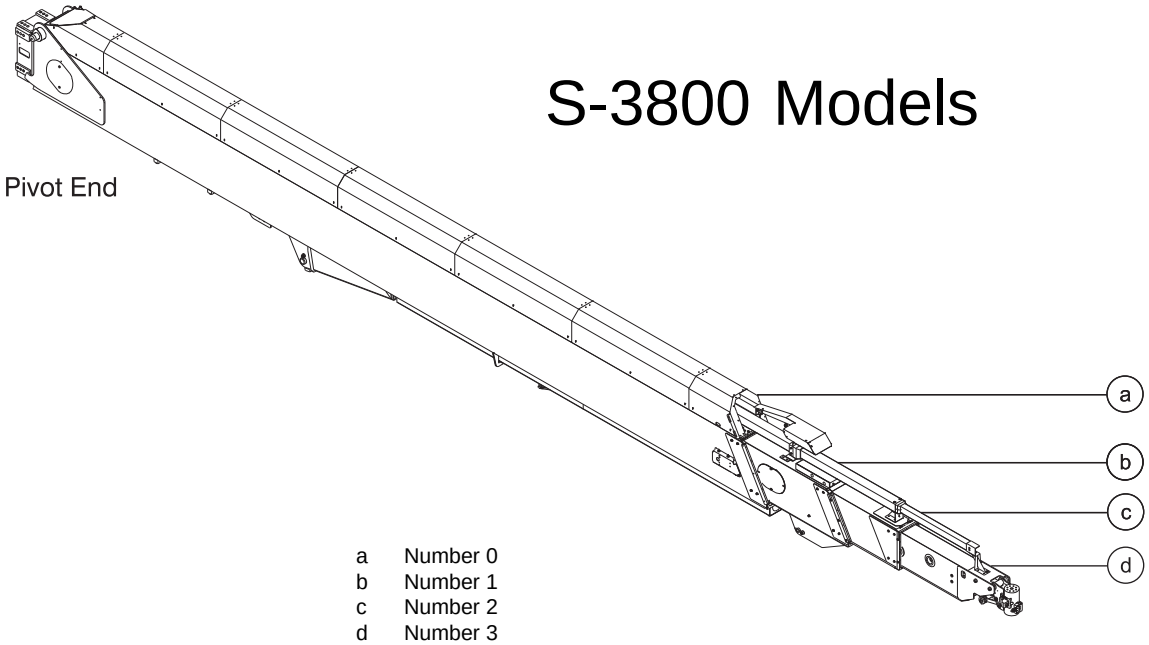
REV A

S-3200 Models



a Number 1
b Number 2
c Number 3

S-3800 Models



a Number 0
b Number 1
c Number 2
d Number 3

4-1
Cable Track

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

How to Remove the Boom Cable Track Assembly

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 Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

Note: Perform this procedure with the boom horizontal.

1 Remove the protective cover from the platform manifold.

2 Remove the cable track assembly end covers from both the pivot and platform end of the machine.

For S-3200 machines proceed to step 4.

3 Using an appropriate overhead lifting device and beginning at the pivot end, remove the cable track covers from the number 0 boom tube.

4 Tag, disconnect and plug the two hydraulic hoses from the boom pull tube to the platform manifold. Secure them to the cable track assembly.

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

5 Tag and disconnect the electrical connectors from the bottom of the control box.

6 Remove the fasteners holding the pull tube to the number 3 boom tube.

7 Remove the fasteners holding the pull tube to the number 2 boom tube.

8 Tag and disconnect the electrical cables located at the platform end of the main cable track tube on the engine side of the machine. These cables include platform controls, limit and proximity switches and work light (if installed).

9 Tag, disconnect and plug the platform manifold hydraulic hoses from the bulkhead at the platform end of the main cable track tube on the engine side of the machine. Cap the fittings.

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

10 Remove the fasteners securing the side tube and horizontal cable track to the main cable track tube located on the engine side of the tube.

11 Lift the side tube (including the cables and hoses disconnected in steps 8 and 9) from the brackets and secure it to the number 0 boom tube (S-3800 machines) or the number 1 boom tube (S-3200 machines).

12 Attach a lifting strap from an overhead crane to the cable track housing assembly connected to the number 1 boom tube.

13 Remove the fasteners holding the assembly to the platform end of the number 1 boom tube.

For S-3800 machines proceed to step 15.

14 Remove the fasteners holding the assembly to the pivot end of the number 1 boom tube.

15 Carefully lift the assembly from the boom and set it on a structure capable of supporting it.

Note: During removal, the overhead crane strap may need to be adjusted for proper balancing.

NOTICE Component damage hazard. Cables, hoses, boom cable tube and cable track can be damaged if they are kinked or pinched.

NOTICE Component damage hazard. The boom cable tube and cable tracks can be damaged if they are twisted.

How to Repair the Boom Cable Track

NOTICE 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 Industries Service Parts Department for each of the cable tracks.
Use part number 62322 which includes a 3-link section for the 60 link cable track; part number 226064 which includes a 4-link section for the 37 link cable track; or 226094 which includes a 4-link section for the 139 link cable track.

1 Visually inspect the cable track and determine which section needs to be replaced.

2 Remove the snap-on cable track spacers.

3 On the metal cable track, remove the external snap rings from the pivot pins at each end of the 3-link or 4-link section to be removed.

4 On the poly cable track, using a hex key, twist and remove the orange fasteners at each end of the 4-link section to be removed.

5 Lift up the hoses and cables and carefully remove the damaged 3-link section of cable track.

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

5 Remove the snap-on spacers from the replacement section of cable track.

6 Lift up the hoses and cables and carefully insert the new 3-link or 4-link section of cable track.

NOTICE 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 pivot pins and external snap rings or orange twist fasteners.

Note: Be sure that the pivot pins are installed from the inside out so the external snap rings or poly buttons are on the outside of the cable track.

8 Install the cable track snap-on spacers.

4-2 Boom

How to Shim the Boom

1 Measure each upper, side and lower wear pad.

Boom wear pad specifications	1/2 inch
Minimum thickness	12.7 mm

Note: If a wear pad is not less than specification, perform the following procedure.

2 Remove the retaining fasteners from the appropriate black plastic boom tube cover at the platform end of the boom. Remove the cover.

3 Extend the boom until the wear pads are accessible.

4 Loosen the wear pad mounting fasteners.

5 Fit as many shims as can be installed by hand.

6 Tighten the mounting fasteners.

7 Remove the boom end cover retaining fasteners at the pivot end of the boom. Remove the boom end cover from the machine.

8 Remove the boom side inspection cover retaining fasteners from the boom at the pivot end of the boom. Remove the boom inspection cover from the machine to access boom 3 wear pads.

9 Loosen the wear pad mounting fasteners.

10 Fit as many shims as can be installed by hand.

11 Tighten the mounting fasteners.

12 Replace the covers.

13 Extend and retract the boom through an entire cycle. Check for tight spots that may cause binding of the 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 on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the platform. See 2-1, *How to Remove the Platform*.

2 Remove the platform rotator. See 2-3, *How to Remove the Platform Rotator*.

3 Remove the cable track. See 4-1, *How to Remove the Boom Cable Track Assembly.*

4 Raise the boom approximately 4 feet / 1.2 m.

5 Attach a lifting strap from an overhead crane to the rod end of the boom lift cylinder.

6 Attach an overhead 10 ton / 10,000 kg crane to the platform end of the boom for support. Do not lift the boom.

7 Remove the boom storage area cover retaining fasteners. Remove the cover from the machine.

8 Place support blocks under the boom lift cylinder.

9 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 lift cylinder may fall when the rod-end pivot pin is removed if the boom lift cylinder is not properly supported by the overhead crane.

⚠WARNING Crushing hazard. The boom may fall when the rod-end pivot pin is removed if the boom is not properly supported by the overhead crane.

10 Carefully raise the boom with the overhead crane until the rod end of the boom lift cylinder can be removed.

11 Carefully lower the rod end of the boom lift cylinder down onto the support blocks.

12 Lower the boom with the overhead crane to a horizontal position.

13 Remove the boom end cover retaining fasteners from the pivot end of the boom. Remove the cover.

14 Locate the cable break limit switch above the primary boom extension cylinder at the pivot end of the boom.

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

16 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.

17 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.

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

19 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.

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

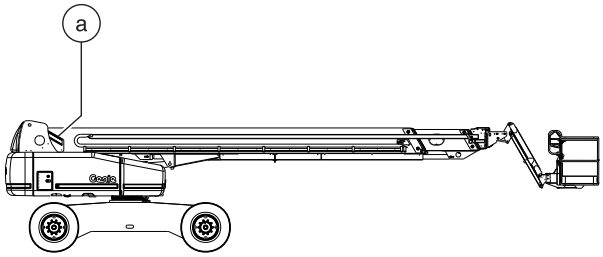
⚠WARNING Crushing hazard. The boom may become unbalanced and fall when it is removed from the machine if it is not properly supported by the overhead cranes.

How to Disassemble the Boom, S-3800 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*.

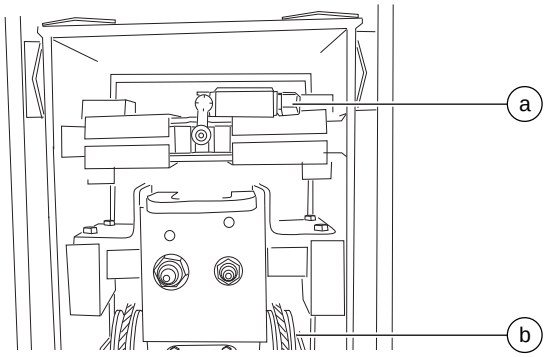
2 Remove the retaining fasteners from the access covers on both sides of the boom at the pivot end. Remove the access covers.



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.



a cable break limit switch
b cable pulley

5 Disconnect the wiring connector from the cable break limit switch.

6 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.

7 Remove the fasteners from the inner cable track mounting bracket at the primary boom extension cylinder.

8 Lay the inner cable track and hoses down and out of the way.

9 Remove the pulley pivot pin retaining fasteners from the number 2 boom tube at the pivot end of the boom.

10 Remove the pulley pivot pins, cable guards and pulleys.

Note: When installing the pulleys, be sure that the side of the pulley with the taller flange is facing the center of the boom tube.

11 Locate the number 3 boom tube extension cable clevis pins on both sides of the number 2 boom tube at the pivot end of the boom.

12 Remove the cotter pin and clevis pin from both cables.

Note: When installing a clevis pin, always replace the cotter pin with a new one.

13 Remove the lower external snap ring and washer from the cable break limit switch actuator pivot pin.

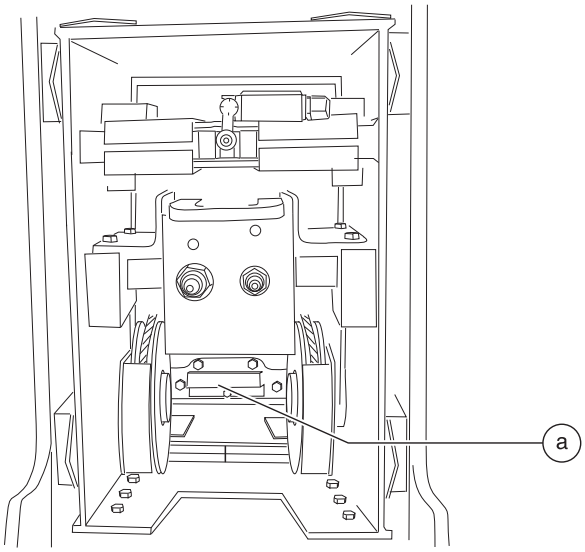
14 Remove the cable break actuator mounting plate retaining fasteners. Remove the lower plate from the machine.

15 Remove the upper plate and actuator pivot pin. Do not remove the cable break limit switch from the mounting plate.

16 Push the cable break actuator and cables towards the platform end of the boom approximately 18 inches / 46 cm.

17 Remove the red cable adjustment locking bracket retaining fasteners. Remove the red locking bracket from the machine.

⚠WARNING Bodily injury hazard. Failure to install the red cable adjustment locking bracket will allow the cable mounting bolts to loosen and fall out which could result in death or serious injury.



a red cable adjustment locking bracket

18 Remove the two cable adjustment bolts.

19 Remove the cable-end block mounting plate fasteners. Remove the cable-end block mounting plate from the machine.

20 Remove the trunnion pin retaining fasteners.

21 Use a slide hammer to remove the trunnion pins from the primary boom extension cylinder.

22 Remove the primary boom extension cylinder hold down brackets at the pivot end of the boom.

23 Attach a lifting strap from an overhead crane to the lifting eye on the primary boom extension cylinder.

24 Support and slide the primary boom extension cylinder out of the boom assembly while guiding the cables out of the boom and place it on a structure capable of supporting it.

⚠WARNING Crushing hazard. The primary boom extension cylinder may become unbalanced and fall when it is removed from the boom if it is not properly supported and attached to the overhead crane.

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

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

25 Remove the retaining fasteners from the limit switch cover on top of the number 2 boom tube at the platform end of the machine.

26 Carefully remove the cover with proximity and limit switches from the top of the number 2 boom tube at the platform end of the boom.

⚠DANGER Tip-over hazard. Failure to install the correct proximity and/or limit switches in the correct location will result in the machine tipping over, resulting in death or serious injury.

27 Tag and disconnect the wiring connectors from the proximity and limit switches at the top of the number 2 boom tube at the platform end of the boom. Do not remove the proximity or limit switches.

28 Remove the retaining fasteners from the limit switch cover on the side of the number 0 boom tube at the platform end of the boom.

29 Carefully remove the cover with proximity and limit switches from the number 0 boom tube at the platform end of the boom.

⚠DANGER Tip-over hazard. Failure to install the correct proximity and/or limit switches in the correct location will result in the machine tipping over, resulting in death or serious injury.

30 Tag and disconnect the wiring connectors from the proximity and limit switches at the ground controls side of the number 0 boom tube at the platform end of the boom. Do not remove the proximity or limit switches.

31 Remove the retaining fasteners from each black plastic boom tube cover at the platform end of the machine. Remove the covers.

32 Remove and label the top and side wear pads of the number 3 boom tube at the pivot end of the boom. Do not remove the bottom wear pads.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

33 Remove and label the top and side wear pads from the number 2 boom tube at the platform end of the boom. Do not remove the bottom wear pads.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

34 Attach a lifting strap from an overhead crane to the number 3 boom tube at the platform end of the boom.

35 Support and slide the number 3 boom tube out of the number 2 boom tube. When the number 3 boom tube is approximately halfway removed, remove the bottom wear pads from the number 2 boom tube at the platform end of the boom.

⚠WARNING Crushing hazard. The number 3 boom tube may become unbalanced and fall when it is removed from the number 2 boom tube if it is not properly supported and attached to the overhead crane.

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

36 Remove and label the top and side wear pads from the number 2 boom tube at the pivot end of the boom. Do not remove the bottom wear pads.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

37 Remove and label the top and side wear pads from the number 1 boom tube at the platform end of the boom. Do not remove the bottom wear pads.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

38 Attach a lifting strap from an overhead crane to the number 2 boom tube at the platform end of the boom.

39 Support and slide the number 2 boom tube out of the number 1 boom tube. When the number 2 boom tube is approximately halfway removed, remove the bottom wear pads from the number 1 boom tube at the platform end of the boom.

⚠WARNING Crushing hazard. The number 2 boom tube may become unbalanced and fall when it is removed from the number 1 boom tube if it is not properly supported and attached to the overhead crane.

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

40 Remove the secondary boom extend cylinder cover retaining fasteners. Remove the covers.

⚠WARNING Bodily injury hazard. Do not operate the machine unless the secondary extend cylinder covers are properly installed. Operating the machine with the covers removed could result in death or serious injury.

41 Tag, disconnect and plug the secondary 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.

42 Support the secondary boom extension cylinder with an overhead crane or other suitable lifting device.

43 Remove the pin retaining fasteners from both the rod-end and barrel-end pivot pins. Do not remove the pins.

44 Use a soft metal drift to remove both pivot pins and remove the secondary boom extension cylinder from the machine while guiding the barrel end of the cylinder out of the boom.

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

NOTICE Component damage hazard. The boom lift cylinder rod can become damaged if the barrel end of the secondary boom extension cylinder is allowed to come in contact with it.

45 Remove and label the top and side wear pads from the number 1 boom tube at the pivot end of the boom. Do not remove the bottom wear pads.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

46 Remove and label the top and side wear pads from the number 0 boom tube at the platform end of the boom. Do not remove the bottom wear pads.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

47 Attach a lifting strap from an overhead crane to the number 1 boom tube at the platform end of the boom.

48 Support and slide the number 1 boom tube out of the number 0 boom tube. When the number 1 boom tube is approximately halfway removed, remove the bottom wear pads from the number 0 boom tube at the platform end of the boom.

⚠WARNING Crushing hazard. The number 1 boom tube may become unbalanced and fall when it is removed from the number 0 boom tube if it is not properly supported and attached to the overhead crane.

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

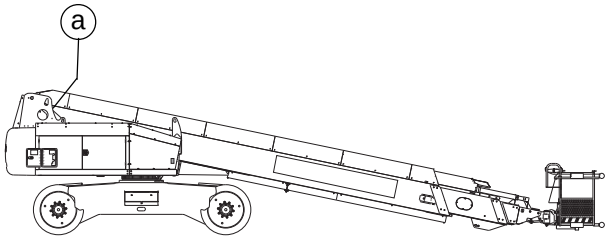
How to Disassemble the Boom, S-3200 Models

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.

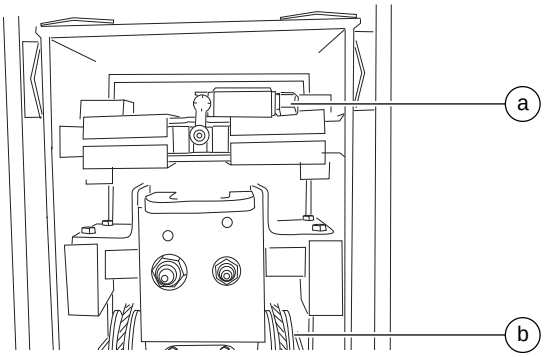
BOOM COMPONENTS REV A



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.



a cable break limit switch
b cable pulley

5 Disconnect the wiring connector from the cable break limit switch.

6 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.

7 Remove the pulley pivot pin retaining fasteners from the number 2 boom tube at the pivot end of the boom.

8 Remove the pulley pivot pins, cable guards and pulleys.

Note: When installing the pulleys, be sure that the side of the pulley with the taller flange is facing the center of the boom tube.

9 Locate the number 3 boom tube extension cable clevis pins on both sides of the number 2 boom tube at the pivot end of the boom.

10 Remove the cotter pin and clevis pin from both cables.

Note: When installing a clevis pin, always replace the cotter pin with a new one.

11 Remove the lower external snap ring and washer from the cable break limit switch actuator pivot pin.

12 Remove the cable break actuator mounting plate retaining fasteners. Remove the lower plate from the machine.

13 Remove the upper plate and actuator pivot pin. Do not remove the cable break limit switch from the mounting plate.

14 Push the cable break actuator and cables towards the platform end of the boom approximately 18 inches / 46 cm.

15 Remove the red cable adjustment locking bracket retaining fasteners. Remove the red locking bracket from the machine.

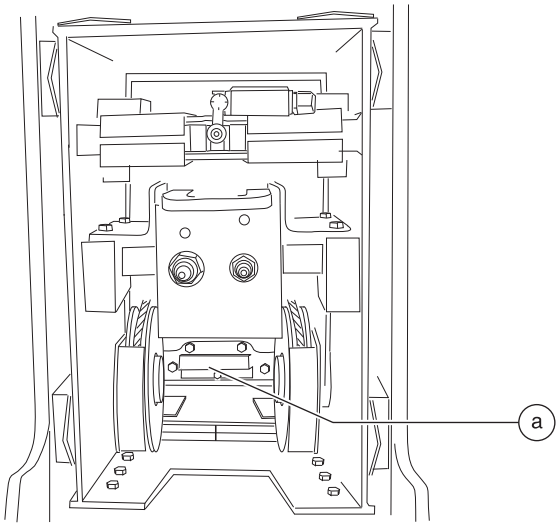
⚠WARNING Bodily injury hazard. Failure to install the red cable adjustment locking bracket will allow the cable mounting bolts to loosen and fall out which could result in death or serious injury.

16 Remove the two cable adjustment bolts.

17 Remove the cable-end block mounting plate fasteners. Remove the cable-end block mounting plate from the machine.

18 Remove the trunnion pin retaining fasteners.

19 Use a slide hammer to remove the trunnion pins from the primary boom extension cylinder.



a red cable adjustment locking bracket

20 Remove the primary boom extension cylinder hold down brackets at the pivot end of the boom.

21 Attach a lifting strap from an overhead crane to the lifting eye on the primary boom extension cylinder.

22 Support and slide the primary boom extension cylinder out of the boom assembly while guiding the cables out of the boom and place it on a structure capable of supporting it.

⚠WARNING Crushing hazard. The primary boom extension cylinder may become unbalanced and fall when it is removed from the boom if it is not properly supported and attached to the overhead crane.

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

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

23 Remove the retaining fasteners from the limit switch cover on top of the number 2 boom tube at the platform end of the machine.

24 Carefully remove the cover with proximity and limit switches from the top of the number 2 boom tube at the platform end of the boom.

⚠DANGER Tip-over hazard. Failure to install the correct proximity and/or limit switches in the correct location will result in the machine tipping over, resulting in death or serious injury.

25 Tag and disconnect the wiring connectors from the proximity and limit switches at the top of the number 2 boom tube at the platform end of the boom. Do not remove the proximity or limit switches.

26 Remove the retaining fasteners from the limit switch cover on the side of the number 1 boom tube at the platform end of the boom.

27 Carefully remove the cover with proximity and limit switches from the number 1 boom tube at the platform end of the boom.

⚠DANGER Tip-over hazard. Failure to install the correct proximity and/or limit switches in the correct location will result in the machine tipping over, resulting in death or serious injury.

28 Tag and disconnect the wiring connectors from the proximity and limit switches at the ground controls side of the number 1 boom tube at the platform end of the boom. Do not remove the proximity or limit switches.

29 Remove the retaining fasteners from each black plastic boom tube cover at the platform end of the machine. Remove the covers.

30 Remove and label the top and side wear pads of the number 3 boom tube at the pivot end of the boom. Do not remove the bottom wear pads.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

31 Remove and label the top and side wear pads from the number 2 boom tube at the platform end of the boom. Do not remove the bottom wear pads.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

32 Attach a lifting strap from an overhead crane to the number 3 boom tube at the platform end of the boom.

33 Support and slide the number 3 boom tube out of the number 2 boom tube. When the number 3 boom tube is approximately halfway removed, remove the bottom wear pads from the number 2 boom tube at the platform end of the boom.

⚠WARNING Crushing hazard. The number 3 boom tube may become unbalanced and fall when it is removed from the number 2 boom tube if it is not properly supported and attached to the overhead crane.

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

34 Remove and label the top and side wear pads from the number 2 boom tube at the pivot end of the boom. Do not remove the bottom wear pads.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

35 Remove and label the top and side wear pads from the number 1 boom tube at the platform end of the boom. Do not remove the bottom wear pads.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

36 Attach a lifting strap from an overhead crane to the number 2 boom tube at the platform end of the boom.

37 Support and slide the number 2 boom tube out of the number 1 boom tube. When the number 2 boom tube is approximately halfway removed, remove the bottom wear pads from the number 1 boom tube at the platform end of the boom.

⚠WARNING Crushing hazard. The number 2 boom tube may become unbalanced and fall when it is removed from the number 1 boom tube if it is not properly supported and attached to the overhead crane.

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

4-3
Boom Lift Cylinder

How to Remove the Boom Lift 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 on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the boom until there is approximately 4 feet / 1.2 m between the turntable and boom rest pad.

2 Attach a lifting strap from an overhead crane or other suitable lifting device to the rod end of the the boom lift cylinder.

3 Attach an overhead 10 ton / 9071 kg crane to the platform end of the boom for support. Do not lift the boom.

4 Remove the boom storage area cover retaining fasteners. Remove the cover from the machine.

5 Place support blocks under the boom lift cylinder.

6 Remove the pin retaining fastener from the boom lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin. Protect the cylinder rod from damage.

⚠WARNING Crushing hazard. The boom lift cylinder may fall when the rod-end pivot pin is removed if the boom lift cylinder is not properly supported by the overhead crane.

⚠WARNING Crushing hazard. The boom may fall when the rod-end pivot pin is removed if the boom is not properly supported by the overhead crane.

7 Carefully raise the boom with the overhead crane until the rod end of the boom lift cylinder can be removed.

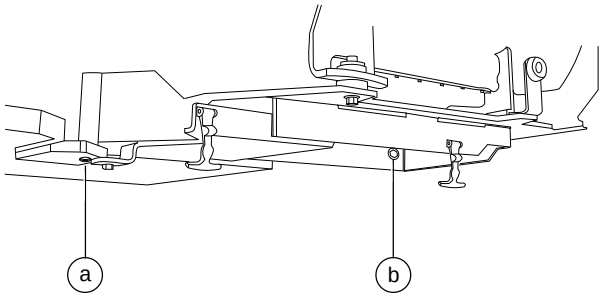
8 Carefully lower the rod end of the boom lift cylinder down onto the support blocks.

9 Carefully raise the boom with the overhead crane until the barrel end of the boom lift cylinder is accessible.

10 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.

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.

4-4
Extension Cylinders

The primary boom extension cylinder is located inside the boom assembly and incorporates cables and pulleys that are responsible for extending the number 2 and 3 boom tubes. The secondary boom extension cylinder (S-3800 models) is located underneath the number 0 boom tube and is responsible for extending the number 1 boom tube. The extension cylinders are equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Primary 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 on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

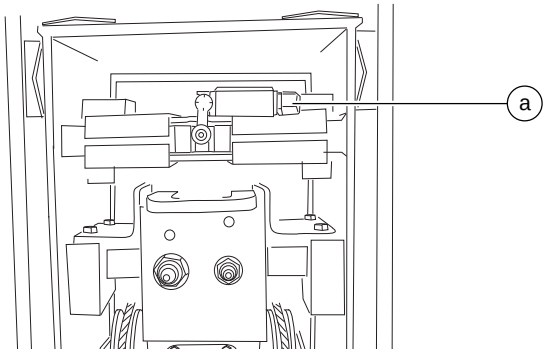
1 Raise the boom to a horizontal position.

2 Remove the retaining fasteners from the boom end cover at the pivot end of the boom. Remove the cover from the machine.

3 Remove the access cover retaining fasteners from both sides of the boom. Remove the access covers.

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

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



a cable break limit switch

6 Disconnect the wiring connector from the cable break limit switch.

7 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.

8 **S-3800 models:** Remove the fasteners from the inner cable track mounting bracket at the primary boom extension cylinder.

9 **S-3800 models:** Lay the inner cable track and hoses down and out of the way.

10 Remove the pulley pivot pin retaining fasteners from the number 2 boom tube at the pivot end of the boom.

11 Remove the pulley pivot pins, cable guards and pulleys.

Note: When installing the pulleys, be sure that the side of the pulley with the shorter flange is facing the inside of the boom tube.

12 Locate the number 3 boom tube extension cable clevis pins on both sides of the number 2 boom tube at the pivot end of the boom.

13 Remove the cotter pin and clevis pin from both cables.

Note: When installing a clevis pin, always replace the cotter pin with a new one.

14 Remove the lower external snap ring and washer from the cable break limit switch actuator pivot pin.

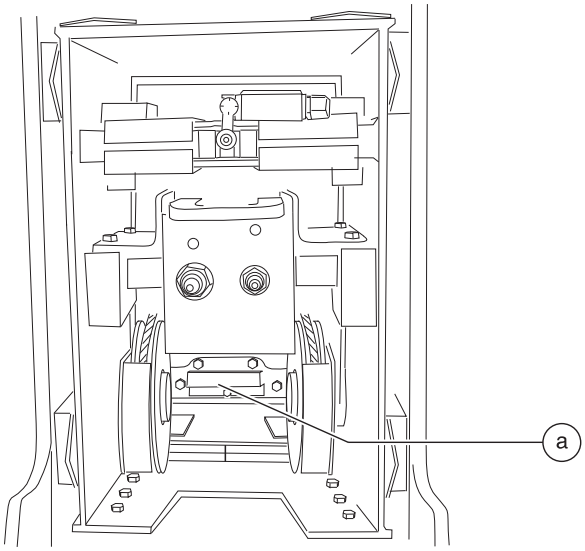
15 Remove the cable break actuator mounting plate retaining fasteners. Remove the lower plate.

16 Remove the upper plate and actuator pivot pin. Do not remove the cable break limit switch from the mounting plate.

17 Push the cable break actuator and cables towards the platform end of the boom approximately 18 inches / 46 cm.

18 Remove the retaining fasteners from the red cable adjustment locking bracket. Remove the red locking bracket.

⚠WARNING Bodily injury hazard. Failure to install the red cable adjustment locking bracket would allow the cable mounting bolts to loosen and fall out which could result in death or serious injury.



a red cable adjustment locking bracket

19 Remove the two cable adjustment bolts.

20 Remove the cable-end block mounting plate fasteners. Remove the cable-end block mounting plate.

21 Remove the trunnion pin retaining fasteners.

22 Use a slide hammer to remove the trunnion pins from the primary boom extension cylinder.

Note: Use a $^{1}/_{2}$-13 bolt thread on each end of the slide hammer.

23 Attach a lifting strap from an overhead crane to the lifting eye on the primary boom extension cylinder.

24 Support and slide the primary boom extension cylinder out of the boom assembly while guiding the cables out of the boom and place it on a structure capable of supporting it.

⚠WARNING Crushing hazard. The primary boom extension cylinder may become unbalanced and fall when it is removed from the boom if it is not properly supported and attached to the overhead crane.

NOTICE Component damage hazard. Cables can be damaged if they are kinked, pinched or snagged during removal.

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

How to Remove the Secondary Boom Extension Cylinder, S-3800 Models

⚠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 on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the boom until the secondary boom extension cylinder barrel-end pivot pin is above the turntable covers.

2 Remove the secondary boom extend cylinder cover retaining fasteners. Remove the covers.

⚠WARNING Bodily injury hazard. Do not operate the machine unless the secondary extend cylinder covers are properly installed. Operating the machine with the covers removed could result in death or serious injury.

3 Tag, disconnect and plug the secondary 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.

4 Support the secondary boom extension cylinder with an overhead crane or other suitable lifing device.

5 Remove the pin retaining fasteners from both the rod-end and barrel-end pivot pins. Do not remove the pins.

6 Protect the boom lift cylinder rod from damage.

7 Use a soft metal drift to remove both pivot pins.

8 Remove the secondary boom extension cylinder from the machine while guiding the barrel end of the cylinder out of the boom.

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

NOTICE Component damage hazard. The boom lift cylinder rod can become damaged if the barrel end of the secondary boom extension cylinder is allowed to come in contact with it.

4-5
Boom Extend/Retract Cables

How to Adjust the Boom Extend/ Retract Cables

Properly adjusted extend/retract cables are essential to safe machine operation. Failure to maintain proper adjustment of the cables could result in unsafe operating conditions and may cause component damage. The boom extend and retract functions should operate smoothly and be free of hesitation, jerking and unusual noise.

Note: A flashlight may be necessary to be able to see the extend/retract cables inside of the boom assembly.

Note: Perform this procedure with the boom fully retracted.

1 Start the engine from the ground controls.

2 Raise the boom to a horizontal position.

3 Stop the engine.

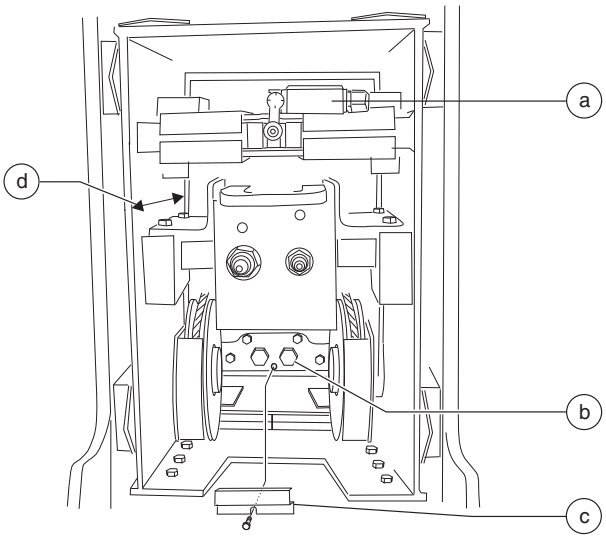
4 Remove the boom end cover from the pivot end of the machine.

5 Locate the red locking bracket (c) covering the cable adjustment bolts at the pivot end of the boom (illustration 1).

6 Remove the retaining fastener from the red locking bracket and remove the bracket from the machine.

7 Locate the retract cable equalizer bolt under the number 1 boom tube at the platform end of the boom assembly (illustration 3).

8 Loosen the nylock (g) and jam nut (h) on the cable tension equalizer bracket. Do not remove the nuts.



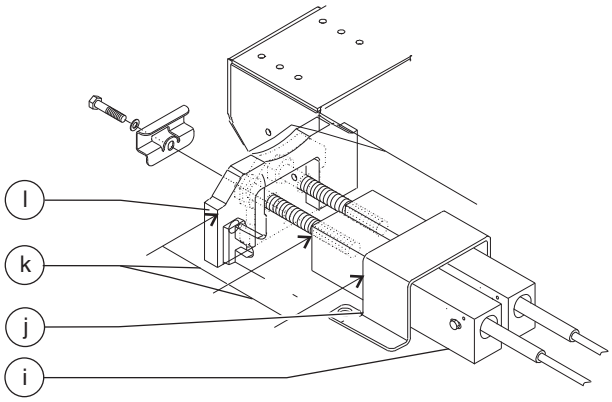
a limit switch
b extend cable adjustment bolts
c red cable adjustment locking bracket
d boom tube distance

Illustration 1

9 At the pivot end of the boom (illustration 1), turn the cable adjustment bolts (b) clockwise to obtain 6 3/4 inches / 17 cm between the end of the number 3 boom tube and the end of the number 2 boom tube (d). As a guide (Illustration 2), the end of the extension cable coupling (i) should be approximately mid-point (k) between the guide plate (l) and the cable retainer bracket (j). Illustration 2 is visible by removing the boom side covers.

Note: Adjust the cable adjustment bolts evenly so the cable break limit switch (a) stays centered in the limit switch actuator (Illustration 1).

Note: If the distance is greater than 6 3/4 inches / 17 cm, loosen the extend cable adjustment bolts and tighten the hex jam nut on the cable tension equalizer bolt until the distance is less than 6 3/4 inches / 17 cm. Loosen the jam nut and repeat step 9.



i extension cable coupling
j cable retainer bracket
k equal distance
l guide plate

Illustration 2

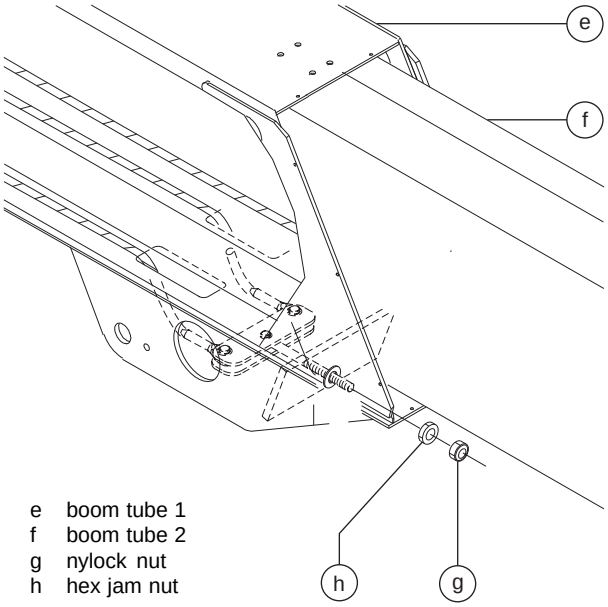
10 At the platform end of the boom, tighten the hex jam nut (h) on the cable tension equalizer bracket located underneath the number 1 boom tube (Illustration 3). Tighten the hex jam nut until it is snug. Do not overtighten.

