Genie®
A TEREX BRAND

Service and Repair Manual

Serial Number Range

S®-80
S®-85
S®-80X

from S8016H-13643 to S8016H-13999

from S8516H-13643 to S8516H-13999

from S80X16H-13643 to S80X16H-13999

from S80H-14000
from S85H-14000
from S80XH-14000

except S8516H-13685
except S8516H-13711

This manual includes:
Repair procedures
Fault Codes
Electrical and
Hydraulic Schematics

For detailed maintenance procedures, refer to the appropriate Maintenance Manual for your machine.

Part No. 1287339GT
Rev A
March 2018

Introduction

Important

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

This manual provides troubleshooting and repair procedures for qualified service professionals.

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

Compliance

Machine Classification

Group B/Type 3 as defined by ISO 16368

Machine Design Life

Unrestricted with proper operation, inspection and scheduled maintenance.

Technical Publications

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

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

Contact Us:

Internet: www.genielift.com
E-mail: awp.techpub@terex.com

Find a Manual for this Model

Go to http://www.genielift.com

Use the links to locate Service Manuals, Maintenance Manuals, Service and Repair Manuals, Parts Manuals and Operator's Manuals.

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First Edition, First Printing

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Revision History

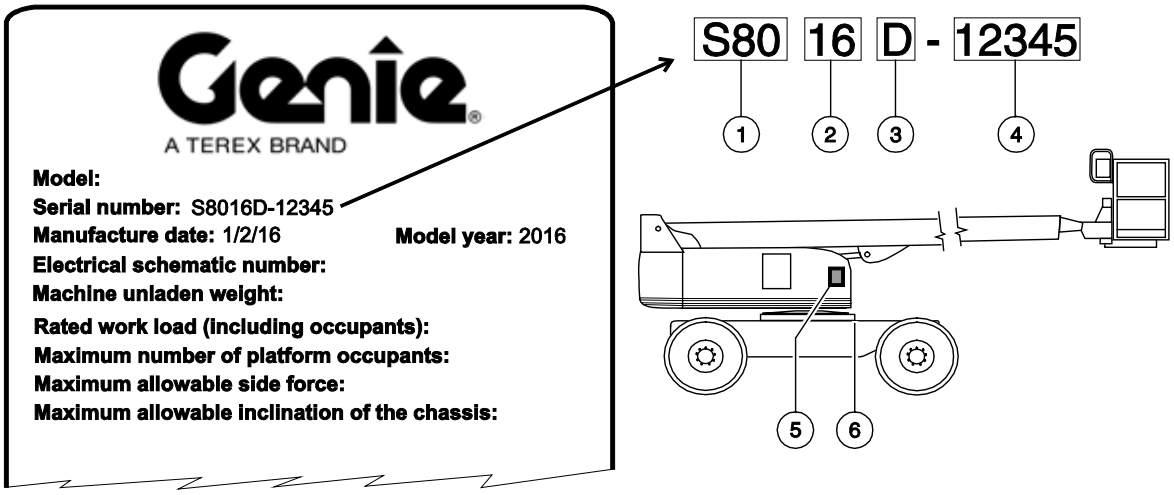
Revision	Date	Section	Procedure / Page / Description
A	3/2018		Initial Release

Reference Examples:	**Electronic Version** Click on any content or procedure in the Table of Contents to view the update.
Section – Repair Procedure, 4-2	
Section – Fault Codes, All charts	
Section – Schematics, Legends and schematics	

Introduction

Serial Number Legend

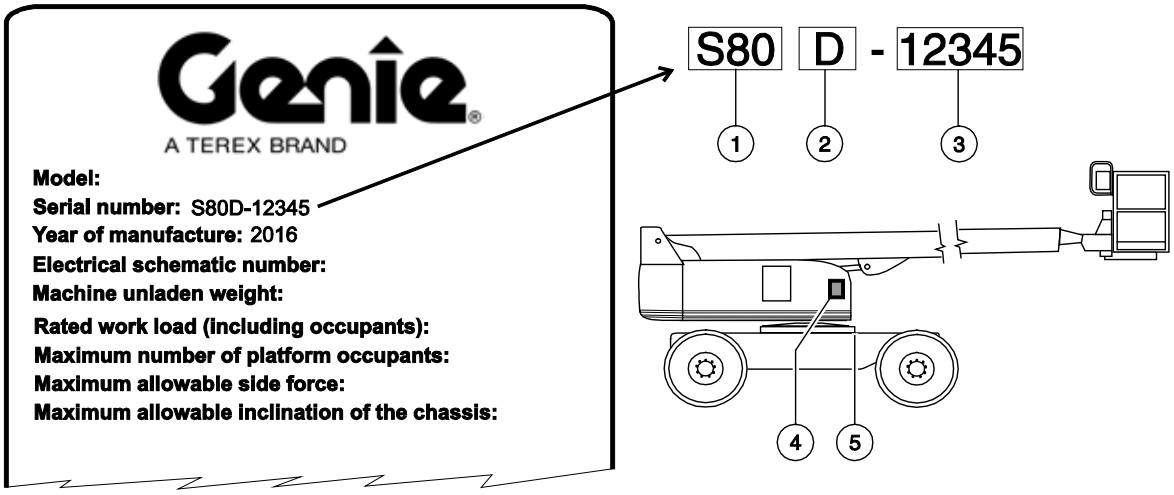
To August 31, 2016



1 Model
2 Model year
3 Facility code

1 Sequence number
2 Serial label (located under cover)
3 Serial number (stamped on chassis)

From September 1, 2016



1 Model
2 Facility code
3 Sequence number

1 Serial label (located under cover)
2 Serial number (stamped on chassis)

Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual and the appropriate Operator's Manual on your machine will result in death or serious injury.