11 Hold the hex jam nut with a wrench and tighten the nylock nut (g) against the hex jam nut.

12 Re-check that the cable break limit switch is centered in the limit switch actuator. Adjust the extension cable adjustment bolts to center it.

13 At the pivot end of the boom, measure the distance between the end of the number 3 boom tube and the end of the number 2 boom tube.

⊙ Result: The measurement between the end of the number 3 boom tube and the end of the number 2 boom tube should be $6^{3}/_{4}$ to $6^{7}/_{8}$ inches / 17 to 17.5 cm (d).



e boom tube 1
f boom tube 2
g nylock nut
h hex jam nut

Illustration 3

14 Install the red locking bracket over the cable adjustment bolts. A flat edge of each bolt head (b) must be on top for the locking bracket to secure the bolts.

⚠WARNING Bodily injury hazard. Failure to re-install the red cable adjustment locking bracket would allow the cable mounting bolts to loosen and fall out which could result in death or serious injury.

15 Lower the boom to the stowed position.

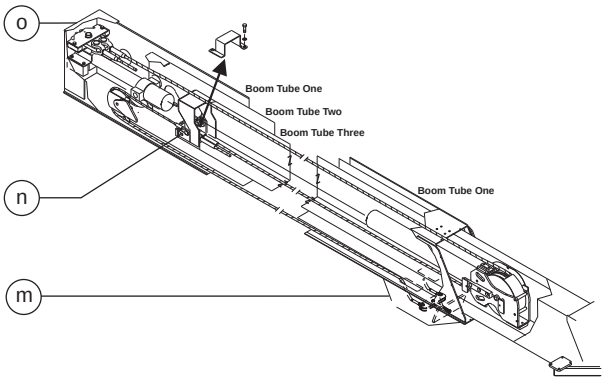
16 Start the engine from the platform controls.

17 Extend the boom approximately 2 feet / 0.6 m.

18 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, repeat the procedure until the number 2 boom moves less than 1/2 inch before the number 3 boom begins to retract.



m figure 3 platform end
n figure 2, boom tube 3
o figure 1, pivot end

Illustration 4

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 Primary Boom Extension Cylinder.*

Boom extend cables:

2 Remove the retaining fasteners that secure the extension cable retainer to the pulley mount. Remove the retainer.

3 Remove the cables from the lower boom extend cable bracket that attaches to the number 3 boom tube.

4 Remove the front and rear fasteners from the anchor bracket that supports the cable anchors. Remove the bracket.

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.

Note: Be sure before installing the extend cables through the boom adjustment coupling that the tall end of the cable anchors are facing down.

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 cables to the lower extend cable bracket that mounts to the number 3 boom tube.

Boom retract cables:

9 Remove the fasteners from the boom retract cables at the platform end of the boom.

10 Attach a rope to one of the boom retract cables at the pivot end of the boom.

11 At the platform end of the boom, pull on the boom retract cable that has the rope attached to it.

12 Pull the old cable completely out of the boom tube. Discard the old boom retract cable.

13 Remove the rope from the old cable and securely attach the rope to the same end of the new boom retract cable.

14 At the pivot end of the boom, carefully pull the rope with the new retract cable attached.

15 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.

16 Repeat steps 11 through 16 for the other boom retract cable.

17 At the platform end of the boom, install the retract cables and fasteners to the adjustment plate.

18 Remove and discard the old boom retract pulleys from the pivot end of the boom extension cylinder.

19 Install the new boom retract pulleys to the pivot end of the boom extension cylinder.

20 Secure the number 2 and number 3 booms together at the platform end with a chain or strap to prevent them from moving.

21 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.

22 Remove the chain or strap from the platform end of the number 2 and number 3 boom tubes.

23 Adjust the boom extend/retract cables. See, *How to Adjust the Boom Extend/Retract Cables.*

Engines

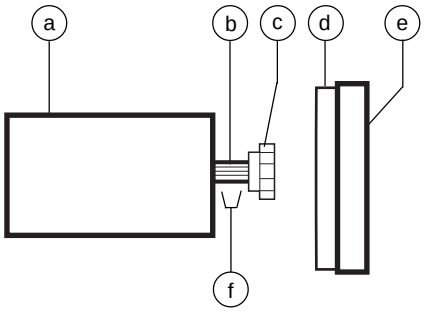
REV A

6-1
RPM Adjustment

Refer to Maintenance Procedure B-12, *Check and Adjust the Engine RPM.*

6-2
Flex Plate

The flex plate couples the engine to the pump. The flex plate is bolted to the engine flywheel and has a cut-out in the center for the pump coupler.



a pump
b pump shaft
c coupler
d flex plate
e flywheel
f Deutz models- .245 inch / 6.2 mm gap
Cummins or Perkins models-
.255 inch / 6.5 mm gap

How to Remove the Flex Plate

1 Disconnect the wiring plug at the electronic proportional controller located on the drive pump.

2 Remove the hose clamp from the air cleaner hose at the air cleaner. Carefully disconnect the hose from the air cleaner.

3 Remove the air cleaner mounting fasteners. Remove the air cleaner from the machine.

4 Remove the fuel filter/water separator retaining fasteners from the pump mounting plate. Do not disconnect the fuel hoses.

5 Remove the fuel filter/water separator and lay it to the side.

6 Support the drive pump assembly with an appropriate lifting device. Then remove all of the pump mounting plate to engine bell housing bolts.

7 Carefully pull the pump away from the engine and secure it from moving.

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

8 Remove the flex plate mounting fasteners, then remove the flex plate from the flywheel.

How to Install the Flex Plate

1 Install the flex plate onto the engine flywheel with the raised spline towards the pump.

2 Apply Loctite® removable thread sealant to the mounting fasteners. Then torque the flex plate mounting bolts in sequence to:
Cummins engines: 23 ft-lbs / 31.2 Nm.
Deutz engines: 28 ft-lbs / 38 Nm.

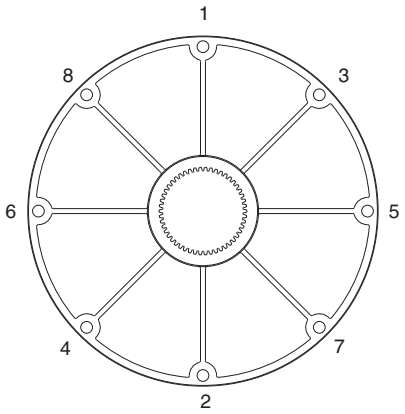
3 Install the pump coupler onto the pump shaft with the set screw toward the pump. Leave the appropriate gap between coupler and pump end plate for your engine.

4 Apply Loctite® removable thread sealant to the pump coupler set screw. Torque the set screw to 61 ft-lbs / 83 Nm.

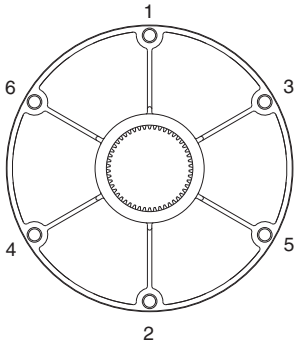
5 Install the bell housing/mounting plate assembly. Apply Loctite® removable thread sealant to the mounting fasteners. Then torque the pump retaining fasteners to:
Cummins engines: 28 ft-lbs / 38 Nm.
Deutz engines: 47 ft-lbs / 63 Nm.

NOTICE Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.

NOTICE Component damage hazard. When installing the pump, do not force the pump coupler into the flexplate or damage to the pump shaft seal may occur.



Cummins Engines



Deutz 2011 Engines

6-3
Oil Pressure and Coolant Temperature Sending Units - Cummins Models

The coolant temperature sending unit is an electrical device. If the coolant temperature reaches 210° F / 99° C, the ECM will shut the engine off to prevent damage and will not start until the coolant temperature drops below 210° F / 99° C. The engine temperature will be shown on the display screen at the ground controls when the key is ON and the Emergency Stop Button is pulled out to the ON position. Use the scroll buttons and scroll to the ENGINE TEMPERATURE screen.

NOTICE Component damage hazard. Do not crank the engine with a water temperature fault shown on the display at the ground controls.

The oil pressure sending unit is an electrical device. If the oil pressure drops below 12 psi / 0.8 bar, the ECM will shut the engine off to prevent damage. The engine oil pressure will be indicated on the display screen at the ground controls while the engine is running. Use the scroll buttons and scroll to the ENGINE OIL PRESSURE screen.

NOTICE Component damage hazard. Do not crank the engine with a low oil pressure fault shown on the display at the ground controls.

6-4
Oil Pressure and Temperature Sending Units - Deutz Models

The engine oil temperature sending unit is an electrical device. If the engine oil temperature reaches 275° F / 135° C, the ECM will shut the engine off to prevent damage and will not start until the engine oil temperature drops below 275° F / 135° C. The engine temperature will be shown on the display screen at the ground controls when the key is ON and the Emergency Stop Button is pulled out to the ON position. Use the scroll buttons and scroll to the Engine Temperature screen.

NOTICE Component damage hazard. Do not crank the engine with a oil temperature fault shown on the display at the ground controls.

The oil pressure sending unit is an electrical device. If the oil pressure drops below 12 psi / 0.8 bar, the ECM will shut the engine off to prevent damage. The engine oil pressure will be indicated on the display screen at the ground controls while the engine is running. Use the scroll buttons and scroll to the Engine Oil Pressure screen.

NOTICE Component damage hazard. Do not crank the engine with a low oil pressure fault shown on the display at the ground controls.

Ground Controls

REV A

The ground control box (TCON) is the communication and operations center for the machine. The ground control box contains two key switches. The key switch towards the top of the control box is for selection of ground or platform controls. The key switch at the bottom of the control box is the Service Bypass key switch. It is used to allow the boom to be raised above 10° with the axles retracted and to correct an out-of-level platform. If the machine trips an envelope safety switch, the operator at the ground controls can turn and hold the Service Bypass key switch in the RECOVER position and the machine will automatically lower the boom to the stowed position in sequence.

The ground control box contains a replaceable membrane decal with touch sensitive buttons for various machine functions. The ground control box also contains two printed circuit boards:

The **LCD (Liquid Crystal Display) circuit board** is mounted to the inside of the control box lid which controls the LCD display screen.

The **ECM circuit board** is the main circuit board for the machine. There are relays on the ECM circuit board that can be replaced. All operating parameters and configuration of options for the machine are stored in the ECM memory.

Note: The ECM circuit board inside the ground control box (TCON) cannot be replaced by itself. If the ECM circuit board is faulty and needs to be replaced, contact the Genie Industries Service Department.

Note: When an ECM circuit board is replaced, the proportional valves will need to be calibrated. See 1-3, *How to Calibrate a Joystick.*

7-1 Circuit Boards

How to Remove the LCD Display Screen Circuit Board

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

2 Remove the platform control box mounting fasteners. Remove the platform control box from the machine.

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

3 Locate the cables that connect to the bottom of the control box. Number each cable and its location at the control box.

4 Disconnect the cables from the bottom of the platform control box.

5 Remove the control cable plug retaining fasteners from the bottom of the platform control box.

6 Remove the platform control box lid fasteners. Open the control box lid.

7 Locate the ECM circuit board mounted to the inside of the platform control box.

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

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

8 Remove the ECM circuit board mounting fasteners.

9 Carefully remove the ECM circuit board from the platform control box.

7-2 Membrane Decal

The membrane decal is a special decal that consists of a decal with an electronic membrane on the backside. The membrane contains touch sensitive areas that, when pushed, activates the machine functions. The membrane buttons activate machine functions similar to toggle switches, but do not have any moving parts.

How to Replace the Membrane Decal

1 Turn the key switch at the ground controls to the OFF position.

2 Push in the Emergency Stop button to the OFF position at both the ground and platform controls.

3 Remove the ground control box lid fasteners. Open the control box lid.

4 Carefully disconnect the two ribbon cables from the membrane decal at the ECM circuit board.

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

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

5 Carefully remove the membrane decal from the control box lid while guiding the ribbon cables out of the control box lid.

6 Remove any decal adhesive from the control box lid with a mild solvent.

Note: Do not allow any solvent to come in contact with the LCD display screen.

7 Install the new membrane decal (Genie part number 50811) while guiding the ribbon cables through the control box lid.

8 Connect the ribbon cables to the ECM circuit board.

9 Close the control box lid and install the retaining fasteners.

7-3 Control Relays

Relays used for single function switching are single pole double throw (SPDT) relays.

How to Test a Single Pole Double Throw Relay

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

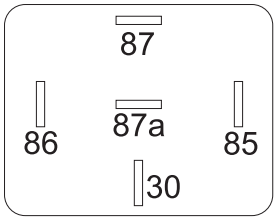
NOTICE Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. Maintain firm contact with a metal part of the machine that is grounded at all times when handling printed circuit boards OR use a grounded wrist strap.

1 Turn the key switch to the OFF position.

2 Open the ground control box and remove the relay to be tested from the ECM circuit board.

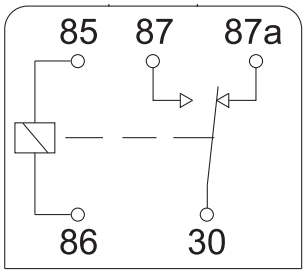
3 Connect the leads from an ohmmeter or continuity tester to each terminal combination and check for continuity. Terminals 85 and 86 represent the coil and should not be tested in any other combination.

Test	Desired result
terminal 85 to 86	85 to 95 Ω
terminal 87 to 87a & 30	no continuity (infinite Ω)
terminal 87a to 30	continuity (zero Ω)



4 Connect 12V DC to terminal 85 and a ground wire to terminal 86, then test the following terminal combinations.

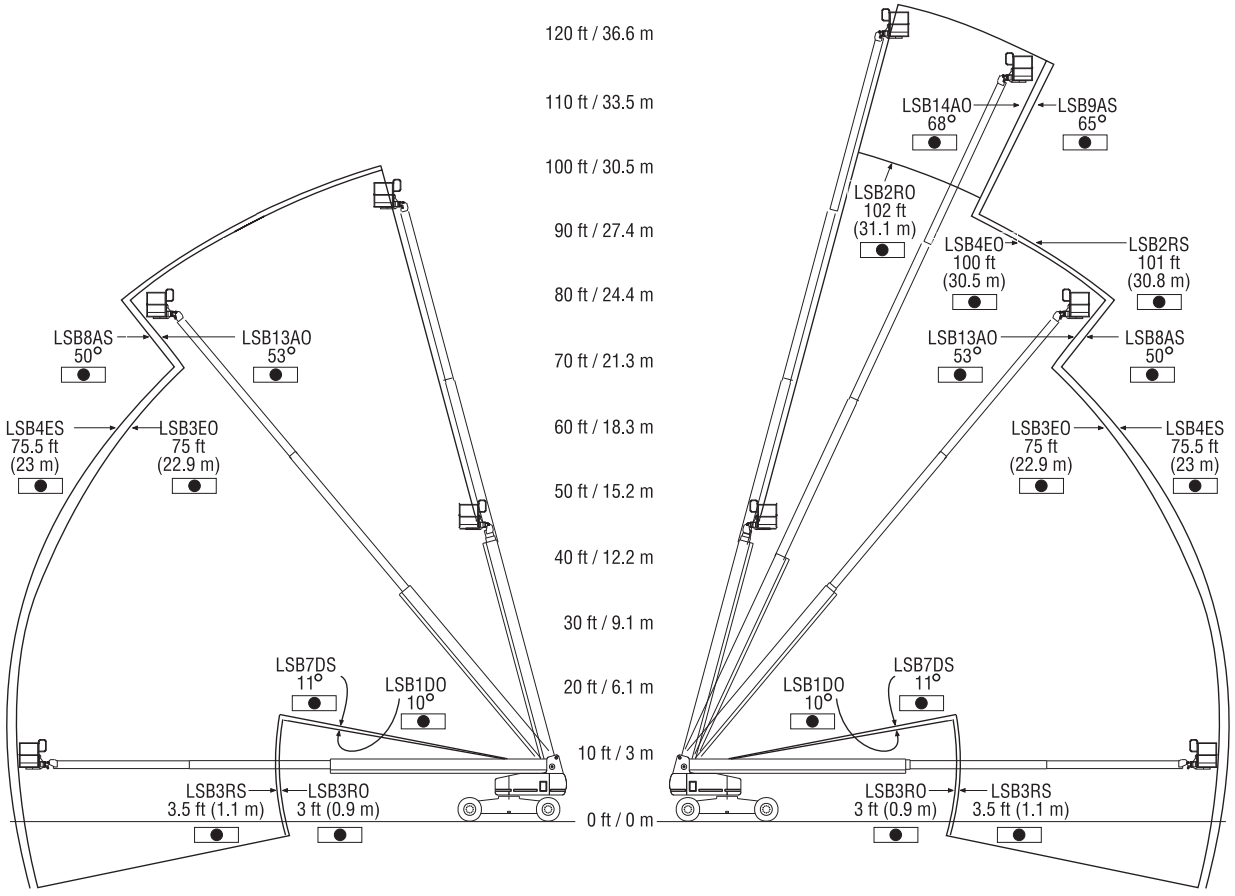
Test	Desired result
terminal 87 to 87a	no continuity (infinite Ω)
terminal 87a to 30	no continuity (infinite Ω)
terminal 87 to 30	continuity (zero Ω)



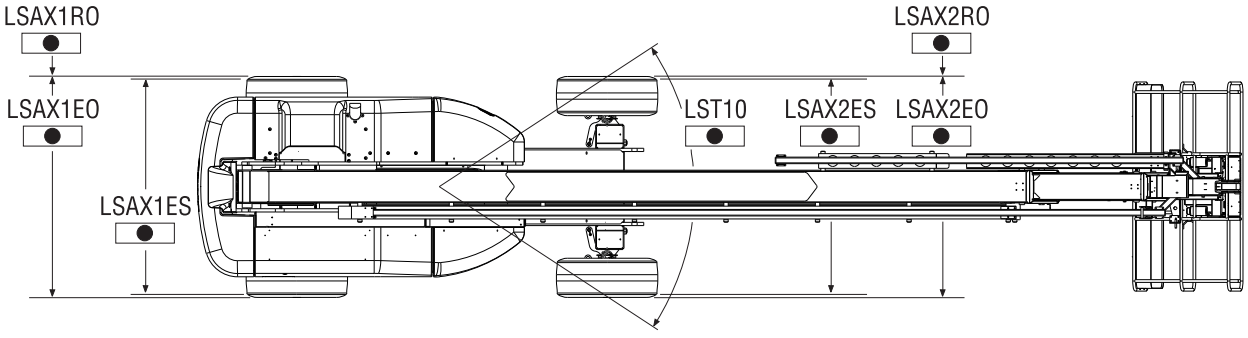
Control Relay Schematic

Limit Switches

REV A



S-3200 Models **S-3800 Models**



8-1
Limit Switches

How to Test the Limit Switches

There are 2 types of limit switches: Mechanical (roller arm) and proximity. Mechanical limit switches are activated by a part of the machine physically moving the roller arm of the switch. Proximity switches are a magnetic type of switch and are activated by the close presence of a ferrous metal.

Mechanical Operational Limit Switch:

1 Manually activate the limit switch.

⊙ Result: The limit switch arm should move freely and spring return to center. A distinct click should be felt and heard.

2 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	continuity (zero 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)

3 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.

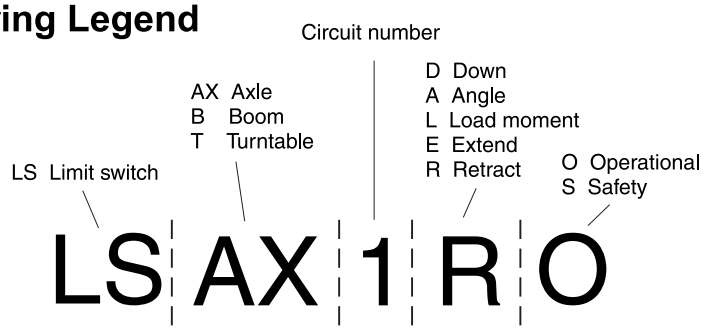
terminal 1 to 2	no continuity (infinite Ω)
terminal 3 to 4	continuity (zero Ω)
terminal 1 to 3 and 4	no continuity (infinite Ω)
terminal 2 to 3 and 4	no continuity (infinite Ω)

Mechanical Safety Limit 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 1 to 2	continuity (zero Ω)
terminal 3 to 4	continuity (zero 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)

Numbering Legend



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.

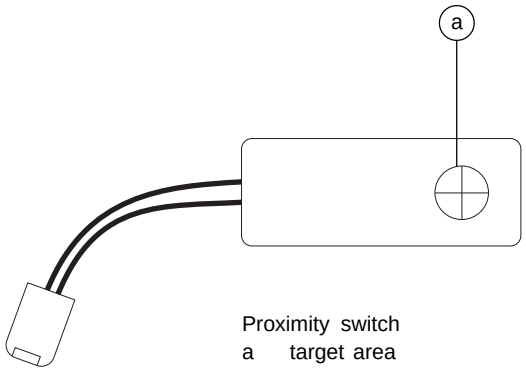
terminal 1 to 2	no continuity (infinite Ω)
terminal 3 to 4	no continuity (infinite Ω)
terminal 1 to 3 and 4	no continuity (infinite Ω)
terminal 2 to 3 and 4	no continuity (infinite Ω)
terminal 5 to 6	no continuity (infinite Ω)

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.

S-3800 models:

3 Raise boom until the protractor reads 67.5 degrees.

4 Loosen the mounting fasteners from the 68 degree proximity switch (LSB14AO).

5 Disconnect the Deutsch connector from the 68 degree proximity switch (LSB14AO) and connect an ohmmeter or continuity tester to terminals 3 and 4 of the deutsch connector.

6 Adjust LSB14AO until the switch contacts just open. While observing the digital protractor, raise the boom until the switch contacts close, then lower the boom until the switch contacts open. Repeat the process until the switch contacts open between 67.5 and 68 degrees.

7 Tighten the 68 degree proximity switch (LSB14AO) mounting fasteners.

8 Lower the boom to 65.3 degrees.

9 Loosen the mounting fasteners from the 65 degree safety switch (LSB9AS).

10 Disconnect the Deutsch connector from the 65 degree safety switch (LSB9AS) and connect an ohmmeter or continuity tester to terminals 1 and 2, and to terminals 3 and 4 of the deutsch connector.

11 Adjust LSB9AS until the switch contacts just open. While observing the digital protractor, raise the boom until the switch contacts close, then lower the boom until the switch contacts open. Repeat the process until the switch contacts open between 65 and 65.5 degrees.

12 Tighten the 65 degree safety switch mounting fasteners.

13 Lower the boom to 52.5 degrees.

14 **S-3200 models:** Raise the boom to 52.5 degrees.

15 Loosen the mounting fasteners from the 53 degree proximity switch (LSB13AO).

16 Disconnect the Deutsch connector from the 53 degree proximity switch (LSB13AO) and connect an ohmmeter or continuity tester to terminals 3 and 4 of the Deutsch connector.

17 Adjust LSB13AO until the switch contacts just open. While observing the digital protractor, raise the boom until the switch contacts close, then lower the boom until the switch contacts open. Repeat the process until the switch contacts open between 52.5 and 53 degrees.

18 Tighten the 53 degree limit switch mounting fasteners.

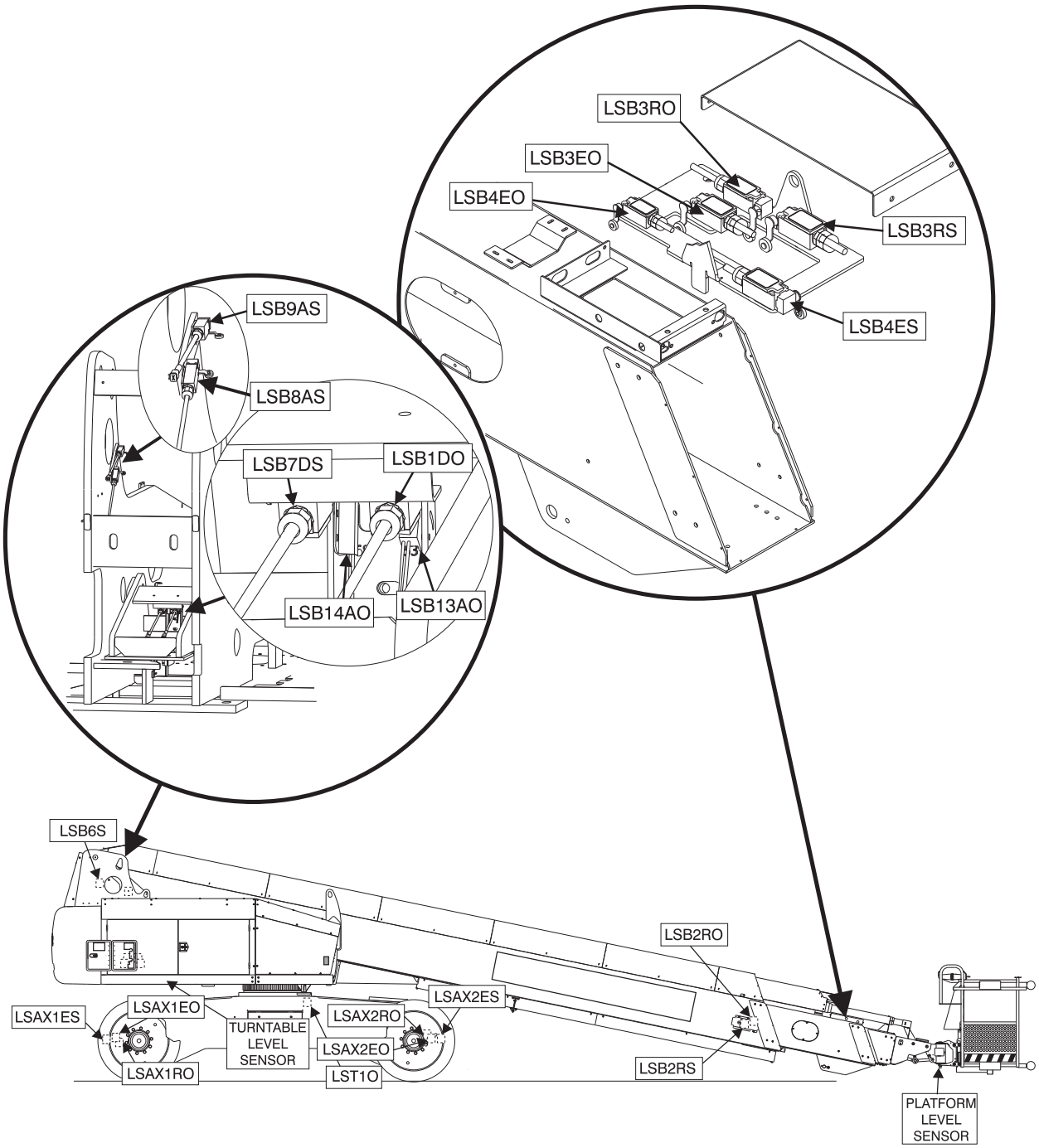
19 Lower the boom to 50.3 degrees.

20 Loosen the mounting fasteners from the 50 degree safety switch (LSB8AS).

21 Disconnect the Deutsch connector from the 50 degree safety switch (LSB8AS) and connect an ohmmeter or continuity tester to terminals 1 and 2, and to 3 and 4 of the Deutsch connector.

22 Adjust LSB8AS until the switch contacts just open. While observing the digital protractor, raise the boom until the switch contacts close, then lower the boom until the switch contacts open. Repeat the process until the switch contacts open between 50 and 50.5 degrees.

8-2
Limit Switch and Level Sensor Locations



Located under the drive chassis end cover at the center of the square end (blue): **LSAX1RO**, **LSAX1EO**, **LSAX1ES**

Located under the drive chassis end cover at the center of the round end (yellow): **LSAX2RO**, **LSAX2EO**, **LSAX2ES**

Located in the center of the swing chassis: **LST1O**

Located on the hydraulic tank tray: **Turntable Level Sensor**

Located on the inside of the swing chassis bulkhead at the counterweight end: **LSB9AS, LSB8AS**

Located at the counterweight end of Boom tube 0: **LSB6S**

Located on the counterweight side of the lift cylinder support assembly: **LSB1DO**, **LSB7DS**, **LSB13AO**, **LSB14AO**

Located on the outside of the platform end of Boom tube 0: **LSB2RO**, **LSB2RS**

Located on the top of the platform end of Boom tube 1: **LSB3EO**, **LSB3RS**, **LSB3RO**, **LSB2RO**, **LSB4ES**

Located on the platform rotator: **Platform Level Sensor**

8-3 Limit Switch Functions

LSAX1RO: Operational Limit Switch, Front Axle, Retract. This switch activates when the axle is fully retracted, activating axle retracted LED and shutting off power to axle retract coils after two seconds.

LSAX2RO: Operational Limit Switch, Rear Axle, Retract. This switch activates when the axle is fully retracted, activating axle retracted LED and shutting off power to axle retract coils after two seconds.

LSAX1EO: Operational Limit Switch, Front Axle, Extend. This switch is activated when the axle is fully extended. If this switch is not activated, boom functions are restricted to the stowed range. If unit is out of stowed, all boom functions are disabled. Axle can be extended while driving to recover.

LSAX2EO: Operational Limit Switch, Rear Axle, Extend. This switch is activated when the axle is fully extended. If this switch is not activated, boom functions are restricted to the stowed range. If unit is out of stowed, all boom functions are disabled. Axle can be extended while driving to recover.

LSAX1ES: Safety Limit Switch, Front Axle, Extend. If this switch is tripped, then the axle is not fully extended. In this condition, if unit is out of stowed, power is cut to boom up, boom extend and axle retract.

LSAX2ES: Safety Limit Switch, Rear Axle, Extend. If this switch is tripped, then the axle is not fully extended. In this condition, if unit is out of stowed, power is cut to boom up, boom extend and axle retract.

LSB6S: Safety Limit Switch, Cable Tension. Cuts power to the extend directional valve if extend cables are out of adjustment or one breaks.

LSB1DO: Operational Limit Switch, 10^{O} Angle. This switch activates anytime the boom is raised above 10^{O}. If axles are not extended, boom up is disabled and the extend axle LED and icon will flash as long as boom up is operated. At this point, if axles are extended, the motors are shifted to low and drive speed is limited to 0.7 mph.

LSB7DS: Safety Limit Switch, 11^{O} Angle. If axles are not extended, this switch is activated when boom is raised to 11^{O}, cutting power to boom up and axle retract.

LSB13AO: Operational Limit Switch, 53^{O} Angle. This switch activates at 53^{O} boom angle, allowing the boom to be extended beyond 75 feet. If the boom is lowered past this switch when the boom is beyond 75 feet, boom extend and boom down are disabled. The retract boom LED and icon and alarm will flash as long as boom down is operated.

LSB8AS: Safety Limit Switch, 50^{O} Angle. This switch cuts power to boom extend, boom down and the engine fuel solenoid when it is mechanically activated at 50^{O} if the boom length is more than 75.5 feet.

LSB14AO: Operational Limit Switch, 68^{O} Angle. This switch is activated at 68^{O} boom angle and allows the boom to be extended beyond 100 feet. If the boom is lowered past this switch when extended beyond 100 feet, boom extend and boom down are disabled. The boom retract LED and icon and alarm will flash as long as boom down is operated.

LSB9AS: Safety Limit Switch, 65^{O} Angle. This switch cuts power to boom extend, boom down and the engine fuel solenoid when it is mechanically activated at 65^{O} if the boom length is more than 101 feet.

LSB3RO: Operational Limit Switch, 3' Extend. This switch activates anytime the boom is extended beyond 3 feet. If axles are not extended, boom extend is disabled and the extend axle LED and icon will flash as long as boom extend is operated. If axles are extended at this point, the motors are shifted to low and drive speed is limited to 0.7 mph. The boom up/down speed and turntable rotate speed are limited to 60% of maximum.

LSB3RS: Safety Limit Switch, 3.5' Extend. If axles are not extended, this switch is activated when the boom is extended beyond 3.5 feet, cutting power to boom extend and axle retract.

LSB3EO: Operational Limit Switch, 75' Extend. This switch activates anytime the boom is extended to 75 feet or beyond. At this point drive speed is reduced to 0.4 mph, boom up/down is reduced to 29% of maximum and turntable rotate is reduced to 40% of maximum. If boom angle is less than 53^{O}, then boom extend is disabled and the raise boom LED and icon and alarm will flash as long as boom extend is operated.

LSB4ES: Safety Limit Switch, 75.5' Extend. This switch cuts power to boom extend, boom down and engine fuel solenoid when it is mechanically activated at 75.5 feet, if boom angle is less than 50^{O}.

LSB4EO: Operational Limit Switch, 100' Extend. This switch activates anytime the boom is extended to 100 feet or beyond. The boom up/down is reduced to 20% of maximum. If boom angle is less than 68^{O}, then boom extend is disabled and the raise boom LED and icon and alarm will flash as long as boom extend is operated. If boom angle is greater than 65^{O}, the BO lockout valve will activate allowing hydraulic flow to the external cylinder to continue to extend to 120 feet.

LIMIT SWITCHES REV A

LSB2RS: Safety Limit Switch, 101' Extend. This switch cuts power to boom extend, boom down and engine fuel solenoid when it is mechanically activated at 101 feet, if boom angle is less than 65^{O}.

LSB2RO: Operational Limit Switch, 100' Retract. This switch is activated anytime boom length is 100' or less. Anytime the boom is being retracted while this switch is activated, the BN lockout valve is activated allowing hydraulic flow out of the inner cylinder.

LST1O: Operational Limit Switch, Drive Enable. This switch is activated when the turntable is rotated in the standard drive zone.

Turntable Level Sensor: Measures the X axis and Y axis of the turntable. The alarm sounds at 4.5^{O}.

Platform Level Sensor: Measures the angle of the platform. The range of measurement is +/- 20^{O}. The safety cutout is set at +/- 10^{O} from gravity and will disable the primary and secondary boom up/down functions and the platform level up/down functions.

Hydraulic Pumps

REV A

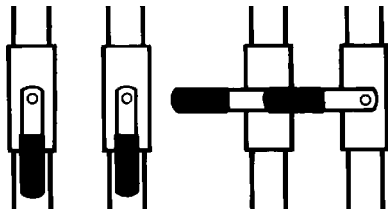
9-1 Function Pumps

There are three hydraulic pumps connected to the engine. There is one variable displacement pump that is used for drive functions and two fixed displacement pumps attached to the drive pump that are used for all other machine functions.

How to Remove the Function Pumps

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 Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Close the two hydraulic tank valves located at the hydraulic tank.



open closed

NOTICE Component damage hazard. The engine must not be started with the hydraulic tank shutoff 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 hydraulic hoses from the function pumps. Cap the fittings on the pumps.

⚠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 Support the function pumps with an overhead crane or other suitable lifing device.

4 Remove the pump mounting bolts. Carefully remove the pumps.

⚠WARNING Crushing hazard. The function pumps may become unbalanced and fall when the mounting bolts are removed if they are not properly supported.

NOTICE Component damage hazard.
Be sure to open the two hydraulic tank valves and prime the pumps after installing the pumps.
See 9-2, *How to Prime the Pumps.*

9-2
Drive Pump

The drive pump is a bi-directional variable displacement piston pump. The pump output is controlled by the electronic displacement controller (EDC), 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 Sundstrand-Sauer service center. Call the Genie Industries Service Department to locate your local authorized service center.

How to Remove the Drive Pump

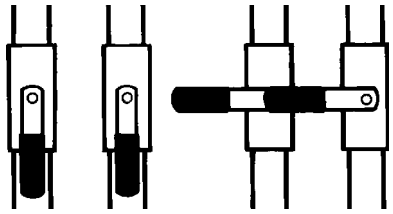
NOTICE Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system and cause severe component damage. Dealer service is recommended.

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 Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the function pumps. See *How to Remove the Function Pumps.*

2 Disconnect the electrical connection at the electronic displacement controller (EDC) located on the drive pump.

3 Close the two hydraulic tank valves located at the hydraulic tank.



open closed

NOTICE Component damage hazard. The engine must not be started with the hydraulic tank shutoff 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.

4 Tag, disconnect and plug the hydraulic hoses from the drive pump. Cap the fittings on the pump.

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

5 Support the drive pump with a suitable lifting device and remove the two drive pump mounting fasteners.

6 Carefully pull the drive pump out until the pump coupler separates from the flex plate.

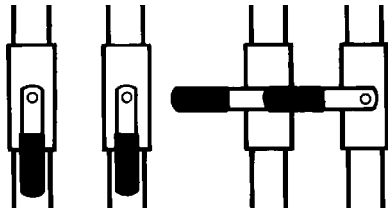
7 Remove the drive pump from the machine.

NOTICE Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the pump.

Note: Before installing the pump, verify proper pump coupler spacing. Refer to the appropriate flex plate installation instructions for your engine.

How to Prime the Pumps

NOTICE Component damage hazard. Be sure that the hydraulic tank shutoff valves are in the OPEN position before priming the pump. The engine must not be started with the hydraulic tank shutoff valves in the CLOSED position or component damage will occur.

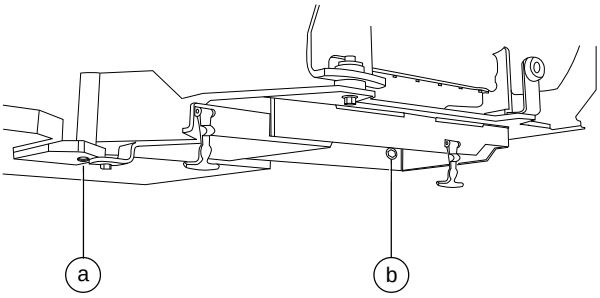


open closed

1 Connect a 0 to 600 psi (0 to 41 bar) pressure gauge to one of the test ports located under the drive pump.

Cummins models:

2 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine to access the fuel injection pump.



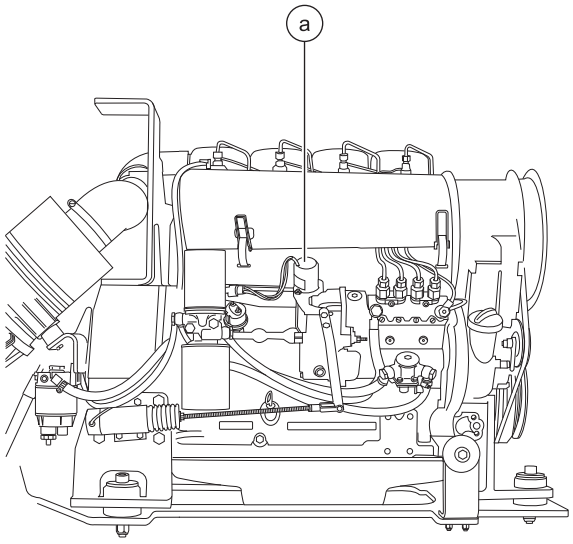
a engine pivot plate anchor hole
b engine pivot plate retaining fastener

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

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

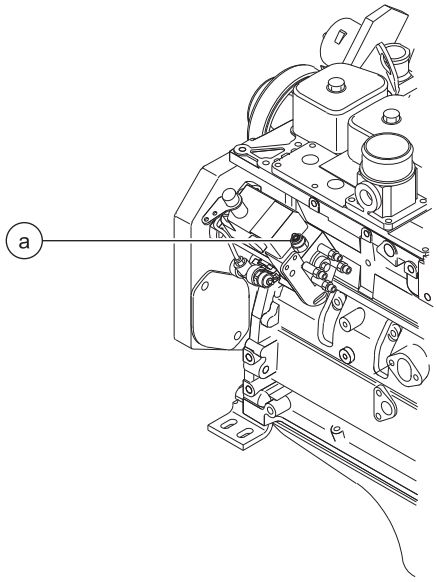
⚠WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate anchor hole to secure it from moving could result in death or serious injury.

5 **Deutz models:** Disconnect the engine wiring harness from the fuel shutoff solenoid at the injector pump.



Deutz models
a fuel shutoff solenoid

Cummins and Perkins models: Disconnect the wire from the fuel shutoff solenoid at the injector pump.



Cummins models
a fuel shutoff solenoi

6 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 250 psi / 17.2 bar.

⚠WARNING Bodily injury hazard. Keep hands, loose clothing and hair clear of all moving engine parts while the engine is cranking.

7 **Deutz models:** Connect the engine wiring harness to the fuel shutoff solenoid at the injector pump.

Cummins and Perkins models: Connect the wire to the fuel shutoff solenoid at the injector pump.

8 Start the engine and check for hydraulic leaks.

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 Section Two, *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.

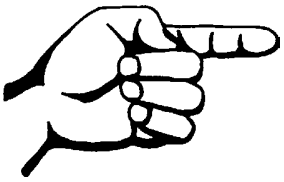
How to Remove the Auxiliary Pump

1 Open the ground controls side turntable cover.

2 Tag, disconnect and plug the hydraulic hoses from the pumps.

3 Remove the pump mounting fasteners and remove the pump from the pump motor.

REV A



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REV A

Manifolds

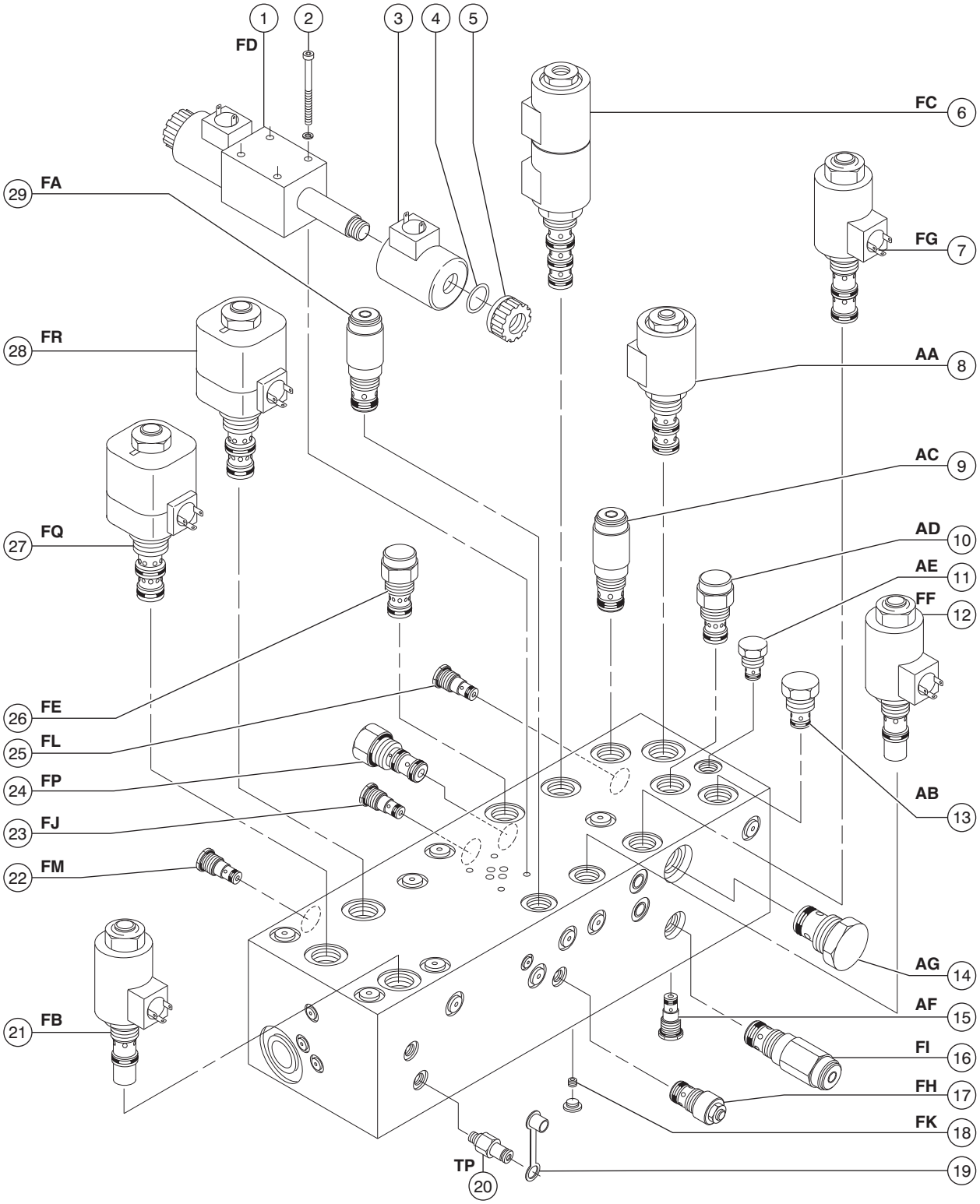
10-1
Function Manifold Components, S-3200 Models

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	FD	Boom up/down	30-35 in-lbs / 3-4 Nm
6	Solenoid Valve, 3 position 4 way	FC	Turntable rotate control, left/right	25-27 ft-lbs / 34-37 Nm
7	Proportional Solenoid Valve	FG	Turntable rotate, proportional speed control	18-20 ft-lbs / 25-27 Nm
8	Solenoid Valve, 2 position 3 way	AA	Auxiliary drive/steer selector	25-27 ft-lbs / 34-37 Nm
9	Relief Valve, 3000 psi / 206.8 bar	AC	Platform manifold pressure limit	18-20 ft-lbs / 24-27 Nm
10	Flow Regulator Valve, 3 gpm / 11.36 L/min	AD	Priority flow to platform	25-27 ft-lbs / 34-37 Nm
11	Check Valve, 5 psi / 0.34 bar	AE	Blocks flow from pump 2 to auxiliary pump	12-14 ft-lbs / 16.3-19 Nm
12	Proportional Solenoid Valve, N.C.	FF	Primary lift, proportional valve speed control	33-37 ft-lbs / 45-50 Nm
13	Check Valve, 10 psi / 0.69 bar	AB	Blocks flow from pump 1 and 2 to auxiliary pump	18-20 ft-lbs / 24.5-27.2 Nm
14	Check Valve	AG	Blocks flow from auxiliary pump, port 2A to pump 1	33-37 ft-lbs / 45-50 Nm
15	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

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MANIFOLDS REV A

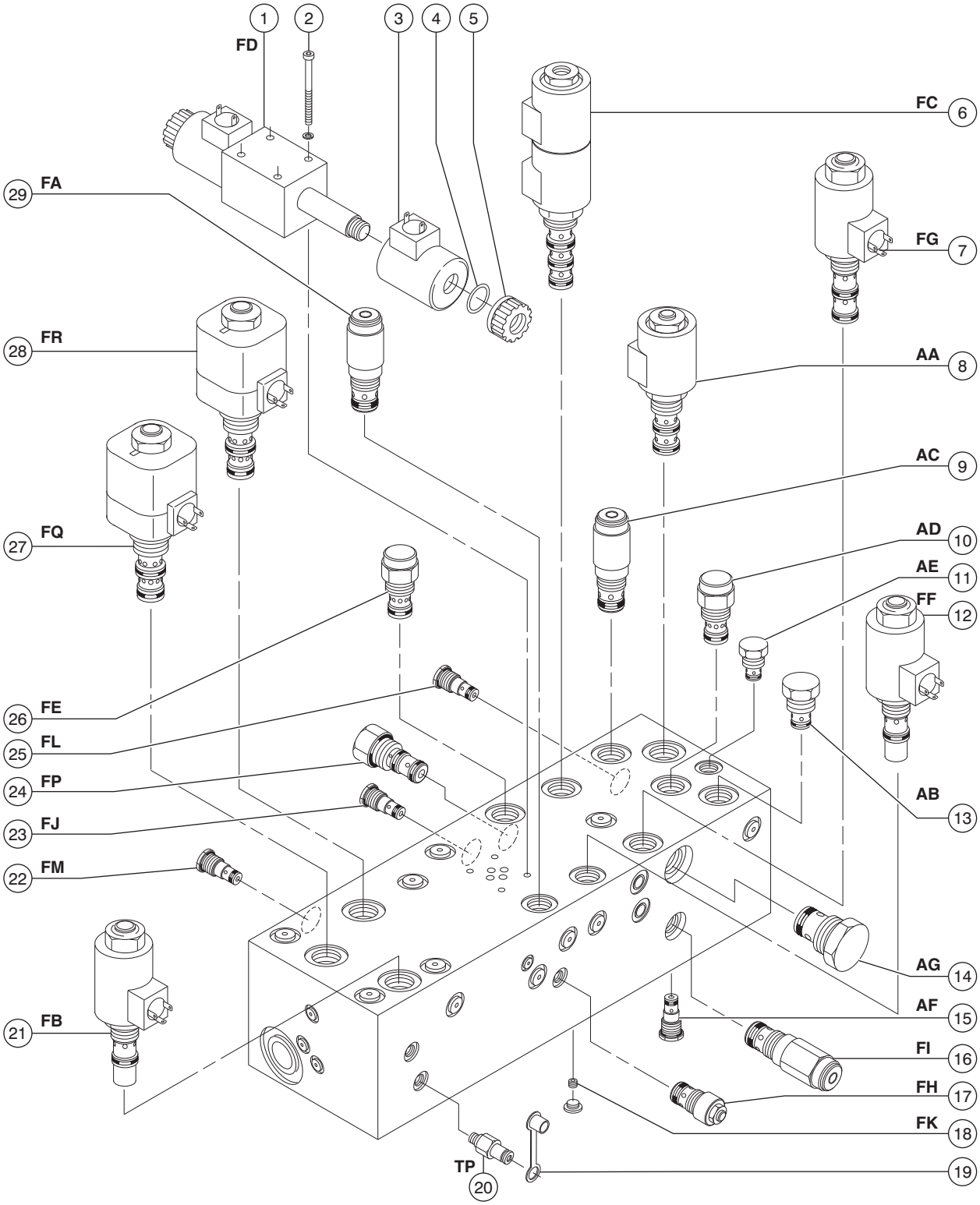


Function Manifold Components, S-3200 Models, continued

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

Index No.	Description	Schematic Item	Function	Torque
16	Relief Valve, 2600 psi / 179.3 bar	FI	Turntable, primary lift and boom retract pressure limit	25-27 ft-lbs / 34-37 Nm
17	Counterbalance Valve, 3200 psi / 220.6 bar	FH	Primary lift, load holding	30-35 ft-lbs / 38-41 Nm
18	Orifice Plug, 0.040 inch / 1.016 mm	FK	Differential sensing damping	
20	Diagnostic Nipple	TP	Testing	
21	Proportional Valve	FB	Boom extend/retract solenoid valve proportional speed control	33-37 ft-lbs / 45-50 Nm
22	Check Valve, 5 psi / 0.34 bar	FM	Extension cylinder load sense check	12-14 ft-lbs / 16.3-19 Nm
23	Check Valve, 5 psi / 0.34 bar	FJ	Primary lift load sense check	12-14 ft-lbs / 16.3-19 Nm
24	Differential Sensing Valve, 110 psi / 7.58 bar	FP	Directs flow to functions	25-27 ft-lbs / 34-37 Nm
25	Check Valve, 5 psi / 0.34 bar	FL	Extension cylinder load sense check	12-14 ft-lbs / 16.3-19 Nm
26	Flow Regulator Valve, 0.1 gpm / 0.38 L/min	FE	Bleeds off differential sensing valve to tank	18-20 ft-lbs / 24.5-27.2 Nm
27	Solenoid Valve, 2 position 3 way	FQ	Boom retract control	52-60 ft-lbs / 71-82 Nm
28	Solenoid Valve, 2 position 3 way	FR	Boom extend control	52-60 ft-lbs / 71-82 Nm
29	Relief Valve, 1800 psi / 124.1 bar	FA	Boom extend pressure limit	18-20 ft-lbs / 24.5-27.2 Nm

MANIFOLDS REV A



10-2
Valve Adjustments - Function Manifold, S-3200 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 Section 2, *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 Section 2, *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.

10-3
Proportional Valves - Function 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.*

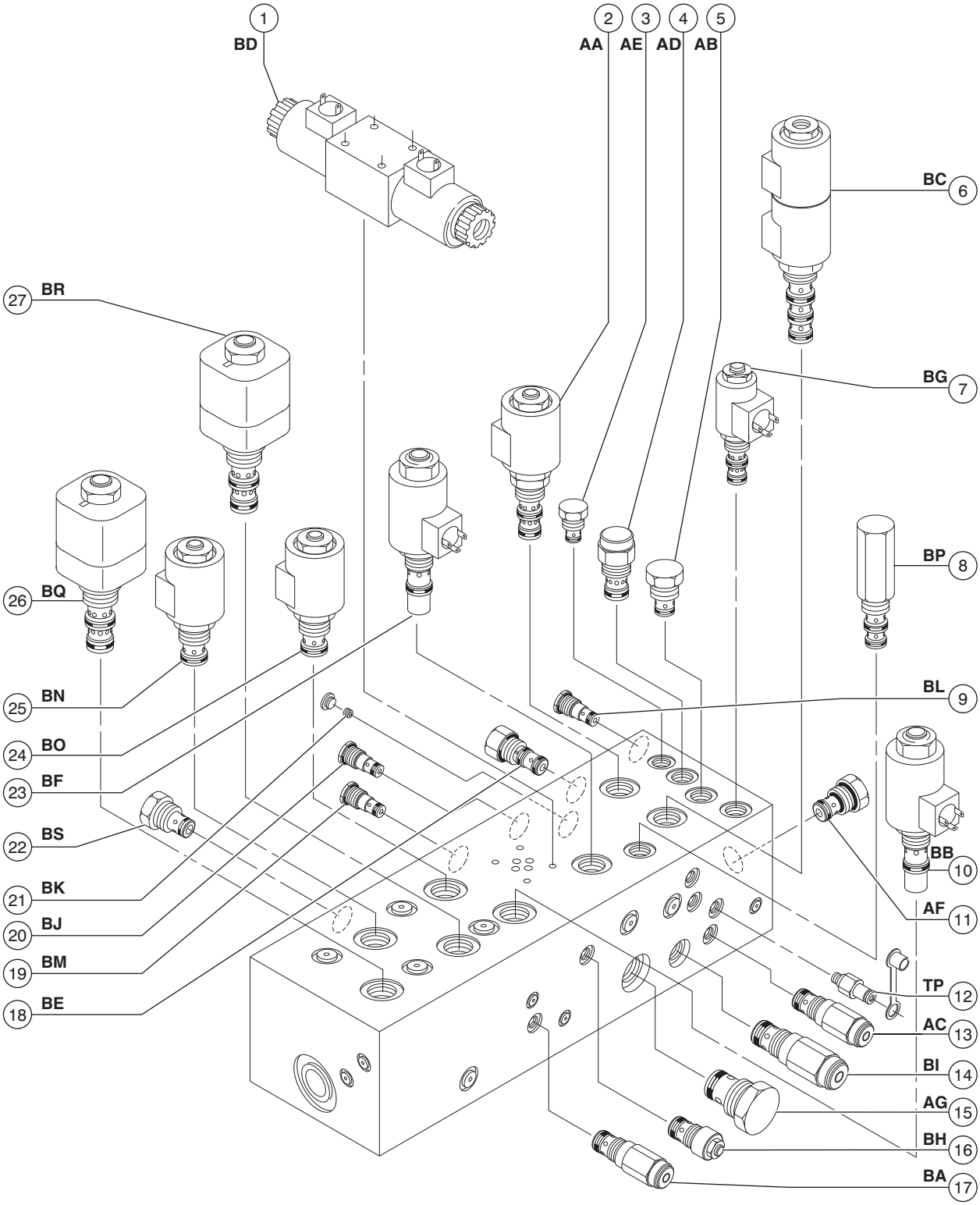
10-4
Function Manifold Components, S-3800 Models

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

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MANIFOLDS REV A

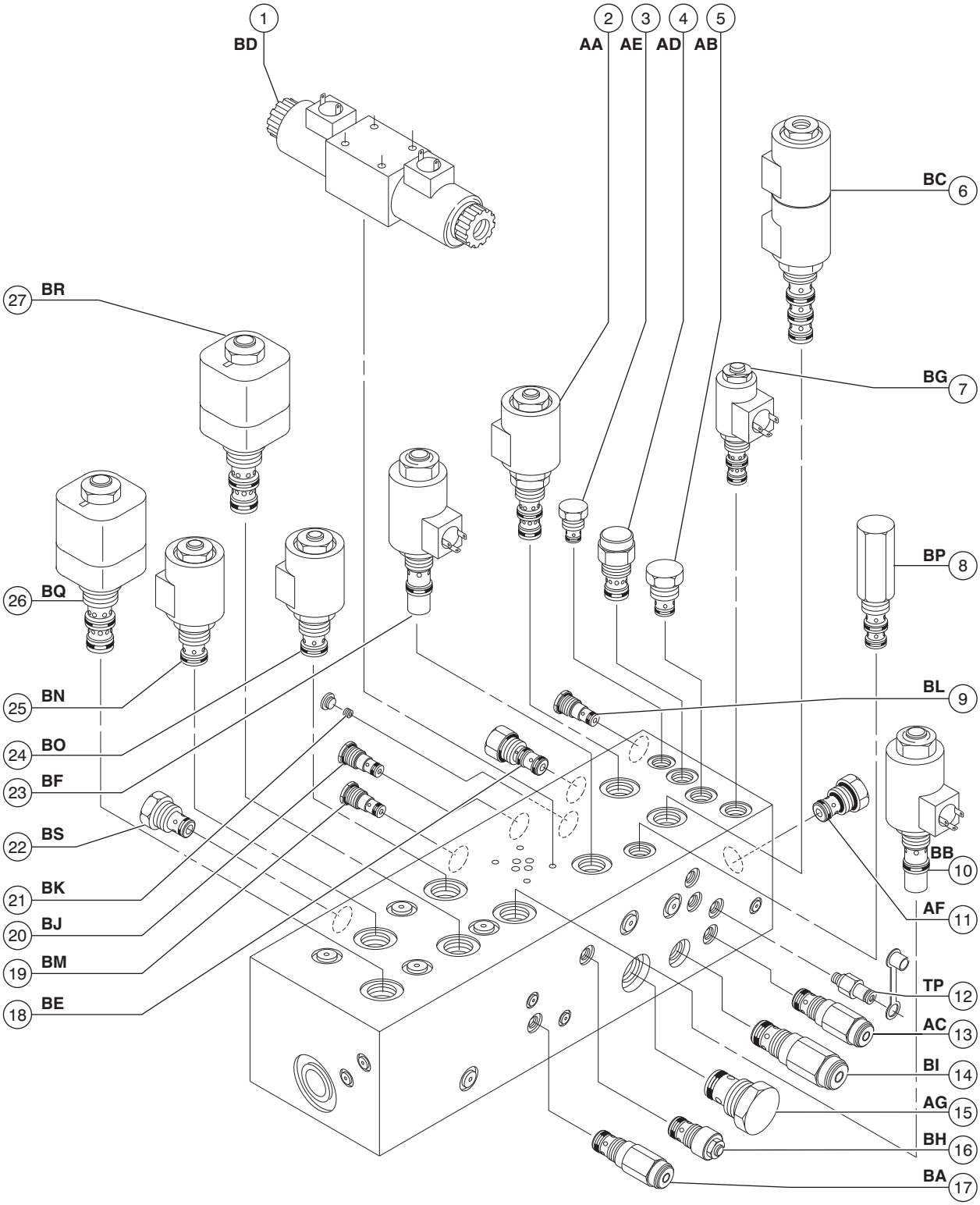


Function Manifold Components, S-3800 Models, continued

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

Index No.	Description	Schematic Item	Function	Torque
14	Relief Valve, 2600 psi / 179.3 bar	BI	Turntable, primary lift and boom retract pressure limit	12-14 ft-lbs / 16.3-19 Nm
15	Check Valve	AG	Blocks flow from auxiliary pump, port 2A to pump 1	33-37 ft-lbs / 45-50 Nm
16	Counterbalance Valve, 3200 psi / 220.6 bar	BH	Primary lift, load holding	30-35 ft-lbs / 41-47 Nm
17	Relief Valve, 1800 psi / 124.1 bar	BA	Boom extend pressure limit	18-20 ft-lbs / 25-27 Nm
18	Flow Regulator Valve, 0.1 gpm / 0.38 L/min	BE	Leads off differential sensing valve to tank	18-20 ft-lbs / 25-27 Nm
19	Check Valve, 5 psi / 0.34 bar	BM	Extension cylinder load sense check	12-14 ft-lbs / 16.3-19 Nm
20	Check Valve, 5 psi / 0.34 bar	BJ	Primary lift load sense check	12-14 ft-lbs / 16.3-19 Nm
21	Orifice Plug, 0.040 inch / 1.016 mm	BK	Differential sensing damping	
22	Check Valve, 30 psi / 2.06 bar	BS	Back pressure check, boom extend	33-37 ft-lbs / 45-50 Nm
23	Proportional Solenoid Valve	BF	Primary lift, proportional speed control	33-37 ft-lbs / 45-50 Nm
24	Solenoid Valve, 2 position 2 way, N.C.	BO	Boom extend sequence control	33-37 ft-lbs / 45-50 Nm
25	Solenoid Valve, 2 position 2 way, N.C.	BN	Boom retract sequence control	33-37 ft-lbs / 45-50 Nm
26	Solenoid Valve, 2 position 3 way	BQ	Boom retract control	52-60 ft-lbs / 71-82 Nm
27	Solenoid Valve, 2 position 3 way	BR	Boom extend control	52-60 ft-lbs / 71-82 Nm

MANIFOLDS REV A



10-5 Valve Adjustments - Function Manifold, S-3800 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 Section 2, *Hydraulic Specifications.*

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

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

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 Section 2, *Hydraulic Specifications.*

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

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.

10-6
Proportional Valves - Function Manifold

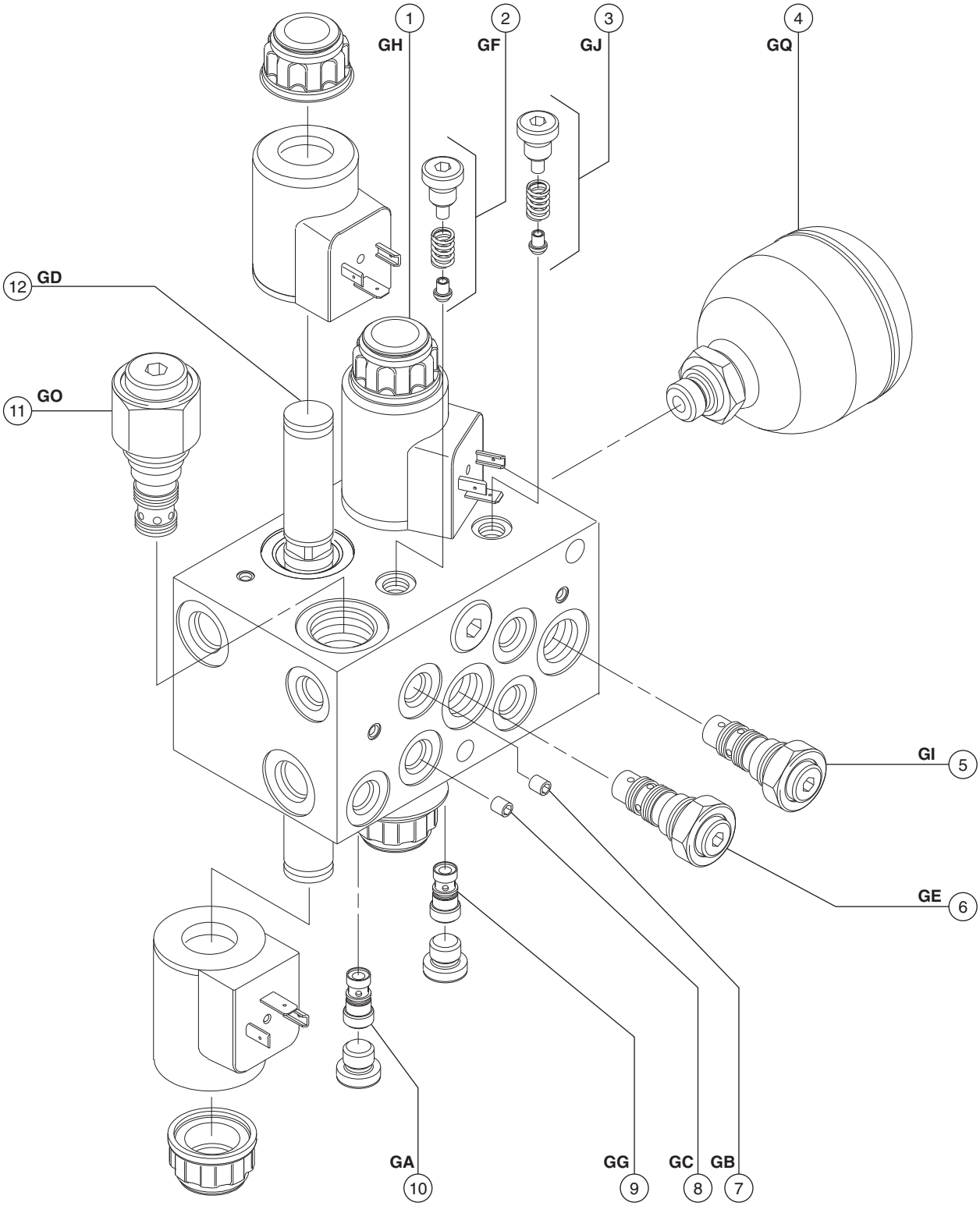
Note: When a proportional valve cartridge or coil is replaced or moved to a different valve cartridge or cavity, the proportional valve cartridge or coil will need to be calibrated. See 1-3, *How to Calibrate a Joystick Controller.*

10-07
Platform Manifold Components

The platform manifold is mounted to the platform mounting weldment.

Index No.	Description	Schematic Item	Function	Torque
1	Proportional solenoid valve, 3 position 4 way	GH	Platform level up/down	18-20 ft-lbs / 24-27 Nm
2	Check valve	GF	Platform rotate circuit	
3	Check valve	GJ	Platform level circuit	
4	Accumulator, 500 psi / 34.5 bar	GM	Hydraulic dampening	23 ft-lbs / 31 Nm
5	Differential sensing valve, N.O.	GI	Platform level differential sensing circuit	23-25 ft-lbs / 31-34 Nm
6	Differential sensing valve, N.O.	GE	Platform rotate differential sensing circuit	23-25 ft-lbs / 31-34 Nm
7	Orifice - plug, 0.030 inch / 0.762 mm	GB	Platform rotate left circuit	
8	Orifice - plug, 0.030 inch / 0.762 mm	GC	Platform rotate right circuit	
9	Shuttle valve	GG	Platform level load sense circuit	7.4-9 ft-lbs / 10-12 Nm
10	Shuttle valve	GA	Platform rotate load sense circuit	7.4-9 ft-lbs / 10-12 Nm
11	Differential sensing valve, N.C.	GC	Directs flow to functions	23-25 ft-lbs / 31-34 Nm
12	Proportional solenoid valve, 3 position 4 way	GD	Platform rotate left/right	18-20 ft-lbs / 24-27 Nm

MANIFOLDS REV A

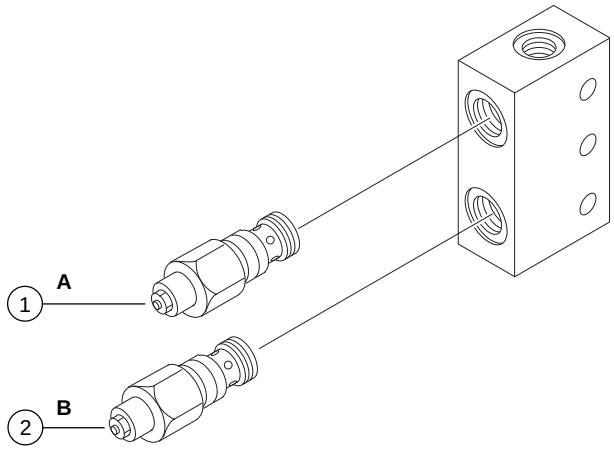


10-08
Proportional Valves - Platform Manifolds

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.*

10-09
Platform Rotate Counterbalance Valve Manifold Components

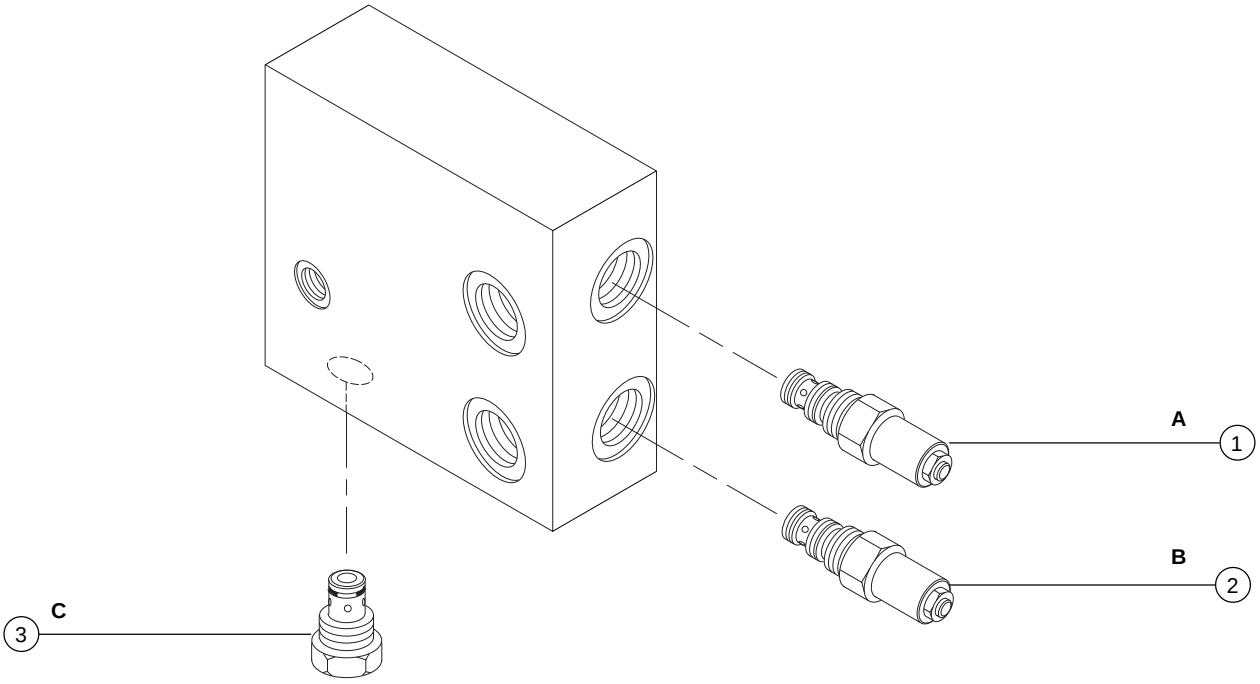
Index No.	Description	Schematic Item	Function	Torque
1	Counterbalance valve	A	Platform rotate left	37-44 ft-lbs / 50-60 Nm
2	Counterbalance valve	B	Platform rotate right	37-44 ft-lbs / 50-60 Nm



10-10
Turntable Rotation Manifold Components

The turntable rotation manifold is mounted to the turntable rotation motor.