Many of the hazards identified in the operator's manual are also safety hazards when maintenance and repair procedures are performed.

Do Not Perform Maintenance Unless:

- R You are trained and qualified to perform maintenance on this machine.
- R You read, understand and obey:
  - manufacturer's instructions and safety rules
  - employer's safety rules and worksite regulations
  - applicable governmental regulations
- R You have the appropriate tools, lifting equipment and a suitable workshop.

Safety Rules

Personal Safety

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



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



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

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

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

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

NOTICE Indicates a potentially hazardous situation which, if not avoided, may result in property damage.



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



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

Workplace Safety

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



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



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



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



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



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



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

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Specifications

Machine Specifications

Tires and wheels Rough Terrain and Non Marking	
Tire size	18-625 FF
Tire ply rating	16 ply
Overall tire diameter	40.7 in 103.3 cm
Tire pressure	Foam filled
Wheel diameter	24.5 in 62.2 cm
Wheel width	15 in 38.1 cm
Tire weight, new foam filled (minimum)	622 lbs 282 kg

Tires and wheels High Flotation

Tire size	41/18LLx22.5
Tire ply rating	14 ply
Tire pressure	70 psi 4.8 bar
Wheel diameter	22.5 in 57 cm
Wheel width	14 in 35.6 cm

Lugs and Lug Nut Torque	
Wheel lugs	11 @ 3/4 - 16
Lug nut torque, dry	420 ft-lbs 569 Nm
Lug nut torque, lubricated	320 ft-lbs 434 Nm

Fluid capacities	
Fuel tank, Deutz and Perkins models	35 gallons 132.5 liters
Fuel tank, Continental model	30 gallons 113.5 liters
LPG tank	33.5 lbs 15.2 kg
Hydraulic tank	40 gallons 151.4 liters
Hydraulic system (including tank)	50 gallons 189.3 liters
Turntable rotation drive hub (single fill port)	40 fl oz 1183 cc
Turntable rotation drive hub (dual fill port)	43 fl oz 1262 cc
Drive hubs four wheel drive	30.5 fl oz 902 cc
Drive hubs two wheel drive	23 fl oz 680 cc

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

Specifications

Performance Specifications

Drive speed, maximum	
Stowed position, RT tires	40 ft / 7.9 - 8.5 sec 12.2 m / 7.9 - 8.5 sec
Stowed position, High Flotation tires	40 ft / 11 - 13 sec 12.2 m / 11 - 13 sec
Raised or Extended	40 ft / 40 - 45 sec 12.2 m / 40 - 45 sec
Braking distance, maximum	
High range on paved surface	6 ft / 1.8 m
Gradeability	Refer to Operator's Manual
Boom function speeds, maximum from platform controls	
Jib Boom up (S-85)	25 - 35 sec
Jib Boom down (S-85)	15 - 25 sec
Boom up (ANSI, CSA, models)	57 - 65 sec
Boom up (CE, AS models)	75 - 83 sec
Boom down (ANSI, CSA, models)	61 - 69 sec
Boom down (CE, AS models)	75 - 83 sec
Boom extend	59 - 67 sec
Boom retract	57 - 65 sec
Turntable rotate, (360°) fully stowed	95 - 103 sec
Turntable rotate, (360°) boom raised or extended	210 - 250 sec
Platform rotate, 160°	8 - 12 sec
Platform level (10° range of motion) ANSI, CSA	3 - 5 sec
Platform level (10° range of motion) CE, AS	20 - 22 sec

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

Hydraulic Oil Specifications

Hydraulic Fluid Specifications

Genie specifications require hydraulic oils which are designed to give maximum protection to hydraulic systems, have the ability to perform over a wide temperature range, and the viscosity index should exceed 140. They should provide excellent antiwear, oxidation prevention, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Cleanliness level, minimum	ISO 15/13
Water content, maximum	250 ppm
Recommended Hydraulic Fluid	
Hydraulic oil type	Chevron Rando HD Premium
Viscosity grade	32
Viscosity index	200
Optional Hydraulic Fluids	
Mineral based	Shell Tellus S2 V 32 Shell Tellus S2 V 46 Shell Tellus S4 VX 32 Shell Shell Donax TG (Dexron III) Chevron 5606A
Biodegradable	Petro Canada Environ MV 46
Fire resistant	UCON Hydrolube HP-5046

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

NOTICE Optional fluids may not have the same hydraulic lifespan and may result in component damage.