Index No.	Description	Schematic Item	Function	Torque
1	Counterbalance valve	A	Turntable rotate left	37-44 ft-lbs / 50-60 Nm
2	Counterbalance valve	B	Turntable rotate right	37-44 ft-lbs / 50-60 Nm
3	Shuttle valve, 2 position 3 way	C	Turntable rotation brake release	10-12 ft-lbs / 14-16 Nm

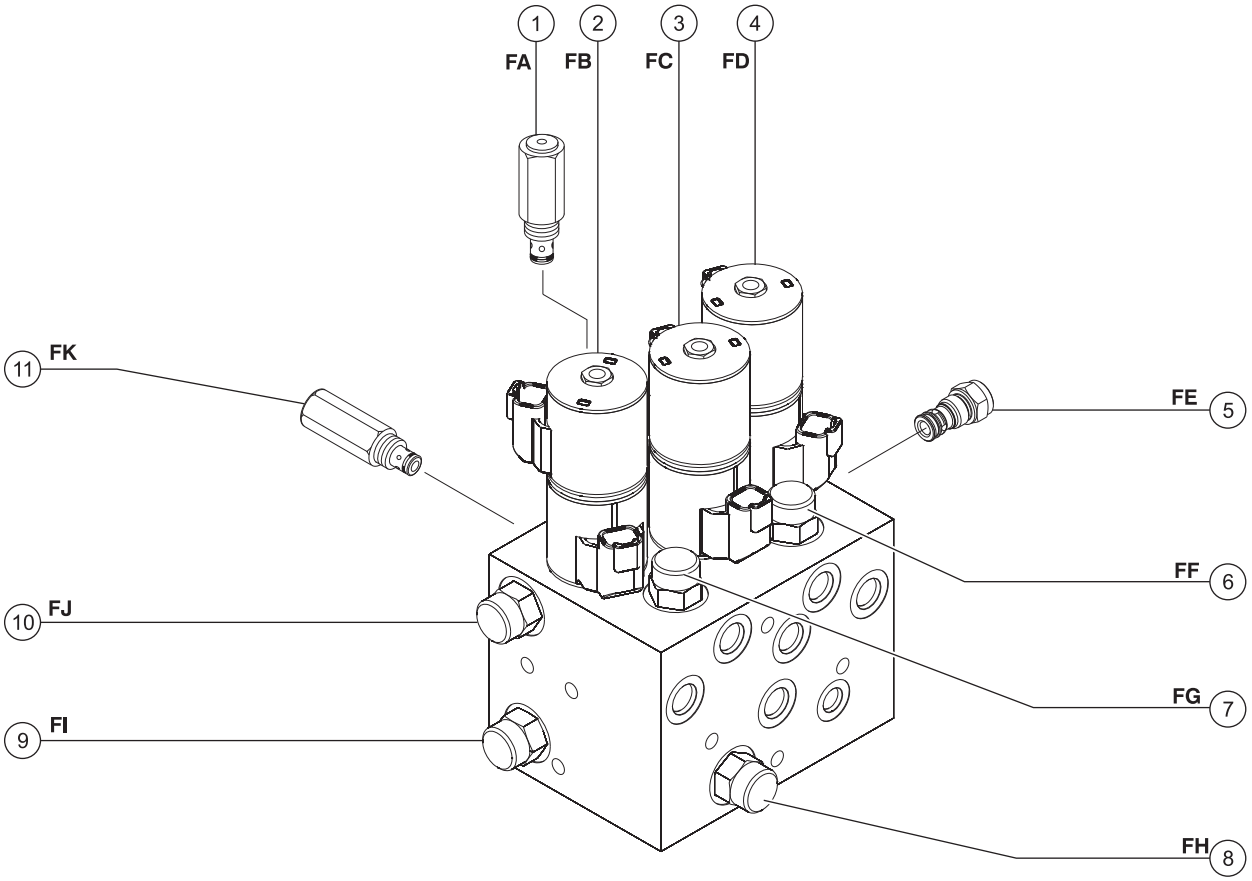


10-11
Steer and Axle Extend/Retract Manifold Components

The steer and axle extend/retract manifold is mounted inside the drive chassis at the square end of the machine.

Index No.	Description	Schematic Item	Function	Torque
1	Relief Valve, 3000 psi / 207 bar	FA	Steering pressure limit	19-21 ft-lbs / 25.8-28.6 Nm
2	Solenoid Valve, 3 position 5 way	FB	Steering cylinder speed, extend/retract, right side	24-26 ft-lbs / 32.5-35.3 Nm
3	Solenoid Valve, 3 position 5 way	FC	Steering cylinder control, axle extend	24-26 ft-lbs / 32.5-35.3 Nm
4	Solenoid Valve, 3 position 5 way	FD	Steering cylinder speed, extend/retract, left side	24-26 ft-lbs / 32.5-35.3 Nm
5	Flow Regulator Valve, 2.0 gpm / 7.6 L/min	FE	Steering cylinder speed	19-21 ft-lbs / 25.8-28.6 Nm
6	Flow Regulator Valve, 1.4 gpm / 5.3 L/min	FF	Steering cylinder speed, round end, left side, extend	19-21 ft-lbs / 25.8-28.6 Nm
7	Flow Regulator Valve, 1.4 gpm / 5.3 L/min	FG	Steering cylinder speed, square end, right side, extend	19-21 ft-lbs / 25.8-28.6 Nm
8	Flow Regulator Valve, 0.1 gpm / 0.38 L/min	FH	Bleeds off diff valve to tank	19-21 ft-lbs / 25.8-28.6 Nm
9	Differential Sensing Valve, 150 psi / 10.3 bar	FI	Meters flow to function sensing	19-21 ft-lbs / 25.8-28.6 Nm
10	Flow Regulator Valve, 2.0 gpm / 7.6 L/min	FJ	Steering cylinder speed, square end, left side, retract	19-21 ft-lbs / 25.8-28.6 Nm
11	Relief Valve, 1800 psi / 124 bar	FK	Flow regulator, rod side	25-27 ft-lbs / 34-37 Nm

MANIFOLDS REV A



10-12
Valve Adjustments - Steer and Axle Extend/Retract Manifold

How to Adjust the Steer and Axle Retract Relief Valve

Note: Perform this procedure with the axles retracted and 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 steer and axle extend/retract manifold.

2 Start the engine from the platform controls.

3 Position the machine so that the left front wheel is against an immoveable object such as a curb.

4 Press down the foot switch and activate the steer function. Steer the wheel into the curb and hold. Observe the pressure reading on the pressure gauge. Refer to Section 2, *Hydraulic Component 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 relief valve pressure.

How to Adjust the Axle Extend Relief Valve

Note: Perform this procedure with the axles retracted, the boom in the stowed position and the machine on a paved surface.

1 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the test port on the steer and axle extend/retract manifold.

2 Start the engine from the platform controls.

3 Press down the foot switch and push the axle extend button. Observe the pressure reading on the pressure gauge. Refer to Section 2, *Hydraulic Specifications.*

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

5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

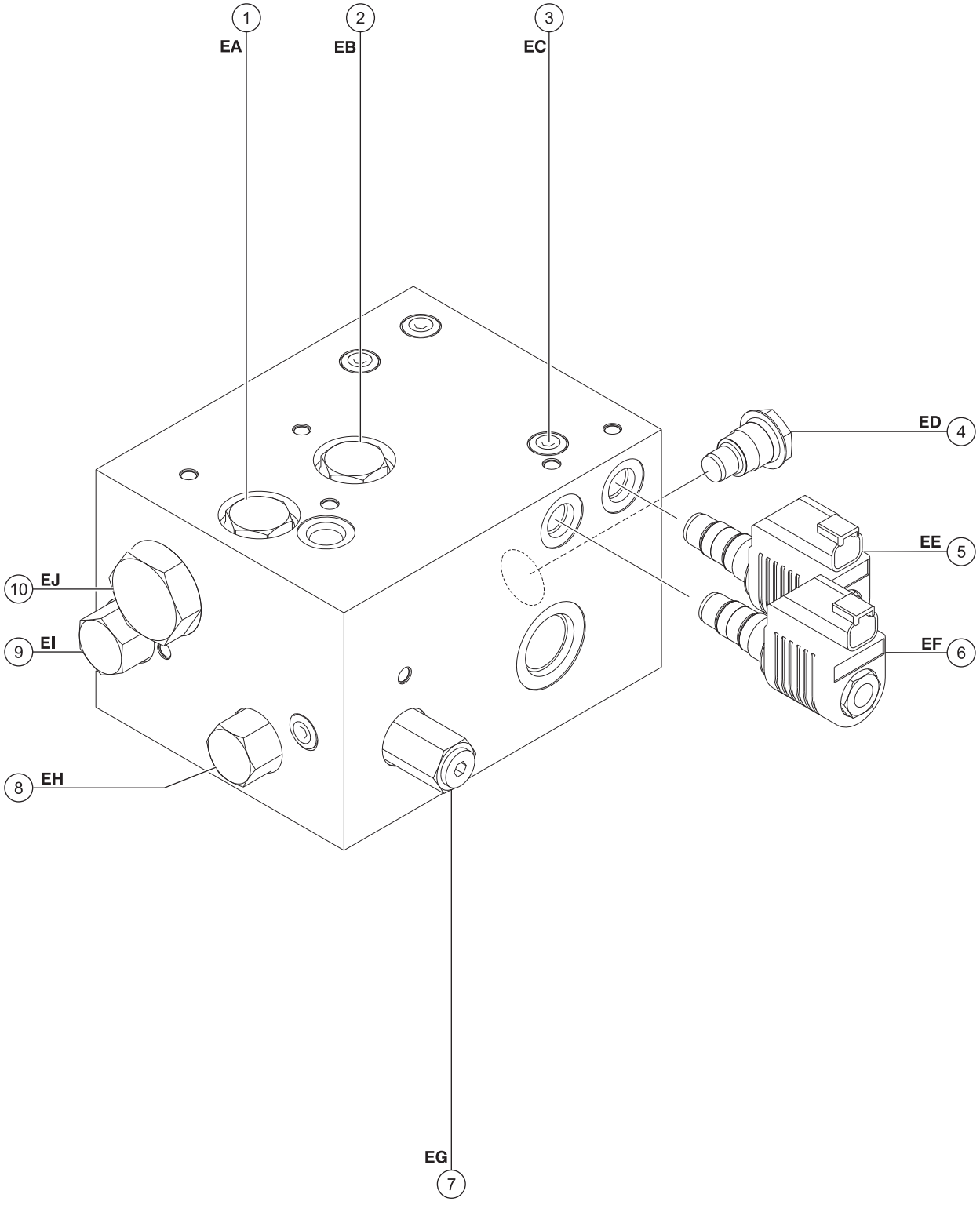
⚠WARNING Tip-over hazard. Do not adjust the relief valve higher than specified.

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

10-13
Traction Manifold, 2WD

The 2WD traction manifold is mounted inside the drive chassis at the circle-end of the machine.

Index No.	Description	Schematic Item	Function	Torque
1	Check valve, 5 psi / 0.34 bar	EA	Drive motor anti-cavitation	30-35 ft-lbs / 41-47 Nm
2	Check valve, 5 psi / 0.34 bar	EB	Drive motor anti-cavitation	30-35 ft-lbs / 41-47 Nm
3	Orifice, 0.031 in / 0.79 mm	EC	Brake and 2-speed circuit	
4	Check valve	ED	Keeps brakes released in case of temporary loss of charge pressure	20-25 ft-lbs / 27-34 Nm
5	Solenoid valve, 2 position 3 way	EE	Brake release	26-30 ft-lbs / 35-41 Nm
6	Solenoid valve, 2 position 3 way	EF	2-speed drive motor shift	26-30 ft-lbs / 35-41 Nm
7	Relief valve, 250 psi / 17.2 bar	EG	Charge pressure circuit	20-25 ft-lbs / 27-34 Nm
8	Shuttle valve, 3 position 3 way	EH	Charge pressure circuit that directs hot oil out of low pressure side of drive pump	30-35 ft-lbs / 41-47 Nm
9	Bi-directional flow control valve, 4.5 gpm / 17 L/min	EI	Equalizes pressure on both sides of divider/combiner valve EJ	30-35 ft-lbs / 41-47 Nm
10	Flow divider/combiner valve	EJ	Controls flow to drive motors in forward and reverse	90-100 ft-lbs / 122-136 Nm


1
EA
2
EB
3
EC
ED
4
EE
5
EF
6
10
EJ
9
EI
8
EH
EG
7

10-14 Valve Adjustments - Traction Manifold

How to Adjust the Charge Pressure Relief Valve

1 Connect a 0 to 600 psi / 0 to 41 bar pressure gauge to the test port located on the drive manifold.

2 Start the engine from the platform controls.

3 Drive the machine slowly in either direction and observe the pressure reading on the pressure gauge. Refer to Section 2, *Hydraulic Specifications.*

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

5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

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

10-15 Valve Coils

How to Test a Coil

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

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

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

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

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

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

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

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

Valve Coil Resistance Specification

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

Description	Specification
Solenoid valve, 3 position 4 way, 12V DC (schematic item EA, EB, EC, ED)	8.8 Ω
Proportional solenoid valve, 12V DC (schematic item FG, BG, GD, GH)	5.4 Ω
Proportional solenoid valve, 12V DC (schematic item FB, FF, BB, BF)	5 Ω
Solenoid Valve, 2 position 3 way, 12V DC (schematic item FQ, FR, BQ, BR)	4.6 Ω
Solenoid Valve, 2 position 3 way, 12V DC (schematic item EE, EF)	7.2 Ω
Solenoid Valve, 2 position 2 way, 12V DC (schematic item BN, BO)	7.2 Ω
Solenoid valve, 3 position 4 way 12V (schematic items ES)	7.1 Ω
Solenoid valve, 2 position 3 way 12V (schematic items AA)	7.2 Ω
Solenoid valve, 2 position 3 way, 10V DC (schematic items FB, FC, FD)	5 Ω

How to Test a Coil Diode

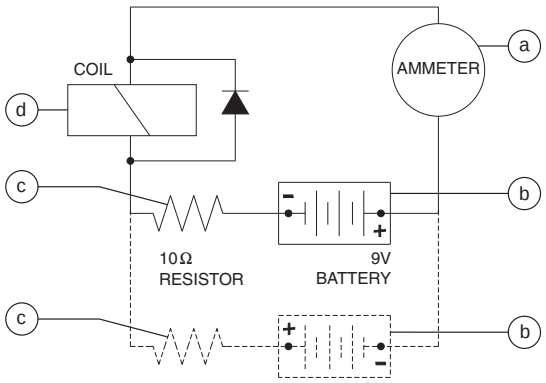
Genie incorporates spike suppressing diodes in all of its directional valve coils except proportional valves and those coils with a metal case. Properly functioning coil diodes protect the electrical circuit by suppressing voltage spikes. Voltage spikes naturally occur within a function circuit following 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 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. Refer to, *How to Test a Coil.*

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

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



a multimeter
b 9V DC battery
c 10Ω resistor
d coil

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

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.

Fuel and Hydraulic Tanks

REV A

11-1
Fuel Tank

How to Remove the Fuel Tank

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Remove the fuel tank in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

⚠DANGER Explosion and fire hazard. Never drain or store fuel in an open container due to the possibility of fire.

1 Remove the fixed engine side turntable cover. See 5-1, *How to Remove a Fixed Turntable Cover*.

2 Tag, disconnect and plug the fuel supply and return hoses. Cap the fittings on the fuel tank.

3 Remove the fuel filler cap from the tank.

4 Using an approved hand-operated pump, drain the fuel tank into a suitable container. See capacity specifications.

⚠DANGER Explosion and fire hazard. When transferring fuel, connect a grounding wire between the machine and pump or container.

Note: Be sure to only use a hand operated pump suitable for use with diesel fuel.

5 Support and secure the fuel tank to an appropriate lifting device.

5 Remove the fuel tank retaining fasteners.

7 Remove the fuel tank from the machine.

⚠WARNING Crushing hazard. The fuel tank may become unbalanced and fall if it is not properly supported and secured to the lifting device.

Note: Clean the fuel tank and inspect for cracks and other damage before installing.

11-2 Hydraulic Tank

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

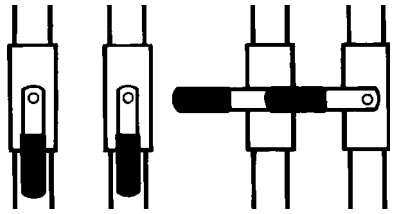
How to Remove the Hydraulic Tank

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

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

1 Remove the ground controls side turntable cover. See 5-1, *How to Remove a Hinged Turntable Cover.*

2 Close the two hydraulic shutoff valves located at the hydraulic tank.



NOTICE Component damage hazard. Be sure that the hydraulic tank shutoff valves are in the OPEN position before priming the pump. The engine must not be started with the hydraulic tank shutoff valves in the CLOSED position or component damage will occur. If the hydraulic tank shutoff valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

3 Remove the drain plug from the hydraulic tank and allow all of the oil from the tank to drain into a suitable container. See capacity specifications.

4 Remove the ground controls support bracket retaining fasteners. Remove the ground controls assembly from the machine.

NOTICE Component damage hazard. Be sure to properly support the ground control box. Do not allow the ground controls to hang by the wiring.

NOTICE Component damage hazard. The ground control box wiring can be damaged if it is kinked or pinched.

5 Tag and disconnect the wiring from the horn.

6 Remove the horn retaining fasteners. Remove the horn from the machine.

7 Tag, disconnect and plug the two suction hoses that are attached to the hydraulic tank shutoff valves.

8 Tag, disconnect and plug the supply hose for the auxiliary power unit. Cap the fitting on the hydraulic tank.

9 Disconnect and plug the T-fitting located at the return filter with the 2 hoses connected to it. Cap the fitting on the return filter housing.

10 Remove the hydraulic tank retaining fasteners.

11 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.

12 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.

NOTICE Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the hydraulic tank. See 9-2, *How to Prime the Pumps.*

Note: Always use pipe thread sealant when installing the drain plug and strainers.

Note: Refer to Section 2, *Machine Specifications* for hydraulic oil requirements.

Turntable Rotation Components

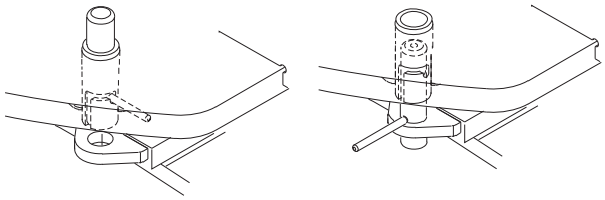
REV A

12-1
Turntable Rotation Hydraulic Motor and Drive Hub

How to Remove the Turntable Rotation Hydraulic Motor

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 Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Secure the turntable from rotating with the turntable rotation lock pin.



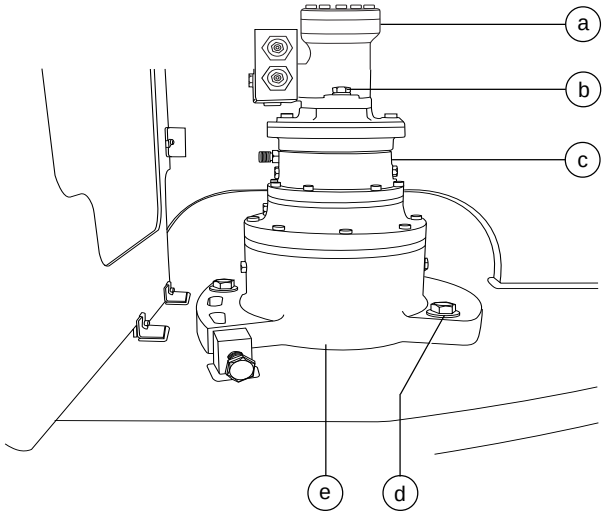
unlocked locked

2 Remove the ground controls side fixed turntable cover. See 5-1, *How to Remove a Fixed Turntable Cover.*

3 Tag, disconnect and plug the hydraulic hoses from the manifold that is mounted to the motor.

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

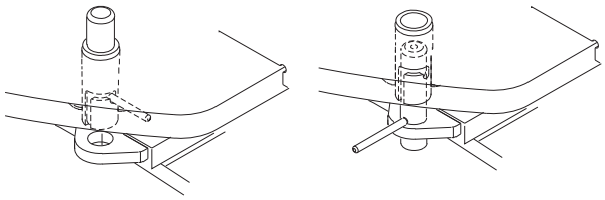
4 Remove the motor/brake mounting fasteners. Remove the motor from the brake.



a motor
b motor/brake mounting bolts
c brake
d drive hub mounting bolts
e drive hub

How to Remove the Turntable Rotation Drive Hub

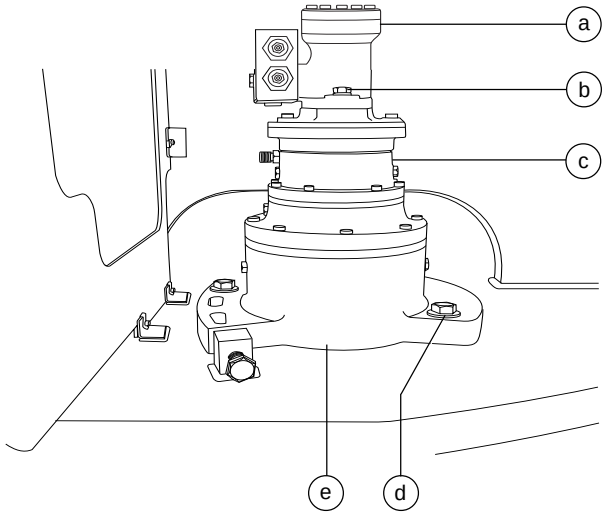
1 Secure the turntable from rotating with the turntable rotation lock pin.



unlocked locked

2 Remove the turntable rotation motor. See *How to Remove the Turntable Rotation Hydraulic Motor.*

3 Remove the brake from the drive hub and set it off to the side.



a motor
b motor/brake mounting bolts
c brake
d drive hub mounting bolts
e drive hub

4 Attach a lifting strap from an overhead crane or other suitable lifting device to the drive hub.

5 Remove the drive hub mounting bolts and remove the drive hub from the machine.

⚠DANGER Tip-over hazard. If the turntable rotation lock pin is not properly installed, machine stability is compromised and the machine could tip over when the drive hub is removed from the machine, which could result in death or serious injury.

⚠WARNING Crushing hazard. The drive hub may become unbalanced and fall if it is not properly supported by the overhead crane or lifting device.

6 Remove the plug from the side of the drive hub. Drain the oil from the hub.

Installing the Drive Hub:

7 Install the drive hub. Use blue thread locking seal on all bolts. Torque the drive hub mounting bolts to 280 ft-lbs / 380 Nm.

8 Install the brake onto the drive hub and torque the mounting fasteners to 20 ft-lbs / 27 Nm.

9 Install the motor onto the brake and torque the mounting fasteners to 93 ft-lbs / 126 Nm.

9 Fill the drive hub with oil from the side hole until the oil level is even with the bottom of the hole. Apply pipe thread sealant to the plugs and install the plugs. Refer to Section 2, *Specifications.*

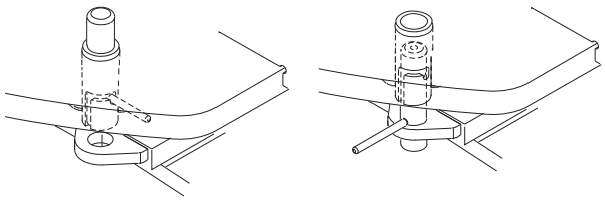
10 Adjust turntable rotation gear backlash.

How to Adjust the Turntable Rotation Gear Backlash

The turntable rotation drive hub is adjustable to control the gap between the rotation motor gear and the turntable bearing.

Note: Be sure to check the backlash with the machine on a flat level surface.

1 Secure the turntable from rotating with the turntable rotation lock pin.

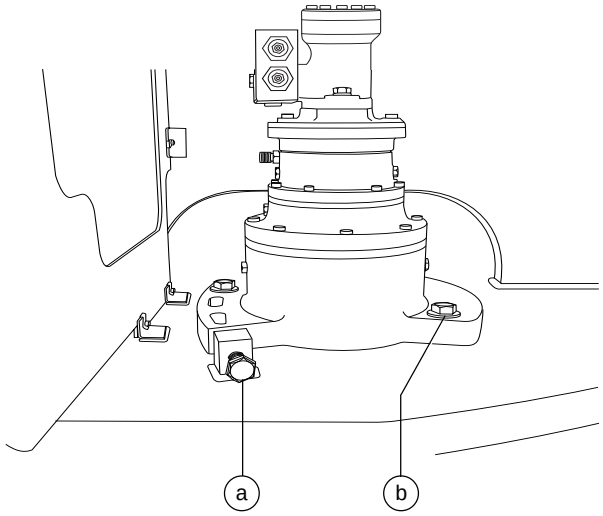


unlocked locked

2 Remove the ground controls side fixed turntable cover. See 5-1, *How to Remove a Fixed Turntable Cover.*

3 Loosen the turntable rotate drive hub mounting bolts. Do not remove them.

Note: It may be necessary to raise the boom slightly to access all the turntable rotate drive hub mounting bolts.



a adjustment bolt with lock nut
b pivot plate mounting bolts

4 Loosen the lock nut on the turntable drive hub adjustment bolt.

5 Tighten the turntable drive hub adjustment bolt until the turntable drive hub gear is fully engaged and tight into the turntable rotate gear.

6 Turn the adjustment bolt 3/4 turn counterclockwise. Tighten the lock nut on the adjustment bolt.

7 Rotate the drive hub away from the turntable rotate gear until it contacts the adjustment bolt. Torque the turntable rotate drive hub mounting bolts. 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

REV A

13-1 Steer Sensors

The steer sensor measures steer angle and communicates that information to the ground controls ECM. The steer sensor on the ground controls side of the machine at the square end acts as the lead sensor. The other three sensors follow the position, or steer angle, of the lead sensor. There is a steer sensor mounted to the top of each upper yoke pivot pin.

Note: If the square-end steering function becomes inoperative, switch to circle-end steer mode and the ground controls side circle-end steer sensor will become the lead sensor.

Note: This procedure will require a minimum of two people.

Note: Perform this procedure with the axles extended.

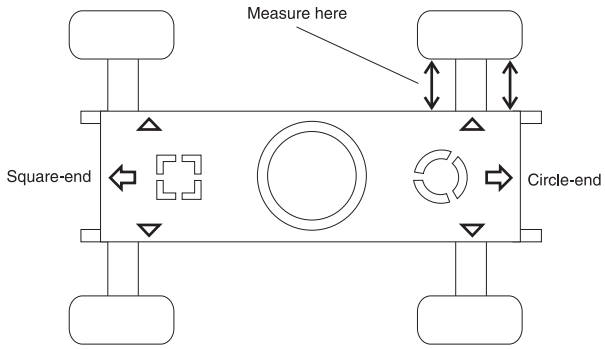
How to Measure the Tire Alignment

1 Start the engine from the platform controls.

2 Press down the foot switch and push the engine idle select button until the engine switches to high rpm.

Measure the steer end tires:

3 Measure the distance between the inside of one square-end tire and the chassis side plate on both sides of the axle.



⊙ Result: Both measurements should be the same to indicate that the tires are parallel with the chassis.

Note: If the measurements are different or if a tire is not parallel with the chassis, the steer sensor of that tire will need to be adjusted. See *How to Adjust a Steer Sensor*.

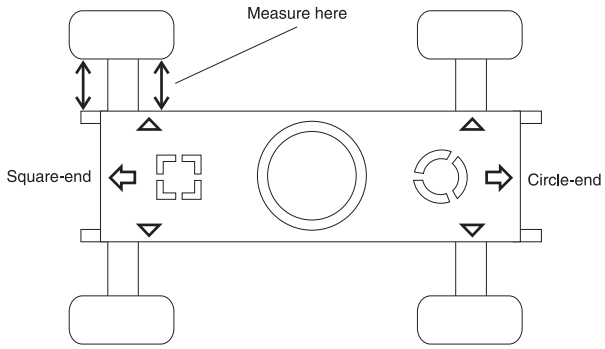
4 Repeat step 3 for the other tire.

How to Adjust a Steer Sensor

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

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

3 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.



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

5 Tighten the steer sensor cover fasteners.

6 Repeat steps 1 through 5 for the other 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 Section Two, *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.

3 Mark the mounting position of the steer sensor cover on the yoke.

Note: It is very important that the steer sensor is installed in the exact position it was in prior to removal. If the steer sensor is not installed correctly, the steer function may operate improperly. If any steer functions operate improperly after removing and installing a steer sensor, see 13-1, *How to Adjust a Steer Sensor.*

4 Remove the steer sensor cover retaining fasteners. Carefully remove the steer sensor cover and lay it out of the way.

NOTICE Component damage hazard. The steer sensor is a very sensitive instrument. It can be damaged internally if it is dropped or sustains any physical shock, even if the damage is not visible.

5 Lay the hoses and steer sensor cable out of the way.

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

6 Mark the mounting position of the steer sensor activator pin mounted to the top of the yoke pivot pin.

7 Remove the steer sensor activator pin retaining fasteners. Remove the steer sensor activator pin from the machine.

Note: It is very important that the steer sensor activator pin is installed in the exact position it was in prior to removal. If the steer sensor activator pin is not installed correctly, the steer function may operate improperly. If any steer functions operate improperly after removing and installing a steer sensor activator pin, see 13-1, *How to Adjust a Steer Sensor.*

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

9 Center a lifting jack of ample capacity under the axle of the yoke and drive hub to be removed. Do not raise the machine.

10 Block the wheels at the opposite end of the machine.

11 Raise the machine approximately 6 inches (15 cm) and place blocks under the chassis for support.

12 Remove the lug nuts and remove the tire and wheel assembly.

13 Remove the drive motor mounting fasteners.

14 Slide the drive motor shaft out of the drive hub and remove the drive motor from the machine.

15 Remove the pin retaining fasteners from the steering cylinder rod-end pivot pins. Remove the pins.

16 Remove the pin retaining fasteners from the upper and lower yoke pivot pins.

17 Support the yoke/drive hub assembly with a lifting jack. Secure the yoke/drive hub assembly to the lifting jack.

18 Use a soft metal drift to remove both yoke pivot pins.

19 Remove the yoke/drive hub assembly from the machine.

⚠WARNING Crushing hazard. The yoke/hub assembly may become unbalanced and fall when the yoke pivot pins are removed if it is not properly supported and secured to the lifting jack.

20 Place the yoke/drive hub assembly on a flat surface with the drive hub facing down.

21 Remove the drive hub mounting fasteners that attach the yoke to the drive hub. Remove the yoke weldment from the drive hub.

Note: Replace the thrust washer with a new one when installing the yoke/drive hub assembly onto the axle. Refer to Section 2, *Machine Torque Specifications*.

13-3
Drive Motor

How to Remove a Drive Motor

CAUTION Component damage hazard. Repairs to the motor should only be performed by an authorized dealer.

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

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 Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

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

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

2 Remove the drive motor mounting fasteners.

3 Slide the drive motor shaft out of the brake and drive hub. Remove the drive motor from the machine.

13-4
Drive Hub

How to Remove a Drive Hub

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 Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the drive motor. See 13-3, *How to Remove a Drive Motor*.

2 Tag, disconnect and plug the hydraulic hose from the brake. Cap the fittting on the 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.

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

4 Center a lifting jack of ample capacity under the axle of the drive hub to be removed. Do not raise the machine.

5 Block the wheels at the opposite end of the machine.

6 Raise the machine approximately 6 inches / 15 cm and place blocks under the chassis for support.

7 Remove the wheel lug nuts. Remove the tire and wheel assembly.

8 Place a second lifting jack under the drive hub for support and secure the drive hub to the lifting jack.

9 Remove the drive hub mounting bolts that attach the drive hub to the yoke. Remove the drive hub from the machine.

⚠WARNING Crushing hazard. The drive hub may become unbalanced and fall if it is not properly supported and secured to the lifting jack. Refer to Section 2, *Machine Torque Specifications*.

13-5
Steering Cylinders

How to Remove a Steering Cylinder

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 Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Locate the hose bracket mounted to the steer cylinder.

2 Remove the hose bracket cover retaining fasteners. Remove the hose bracket cover.

3 Remove the hose bracket retaining fasteners from the steering cylinder.

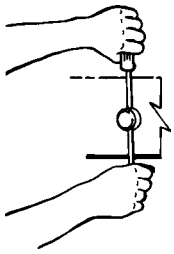
4 Tag, disconnect and plug the hydraulic hoses from the steering cylinder. Cap the fittings on the cylinder.

⚠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.

5 Remove the pin retaining fasteners from the steer cylinder pivot pins.

6 Support the steer cylinder with a suitable lifting device.

7 Place a rod through each steer cylinder pivot pin and twist to remove the pins.



8 Remove the steering cylinder from the machine.

⚠CAUTION Crushing hazard. The steer cylinder may become unbalanced and fall if it is not properly supported by the lifting device.

13-6
Hub and Bearings, 2WD Models

How to Remove the Hub and Bearings, 2WD Models

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

2 Block the non-steer wheels.

3 Center a lifting jack with a minimum capacity of 25,000 lbs / 12000 kg under the drive chassis between the steer wheels.

4 Raise the machine 6 inches / 15 cm and place blocks under the chassis for support.

⚠CAUTION Crushing hazard. The machine may fall if not properly supported.

5 Remove the lug nuts. Remove the tire and wheel assembly.

6 Remove the dust cap, cotter pin and castle nut.

Note: Always use a new cotter pin when installing a castle nut.

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

8 Place the hub on a flat surface and gently pry the bearing seal out of the hub.

9 Remove the rear bearing.

How to Install the Hub and Bearings, 2WD Models

Note: When replacing a wheel bearing, both the inner and outer bearings including the pressed-in races must be replaced.

1 Be sure that both bearings are packed with clean, fresh grease.

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

3 Press the bearing seal evenly into the hub until it is flush.

4 Slide the hub onto the yoke spindle.

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

5 Place the outer bearing into the hub.

6 Install the washer and castle nut.

7 Tighten the castle nut to 158 ft-lbs / 214 Nm to seat the bearing.

Note: Rotate the hub by hand while torquing the castle nut to make sure the bearings seat properly.

8 Loosen the castle nut one turn, and then torque to 35 ft-lbs / 47 Nm.

9 Install a new cotter pin. Bend the cotter pin to secure the castle nut.

Note: Always use a new cotter pin when installing a castle nut.

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

13-7 Extendable Axles

The extendable axles are used to widen the foot print of the drive chassis for stability.

How to Shim an Extendable Axle

Note: Measure each wear pad. Replace the wear pad if it is less than 7/16 inch / 11 mm thick. If the wear pad is 7/16 inch / 11 mm thick or more, perform the following procedure.

1 Fully extend the axle.

2 Remove the wear pad retaining fasteners.

Side wear pads:

3 Install the new shims under the wear pad to obtain zero clearance and zero drag.

4 Use a round punch through the wear pad mounting holes to align the shims with the wear pad. Install the wear pad retaining fasteners.

5 Extend and retract the axle through an entire cycle. Check for tight spots that could cause binding or scraping of the axle tubes.

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

Top and bottom wear pads:

3 Center a lifting jack of ample capacity under the axle that needs to be shimmed. Do not raise the machine.

4 Block the wheels at the opposite end of the machine.

5 Raise the machine just until the weight of the machine is relieved off of the axle. Do not raise the wheels off of the ground.

6 Install the new shims under the wear pad to obtain zero clearance and zero drag.

7 Use a round punch through the wear pad mounting holes to align the shims with the wear pad. Install the wear pad retaining fasteners.

8 Extend and retract the axle through an entire cycle. Check for tight spots that could cause binding or scraping of the axle tubes.

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

How to Remove an Inner Axle

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 Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

Note: Perform this procedure with the tires parallel to the chassis and the axles fully extended.

1 Remove the top drive chassis cover.

2 Remove the yoke and hub assembly. See 13-2, *How to Remove the Yoke and Hub.*

3 Remove the steering cylinder. See 13-5, *How to Remove a Steering Cylinder.*

4 Remove the axle cover retaining fasteners located above the axle. Remove the chassis cover from the machine.

5 Remove the upper wear pad retainer plate retaining fasteners. Remove the plate from the machine.

6 Attach a lifting strap from an overhead crane of ample capacity to the inner axle for support. Do not lift it.

7 Remove the retaining fasteners from the upper and lower wear pads at the outer axle. Do not remove the side wear pads.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

8 Remove the pin retaining fasteners from the axle stop pin. Use a slide hammer to remove the pin.

9 Remove the access cover fasteners from the end of the inner axle to access the axle extension cylinder clevis pin. Remove the cover.

10 Place support blocks under the end of the axle extension cylinder for support.

11 Remove the cotter pin from the axle extension cylinder clevis pin.

Note: Alwayse use a new cotter pin when installing a clevis pin.

12 Use a soft metal drift to remove the axle extension cylinder clevis pin.

13 Carefully support and slide the inner axle out of the chassis. Remove the axle from the machine.

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

NOTICE Component damage hazard. The aluminum limit switch track and the axle extension cylinder may become damaged if the axle is allowed to fall when it is removed from the machine.

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

Note: When installing an inner axle, there needs to be a minimum of $^1/_8$ inch / 3.1 mm gap between the proximity switches and the aluminum limit switch track. Measure the gap with the axles in both the retracted and extended positions. Adjust the proximity switches as necesary to obtain a $^1/_8$ inch / 3.1 mm gap.

How to Remove the Axle Extension Cylinder

1 Remove a yoke and hub assembly. See 13-2, *How to Remove the Yoke and Hub.*

2 Remove the axle. See *How to Remove an Inner Axle.*

3 Remove the access covers from the end of the remaining axle.

4 Tag, disconnect and plug the axle 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.

5 Tag and disconnect the wiring connectors from the proximity switches and limit switch. Do not remove the switches.

Note: The wiring connectors for the switches can be accessed through the access holes on either side of the chassis end plate.

6 Place blocks under the axle extension cylinder for support.

7 Attach a lifting strap from an overhead crane to the end of the axle extension cylinder.

Note: Attach the lifting strap to the end of the cylinder that has the inner axle removed.

8 Remove the cotter pin from the axle extension cylinder clevis pin on the remaining inner axle.

Note: Alwayse use a new cotter pin when installing a clevis pin.

9 Use a soft metal drift to remove the pin.

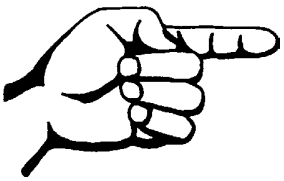
⚠CAUTION Crushing hazard. The axle extension cylinder may fall if it is not properly supported.

NOTICE Component damage hazard. The axle extension cylinder and limit switches can become damaged if the axle extension cylinder is allowed to fall.

10 Carefully support and slide the axle extension cylinder out of the axle.

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

REV A AXLE COMPONENTS



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Fault Codes

REV A



Observe and Obey:

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

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie S-3200 and S-3800 Operator's Manual.*
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropiate 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 Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

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

Note: Perform all troubleshooting on a firm, level surface.

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

CONTROL SYSTEM FAULT CODES REV A

Fault Diagnostics - Control System

How to Read Control System Fault Codes

Note: Initial fault testing occurs at power-up.

Faults are abnormal conditions that exist due to component failure or System misuse. CPU, memory, LCD, LED, limited joystick and limited operator switch testing is done on power-up. If an operator switch is depressed on power-up, the display should show and error and not allow any machine functions.

Releasing the switch will clear the error and allow all machine functions. The joystick operates similarly.

All other fault testing is done continuously.

1 When a fualt is diagnosed, the PCON fault indicator will flash and a fault message will be displayed on the TCON LCD. The message will contain the fault source and type.

2 Additional information, including the occurrence counter and a time-stamp is available with a PC, connected to one of the RS232 ports. Up to 16 unique fault messages can be saved. Each fault is saved with the device identity, fault type, engine hour time-stamp and an 8-bit occurrence counter.

3 The fault code table on the following pages lists the functions or components monitored by the system.

REV A CONTROL SYSTEM FAULT 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

CONTROL SYSTEM FAULT CODES REV A

Error Source	Error Type	Effects	Recovery Actions
Primary Ext/Ret Joystick	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		
	Not calibrated	Joystick Speed and Direction frozen at zero and neutral	Calibrate Joystick
	Just calibrated	Initiate one second beep of audible warning device	Self-clearing (transient)
Primary Up/Down Joystick	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		
	Not calibrated	Joystick Speed and Direction frozen at zero and neutral	Calibrate Joystick
	Just calibrated	Initiate one second beep of audible warning device	Self-clearing (transient)
Steer Joystick	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		
	Not calibrated	Joystick Speed and Direction frozen at zero and neutral	Calibrate Joystick
	Just calibrated	Initiate one second beep of audible warning device	Self-clearing (transient)
Primary Boom Up/Down switches on TCON	Fault Check (both buttons pressed)	Primary Boom Up/Down disabled, display message on LCD	Power up controller with problem corrected
Primary Boom Ext/Ret switches on TCON	Fault Check (both buttons pressed)	Primary Boom Ext/Retract disabled, display message on LCD	Power up controller with problem corrected
Primary Boom Length	Fault Check (unknown length)	Stop all boom functions, allow only boom retract, once fully retracted allow boom down. Display message on LCD	Power up controller with problem corrected
Primary Boom Angle	Fault Check (unknown angle)	Stop all boom functions, allow only boom retract. Display message on LCD	Power up controller with problem corrected

REV A CONTROL SYSTEM FAULT CODES

Error Source	Error Type	Effects	Recovery Actions
Primary Up/Down Speed	Not calibrated	Display message on LCD and allow operation at default speed	Perform auto calibrate precedure
Primary Extend/Retract Speed	Not calibrated	Display message on LCD and allow operation at default speed	Perform auto calibrate precedure
SAFETY SWITCH P3	Fault Check	Display message on LCD P3 SAFETY SWITCH FAULT	Power up controller with problem corrected
SAFETY SWITCH P6R1		Display message on LCD P6R1 SAFETY SWITCH FAULT	
SAFETY SWITCH P6R2		Display message on LCD P6R2 SAFETY SWITCH FAULT	
SAFETY SWITCH P7		Display message on LCD P7 SAFETY SWITCH FAULT	
SAFETY SWITCH P7R		Display message on LCD P7R SAFETY SWITCH FAULT	
SAFETY SWITCH P9A		Display message on LCD P9A SAFETY SWITCH FAULT	
SAFETY SWITCH P9B		Display message on LCD P9B SAFETY SWITCH FAULT	
SAFETY SWITCH P10		Display message on LCD P10 SAFETY SWITCH FAULT	
SAFETY SWITCH P11		Display message on LCD P11 SAFETY SWITCH FAULT	
SAFETY SWITCH P12		Display message on LCD P12 SAFETY SWITCH FAULT	
SAFETY SWITCH P14		Display message on LCD P14 SAFETY SWITCH FAULT	
SAFETY SWITCH P18		Display message on LCD P18 SAFETY SWITCH FAULT	
SAFETY SWITCH P22		Display message on LCD P22 SAFETY SWITCH FAULT	
SAFETY SWITCH P22R		Display message on LCD P22R SAFETY SWITCH FAULT	
CAN Bus	Fault Check	Display message on LCD	Power up controller with problem corrected

CONTROL SYSTEM FAULT CODES REV A

Error Source	Error Type	Effects	Recovery Actions
Primary Boom Lock-Out Valve #1	Fault Check	Limited Speed and Direction frozen at zero and neutral, Alarm sounds	Power up controller with problem corrected
Primary Boom Lock-Out Valve #2			
Platform Overload	Fault Check (if active)	Display message on LCD	Power up controller with problem corrected
Shut Down Mode			
Turntable Rotate Joystick	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		
	Not calibrated	Joystick Speed and Direction frozen at zero and neutral	Calibrate Joystick
	Just calibrated	Initiate one second beep of audible warning device	Self-clearing (transient)
Turntable Rotate Buttons	Fault Check (both buttons pressed)	TT rotate disabled, display message on LCD	Power up controller with problem corrected
Turntable Rotate Speed	Not calibrated	Display message on LCD and allow operation at default speed	Perform auto calibrate procedure
Turntable Rotate Flow Valve	Not calibrated	Normal function except threshold for one or the other directions 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		
Turntable Rotate CW Valves	Fault Check	Limited Speed and Direction frozen at zero and neutral, Alarm sounds	Power up controller with problem corrected
Turntable Rotate CCW Valves			
Turntable Level Sensor X-Direction	Fault Check	Display message on LCD and sound audible alarm	Correct problem
Turntable Level Sensor Y-Direction			
Platform Level Sensor Y-Direction			

REV A CONTROL SYSTEM FAULT CODES

Error Source	Error Type	Effects	Recovery Actions
Propel Joystick	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		
	Not calibrated	Joystick Speed and Direction frozen at zero and neutral	Calibrate Joystick
	Just calibrated	Initiate one second beep of audible warning device	Self-clearing (transient)
Propel Valves (High Current)	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	Shut down engine, 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		
Motor Speed Valve	Fault Check	Shut down engine, Limited Speed and Direction frozen at zero and neutral, Alarm sounds	Power up controller with problem corrected
Brake Valve			
Platform Level Up Valve	Fault Check	Limited Speed and Direction frozen at zero and neutral, Alarm sounds	Power up controller with problem corrected
Platform Level Down Valve			
Platform Rotate CW Valve			
Platform Rotate CCW Valve			
Jib Up Valve			
Jib Down Valve			
Jib Switches	Fault Check (both buttons pressed)	Affected functions disabled, display message on LCD	Power up controller with problem corrected
Platform Rotate Switches			
Platform Level Switches			
Footswitch Timeout		Display message on LCD	Recycle power
Hydraulic Generator/Welder - Bypass Valve	Fault Check	Disable Generator, Display message on LCD Display	Power up controller with problem corrected

CONTROL SYSTEM FAULT CODES REV A

Error Source	Error Type	Effects	Recovery Actions
SteeringJoystick	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		
	Not calibrated	Joystick Speed and Direction frozen at zero and neutral	Calibrate Joystick
	Just calibrated	Initiate one second beep of audible warning device	Self-clearing (transient)
LF Steer Angle Sensor	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		
RF Steer Angle Sensor	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		
LR Steer Angle Sensor	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		
RR Steer Angle Sensor	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		
LF Steer Valves	Fault Check	Limited Speed and Direction frozen at zero and neutral, Alarm sounds	Power up controller with problem corrected
RF Steer Valves			
LR Steer Valves			
RR Steer Valves			
Hydraulic Generator/Welder - Bypass Valve	Fault Check	Display message on LCD	Power up controller with problem corrected

Control System Fault Codes

How to Clear Boom Safety Switch Faults

Note: Beginning with software release 3.0, the boom envelope switches will latch and faults must be reset in software or through the use of the TCON LCD. They will not clear by re-powering the machine.

Note: There are two methods to reset the faults, by using Web GPI or through the menu available on the TCON LCD.

Using Web GPI

1 Connect the device containing the WEB GPI software to the TCON with an RS-232 cable.

2 Select the Safety folder, then the Fault Status screen.

3 Change any safety switch drop down menus displaying FAULT to OK. Press SEND.

4 Exit Web GPI.

Using the TCON LCD

Note: Take care when using this method to avoid resetting threshold defaults.

1 With the key switch off, press and hold the ↵ button and turn the key switch to the on position. Release the ↵ button after five seconds and press the – – ↓ ↓ buttons.

2 Press the ↓ button until CLEAR ALL SAFETY SWITCH FAULTS appears.

3 Select YES, then press the ↵ button.

4 Press the ↓ button until EXIT appears.

5 Select YES, then press the ↵ button.

Note: This clears all latching faults, not standard faults.

SOFTWARE

Software



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 *Genie S-3200 Operator's Manual and the Genie S-3800 Operator's Manual.*
- ☑ Be sure that all necessary tools and parts are available and ready for use.

About This Section

This section explains various parts of the machine software operating system and how to access some of the adjustable parameters of the control system.

Web GPI

The software system used on the machine is called Web GPI. It is a software application that is typically used with a laptop computer. The laptop can be connected to the ground controls via a tee harness connector (Genie part number 75094).

The Web GPI software can access all adjustable parameters for the machine. It can also be used to aid in troubleshooting and viewing fault code history.

Schematics

REV A

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 printed in the 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.

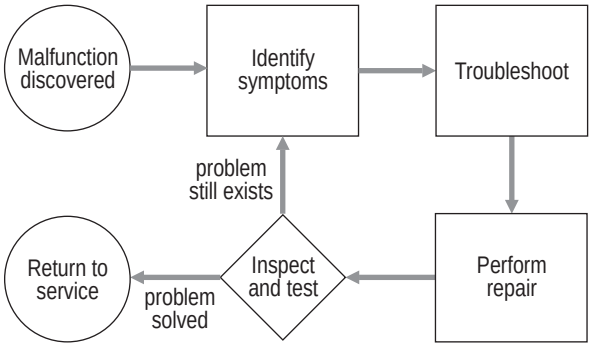
Electrical Schematics

⚠WARNING Electrocution 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



Wire Circuit Legend

REV A

Circuit numbering

1 Circuit numbers consist of three parts: the circuit prefix, circuit number and circuit suffix. The circuit prefix indicates the type of circuit. The circuit number describes the function of the circuit. The circuit suffix provides an abbreviation for the number or may be used to further define the function of this portion of the circuit. It also may be used to indicate the final end of the circuit, i.e., LS or limit sw.

2 The circuit number may be used more than once in a circuit.

For Example:

C 74 PL – This is the circuit for the lockout valve #1. C stands for control, 74 is the number of the circuit for the primary #1 lock out valve. PL stands for Primary Lockout.

S 62 BST – This is the circuit that communicates to the onboard computers of the machine that the boom is fully stowed. S stands for safety, 62 is the number of the circuit for boom stowed and BST stands for Boom Stowed.

P 48 LP – P stands for power. 48 is the circuit number for work lamps and LP stands for Lamp.

R 48 LP – R stands for relay. In this case it is the wire that feeds the relay coil for the work lamp. All other numbers remain the same.

Circuit prefix

C ..... Control

D ..... Data

E ..... Engine

G ..... Gauges

N ..... Neutral

P ..... Power

R ..... Relay Output

S ..... Safety

V ..... Valve

Circuit suffix

Definition	Suffix
AC Generator	GEN
Alternator Field	AF
Angle	ANG
Auxiliary Boom Valve	ABV
Auxiliary Forward Valve	AFV
Auxiliary Hydraulic Pump	AH
Auxiliary Platform Valve	APV
Auxiliary Reverse Valve	ARV
Auxiliary Steer/Drive Valve	ASV
Axle Extend Valve	AXE
Axle Oscillate	AXO
Axle Retract Valve	AXR
Axle Front Position	FAP
Axle Rear Position	RAP
Battery	BAT
Boom Extended	BEX
Boom Stowed	BST
Brake	BRK
Bypass Valves	BV
Calibrate	CAL
CAN Signal	CAN
CAN Shield	SHD
CATS Module	CAT
Chain Break	CNK
Data High	DTH
Data Low	DTL
Drive Chassis Controller	DCN
Drive Enable	DE
Drive Enable Left	DEL
Drive Enable Right	DER
Electrical Displacement Control	EDC
Envelope Light	ENV
Engine Speed Select	ESP
Engine Status Lamp	ESL
Envelope Lockout	ENL
Extend/retract Lockout	ERL
Filter Restricted	FLR
Filter Switch	FLT
Flashing Beacon	FB
Float Switch	FS
Footswitch Signal	FTS
Forward	FWD
Fuel Pump	FP
Fuel Select (gas/LP)	FL
Fuel Solenoid	FSL

REV A

WIRE CIRCUIT LEGEND

Definition	Suffix
Function Enable	FE
Ground Control	TCN
Ground	GND
Horn	HRN
High RPM	HS
Hydraulic Generator	HG
Ignition	IGN
Jib Bellcrank Down	JBD
Jib Bellcrank Up	JBU
Jib Sensor	JBS
Jib U/D Control	JUD
Jib Down	JD
Jib Up/Down Flow Control	JFC
Jib Select Valve	JSV
Jib Up	JU
Jib E/R Control	JER
Jib Ext	JBE
Jib Ret	JBR
Jib Rotate Left (CCW)	JRL
Jib Rotate Right (CW)	JRR
Joystick 5 VDC Power	JPW
Lamps	LPS
Left Front	LF
Left Front Steer Sensor	LFS
Left Rear	LR
Left Rear Steer Sensor	LRS
Limit Switch	LS
Lift Speed Reduction	LSR
Load Sensor	LDS
Lockout	LO
Low RPM	LS
Low fuel	LOF
Motor Shift (Speed)	MS
Multi Function Valve	MFV
Platform Control	PCN
Primary Ext/Ret Lockout	PEL
Platform Level Down	PLD
Platform Level Flow Control	PLF
Platform Level Up	PLU
Platform Rotate Flow Control	PRF
Platform Rotate Control	PRC
Platform Rotate Left (CCW)	PRL
Platform Rotate Right (CW)	PRR
Power	PWR
Power to Length Sensor	PSL
Platform Tilt Alarm	PTA
Platform Tilt Sensor	PTS
Pressure Comp Enable	PCE
Pressure Sender	PSR
Pressure Switches	PS
Primary Boom Angle Sensor	PBS
Primary Boom Down	PBD
Primary Boom Ext/Ret Lockout Valve	PBL
Primary Boom Extend	PBE
Primary Boom Extend/Retract Flow Control	PER
Primary Boom Retract	PBR
Primary Boom Angle Sensor	PBS
Primary Boom Down	PBD
Primary Boom Ext/Ret Lockout Valve	PBL
Primary Boom Extend	PBE
Primary Boom Extend/Retract Flow Control	PER
Primary Boom Retract	PBR
Primary Boom Up	PBU
Primary Boom Up/Dwn Flow Control	PUD
Primary Boom Extend/Retract Signal	PLS
Primary Boom Up/Down Signal	PES
Primary Lockout	PL
Primary Length Sensor	PSL
Propel Signal	JPL
Program Setup Enable	PSE
Propel Lockout	PLL
Proportional Valve	PRV
Proximity Sensor	PXS
Receptacle	REC
Recovery	RCV
Retract Lockout	RL
Return	RET
Reverse	REV
Right Front	RF
Right Front Steer Sensor	RFS
Right Rear	RR
Right Rear Steer Sensor	RRS
RPM	RPM
Secondary Boom Angle Sensor	SBS
Secondary Boom Elevated	SBL
Sec Boom Down	SBD
Sec Boom Extend	SBE
Sec Boom Extend/Retract Flow Control	SER
Sec Boom Retract	SBR
Sec Boom Up	SBU
Sec Boom Up/Dwn Flow Control	SUD
Secondary Boom	SB

This list continues on the next page.

WIRE CIRCUIT LEGEND REV A

Definition	Suffix
Secondary Boom Lockout Valve (Extend)	SLE
Secondary Boom Lockout Valve (Riser Down)	SLD
Sensor	SEN
Spare	SP
Speed Sensor	SS
Start Aid (Glow Plug or choke)	SA
Starter	STR
Steer Control Signal	STC
Steering Valve Clockwise	SCW
Steering Valve Counter Clockwise	SCC
Temp Sender	TSR
Temp Switches	TS
Tether	TET
Tilt Alarm X axis	TAX
Tilt Alarm Y axis	TAY
Turntable or Ground Control Panel	TCN
Turntable Rotate Flow Control	TRF
Turntable Rotate Right (CW)	TRR
Turntable Rotate Signal	TRS
Turntable Tilt Alarm	TTA
Turntable Tilt Sensor	TTS
Test Switch	TSW

Wire Coloring

1 All cylinder extension colors are solid and all retract functions are striped black. When using black wire, the stripe shall be white.

2 All rotations that are LEFT or CW are solid, RIGHT or CCW are striped and black. When the wire is black, the stripe is white.

3 All proportional valve wiring is striped.

Wire Color Legend

BL	Blue
BL/BK	Blue/Black
BL/RD	Blue/Red
BL/WH	Blue/White
BK	Black
BK/RD	Black/Red
BK/WH	Black/White
BR	Brown
GR	Green
GR/BK	Green/Black
GR/WH	Green/White
RD	Red
RD/BK	Red/Black
RD/WH	Red/White
OR	Orange
OR/BL	Orange/Blue
OR/BK	Orange/Black
OR/RD	Orange/Red
WH	White
WH/BK	White/Black
WH/RD	White/Red
YL	Yellow

REV A 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
GR	17	Platform rotate left valve driver
GR/BK	18	Platform rotate right valve driver
GR/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

Color	Circuit #	Primary function
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
GR	43	Jib up
GR/BK	44	Jib down
GR/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)
GR/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
GR/WH	59	Chain break circuit
GR/WH	60	Axle extend
GR	61	Axle retract
OR	62	Boom stowed (safety)
OR/RD	63	Power to boom envelope safety switch

This list continues on the next page.

WIRE CIRCUIT LEGEND REV A

Color	Circuit #	Primary function
OR/BK	64	Power for operational switches
BL/WH	65	Low fuel indication
BL	66	Drive enable
BL	67	Secondary boom not stowed
RD	68	Primary boom lowered (operational)
BL	69	Primary boom #1 extended
BL/WH	70	Primary boom #2 retracted
BL/BK	71	Primary boom #2 extended
GR	72	Secondary boom extend
GR/BK	73	Secondary boom retract
RD	74	Primary #1 Lockout
RD/WH	75	Primary #2 Lockout
BL	76	Pri boom #3 extended
WH	77	Lower angle #1 operational
WH/BK	78	Upper angle #2 operational
BK	79	power from TCON ESTOP
N/A	80	Can 2.0/J1939 Shield
GR	81	Can 2.0/J1939 Low
YL	82	Can 2.0/J1939 High
GR/WH	83	Tilt signal x axis
GR/BK	84	Tilt signal y axis
GR	85	Tilt sensor power
OR	86	Hydraulic filter restricted
RD	87	Platform level safety power
RD/BK	88	Platform level safety output
BR	89	Platform level safety ground
RD/BK	90	Proximity kill
RD/WH	91	Gate Interlock
WH/BK	92	Motor speed (LO/HI)
WH/RD	93	Motor bypass
WH	94	Load sensor
OR	95	Tether ESTOP return
RD	96	Tether power
BK	97	Tether ESTOP power
WH	98	J1708 + (high)

Color	Circuit #	Primary function
BK	99	J1708 - (low)
WH/RD	100	Outrigger lowered
WH/BK	101	Outrigger raised
OR	102	Pothole protector up
OR/RD	103	Pothole protector down
BK/WH	104	Proprietary data buss – (i.e. ITT or AP)
BK/RD	105	Proprietary data buss + (i.e. ITT or AP)
GR	106	Spare
RD	107	Alternator field
BL/WH	108	Engine status
GR/WH	109	Sensor pwr
BK	110	Sensor return
OR	111	Steer signal
RD	112	Steer signal to solenoid valve
OR/RD	113	Multi function valve
BK/RD	114	Load moment overweight
RD/BK	115	Load moment underweight
OR	116	Hydraulic oil cooler
RD	117	Flashing beacon
OR	118	Lift speed reduction
BL	119	Hydraulic pressure sensor output
OR	120	Oil cooler fan
GR	121	Axle oscillate LEFT
GR/BK	122	Axle oscillate RIGHT
RD/BK	123	Primary boom angle signal operational
RD/WH	124	Secondary boom angle signal operational
WH/RD	125	Secondary boomlockout (Ext Enable)
WH/BK	126	Secondary boom lockout (Riser Down Enable)
GR	127	ECU test switch
OR/RD	128	Low engine speed

REV A WIRE CIRCUIT LEGEND

Color	Circuit #	Primary function
RD/BK	129	Descent alarm
WH/RD	130	Travel alarm
BL	131	Motion alarm
GR	132	Platform load input
GR/WH	133	Platform load alarm
GR/BK	134	Key switch power
BL/WH	135	Fuel pump
RD	136	Power to safety module
RD/WH	137	Propel power (P_38)
RD/BK	138	Pri boom up/sec boom dwn-Ext (P_11/30)
WH/RD	139	Turntable rot FC safety (P_39)
OR/RD	140	Boom envelope safety
RD	141	Primary boom angle signal safety
OR	142	Secondary boom angle signal safety
BL/RD	143	Drive enable left
BL/WH	144	Drive enable right
RD/WH	145	Calibrate
BL	146	Jib bellcrank up FC
BL/BK	147	Jib bellcrank down FC
BL/WH	148	Jib bellcrank sensor
GR/WH	149	Jib Up/Down FC
GR/BK	150	Hydraulic generator bypass
GR	151	Hydraulic EDC output
BK	152	Injector retard
BK	153	Jib extend
BK/WH	154	Jib retract
OR/RD	155	Pressure comp enable
GR/WH	156	Jib Up/Down
BK/RD	157	Jib Ext/Ret
BL/RD	158	Spare
BL/WH	159	Steer joystick signal
WH/RD	160	Propel joystick signal
WH/BK	161	Sec boom joystick signal
OR	162	Joystick 5 VDC power

Color	Circuit #	Primary function
BL/WH	163	Pri extend/retract signal
RD/WH	164	Pri up/down signal
WH/RD	165	TT Rotate signal
OR	166	Boom length signal safety
OR/BK	167	Boom length signal operational
BL/RD	168	Primary boom hydraulic valve lockout
GR	169	Envelope active LED
WH/RD	170	Load sense relay source
WH/BK	171	Load sense relay sink
BL	172	UP/DN flow control ground
BK	173	Ext/Ret flow control ground
WH	174	Key switch power, ground position
WH/BK	175	Load sensor signal operational
GR/WH	176	Secondary extend/retract FC
BL/RD	177	Extend/retract lockout
BK	178	Control module status light
GR	179	Drive power relay
BK	180	Lift power relay
OR	181	48 Volt alternator field (or battery)
RD	182	24 Volt battery
BL	183	Envelope or load sense recovery
WH	184	Program setup enable
WH	185	Encode A
BL	186	Encode B
BL	187	Bootstrap or program enable
GR	188	Safety cross check
BK	189	Data receive
BK/WH	190	Data transmit
WH/RD	191	Multi-Function pressure relief
WH/BK	192	Jib rotate left
WH/RD	193	Jib rotate right
WH/RD	194	Speed select input
OR/RD	195	Electric brake source
YL	196	2.5V Sensor power
BR	N/A	Ground or return

Limit Switches

REV A

Types of Limit Switches

There are two types of limit switches, which are found in various locations throughout the machine: mechanical-type **operational** or **safety** switches and magnetic **proximity** switches. As in aircraft, which features redundant safety systems, each mechanical safety switch is backed up with an independently functioning proximity switch.

The mechanical-type **operational** or **safety** switches are used to sense a positive displacement or movement of the limit switch actuator, or arm, as the machine moves through its range of operational functions. Included in this group are envelope limit switches, which sense the extended length and angle of the boom, position of the axles and rotational position of the turntable.
For example, when the 53° operational switch is activated by achieving a 53° boom angle, the boom may then be extended beyond 75 feet (22.9 m). Another example is the drive enable limit switch, which disables the drive function anytime the boom is rotated past the rear axles, indicated by the 'square' end of the drive chassis.
In some cases, the engine will be stopped if safety parameters are exceeded.

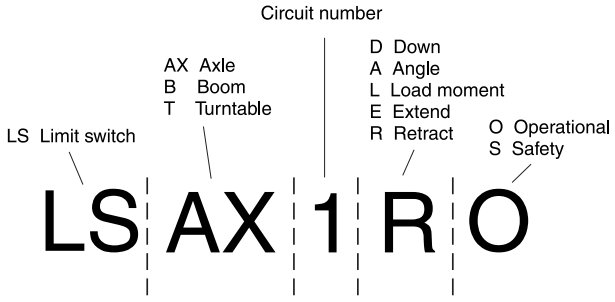
Magnetic **proximity** switches are used to sense very specific positions of a part of the machine in relation to the remainder of the machine. Proximity switches must be correctly aligned for the machine functions to operate. Proximity switches are found at the front and rear axle, the turntable and several locations on the boom.

Limit Switch Numbering

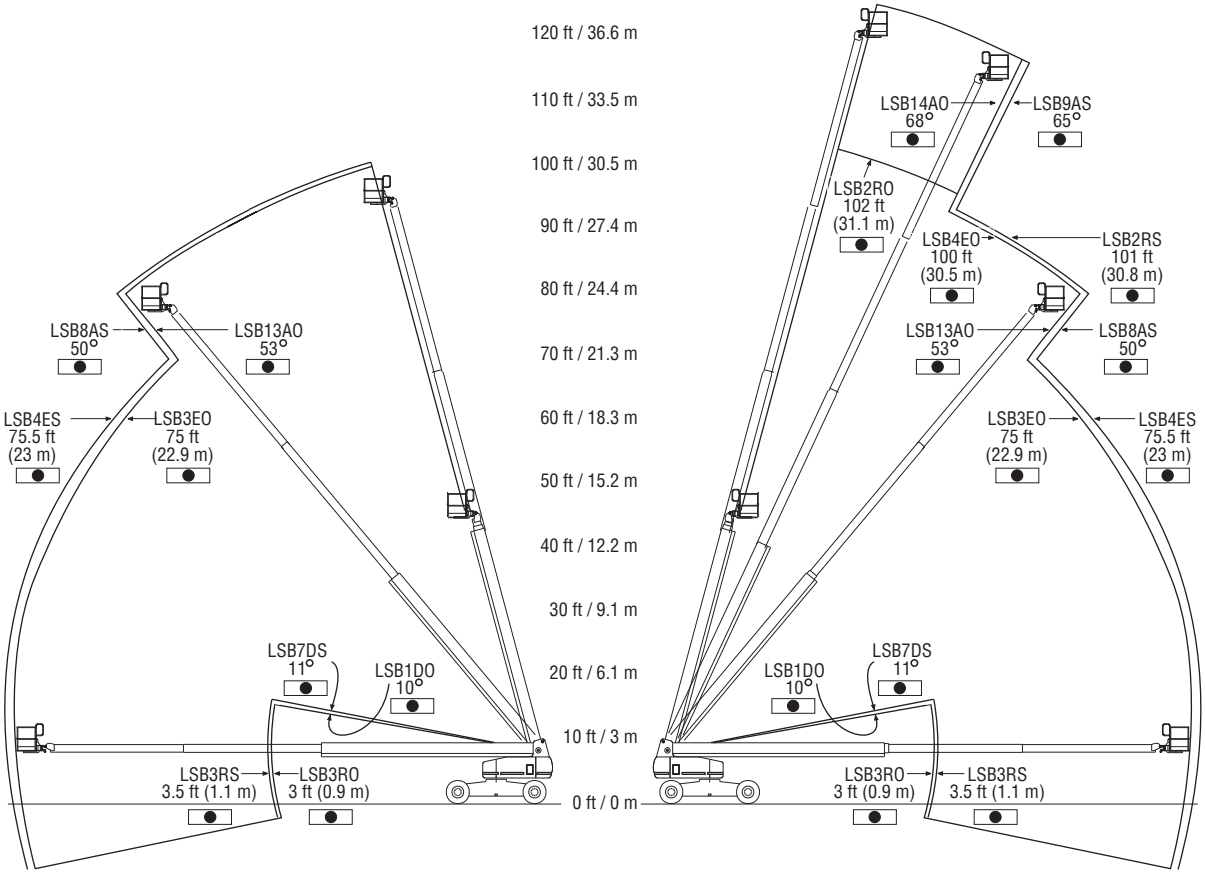
LSAX1RO	Front axle retract proximity
LSAX2RO	Rear axle retract proximity
LSAX1EO	Front axle extend proximity
LSAX2EO	Rear axle extend proximity
LSAX1ES	Front axle extend safety
LSAX2ES	Rear axle extend safety
LSB6S	Cable tension safety
LSB7DS	Boom 11° angle safety
LSB3RS	Boom 3 foot (0.9 m) extend safety
LSB2RS ••	Boom 101 feet (30.8 m) extend safety
LSB9AS ••	Boom 65° angle safety
LSB8AS	Boom 50° angle safety
LSB4ES	Boom 76 feet (23.2 m) extend safety
LST1O	Drive enable mechanical
LSB1DO	Boom 10° mechanical
LSB2RO ••	Boom >100 feet (30.5 m) retract proximity
LSB3RO	Boom >3 feet (0.9 m) stowed mechanical
LSB3EO	Boom 75 feet (22.9 m) extend proximity
LSB4EO ••	Boom 100 feet (30.5 m) extend proximity
LSB13AO	Boom 53° angle proximity
LSB14AO ••	Boom 68° angle proximity

(•• S3800 models only)