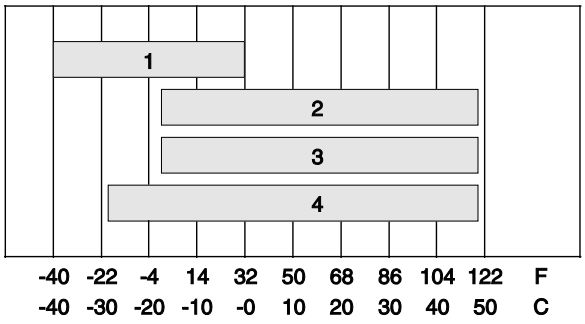
Note: Extended machine operation can cause the hydraulic fluid temperature to increase beyond it's maximum allowable range. If the hydraulic fluid temperature consistently exceeds 200°F / 90°C an optional oil cooler may be required.

NOTICE

Do not top off with incompatible hydraulic fluids. Hydraulic fluids may be incompatible due to the differences in base additive chemistry. When incompatible fluids are mixed, insoluble materials may form and deposit in the hydraulic system, plugging hydraulic lines, filters, control valves and may result in component damage.

Note: Do not operate the machine when the ambient air temperature is consistently above 120°F / 49°C.

Hydraulic Fluid Temperature Range



Ambient air temperature

1 Chevron hydraulic oil 5606A
2 Petro-Canada Environ MV 46
3 UCON Hydrolube HP-5046D
4 Chevron Rando HD premium oil MV

Chevron Rando HD Premium Oil MV Fluid Properties

ISO Grade	32
Viscosity index	200
Kinematic Viscosity cSt @ 200°F / 100°C cSt @ 104°F / 40°C	 7.5 33.5
Brookfield Viscosity cP @ -4°F / -20°C cP @ -22°F / -30°C	 1040 3310
Flash point	375°F / 190°C
Pour point	-58°F / -50°C
Maximum continuous operating temperature	171°F / 77°C

Note: A hydraulic oil heating system is recommended when the ambient temperature is consistently below 0°F / -18°C.

Note: Do not operate the machine when the ambient temperature is below -20°F / -29°C with Rando HD Premium MV.

Specifications

Chevron 5606A Hydraulic Oil Fluid Properties

ISO Grade	15
Viscosity index	300
Kinematic Viscosity	
cSt @ 200°F / 100°C	5.5
cSt @ 104°F / 40°C	15.0
cSt @ -40°F / -40°C	510
Flash point	180°F / 82°C
Pour point	-81°F / -63°C
Maximum continuous operating temperature	124°F / 51°C

Note: Use of Chevron 5606A hydraulic fluid, or equivalent, is required when ambient temperatures are consistently below 0°F / -17°C unless an oil heating system is used.

NOTICE Continued use of Chevron 5606A hydraulic fluid, or equivalent, when ambient temperatures are consistently above 32°F / 0°C may result in component damage

Petro-Canada Environ MV 46 Fluid Properties

ISO Grade	46
Viscosity index	154
Kinematic Viscosity	
cSt @ 200°F / 100°C	8.0
cSt @ 104°F / 40°C	44.4
Flash point	482°F / 250°C
Pour point	-49°F / -45°C
Maximum continuous operating temperature	180°F / 82°C

Shell Tellus S4 VX Fluid Properties

ISO Grade	32
Viscosity index	300
Kinematic Viscosity	
cSt @ 200°F / 100°C	9
cSt @ 104°F / 40°C	33.8
Brookfield Viscosity	
cSt @ -4°F / -20°C	481
cSt @ -13°F / -25°C	702.4
cSt @ -40°F / -40°C	2624
Flash point	>100
Pour point	-76°F / -60°C
Maximum continuous operating temperature	103°F / 75°C

UCON Hydrolube HP-5046 Fluid Properties

ISO Grade	46
Viscosity index	192
Kinematic Viscosity cSt @ 149°F / 65°C cSt @ 104°F / 40°C cSt @ 0°F / -18°C	 22 46 1300
Flash point	None
Pour point	-81°F / -63°C
Maximum continuous operating temperature	189°F / 87°C

Hydraulic Component Specifications

Drive Pump	
Type: bi-directional variable displacement piston pump	
Displacement per revolution	0 to 2.8 cu in 0 to 46 cc
Flow rate @ 2300 rpm	30.3 gpm 114.7 L/min
Drive pressure, maximum	3750 psi 259 bar
Charge Pump	
Type	gerotor
Displacement per revolution	0.85 cu in 13.9 cc
Flow rate @ 2300 rpm	9 gpm 34 L/min
Charge pressure @ 2300 rpm Neutral position	310 psi 21.4 bar
Function pump	
Type: variable displacement piston pump	
Displacement per revolution	0 to 2.3 cu in 0 to 38 cc
Flow rate @ 2300 rpm	0 to 23 gpm 0 to 87 L/min
Pressure, maximum	2900 psi 200 bar
Pressure compensator	2900 psi 200 bar
Standby pressure	250 psi 17.3 bar
Auxiliary Pump	
Type: fixed displacement gear pump	
Displacement per revolution	0.15 cu in 2.47 cc

Specifications

Function manifold	
System relief valve pressure, maximum	3200 psi 221 bar
Primary boom extend relief pressure (measured at PTEST port)	2400 psi 165 bar
Platform Manifold and Oscillate Valve	
Platform level flow regulator	0.6 gpm 2.3 L/min
Platform rotate flow regulator	0.3 gpm 1.1 L/min
Oscillate relief pressure	950 psi 65.5 bar
Traction Manifold	
Hot oil relief pressure	280 psi 19.3 bar
Brakes	
Brake release pressure, Wheel drive hubs	240 psi 16.5 bar
Drive Motors	
Displacement per revolution high speed:	0.9 cu in 14.7 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	51 psi 3.5 bar
Hydraulic tank return filter	10 micron with 25 psi / 1.7 bar bypass
Drive motor case drain return filter	Beta 10 ≥2

Manifold Component Specifications

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

Specifications

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 hp 55 kW
Induction system	turbocharged
Firing order	1 - 3 - 4 - 2
Low idle	1300 rpm
Low idle w/ belt driven generator	1500 rpm
High idle	2350 rpm
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
Lubrication system	
Oil pressure, hot (@ 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
Unit ships 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
Temperature switch point	275°F 135°C
Oil Pressure switch	
Installation torque	8 - 18 ft-lbs 11 - 24 Nm
Pressure switch point	22 psi 1.5 bar
Fuel injection system	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 Manual for your engine.	
Starter motor	
Current draw, normal load	140 - 200A
Cranking speed	250 - 350 rpm
Battery – Engine starting and control system	
Type	12V DC, Group 31
Quantity	2
Battery capacity, maximum	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

Specifications

Deutz TD 2.9 Engine

Displacement	177 cu. in 2.9 liters
Number of cylinders	4
Bore and Stroke	3.6 x 4.3 inches 92 x 110 mm
Horsepower net intermittent @ 2600 rpm	74.2 hp 55 kW
Induction system	turbocharged
Firing order	1 - 3 - 4 - 2
Low idle	900 rpm
Low idle w/ belt driven generator	1500 rpm
High idle	2500 rpm
Compression ratio	17.4:1
Compression pressure pressure (psi or bar) of the lowest cylinder must be at least 75% of the highest cylinder	
Governor	electronic
Valve Clearance, cold	
Intake	0.012 in 0.3 mm
Exhaust	0.020 in 0.5 mm
Lubrication system	
Oil pressure, hot (@ 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
Unit ships 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
Temperature switch point	275°F 135°C
Oil Pressure switch	
Installation torque	8 - 18 ft-lbs 11 - 24 Nm
Pressure switch point	22 psi 1.5 bar
Fuel injection system	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 Manual for your engine.	
Starter motor	
Current draw, normal load	140 - 200A
Cranking speed	250 - 350 rpm
Battery – Engine starting and control system	
Type	12V DC, Group 31
Quantity	2
Battery capacity, maximum	1000A
Reserve capacity @ 25A rate	200 Minutes
Alternator output	95A @ 14V DC
Fan belt deflection	3/8 to 1/2 inch 9 to 12 mm

Specifications

Perkins 404D-22T Engine

Displacement	134 cu in 2.2 liters
Number of cylinders	4
Bore and stroke	3.31 x 3.94 inches 84 x 100 mm
Horsepower	58 @ 2500 rpm 44 kW @ 2500 rpm
Firing order	1 - 3 - 4 - 2
Idle	1000 rpm
Low RPM	1500 rpm
High RPM	2500 rpm
Compression ratio	23.3:1
Compression pressure	426 psi 29.4 bar
Pressure (psi) of lowest cylinder must be within 50 psi / 3.45 bar of highest cylinder	
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.008 in 0.2 mm
Exhaust	0.008 in 0.2 mm
Lubrication system	
Oil pressure, cold (at 2500 rpm)	60 psi 4.1 bar
Oil capacity (including filter)	9.3 quarts 8.8 liters
Oil viscosity requirements	
Below 86°F / 30°C	5W-20
-4°F to 104°F / -20°C to 40°C	10W-30
Above 14°F / -10°C	15W-40
Units ship with 15W-40. Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator Handbook on your machine.	
Fuel injection system	
Injection pump make	Zexel
Injection pressure	2133 psi 147 bar
Fuel requirement	
For fuel requirements, refer to the engine Operator's Manual on your machine.	
Alternator output	55A @ 12V DC
Fan belt deflection	3/8 in 10 mm
Starter motor	
Current draw, no load	140-200A
Brush length, new	0.7480 in 19 mm
Brush length, minimum	0.5 in 12.7 mm
Battery	
Type	12V DC, Group 31
Quantity	2
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	200 minutes
Engine coolant	
Capacity	7.7 quarts 7.3 liters

Specifications

GM 3.0L Engine

Displacement	183 cu. in 3.0 liters
Number of cylinders	4
Bore and Stroke	4.0 x 3.6 inches 101.6 x 91.44 mm
Horsepower @ 2500 rpm **Horsepower @ 1500 rpm**	70 hp / 52 kW 40 hp / 30kW
Firing order	1 - 3 - 4 - 2
Standby idle-computer controlled Frequency	1000 rpm
Low function idle-computer controlled Frequency	1500 rpm
High function idle-computer controlled Frequency	2500 rpm
Compression ratio	9.25:1
Compression pressure pressure (psi or bar) of the lowest cylinder must be at least 75% of the highest cylinder	
Governor	electronic
Lubrication system	
Oil pressure, hot minimum @ 1000 rpm	6 psi 0.4 bar
Oil capacity (including filter)	5 quarts 4.7 liters
Oil viscosity requirements	
-22°F to 86°F / -30°C to 30°C	5W-20
-4°F to 104°F / -20°C to 40°C	10W-40
Above 5°F / -15°C	15W-40

Unit ships with 5W-30.
Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator Manual for your engine.