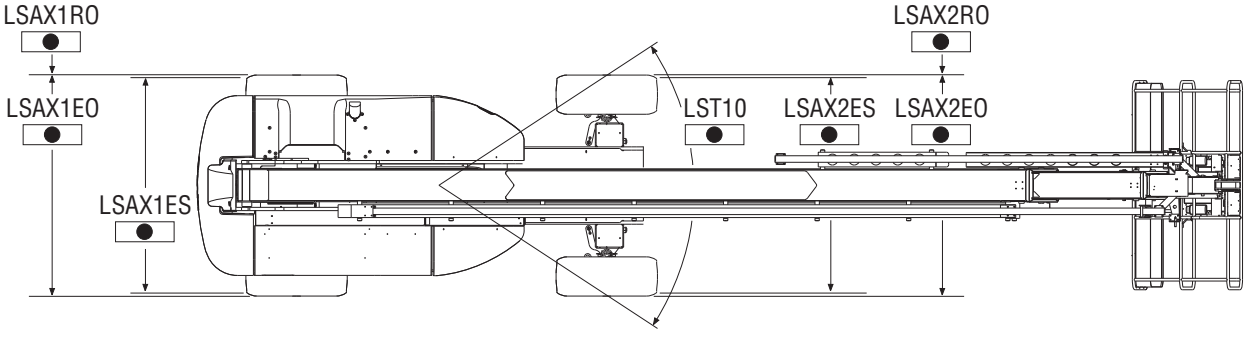
Numbering Legend



REV A LIMIT SWITCHES

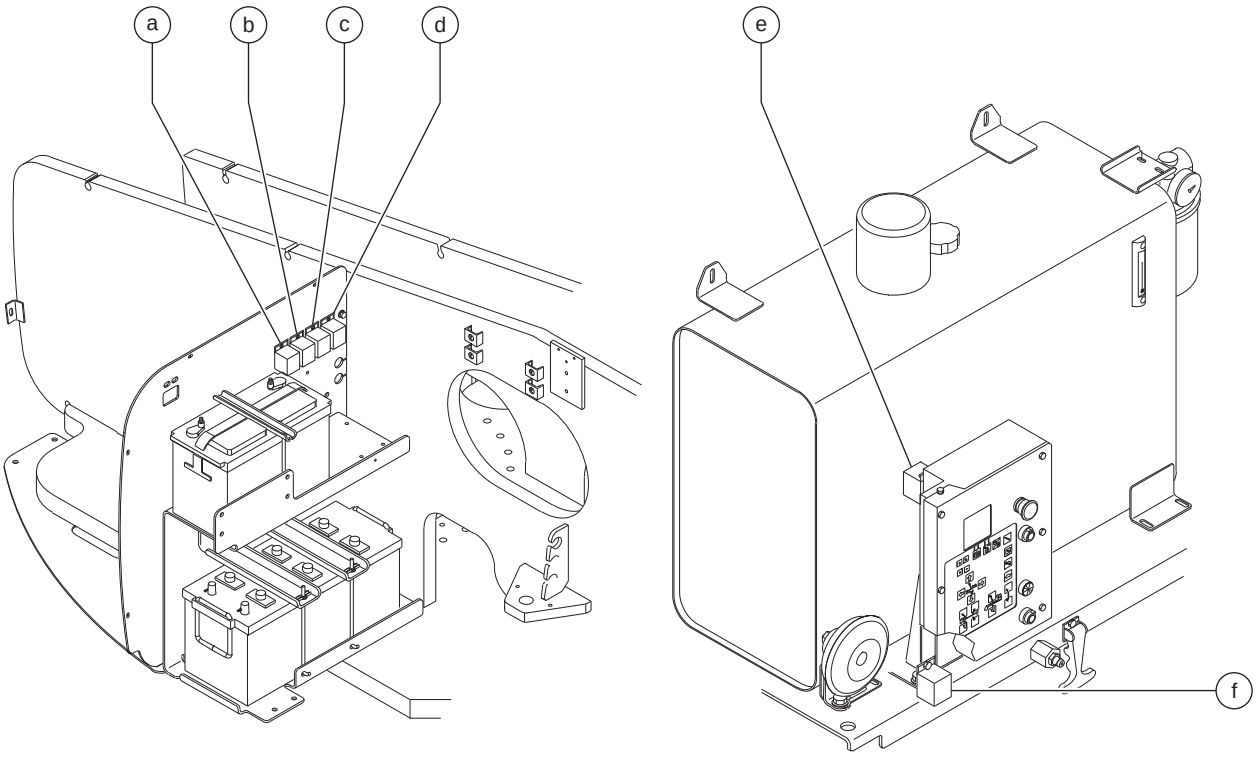


S3200 Models **S3800 Models**

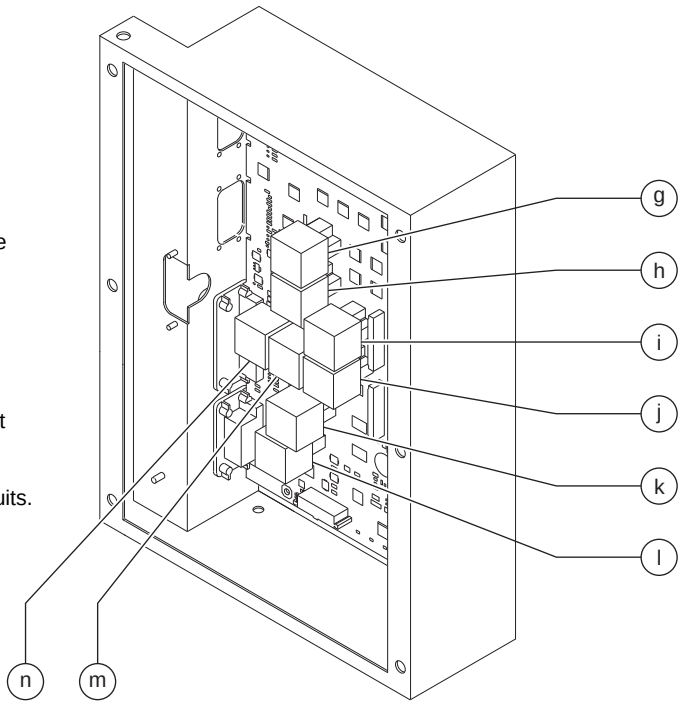


Relay Layout

REV A

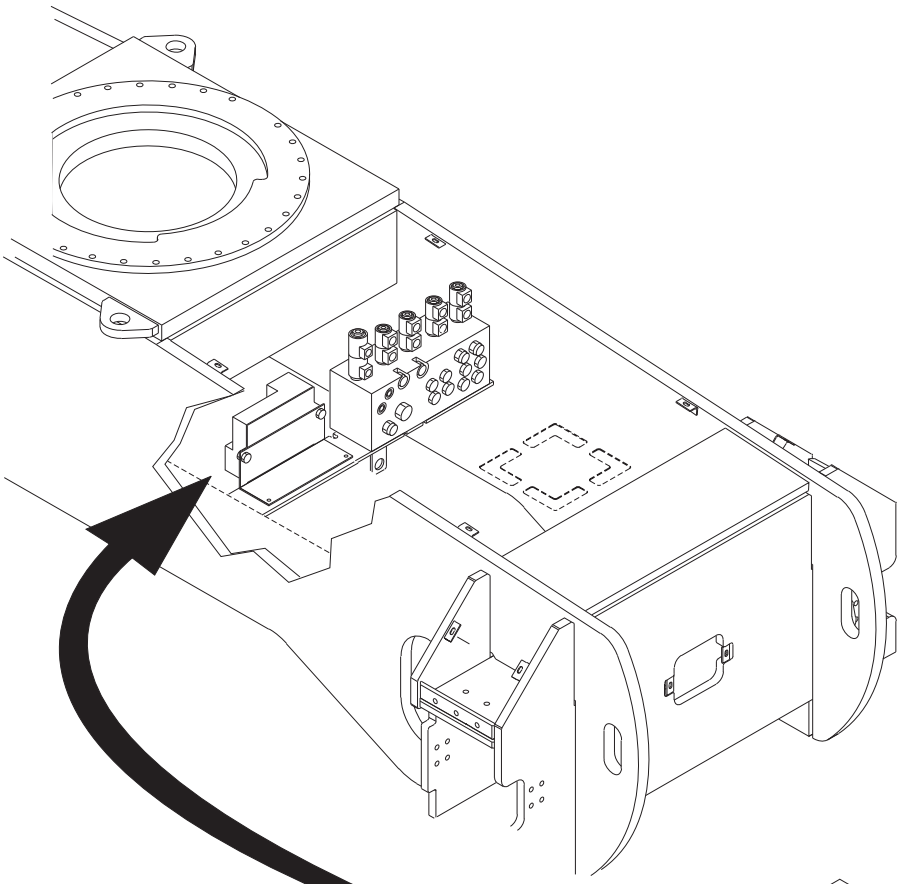


a Fuel solenoid relay (Deutz models only).
b Oil cooler relay.
c Engine cold start relay.
d Starter relay.
e Horn relay.
f Flashing beacon relay.
g CR17 relay (K7) - powers C35RPM circuit (Hi/low solenoid).
h CR16 relay (K8) - powers C34SA circuit (Engine cold start).
i CR12 relay (K4) - powers primary valves 1 and 2, ignition, glow plug, starter relay, generator, and the boom retract, multifunction and platform rotate valve coils.
j CR14 relay (K2) - powers P7R or S56PRV circuit including the auxiliary valve, boom extend/retract and turntable rotate valve coils.
k CR10 relay (K6) - powers C21IGN and C107AF circuits (Fuel on/off solenoid and alternator field).
l CR15 relay (K1) - powers P22R or C03PBF circuit (Boom up/down valve coil).
m CR13 relay (K5) - powers P_7 and throttle relay.
n CR11 relay (K3) - powers P-6R2 or P54ENG circuits.



Drive Chassis Controller Pin Legend

REV A

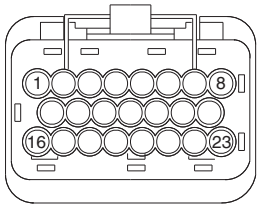


DCON
DRIVE CHASSIS
CONTROLLER
J2

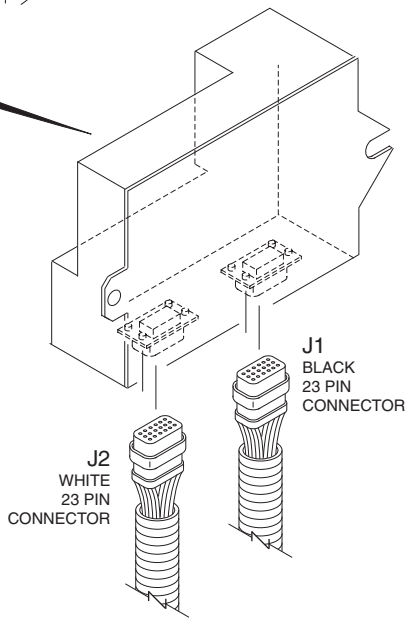
1 = VLVRET - BR
2 = V61AXRT - GR
3 = V60AXEX - GR/WH
4 = V29MS - RD/WH
5 = (UNUSED)
6 = (UNUSED)
7 = (UNUSED)
8 = (UNUSED)
9 = (UNUSED)
10 = (UNUSED)
11 = (UNUSED)
12 = C111RFS - OR
13 = C111LFS - OR
14 = VLVRET2 - BR
15 = V32BRK - WH/RD
16 = (UNUSED)
17 = (UNUSED)
18 = V36RFS - BL
19 = P110RT - BK
20 = P109ANG - GR/WH
21 = V37RFS - BL/BK
22 = V36LFS - BL
23 = V37LFS - BL/BK

DCON
DRIVE CHASSIS
CONTROLLER
J1

1 = GND-DCON - BR
2 = P21DCON - WH
3 = P53LS - GR
4 = (UNUSED)
5 = S56PRV - RD
6 = C61AXRT - GR
7 = (UNUSED)
8 = C61LS - GR
9 = P61LS - GR
10 = (UNUSED)
11 = (UNUSED)
12 = (UNUSED)
13 = (UNUSED)
14 = (UNUSED)
15 = C61LS(A) - GR
16 = (UNUSED)
17 = D81CAN(-) - GR
18 = D82CAN(+) - YL
19 = (UNUSED)
20 = (UNUSED)
21 = (UNUSED)
22 = (UNUSED)
23 = P61LS(A) - GR

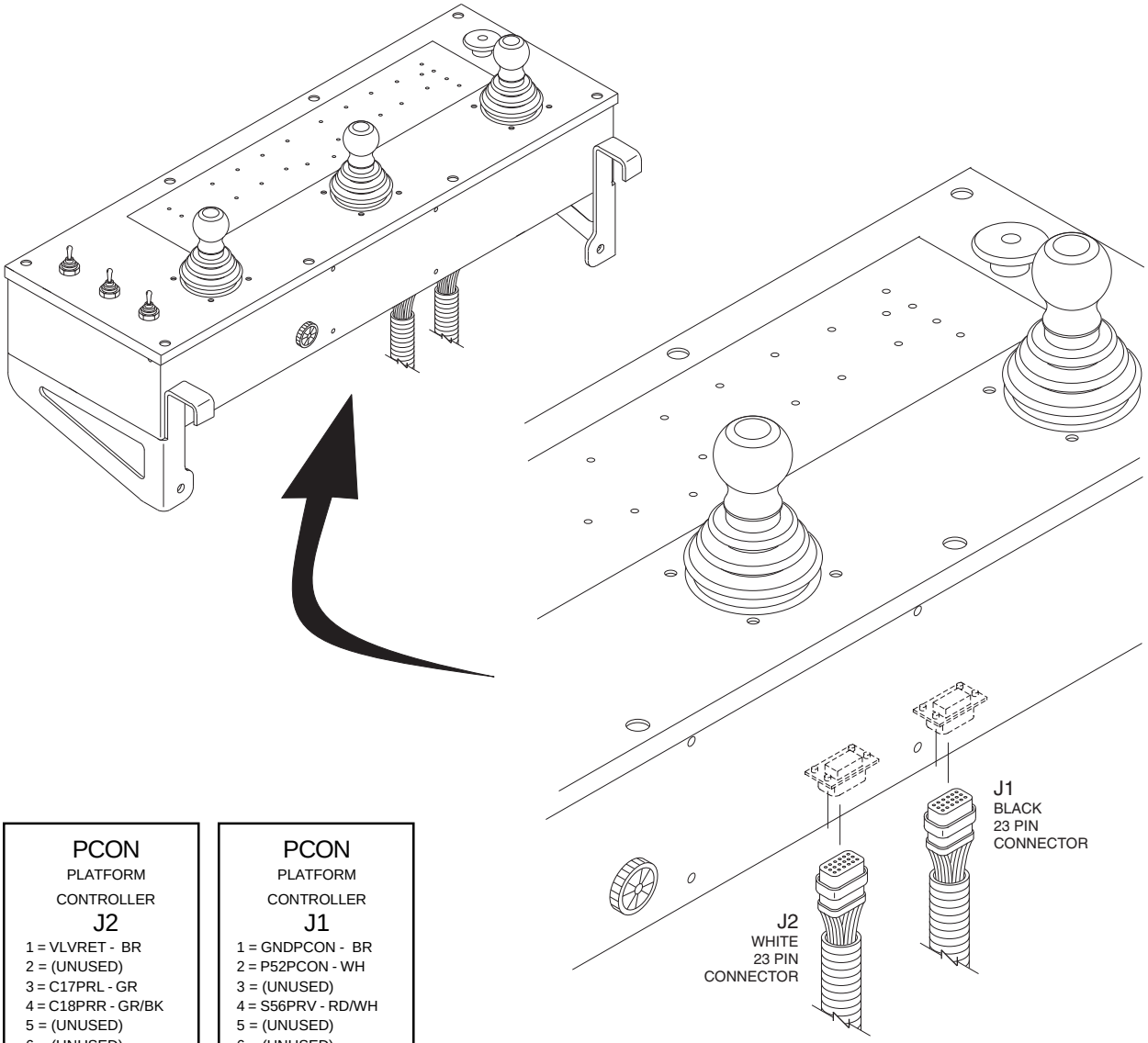


PIN NUMBERING FOR
23 PIN
CONNECTORS
(WIRE SIDE)



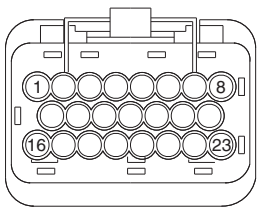
Platform Controller Pin Legend

REV A



PCON PLATFORM CONTROLLER J2
1 = VLVRET - BR
2 = (UNUSED)
3 = C17PRL - GR
4 = C18PRR - GR/BK
5 = (UNUSED)
6 = (UNUSED)
7 = C14PLU - OR
8 = C15PLD - OR/BK
9 = (UNUSED)
10 = R90PXS - RD/BK
11 = C90PXS - RD/BK
12 = LDSGND - GR/YL
13 = LDSSIG - OR
14 = LDSPWR - BK
15 = C88PTS - RD/BK
16 = R56FTS - RD
17 = C56FTS - RD
18 = (UNUSED)
19 = PLATRET - BR
20 = C84TAY - GR/BK
21 = P85PTS - GR
22 = PTSRET - BR
23 = P87PTS - RD

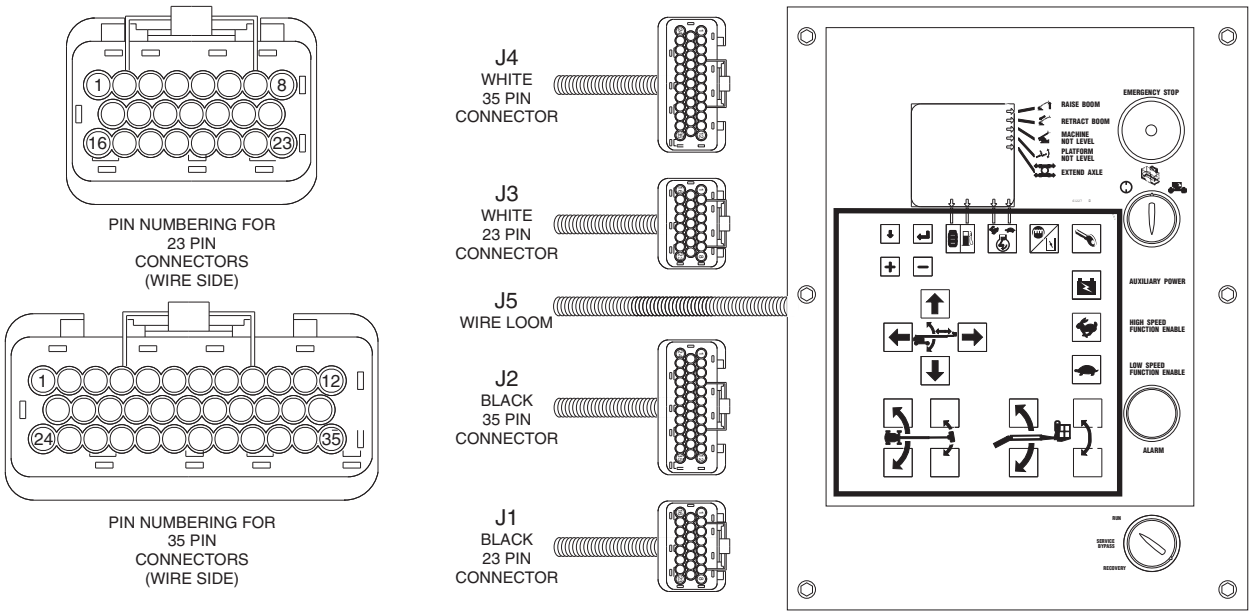
PCON PLATFORM CONTROLLER J1
1 = GNDPCON - BR
2 = P52PCON - WH
3 = (UNUSED)
4 = S56PRV - RD/WH
5 = (UNUSED)
6 = (UNUSED)
7 = P56PRV - RD
8 = (UNUSED)
9 = (UNUSED)
10 = (UNUSED)
11 = (UNUSED)
12 = (UNUSED)
13 = (UNUSED)
14 = (UNUSED)
15 = C47OUT - WH/BK
16 = C46HN - WH
17 = D81CAN(-) - GR
18 = D82CAN(+) - YL
19 = (UNUSED)
20 = (UNUSED)
21 = (UNUSED)
22 = (UNUSED)
23 = P23PCON - BK



PIN NUMBERING FOR
23 PIN
CONNECTORS
(WIRE SIDE)

Turntable Controller Pin Legend

REV A



TCON
TURNTABLE CONTROLLER
J1

1 = GNDPCON - BR
2 = P52PCON - WH
3 = C46HRN - WH
4 = C47OUT - WH/BK
5 = P23PCON - BK
6 = S56PRV - RD/WH
7 = P56PRV - RD
8 = R48LP - WH/RD
9 = R117FB - RD
10 = (UNUSED)
11 = (UNUSED)
12 = (UNUSED)
13 = (UNUSED)
14 = S132LDS - BL/WH
15 = P97TET - BK
16 = (UNUSED)
17 = D81CAN(-) - GR
18 = D82CAN(+) - YL
19 = (UNUSED)
20 = (UNUSED)
21 = (UNUSED)
22 = (UNUSED)
23 = P95TET - OR

TCON
TURNTABLE CONTROLLER
J2
(S3800 MODELS)

1 = GNDDCON - BR
2 = P21DCON - RD
3 = P53LS - WH/BK
4 = P54ENG - BK/WH
5 = P56PRV - RD
6 = P57PBD - RD/WH
7 = P58LS - RD/BK
8 = S59CNBK - GR/WH
9 = C60AXEX - GR/WH
10 = C61AXRT - GR
11 = S62BSTO - OR
12 = P63LS - OR/RD
13 = C64LS - OR/BK
14 = C65LOFL - BL/WH
15 = C66DREN - BL
16 = (UNUSED)
17 = C68PBD - RD
18 = C69PBE - BK
19 = C70PBE - BL/WH
20 = C71PBE - BL/BK
21 = (UNUSED)
22 = (UNUSED)
23 = V74PRLO - RD
24 = V75PRLO - RD/WH
25 = SNSR GND - BR
26 = (UNUSED)
27 = G119SR - BL
28 = C76PBE - BL
29 = C77AS - WH
30 = C78PS - WH/BK
31 = (UNUSED)
32 = (UNUSED)
33 = (UNUSED)
34 = (UNUSED)
35 = VLVRET1 - BR

TCON
TURNTABLE CONTROLLER
J2
(S3200 MODELS)

1 = GNDDCON - BR
2 = P21DCON - RD
3 = P53LS - WH/BK
4 = P54ENG - BK/WH
5 = P56PRV - RD
6 = P57PBD - RD/WH
7 = P58LS - RD/BK
8 = S59CNBK - GR/WH
9 = C60AXEX - GR/WH
10 = C61AXRT - GR
11 = S62BSTO - OR
12 = P63LS - OR/RD
13 = C64LS - OR/BK
14 = C65LOFL - BL/WH
15 = C66DREN - BL
16 = (UNUSED)
17 = C68PBD - RD
18 = C69PBE - BK
19 = C70PBE - BL/WH
20 = C71PBE - BL/BK
21 = (UNUSED)
22 = (UNUSED)
23 = (UNUSED)
24 = (UNUSED)
25 = SNSR GND - BR
26 = (UNUSED)
27 = G119SR - BL
28 = (UNUSED)
29 = C77AS - WH
30 = (UNUSED)
31 = (UNUSED)
32 = (UNUSED)
33 = (UNUSED)
34 = (UNUSED)
35 = (UNUSED)

TCON
TURNTABLE CONTROLLER
J3

1 = (UNUSED)
2 = R35RPM - BK/RD
3 = C21IGN - WH
4 = C34SA - BK/WH
5 = (UNUSED)
6 = (UNUSED)
7 = C46HRN - WH
8 = (UNUSED)
9 = C33STR - BK
10 = C31EDC (-) WH/BK
11 = C30EDC (+) WH
12 = C25PSR - WH/BK
13 = C26TSR - WH/RD
14 = RET85TTSR - BR
15 = P85TTSR - GR
16 = VLVRET2 - BR
17 = (UNUSED)
18 = C41RPM - OR/BK
19 = C107AF - RD
20 = C83TAX - GR/WH
21 = C84TAY - GR/BK
22 = C45GEN - GR/WH
23 = (UNUSED)

TCON
TURNTABLE CONTROLLER
J5

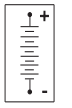
1 = BATVLV - RD
2 = BATGND - BR
3 = BATGND - BR
4 = BATECU - RD

TCON
TURNTABLE CONTROLLER
J4

1 = VLVRET4 - BR
2 = C03PBF - RD/WH
3 = C09PERF - BK/RD
4 = C06TRF - WH/RD
5 = (UNUSED)
6 = (UNUSED)
7 = C01PBU - RD
8 = C02PBD - RD/BK
9 = C07PBE - BK
10 = C08PBR - BK/WH
11 = (UNUSED)
12 = (UNUSED)
13 = (UNUSED)
14 = (UNUSED)
15 = S2PLD2 - GR/BK
16 = S7PLE2 - GR/WH
17 = S7PLE1 - BL/BK
18 = S2PLD1 - BL/RD
19 = (UNUSED)
20 = (UNUSED)
21 = (UNUSED)
22 = (UNUSED)
23 = C113MFV - OR/RD
24 = (UNUSED)
25 = C04TRL - WH
26 = C05TRR - WH/BK
27 = VLVRET7 - BR
28 = (UNUSED)
29 = (UNUSED)
30 = VLVRET6 - BR
31 = (UNUSED)
32 = C27AUX - RD
33 = (UNUSED)
34 = (UNUSED)
35 = (UNUSED)

Electrical Symbols Legend

REV A



Battery



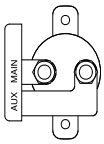
Chassis ground



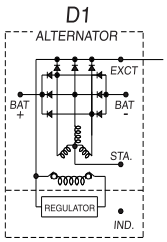
Fuse with amperage



Circuit breaker with amperage



Battery separator

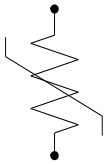


ALTERNATOR



Coil

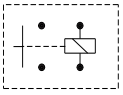
Diode



Current limiting device



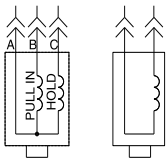
Relay



Power relay



Horn



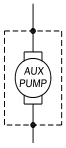
Fuel solenoid



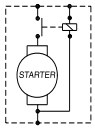
HIGH/LOW SPEED SOLENOID



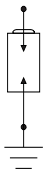
Auxiliary fan



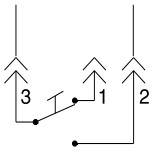
Auxiliary pump



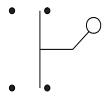
Starter motor



Engine cold start ignitor



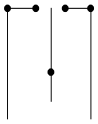
Foot switch



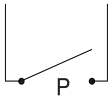
Fan belt break switch



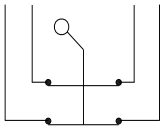
Temperature switch



Toggle switch



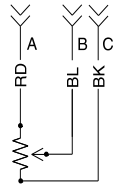
Proximity switch



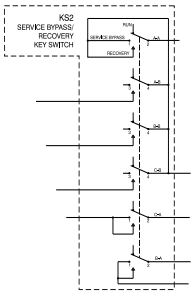
Proximity kill switch



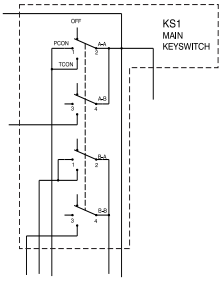
Sending unit



Steer sensor



Service bypass/recovery key switch



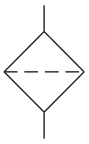
Main key switch

Hydraulic Symbols Legend

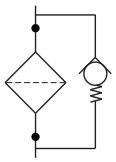
REV A



Oil cooler



Filter



Filter with bypass valve



Pump prime mover engine or motor



Fixed displacement pump with gpm and (L/min)



Bi-directional pump



Swash plate



Double acting cylinder



Brake



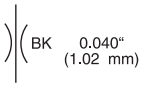
Check valve



Test port



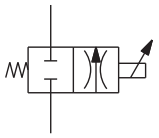
Shutoff valve



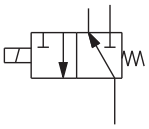
Orifice with size



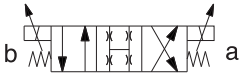
Bi-directional motor



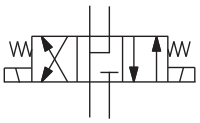
Solenoid operated proportional valve



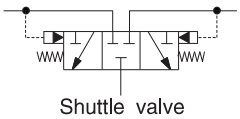
Solenoid operated 2 position, 3 way directional valve



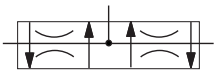
Electronic displacement controller (EDC)



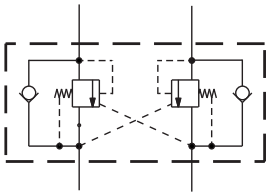
Solenoid operated 3 position, 4 way directional valve



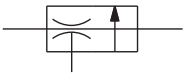
Shuttle valve



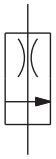
Flow divider/combiner valve



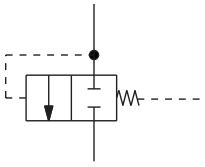
Counterbalance valve



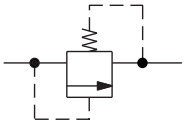
Priority flow regulator



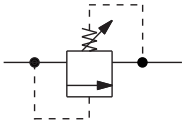
Flow regulator



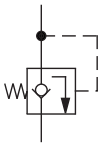
Differential sensing valve



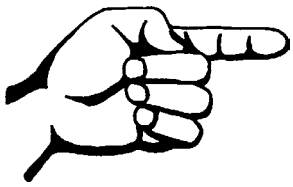
Relief valve



Adjustable relief valve

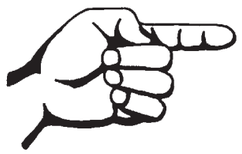


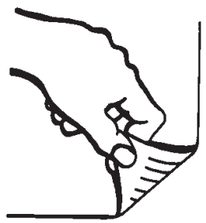
Relief valve with an incorporated check valve



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Electrical Schematic, View 1
S3200 Models

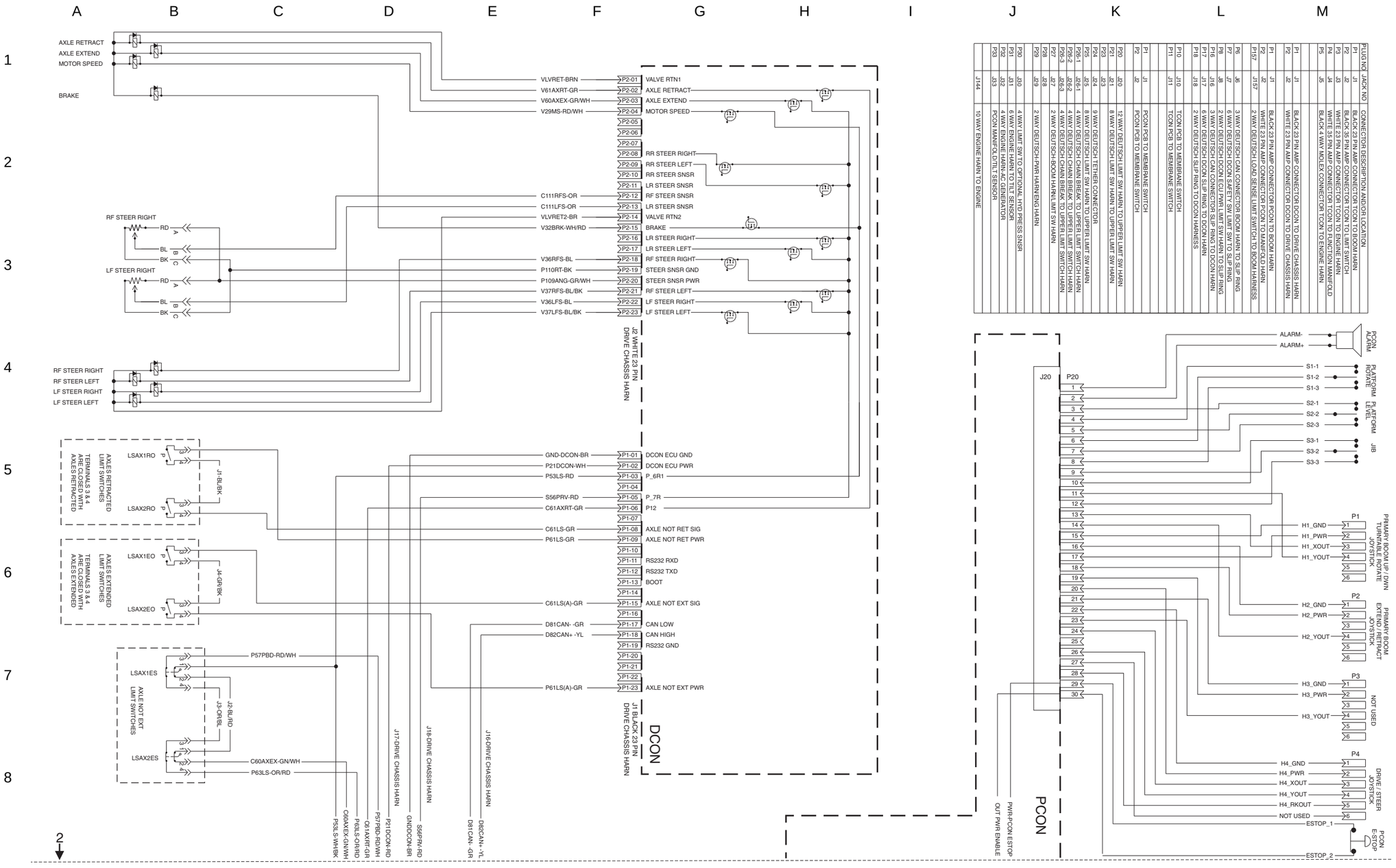




Electrical Schematic, View 1

S3200 Models

REV A



PLUG NO	JACK NO	CONNECTOR DESCRIPTION AND/OR LOCATION
P1	J1	BLACK 23 PIN AMP CONNECTOR TCON TO BOOM HARN
P2	J2	BLACK 35 PIN AMP CONNECTOR TCON TO LIMIT SWITCH
P3	J3	WHITE 23 PIN AMP CONNECTOR TCON TO ENGINE HARN
P4	J4	WHITE 23 PIN AMP CONNECTOR TCON TO MANIFOLD
P5	J5	BLACK 4 WAY MOLEX CONNECTOR TCON TO ENGINE HARN
P1	J1	BLACK 23 PIN AMP CONNECTOR PCON TO BOOM HARN
P2	J2	WHITE 23 PIN AMP CONNECTOR PCON TO DRIVE CHASSIS HARN
P1	J1	BLACK 23 PIN AMP CONNECTOR DCON TO DRIVE CHASSIS HARN
P2	J2	WHITE 23 PIN AMP CONNECTOR DCON TO DRIVE CHASSIS HARN
P1157	J1157	2 WAY DEUTSCH LOAD SENSE LIMIT SWITCH TO BOOM HARNESS
P5	J5	3 WAY DEUTSCH CAN CONNECTOR BOOM HARN TO SLIP RING
P7	J7	6 WAY DEUTSCH DCON SAFETY SW LIMIT SW TO SLIP RING
P8	J8	2 WAY DEUTSCH DCON ECU PWR LIMIT SW HARN TO SLIP RING
P16	J16	3 WAY DEUTSCH CAN CONNECTOR SLIP RING TO DCON HARN
P17	J17	6 WAY DEUTSCH DCON SLIP RING TO DCON HARN
P18	J18	2 WAY DEUTSCH SLIP RING TO DCON HARNESS
P10	J10	TCON PCB TO MEMBRANE SWITCH
P11	J11	TCON PCB TO MEMBRANE SWITCH
P1	J1	PCON PCB TO MEMBRANE SWITCH
P2	J2	PCON PCB TO MEMBRANE SWITCH
P20	J20	12 WAY DEUTSCH LIMIT SW HARN TO UPPER LIMIT SW HARN
P21	J21	8 WAY DEUTSCH LIMIT SW HARN TO UPPER LIMIT SW HARN
P23	J23	9 WAY DEUTSCH TETHER CONNECTOR
P24	J24	8 WAY DEUTSCH LIMIT SW HARN TO UPPER LIMIT SW HARN
P25	J25	4 WAY DEUTSCH CHAIN BREAK TO UPPER LIMIT SWITCH HARN
P26-1	J26-1	4 WAY DEUTSCH CHAIN BREAK TO UPPER LIMIT SWITCH HARN
P26-2	J26-2	4 WAY DEUTSCH CHAIN BREAK TO UPPER LIMIT SWITCH HARN
P26-3	J26-3	4 WAY DEUTSCH CHAIN BREAK TO UPPER LIMIT SWITCH HARN
P27	J27	2 WAY DEUTSCH BOOM HARN LIMIT SW HARN
P28	J28	
P29	J29	2 WAY DEUTSCH PWR HARN ENG HARN
P30	J30	4 WAY LIMIT SW TO OPTIONAL HYD PRESS SNSR
P31	J31	6 WAY ENGINE HARN TO TILT SENSOR
P32	J32	4 WAY ENGINE HARN TO ALTERNATOR
P33	J33	PCON MANIFOLD/TILT SENSOR
J144		10 WAY ENGINE HARN TO ENGINE