Fuel requirement
For fuel requirements, refer to the engine Operator Manual for your engine.

Battery – Engine starting and control system	
Type	12V DC, Group 31
Quantity	2
Battery capacity, maximum	1000A
Reserve capacity @ 25A rate	200 Minutes
Engine coolant	
Capacity	12 quarts 11.4 liters
Alternator output	70A @ 12V DC
Fan belt deflection	1/2 inch 12 mm

Machine Torque Specifications

Platform Rotator	
1-8 center bolt, GR 5, lubricated (before SN 15-12988)	480 ft-lbs 651 Nm
3/8-16 bolts, GR 8 (before SN 15-12988) *(use blue thread locking compound)	35 ft-lbs* 47 Nm*
1-8 center bolt, GR 5, dull gray (from SN 15-12988)	615 ft-lbs 834 Nm
3/8-16 bolts, GR 8 (from SN 15-12988) dull gray *(use blue thread locking compound)	35 ft-lbs* 47 Nm*
Turntable rotate assembly	
Rotate bearing mounting bolts, lubricated	180 ft-lbs 244 Nm
Rotate drive hub mounting bolts, lubricated	80 ft-lbs 108 Nm
Backlash plate mounting bolts, lubricated	280 ft-lbs 379 Nm
Drive motors and hubs	
Drive hub mounting bolts, lubricated	180 ft-lbs 217 Nm
Drive motor mounting bolts, dry	110 ft-lbs 149 Nm
Drive motor mounting bolts, lubricated *(use blue thread locking compound)	80 ft-lbs* 108 Nm
Engine vibration isolators	
Compressed height	0.50 in 12.7 mm

Specifications

Hydraulic Hose and Fitting Torque Specifications

Your machine is equipped with Parker Seal-Lok™ ORFS or 37° JIC fittings and hose ends. Genie specifications require that fittings and hose ends be torqued to specification when they are removed and installed or when new hoses or fittings are installed.

Seal-Lok™ Fittings

(hose end - ORFS)

SAE Dash Size	Torque
-4	10 ft-lbs / 13.6 Nm
-6	30 ft-lbs / 40.7 Nm
-8	40 ft-lbs / 54.2 Nm
-10	60 ft-lbs / 81.3 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

JIC 37° Fittings

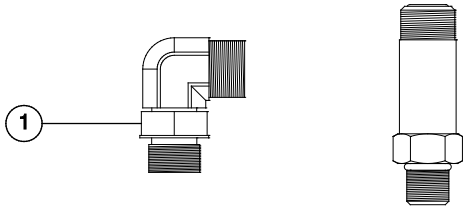
(swivel nut or hose connection)

SAE Dash Size	Thread Size	Flats
-4	7/16-20	2
-6	9/16-18	1 ¼
-8	3/4-16	1
-10	7/8-14	1
-12	1 1/16-12	1
-16	1 5/16-12	1
-20	1 5/8-12	1
-24	1 7/8-12	1

SAE O-ring Boss Port

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

SAE Dash Size	Torque
-4	14 ft-lbs / 19 Nm
-6	23 ft-lbs / 31.2 Nm
-8	36 ft-lbs / 54.2 Nm
-10	62 ft-lbs / 84 Nm
-12	84 ft-lbs / 114 Nm
-16	125 ft-lbs / 169.5 Nm
-20	151 ft-lbs / 204.7 Nm
-24	184 ft-lbs / 249.5 Nm



Adjustable Fitting

1 jam nut

Non-adjustable fitting

SAE O-ring Boss Port

(tube fitting - installed into Steel)

SAE Dash Size		Torque
-4	ORFS / 37° (Adj) ORFS (Non-adj) 37° (Non-adj)	15 ft-lbs / 20.3 Nm 26 ft-lbs / 35.3 Nm 22 ft-lbs / 30 Nm
-6	ORFS (Adj / Non-adj) 37° (Adj / Non-adj)	35 ft-lbs / 47.5 Nm 29 ft-lbs / 39.3 Nm
-8	ORFS (Adj / Non-adj) 37° (Adj / Non-adj)	60 ft-lbs / 81.3 Nm 52 ft-lbs / 70.5 Nm
-10	ORFS (Adj / Non-adj) 37° (Adj / Non-adj)	100 ft-lbs / 135.6 Nm 85 ft-lbs / 115.3 Nm
-12	(All types)	135 ft-lbs / 183 Nm
-16	(All types)	200 ft-lbs / 271.2 Nm
-20	(All types)	250 ft-lbs / 339 Nm
-24	(All types)	305 ft-lbs / 413.5 Nm

Torque Procedure

Seal-Lok™ fittings

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

Note: The O-ring in Parker Seal Lok™ fittings and hose end are custom-size O-rings. They are not standard size O-rings. They are available in the O-ring field service kit (Genie part number 49612).

2 Lubricate the O-ring before installation.

3 Be sure the O-ring face seal is seated and retained properly.

4 Position the tube and nut squarely on the face seal end of the fitting, and tighten the nut finger tight.

5 Tighten the nut or fitting to the appropriate torque. Refer to the appropriate torque chart in this section.

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

JIC 37° fittings

1 Align the tube flare (hex nut) against the nose of the fitting body (body hex fitting) and tighten the hex nut to the body hex fitting to hand tight, approximately 30 in-lbs / 3.4 Nm.

2 Using a permanent ink marker, make a reference mark on one the flats of the hex nut and continue the mark onto the body of the hex fitting. Refer to Illustration 1.

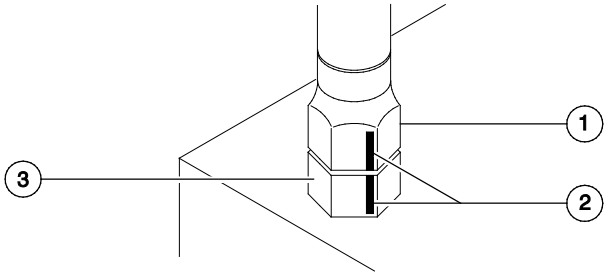


Illustration 1

1 hex nut
2 reference mark
3 body hex fitting

Specifications

3 Working clockwise on the body hex fitting, make a second mark with a permanent ink marker to indicate the proper tightening position. Refer to Illustration 2.

Note: Use the JIC 37° Fitting table in this section to determine the correct number of flats, for the proper tightening position.

Note: The marks indicate the correct tightening positions have been determined. Use the second mark on the body hex fitting to properly tighten the joint after it has been loosened.

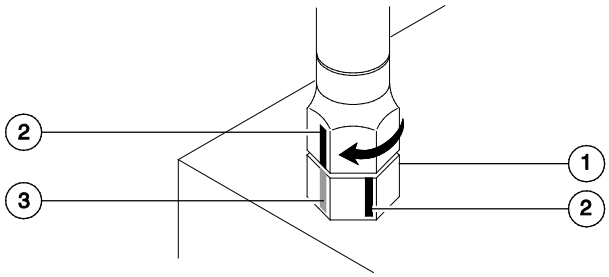


Illustration 2

1 body hex fitting
2 reference mark
3 second mark

4 Tighten the hex nut until the mark on the hex nut is aligned with the second mark on the body hex fitting.

5 Operate all machine functions and inspect the hose, fittings and related components to confirm there are no leaks.

Repair Procedures



Observe and Obey:

R Repair procedures shall be completed by a person trained and qualified on the repair of this machine.

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

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

Before Repairs Start:

R Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.

R Be sure that all necessary tools and parts are available and ready for use.

R Use only Genie approved replacement parts.

R Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.

Machine Configuration:

R Unless otherwise specified, perform each repair procedure with the machine in the following configuration:

- Machine parked on a firm, level surface
- Key switch in the off position with the key removed
- The red Emergency Stop button in the off position at both the ground and platform controls
- Wheels chocked
- All external AC power supply disconnected from the machine
- Boom in the stowed position
- Turntable secured with the turntable rotation lock

Repair Procedures

About This Section

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

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

Symbols Legend



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

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

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

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

NOTICE Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

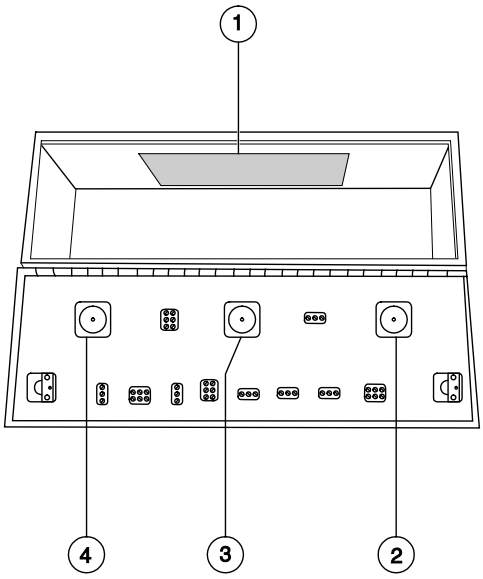
⊙ Indicates that a specific result is expected after performing a series of steps.

☒ Indicates that an incorrect result has occurred after performing a series of steps.

Platform Controls

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

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



1 ALC-500 circuit board
2 drive/steer joystick controller
3 secondary boom up/down joystick controller
4 primary boom up/down and turntable rotate left/right joystick controller

1-1 ALC-500 Circuit Board

Note: When the ALC-500 circuit board is replaced, the joystick controllers will need to be calibrated. Refer to Repair Procedure, *How to Calibrate a Joystick*.

How to Remove the ALC-500 Circuit Board

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

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

3 Locate the ALC-500 circuit board mounted to the inside of the platform control box.

4 Attach a grounded wrist strap to the ground screw inside the platform control box.

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 disconnect the wire connectors from the circuit board.

6 Remove the ALC-500 circuit board mounting fasteners.

7 Carefully remove the ALC-500 circuit board from the platform control box.

Platform Controls

1-2 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 ramping can be set.

Note: Perform this procedure with the engine off.