REV A

Electrical Schematic, View 2
S3200 Models

N M L K J I H G F E D C B A

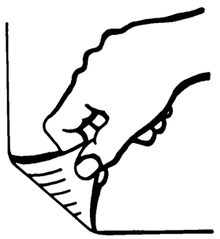
1 2 3 4 5 6 7 8

Genie S3200
Electrical Schematic
ES0513 Rev A

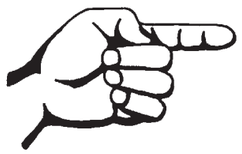
(SLIP RING)
P18
P17
J7
P7-LIMT SW HARN
J8
P8-LIMT SW HARN
(SLIP RING)
P16
J6
P6-BOOM HARN
SS6PRV-RD
GNDDCON-BR
P21DCON-RD
P57RBD-RD/WH
C61AXRT-GR
P63LS-OR/RD
C60AXEX-GR/WH
P53LS-WH/BK
D82CAN+ -YL
D81CAN- -GR
CAN SHIELD
CAN LOW
CAN HIGH
DCON GND
DCON PWR
P7R
P4R
P22
P12
P18
P1
P6R1
S56PRV-RD/WH
GNDPCON-BR
P52PCON-WH
P7
P56PRV-RD
P22
CAN SHIELD
RS232_RXD
RS232_TXD
BOOT
C47OUT-WH/BK
OUT PWR ENBL
C46HN-WH
HRN RLY CNTRL
D82CAN+ -GR
CAN+
D81CAN- -YL
CAN-
RS232_GND
P23PCON-BK
PWR-PCON ESTOP
S132LDS-BL/WH
P157-PCON J2 HARN
J157-BOOM HARN
J1 BLACK 23 PIN
BOOM HARN
VLVRET-BR
PLAT ROT CCW
PLAT ROT CW
PLAT LEVEL UP
PLAT LEVEL DN
C17PRL-GR
C18PRR-GR/BK
C14PLU-OR
C15PLD-OR/BK
R90PXS-RD/BK
C90PXS-RD/BK
PROX SWITCH (OPTION)
GR/YL
OR
BK
RD
LOAD SENSOR ASSEMBLY OPTION
FOOTSWITCH
C88PTS-RD/BK
R56PTS-RD
C56PTS-RD
PLATFORM TILT SENSOR ASSEMBLY
PLAT TILT SNSR 0-20 DEG Y AXIS
SAFETY CUTOUT 10 DEG
PLATRET-BR
C84TAY-GN/BK
P85PTS-GN
PTSRET-BR
P87PTS-RD
P23-PCON MANIFOLD
J31-TILT SNSR
1. PLAT SENSOR GND
2. TILT SENSOR SIG OUT
3. TILT SENSOR PWR
4. TILT SWITCH GND
5. PWR TO TILT SWITCH
6. OUT FROM TILT SWITCH
P1-01 VLV RTN
P1-02
P1-03 ON/OFF VLV3_A
P1-04 ON/OFF VLV3_B
P1-05 PROP VLV2_A
P1-06 PROP VLV2_B
P1-07 PROP VLV1_A
P1-08 PROP VLV1_B
P1-09
P1-10 PROX KILL GND
P1-11 PROX KILL CMD
P1-12 LOAD SNSR GND
P1-13 LOAD SNSR OUT
P1-14 LOAD SNSR PWR
P1-15 SAFE PL TILT OUT
P1-16 FOOT SW PWR
P1-17 FOOT SW RTN
P1-18
P1-19 PL TILT SNSR GND
P1-20 PL TILT SNSR
P1-21 PL TILT SNSR PWR
P1-22 SAFE PL TILT GND
P1-23 SAFE PL TILT PWR
J2 WHITE 23 PIN
PCON MANIFOLD
PCON
PWR/PCON ESTOP
OUT PWR ENABLE
U20
K2
K1
P7R
P4R
J3 10PIN
J1 10PIN
J2 10PIN
MEMBRANE/LED INTERFACE CARD
PCON MEMBRANE PANEL
HORN
AC GENERATOR
AUXILIARY
START ASSIST
START
DRIVE ENABLE
SPARE 1
AXLE RETRACT
ENGINE SPEED
AXLE EXTEND
DRIVE SPEED
FRONT STEER
REAR STEER
CRAB STEER
COORD STEER
SPARE 2
FUEL TYPE

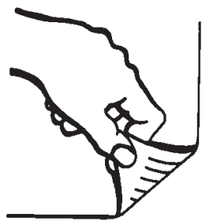
Electrical Schematic, View 2

S3200 Models



Electrical Schematic, View 3
S3200 Models

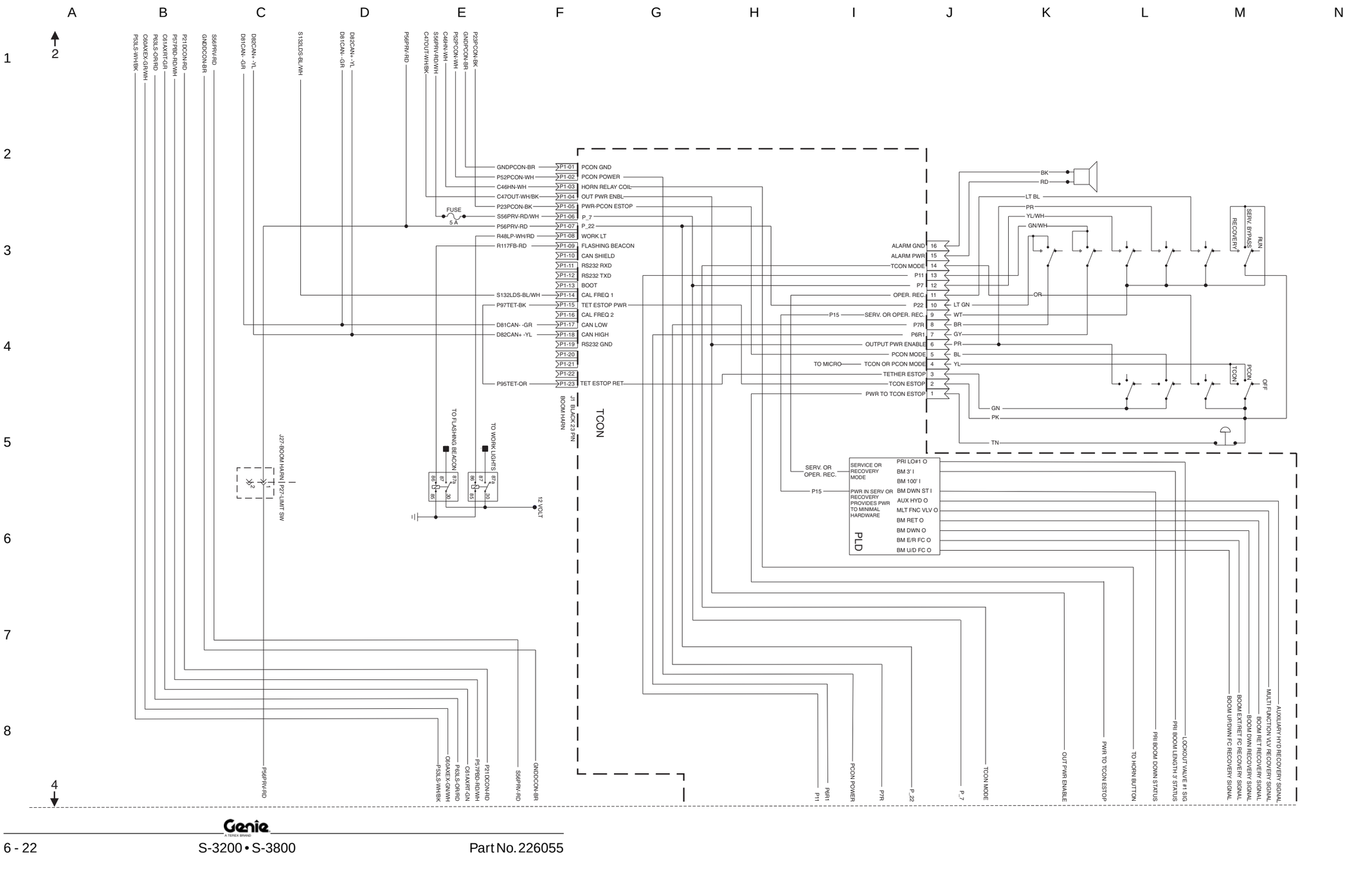




Electrical Schematic, View 3

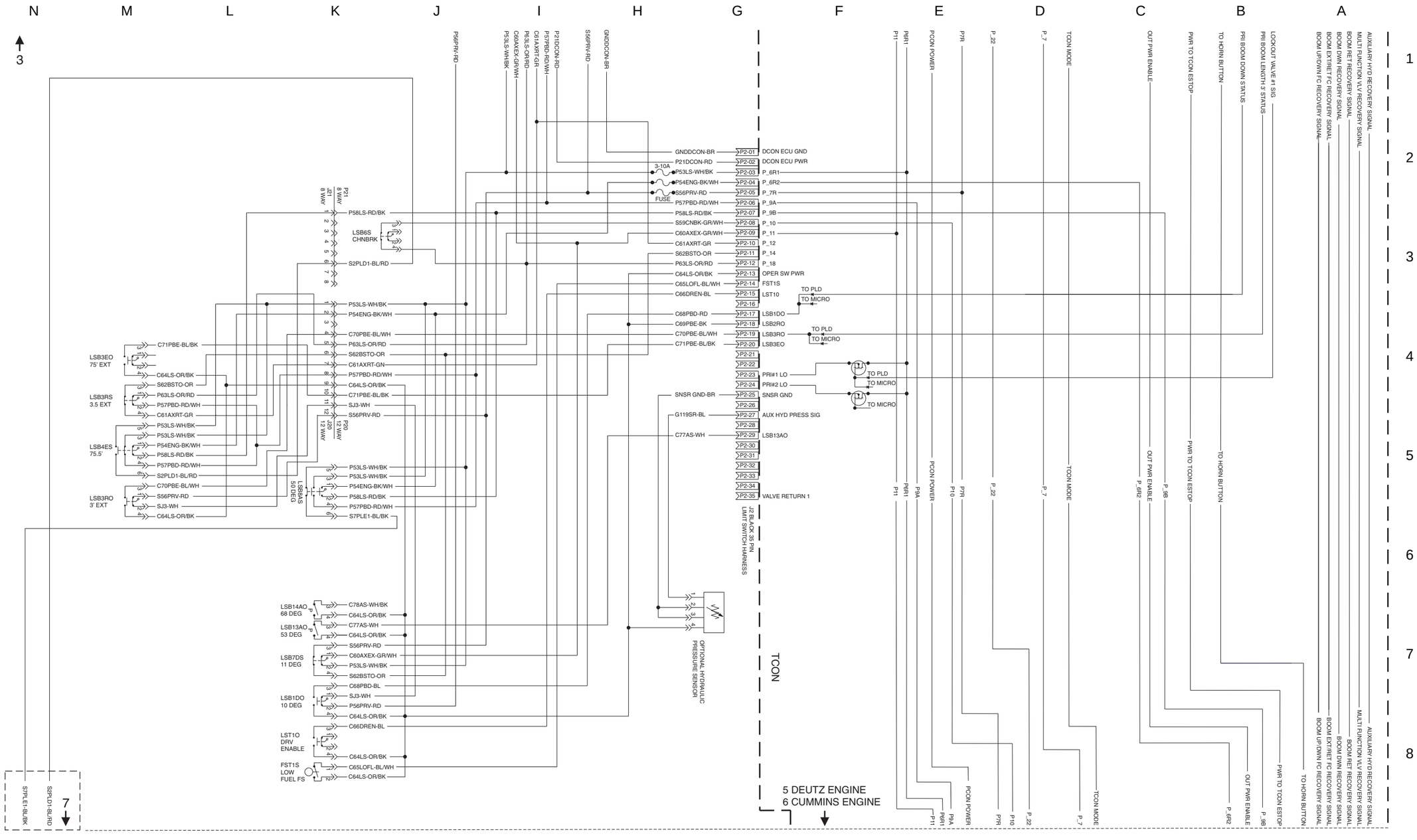
REV A

S3200 Models

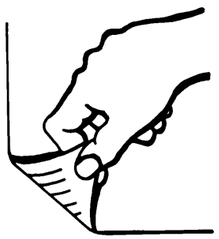


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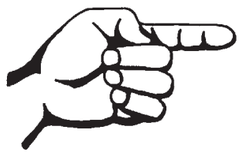
Electrical Schematic, View4
S3200 Models

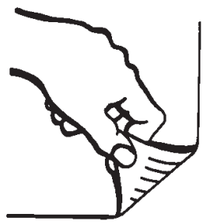


Electrical Schematic, View4
S3200 Models



Electrical Schematic, View 5
S3200 Models

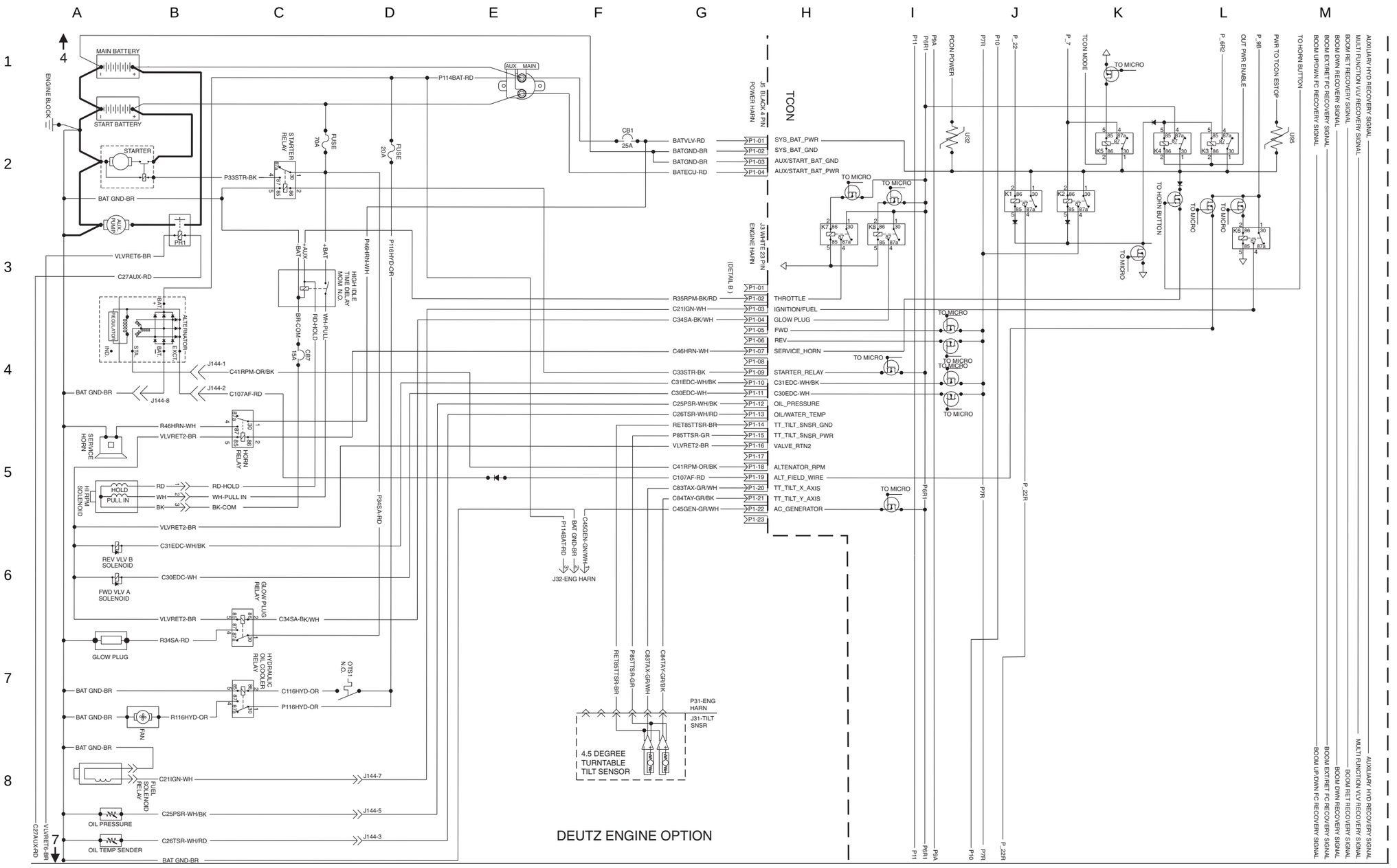




Electrical Schematic, View 5

REV A

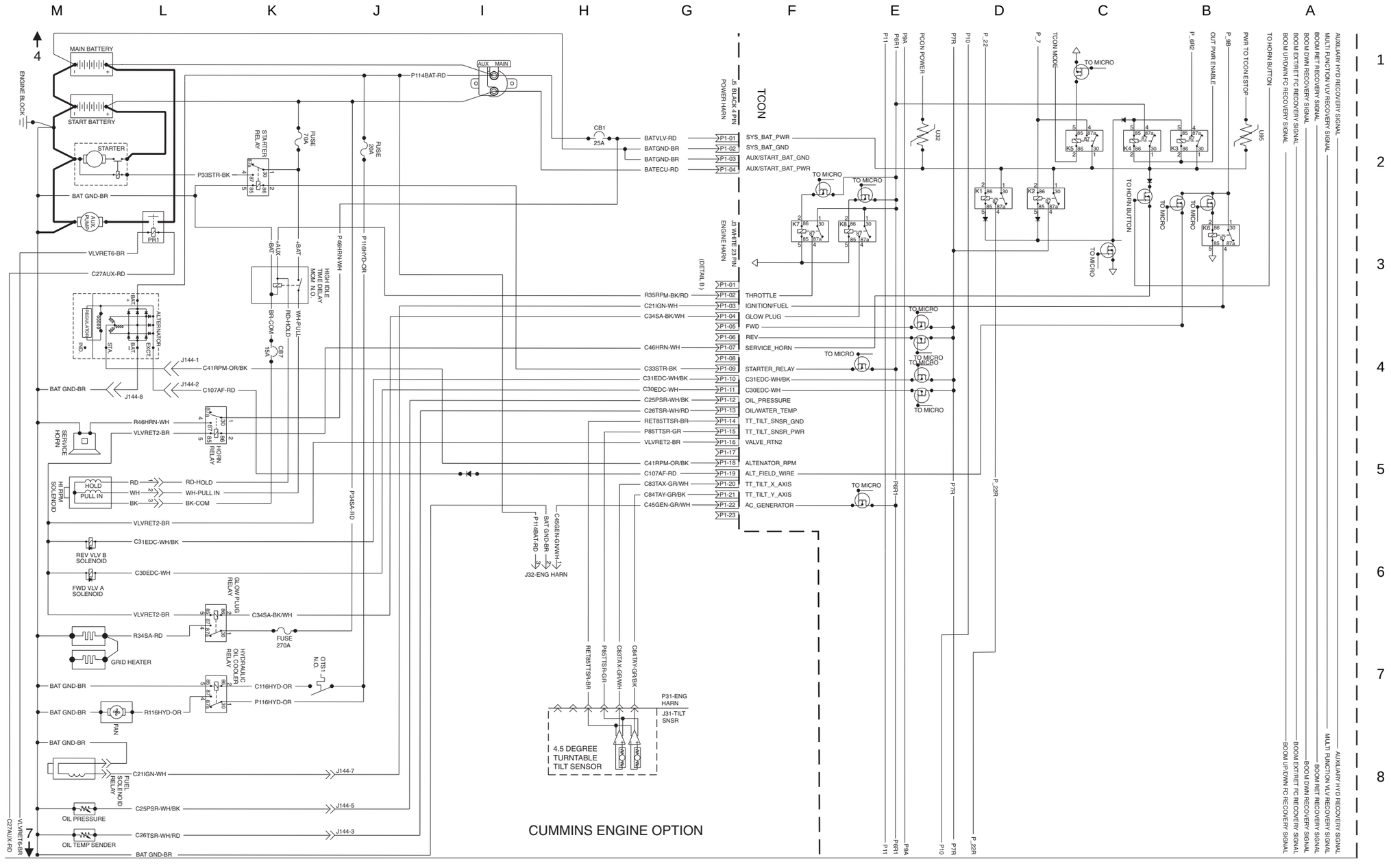
S3200 Deutz Engine Models



REV A

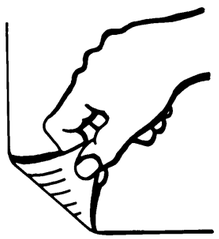
Electrical Schematic, View 6

S3200 Cummins Engine Models

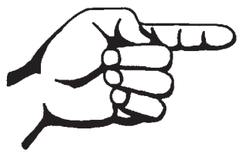


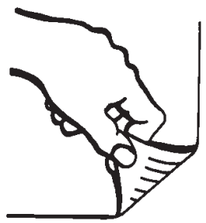
Electrical Schematic, View 6

S3200 Models



Electrical Schematic, View 7
S3200 Models

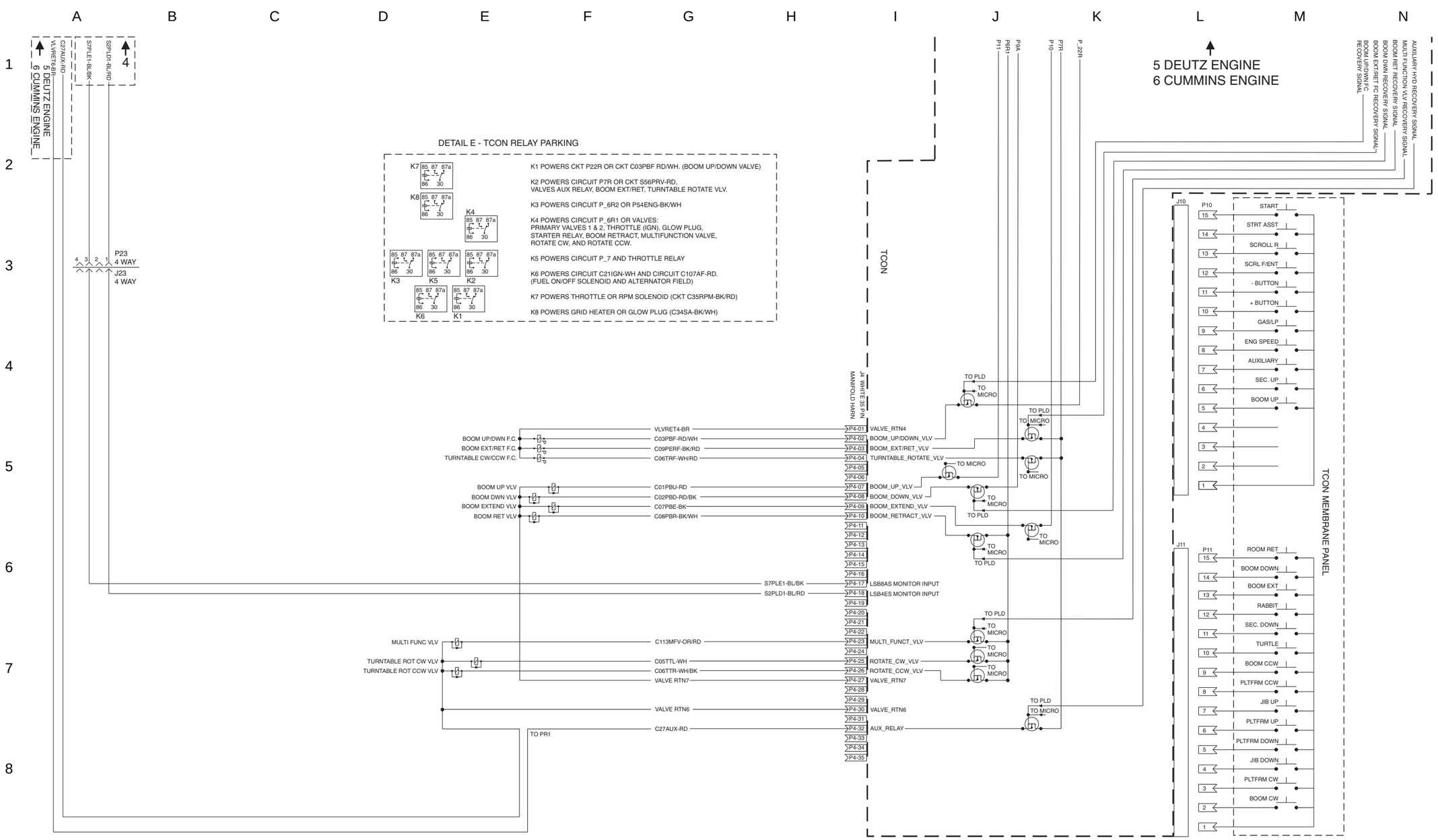




Electrical Schematic, View 7

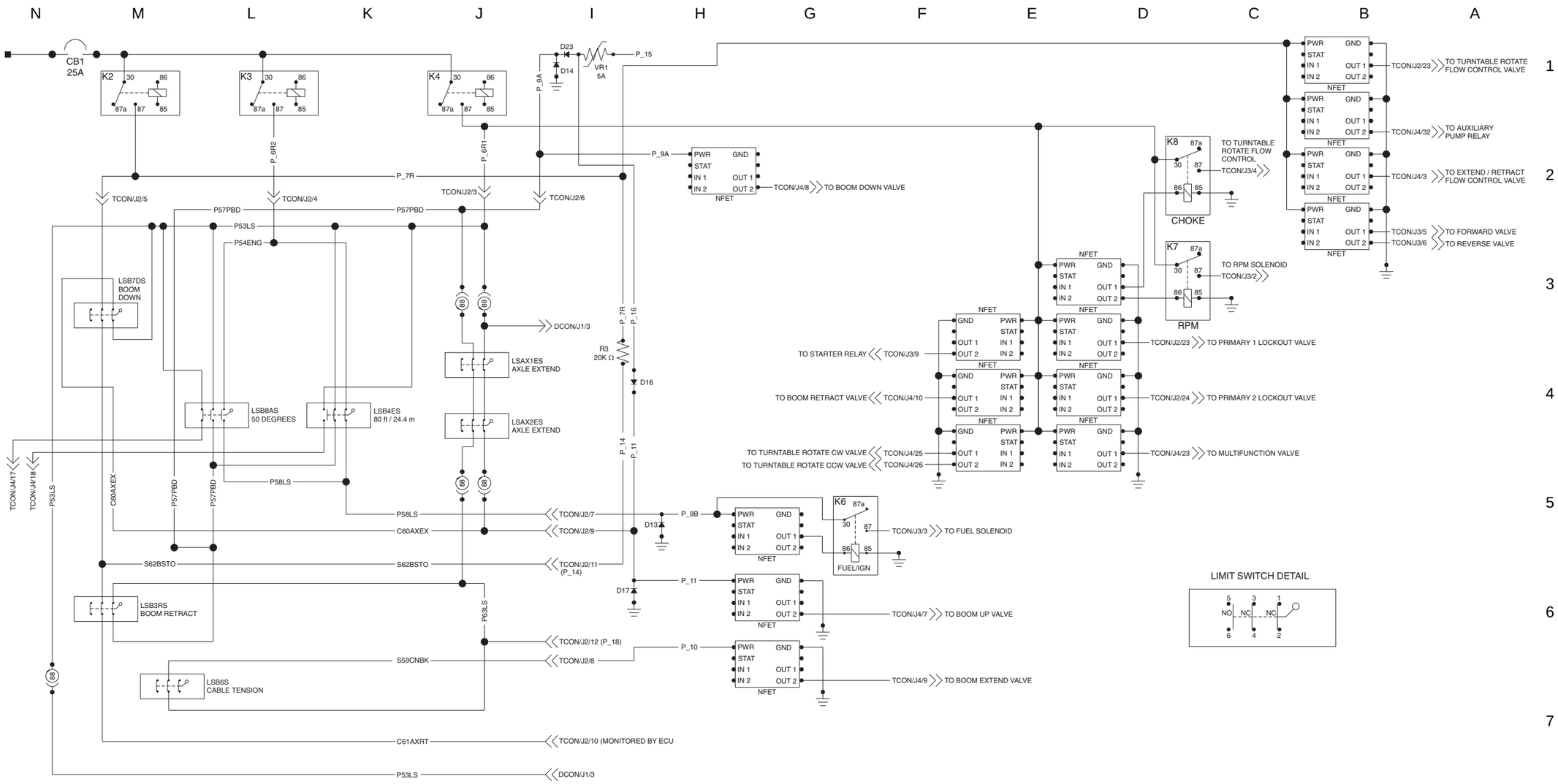
S3200 Models

REV A

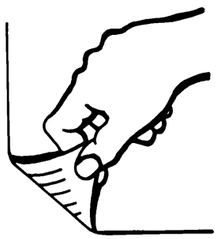


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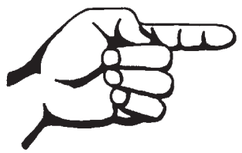
Safety Circuit Schematic, S3200 Models

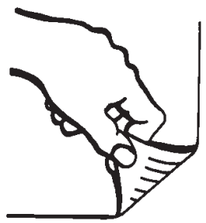


Safety Circuit Schematic,
S3200 Models



Electrical Schematic, View 1
S3800 Models

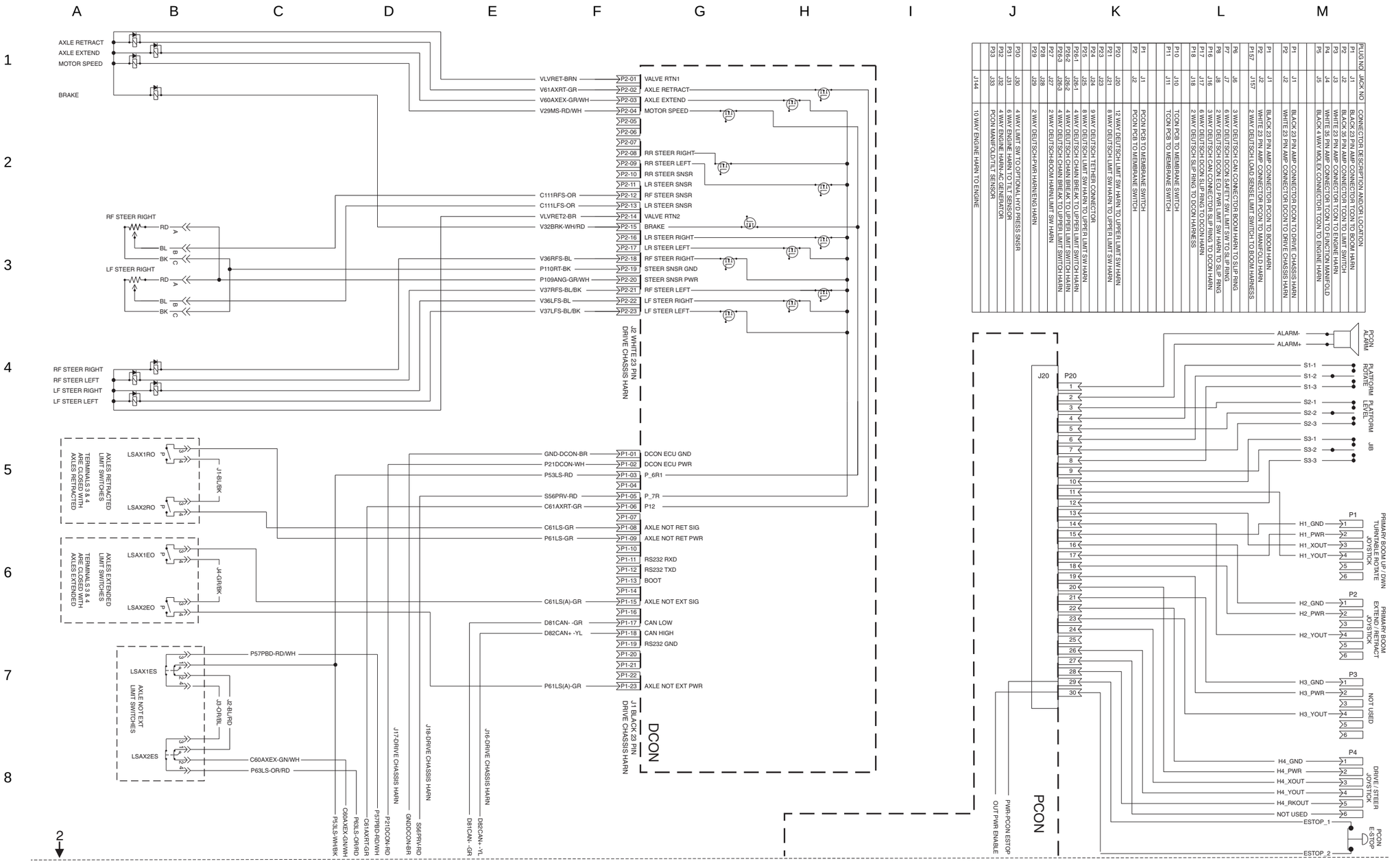




Electrical Schematic, View 1

S3800 Models

REV A



REV A

Electrical Schematic, View 2
S3800 Models

N M L K J I H G F E D C B A

1 2 3 4 5 6 7 8

Genie S3800
Electrical Schematic
ES0513 Rev A

(SLIP RING)
P18 J8 P78-LIMIT SW HARN
P17 J7 P77-LIMIT SW HARN
P16 J6 P6-BOOM HARN
S56PRV-RD
GNDDCON-BR
P52DCON-RD
P57PBD-RD/WH
C61AXRT-GR
P63LS-OR/RD
C60AXEX-GR/WH
P63LS-WH/BK
D82CAN+ -YL
D81CAN- -GR
CAN HIGH
CAN LOW
CAN SHIELD
P157-PCON J2 HARN
J157-BOOM HARN
S13ZLDS-BL/WH

PLATFORM TILT SENSOR ASSEMBLY
PLAT TILT SNSR 0-20 DEG Y AXIS
SAFETY CUTOUT 10 DEG
SAFETY CUTOUT 10 DEG
LOAD SENSOR ASSEMBLY OPTION
FOOTSWITCH
PROX SWITCH (OPTION)
PLAT ROT CCW
PLAT ROT CW
PLAT LEVEL UP
PLAT LEVEL DN
VLVRET-BR
C17PRL-GR
C18PRR-GR/BK
C14PLU-OR
C15PLD-OR/BK
R90PXS-RD/BK
C90PXS-RD/BK
GR/YL
OR
BK
RD
WH
C88PTS-RD/BK
R56PTS-RD
C56PTS-RD
PLATRET-BR
C84TAY-GN/BK
P85PTS-GN
PTSRET-BR
P87PTS-RD
P33-PCON MANIFOLD
J31-TILT SNSR
1. PLAT SENSOR GND
2. TILT SENSOR SIG OUT
3. TILT SENSOR PWR
4. TILT SWITCH GND
5. PWR TO TILT SWITCH
6. OUT FROM TILT SWITCH