1 Open the platform control box.

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

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

4 Select a joystick to calibrate.

5 Disconnect the wire harness connector from the joystick for approximately 10 seconds or until the alarm sounds. Connect the wire harness connector to the joystick.

6 Move the joystick full stroke in either direction and hold for 5 seconds.

7 Return the joystick to the neutral position, pause for a moment, then move the joystick full stroke in the opposite direction. Hold for 5 seconds and return the joystick to the neutral position.

⊙ Result: The alarm should sound indicating successful joystick calibration.

⊠ Result: The alarm does not sound. Check the electrical connections or replace the joystick.

8 Repeat this procedure for each joystick controlled machine function including the thumb rocker steer switch.

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

How to Adjust the Joystick Max-out Setting

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

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

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

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

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

4 Do not press down the foot switch.

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

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

7 Momentarily activate the drive enable toggle switch in the right direction 4 times.

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

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

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

9 Start a timer and activate the machine function that needs to be adjusted. Record the time it takes for that function to complete a full cycle (ie; boom up).

10 Compare the machine function time with the function times listed in Refer to Specifications, *Performance Specifications*. Determine whether the function time needs to increase or decrease.

11 While the joystick is activated, adjust the max-out setting to achieve the proper function cycle time. Momentarily move the drive enable toggle switch in the right direction to increase the function speed or momentarily move the drive enable toggle switch in the left direction to decrease the function speed.

Note: Each time the drive enable toggle switch is momentarily moved, the function speed will change in 2% increments from a default of 100%, with a minimum of 60% and a maximum of 120%.

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

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

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

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

Function speeds (factory settings)	
Boom up	89 to 93 seconds
Boom down	90 to 94 seconds
Boom extend	73 to 79 seconds
Boom retract	79 to 84 seconds
Turntable rotate, 360°boom fully stowed	95 to 103 seconds
Drive speeds (factory settings)	
Stowed- high speed	7.9 to 8.5 seconds
Non-stowed	40 to 45 seconds

How to Adjust the Joystick Ramp Rate Setting

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

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

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

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

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

4 Do not press down the foot switch.

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

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

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

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

Platform Controls

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

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

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

11 Release the foot switch.

12 While the joystick is activated, set the ramp rate. Momentarily move the drive enable toggle switch in the right direction to increase the time or momentarily move the drive enable toggle switch in the left direction to decrease the time.

Note: Each time the drive enable toggle switch is momentarily moved, the time will change in 10% increments.

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

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

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

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

15 Cycle the red Emergency Stop button off, then back on.

Ramp rate (factory settings)	
Boom up/down	
accelerate	3 seconds
decelerate	1 second
Boom extend/retract	
accelerate	2.5 seconds
decelerate	1 second
Turntable rotate	
accelerate	3 seconds
decelerate	2 second
Drive	
accelerate	4 seconds
decelerate to neutral	0.5 second
decelerate, change of direction	0.75 second
decelerate, coasting	1 second
decelerate, braking	1 second
decelerate, shift from low to high speed	1 seconds
decelerate, shift from high to low speed	4 seconds

How to Adjust the Joystick Threshold Setting

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

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

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

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

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

4 Do not press down the foot switch.

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

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

7 Momentarily activate the drive enable toggle switch in the right direction 8 times.

⊙ Result: There should be a pause and the alarm should sound 8 times indicating that the machine is in threshold calibration mode.

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

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

9 Select a boom function joystick to set the threshold.

10 Slowly move the joystick off center in either direction just until the function begins to move.

11 Slowly move the joystick back towards the neutral position. Just before the function stops moving, move the drive enable toggle switch to either side to set the threshold.

⊙ Result: The alarm should sound indicating a successful calibration.

Note: For each joystick axis, the threshold must be set for both directions.

12 Repeat steps 9 through 11 for each direction of boom joystick controlled machine function (boom up/down, boom extend/retract and turntable rotate left/right).

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

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

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

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

Platform Controls

How to Calibrate the Boom Angle Sensor

The boom angle sensor controls the maximum angle that the boom can attain.

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

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

2 Turn the key switch to platform controls.

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

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

5 Momentarily activate the drive enable toggle switch to the right 12 times.

⊙ Result: There should be a pause and the alarm should sound 12 times indicating that the machine is in Angle Sensor calibration mode.

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

7 Momentarily activate the drive enable toggle switch to the right 1 time to set the stowed position.

Note: The alarm will not sound indicating the setting.

8 Raise the primary boom to the fully elevated position.

Note: Manually reduce the boom speed as it reaches the fully elevated position.

9 Momentarily activate the drive enable toggle switch to the right 1 time to set the elevated position.

⊙ Result: The alarm will sound indicating that the angle sensor has been calibrated.

10 Release the joystick and the foot switch and wait for 10 seconds.

⊙ Result: The alarm will sound indicating that the settings have been saved and is leaving calibration mode.

11 Cycle the red Emergency Stop button off, then back on. Start the machine and return to the stowed position.

2-1 Platform

How to Remove the Platform

1 Remove the cable clamp from the top of the platform mounting weldment.

2 Remove the mounting fasteners from the power to platform outlet box bracket. Lay the outlet box and bracket assembly off to the side. Do not disconnect the wiring.