PCON
P1-01 VLV RTN
P1-02
P1-03 ON/OFF VLV3_A
P1-04 ON/OFF VLV3_B
P1-05 PROP VLV2_A
P1-06 PROP VLV2_B
P1-07 PROP VLV1_A
P1-08 PROP VLV1_B
P1-09
P1-10 PROX KILL GND
P1-11 PROX KILL CMD
P1-12 LOAD SNSR GND
P1-13 LOAD SNSR OUT
P1-14 LOAD SNSR PWR
P1-15 SAFE PL TILT OUT
P1-16 FOOT SW PWR
P1-17 FOOT SW RTN
P1-18
P1-19 PL TILT SNSR GND
P1-20 PL TILT SNSR
P1-21 PL TILT SNSR PWR
P1-22 SAFE PL TILT GND
P1-23 SAFE PL TILT PWR
J2 WHITE 23 PIN PCON MANIFOLD
PWR-PCON ESTOP
OUT PWR ENABLE
U20

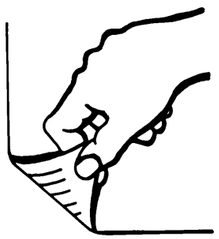
GNDPCON-BR
P52PCON-WH
S56PRV-RD/WH
P56PRV-RD
C47OUT-WH/BK
C46HN-WH
D82CAN+ -GR
D81CAN- -YL
P23PCON-BK
FUSE 5 A
P7
P22
CAN SHIELD
RS232_RXD
RS232_TXD
BOOT
OUT PWR ENBL
HRN RLY CNTRL
CAN+
CAN-
RS232_GND
PWR-PCON ESTOP
J1 BLACK 23 PIN BOOM HARN
K2
K1
P6R
P7R

J3 10PIN
J1 10PIN
J2 10PIN
MEMBRANE/LED INTERFACE CARD

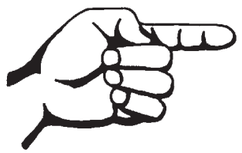
PCON MEMBRANE PANEL
HORN
AC GENERATOR
AUXILIARY
START ASSIST
START
DRIVE ENABLE
SPARE 1
AXLE RETRACT
ENGINE SPEED
AXLE EXTEND
DRIVE SPEED
FRONT STEER
REAR STEER
CRAB STEER
COORD STEER
SPARE 2
FUEL TYPE

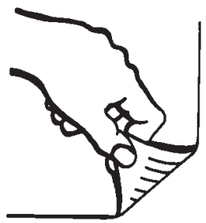
Electrical Schematic, View 2

S3800 Models



Electrical Schematic, View 3
S3800 Models

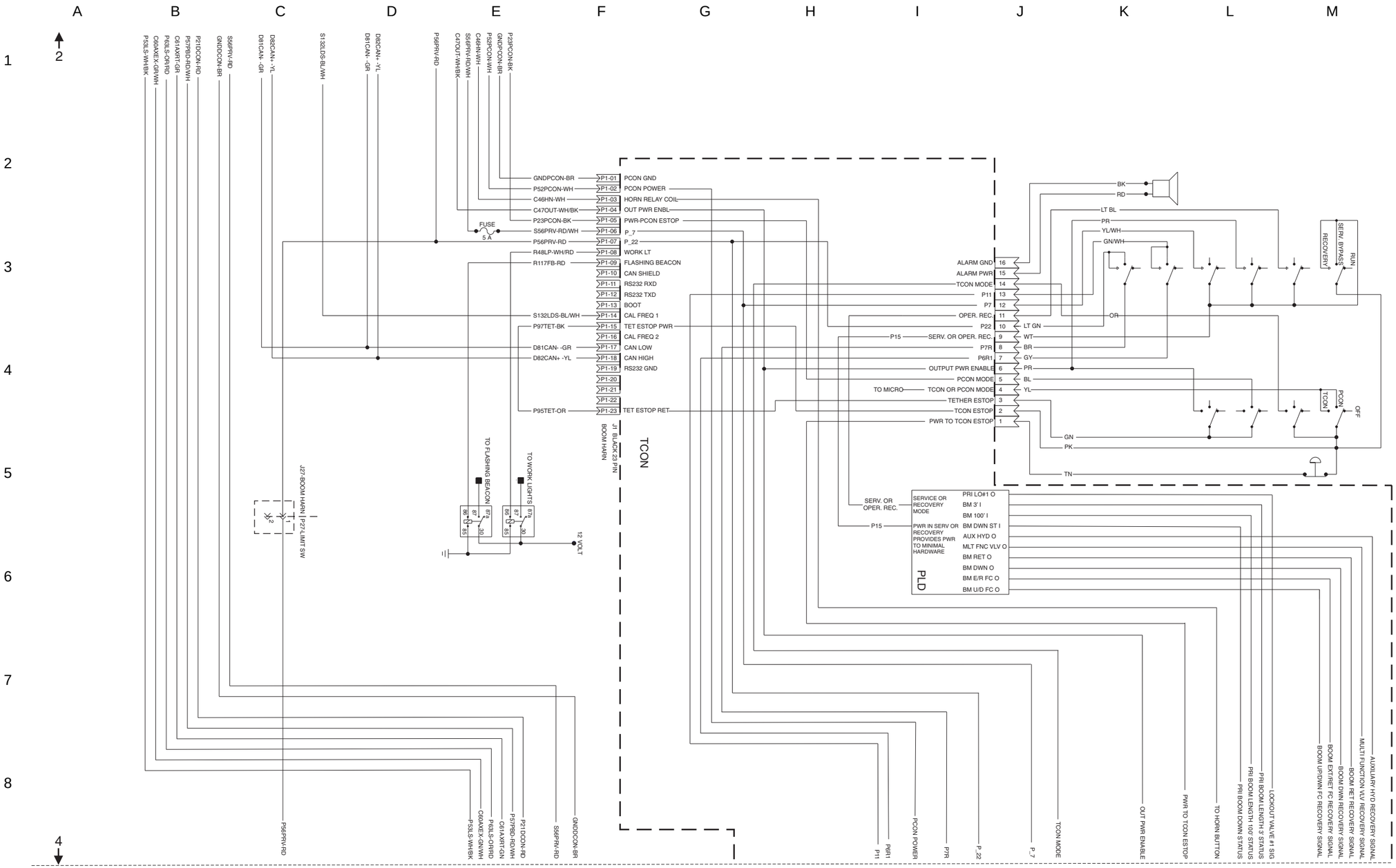




Electrical Schematic, View 3

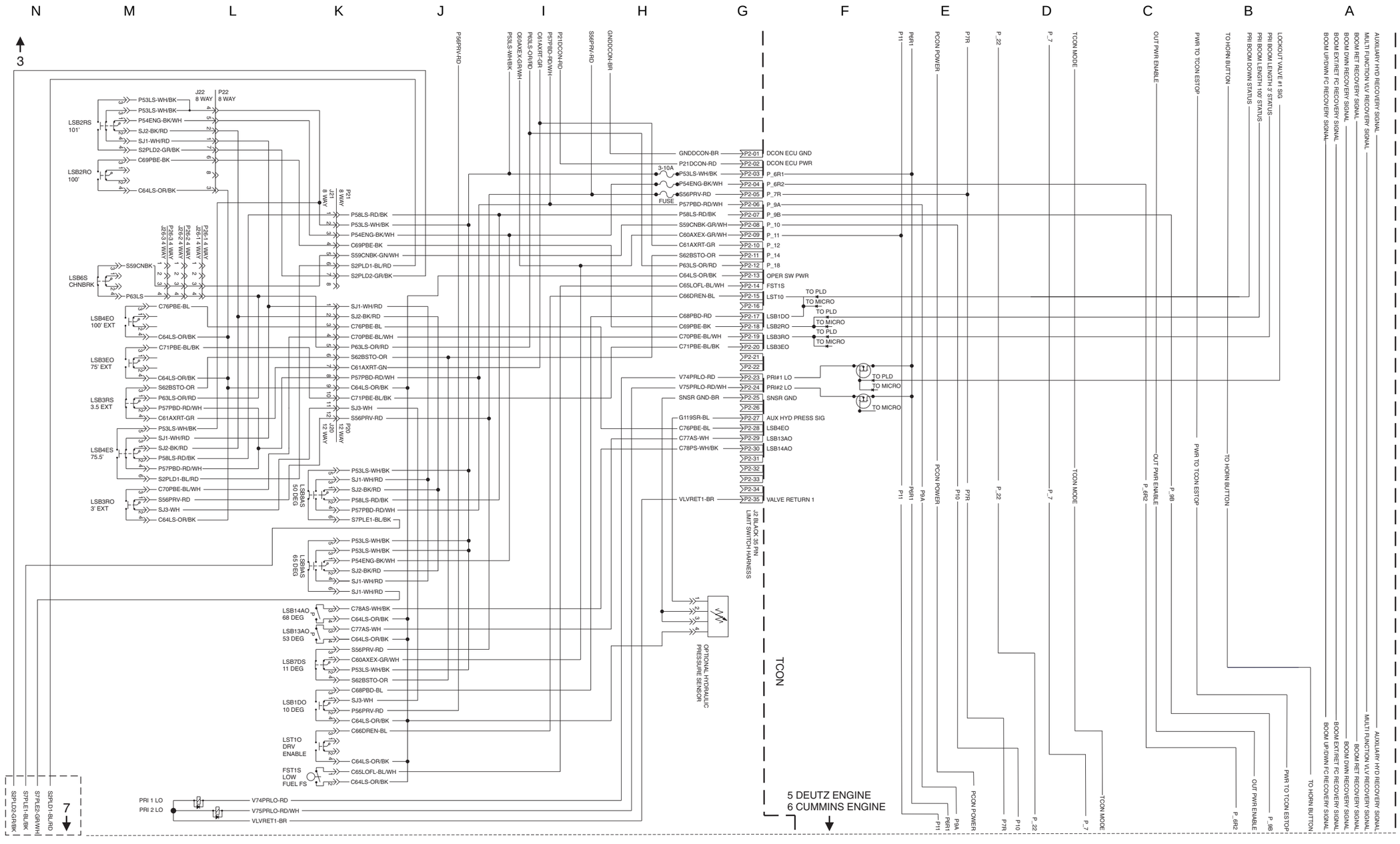
REV A

S3800 Models



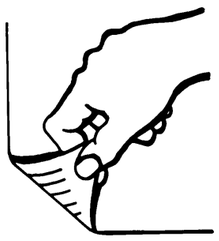
REV A

Electrical Schematic, View 4
S3800 Models

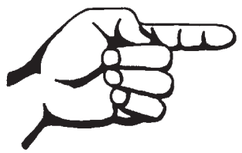


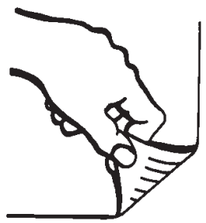
Electrical Schematic, View 4

S3800 Models



Electrical Schematic, View 5
S3800 Models

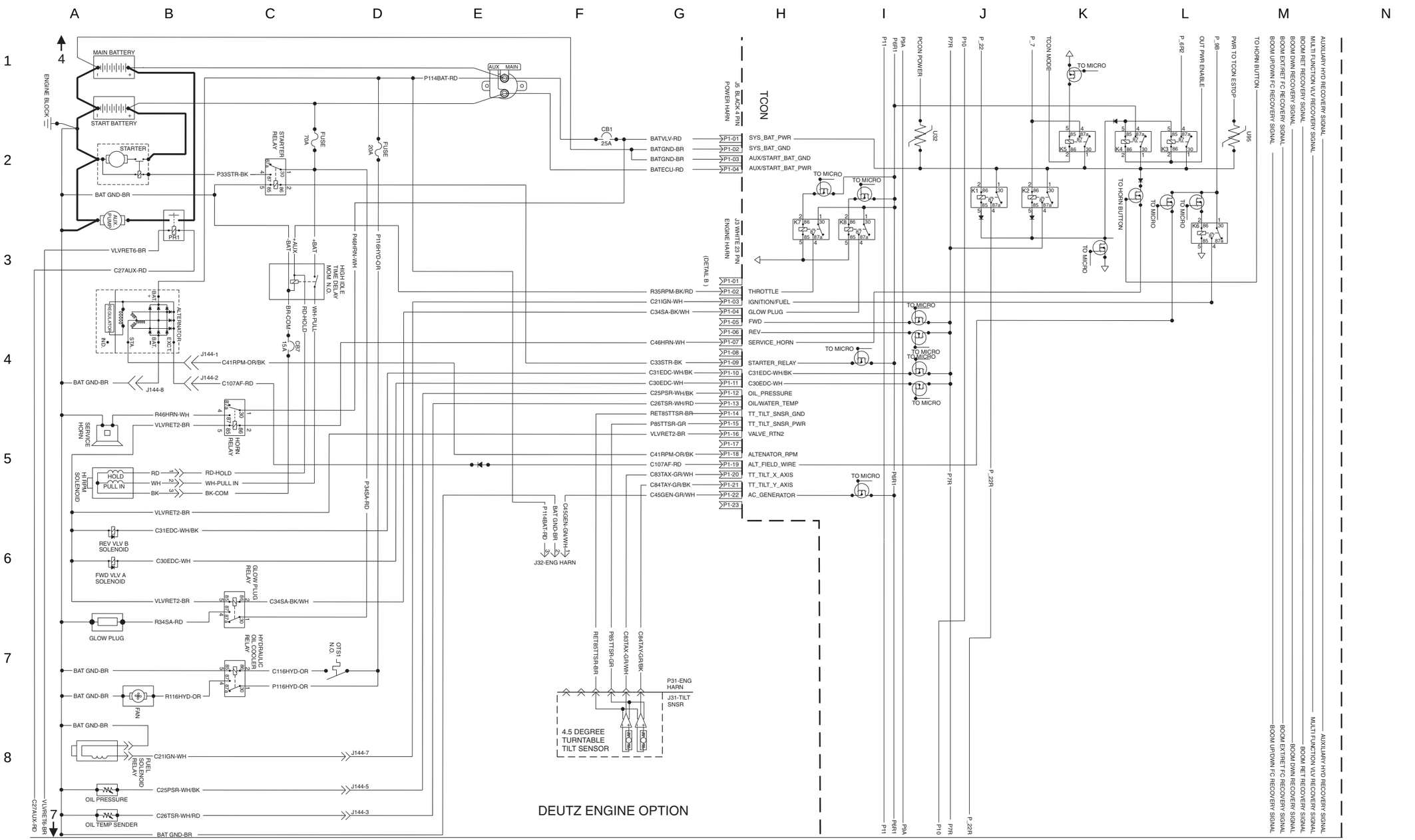




Electrical Schematic, View 5

REV A

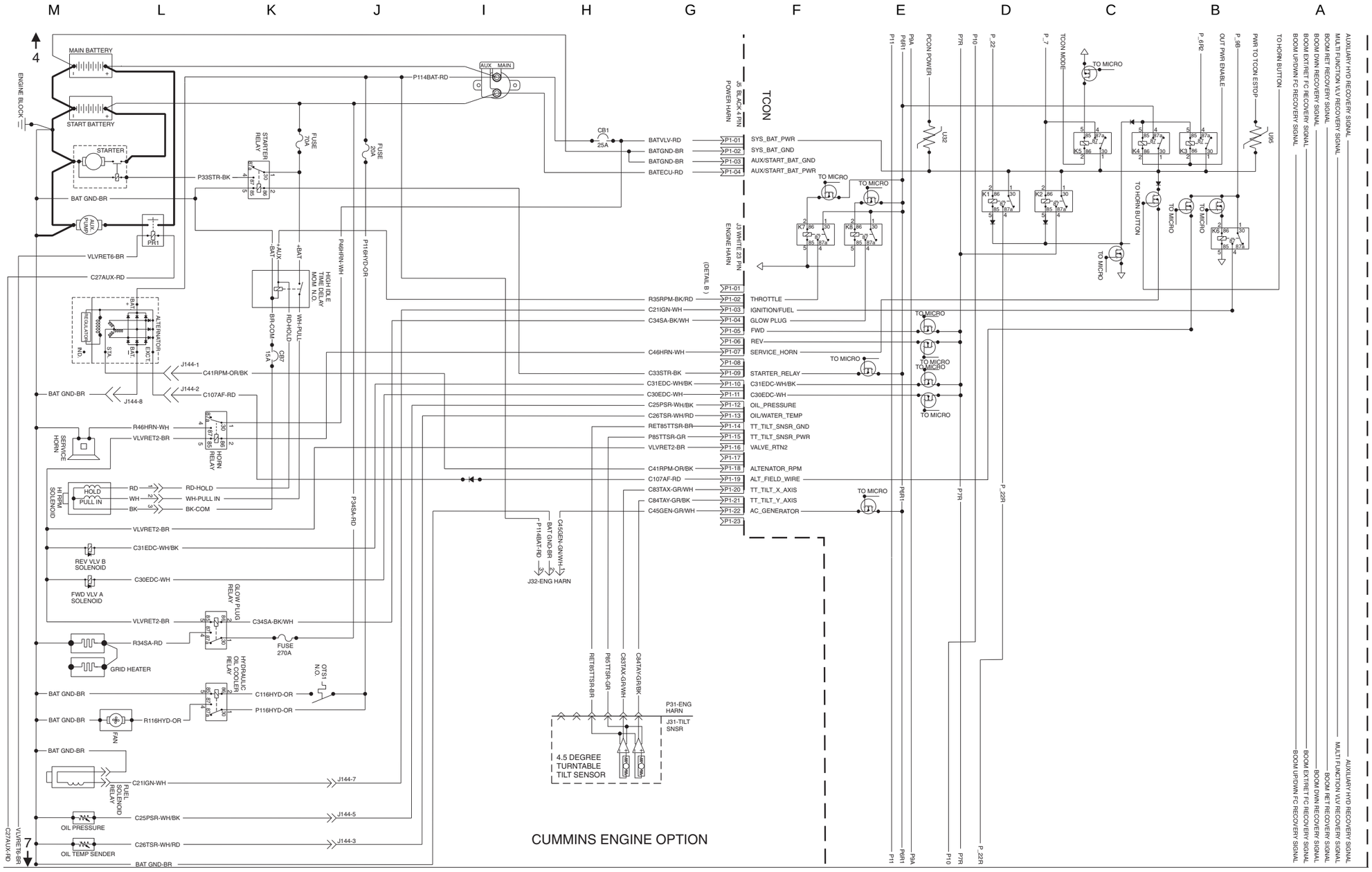
S3800 Deutz Engine Models



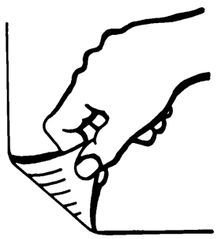
REV A

Electrical Schematic, View 6

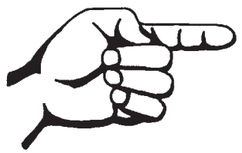
S3800 Cummins Engine Models

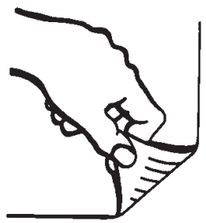


Electrical Schematic, View 6
S3800 Models



Electrical Schematic, View 7
S3800 Models

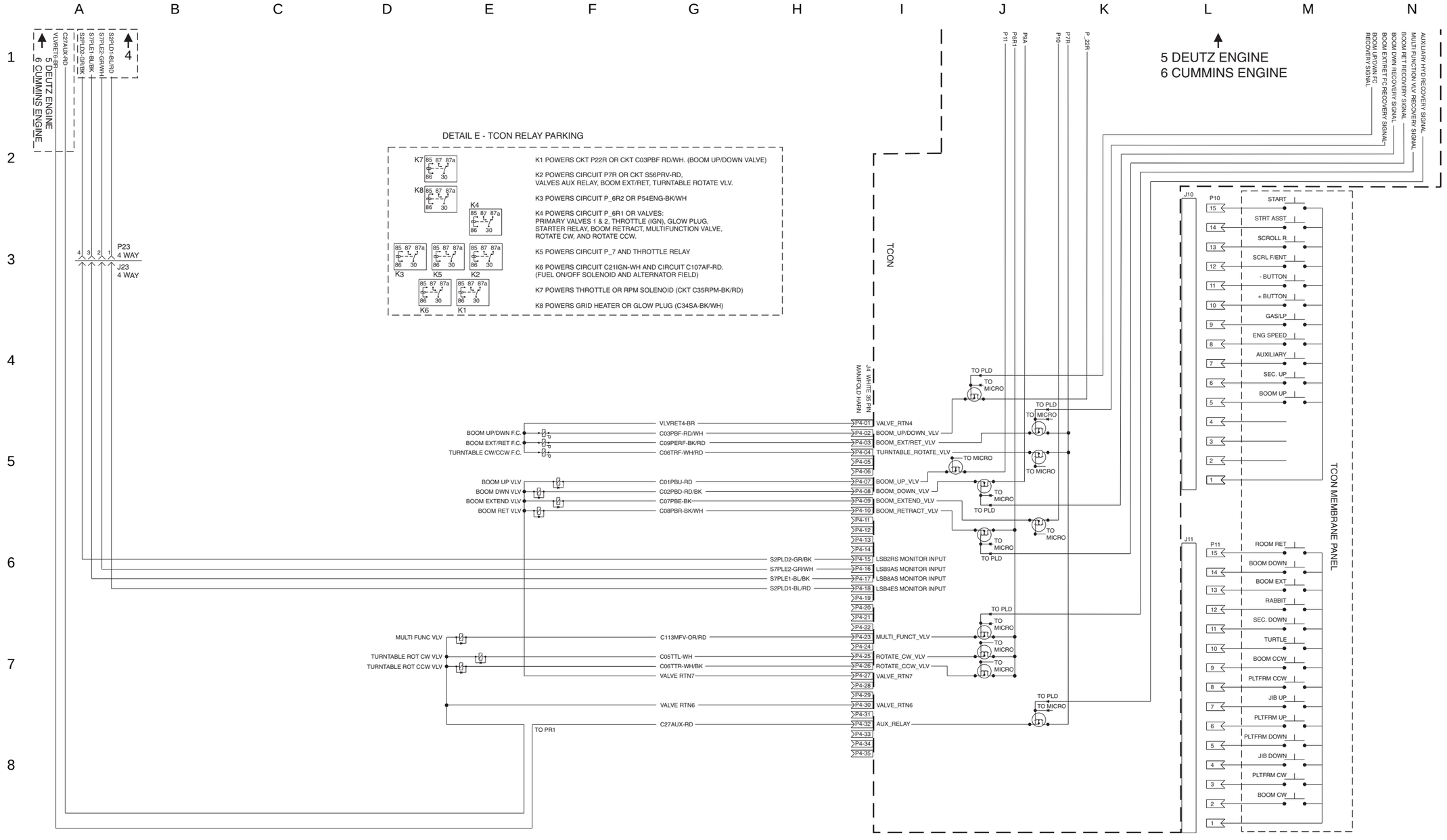




Electrical Schematic, View 7

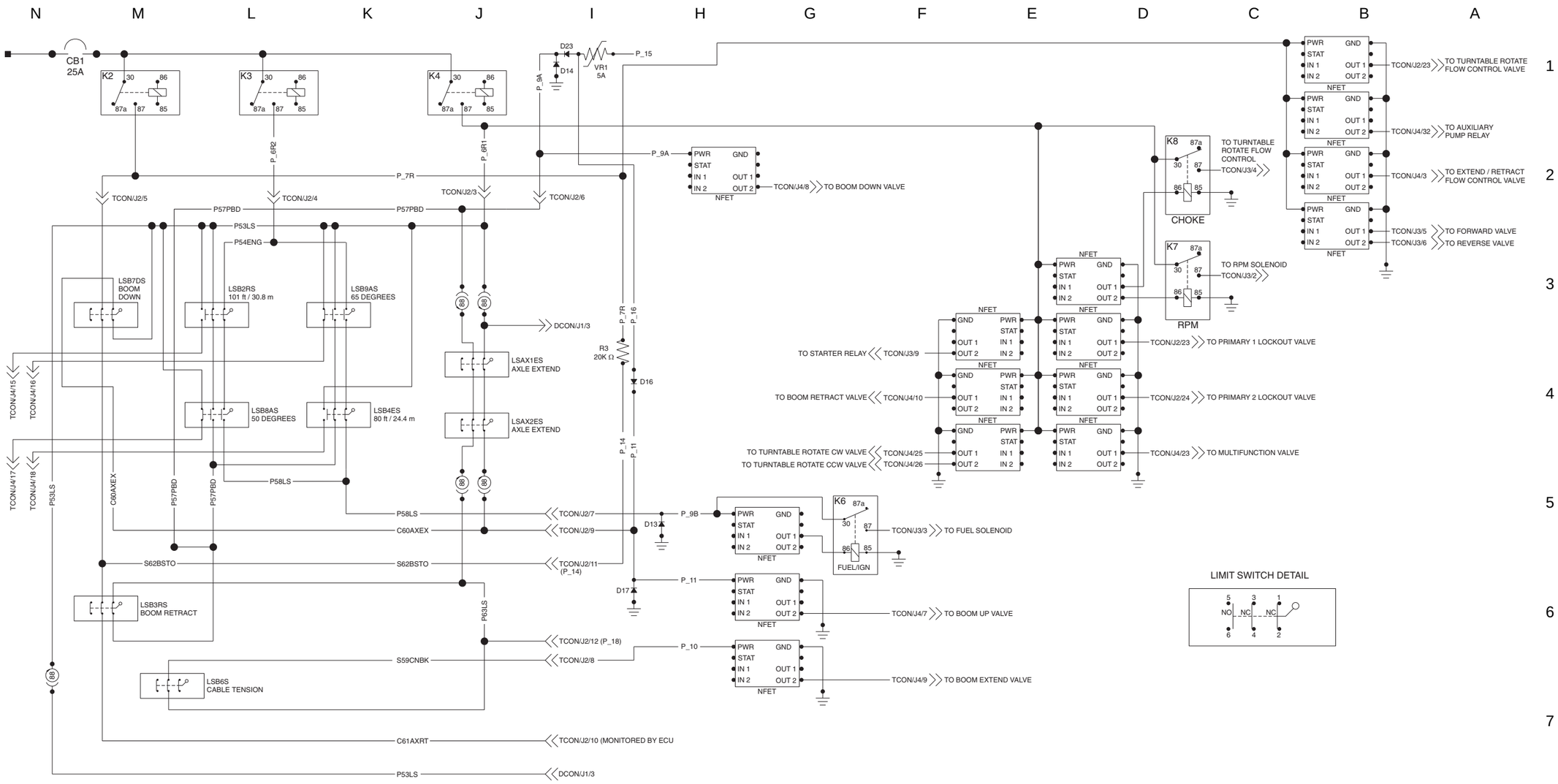
S3800 Models

REV A

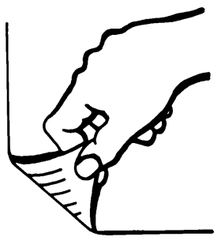


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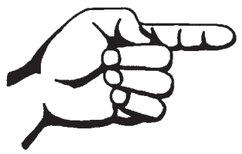
Safety Circuit Schematic, S3800 Models

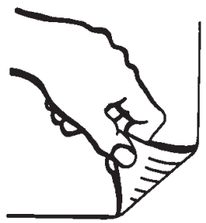


Safety Circuit Schematic,
S3800 Models



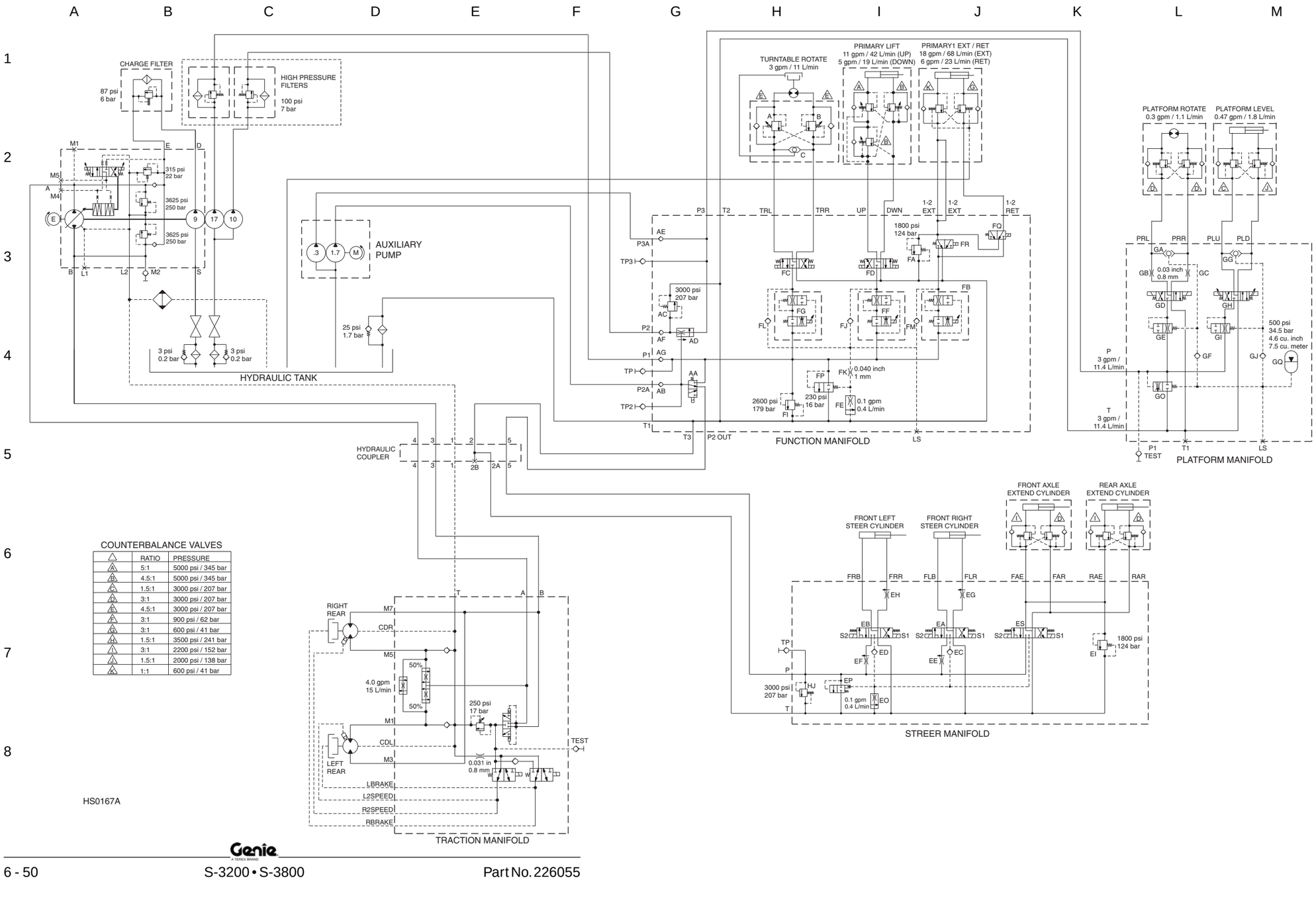
Hydraulic Schematic,
S3200 Models





Hydraulic Schematic,
S3200 Models

REV A



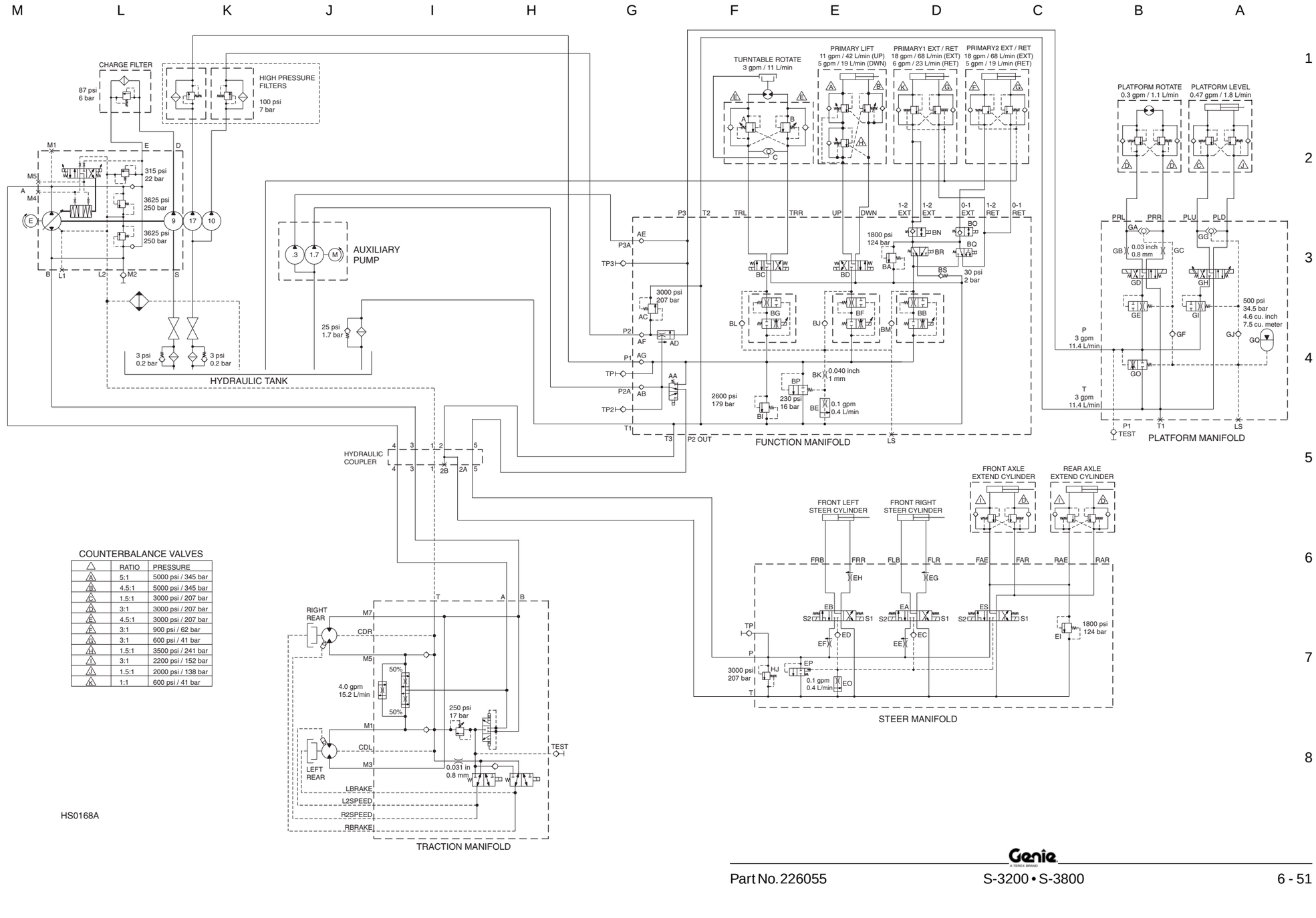
HS0167A

COUNTERBALANCE VALVES

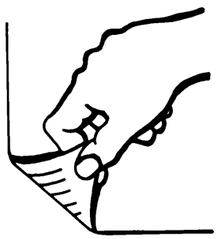
	RATIO	PRESSURE
A	5:1	5000 psi / 345 bar
B	4.5:1	5000 psi / 345 bar
C	1.5:1	3000 psi / 207 bar
D	3:1	3000 psi / 207 bar
E	4.5:1	3000 psi / 207 bar
F	3:1	900 psi / 62 bar
G	3:1	600 psi / 41 bar
H	1.5:1	3500 psi / 241 bar
J	3:1	2200 psi / 152 bar
K	1.5:1	2000 psi / 138 bar
L	1:1	600 psi / 41 bar

REV A

Hydraulic Schematic,
S3800 Models



Hydraulic Schematic,
S3800 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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Fax +55 11 41 665 754

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Fax +52 55 5666 3241

Service Manual
S-3200 • S-3800

(from serial number S-3200 - 100)
(from serial number S-3800 - 100)

Part No. 226055

Rev A

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