3 Remove the foot switch mounting fasteners.

4 Remove the cover plate from the bottom of the foot switch to access the foot switch wire terminals.

5 Tag and disconnect the foot switch wiring from the foot switch. Remove the cable from the back of the platform.

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

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

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

Note: If your machine is equipped with an airline to platform option, the airline must be disconnected from the platform before removal.

7 Support and secure the platform to an appropriate lifting device.

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

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

Platform Components

2-2 Platform Leveling Cylinder

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

How to Remove the Platform Leveling Cylinder

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

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

1 Extend the primary boom until the slave cylinder barrel-end pivot pin is accessible.

2 Raise the primary boom slightly and place blocks under the platform for support.

3 Lower the primary 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 Remove the pin retaining fastener from the slave cylinder rod-end pivot pin. Use a soft metal drift to drive the rod-end pivot pin out.

⚠WARNING Crushing hazard. The jib boom could fall when the slave cylinder rod-end pivot pin is removed if not properly supported.

5 Remove the external snap rings from the barrel-end pivot pin.

6 Use a soft metal drift to drive the barrel-end pivot pin out.

7 Carefully pull the cylinder out of the primary boom to access the hydraulic hoses.

8 Tag, disconnect and plug the hydraulic hoses from the slave cylinder. Cap the fittings on the cylinder.

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

How to Bleed the Slave Cylinder

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

1 Raise the boom to a horizontal position.

2 Move the platform level toggle switch up and down through two 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 (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform.*

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

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

3 S-85: Support the jib boom leveling arms and the platform mounting weldment with an appropriate lifting device. Do not apply any lifting pressure.

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

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

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

S-80:

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

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

Platform Components

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

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

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

S-85:

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

10 Support the jib boom leveling arms.

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

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

12 Lower the jib boom leveling arms.

⚠WARNING Crushing hazard. The platform rotator could fall when removed from the machine if not properly supported.

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

How to Bleed the Platform Rotator

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

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

2 Place a suitable container underneath the platform rotator.

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

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

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

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

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

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

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

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

7 Clean up any hydraulic oil that may have spilled.

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

2-4 Platform Overload System (if equipped)

How to Calibrate the Platform Overload System (if equipped)

Proper 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 controls. Start the engine and level the platform.

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

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

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

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

Platform Components

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

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

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

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

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

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

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

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

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

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

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 overload indicator lights are off and the alarm does not sound. Proceed to step 8.

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

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

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

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

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

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

9 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should not operate.

10 Turn the key switch to ground controls.

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 platform overload indicator light should be off at both the ground and platform controls and the alarm should not sound.

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

13 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should operate normally.

14 Turn the key switch to platform controls.

15 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should operate normally.

Jib Boom Components

3-1
Jib Boom

How to Remove the Jib Boom

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

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

1 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform.*

Note: Models equipped with platform overload system: If the platform overload components are disassembled and/or removed from the platform support, the platform overload system will need to be calibrated. Refer to Repair Procedure, *How to Calibrate the Platform Overload System*.

2 **Models equipped with platform overload system**: Tag and disconnect the electrical connector from the platform load sense module.

3 Remove the hose and cable cover from the side of the jib boom.

4 Remove the hose and cable clamp from the jib boom pivot pin. Lay all hoses and cables to the side.

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

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

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

6 Attach a lifting strap from an overhead crane to the jib boom assembly.

7 Place blocks under the platform leveling cylinder for support. Protect the cylinder rod from damage.

8 Remove the pin retaining fastener from the slave cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

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

9 Remove the pin retaining fastener from the jib boom bellcrank to primary boom pivot pin.

10 Use a soft metal drift to remove the pin and carefully remove the jib boom assembly from the primary boom.

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

3-2
Jib Boom Lift Cylinder

How to Remove the Jib Boom Lift Cylinder

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Boom Components

4-1
Cable Track

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

How to Remove the Cable Track

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

1 Open the platform control box.

2 Tag and disconnect the foot switch wiring from the terminal strip inside the platform control box.

3 Loosen the squeeze connector and remove the foot switch cable from the control box.

4 Disconnect the wire connectors from the bottom of the platform control box.

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

5 Remove the mounting fasteners from the power to platform outlet box bracket. Lay the outlet box and bracket assembly off to the side.

6 **S-80**: Tag, disconnect and plug the hydraulic hoses from the counterbalance valve manifold located on the platform rotator. Cap the fittings on the manifold.

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

7 Tag, disconnect and plug the hydraulic hoses from the platform leveling slave cylinder at the platform manifold and 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.

8 Remove the timing link/timing link cam pin and gently rest the timing link against the counterweight.

9 **S-85**:Remove the hose and cable cover from the side of the jib boom.

10 Tag, disconnect and plug the hydraulic hoses from the jib boom/platform rotate select manifold. Cap the fittings on the manifold.

11 Tag, disconnect and plug the wiring from the jib boom/platform rotate select manifold.

12 Tag, disconnect and plug the hydraulic hoses from the jib boom lift 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.

All models:

13 From the ground controls, raise the boom to a horizontal position.

14 Remove the fasteners from the drive speed limit switch bracket (LS1RS) mounted on the side of the boom at the platform end of the boom. Do not remove the limit switch from the bracket.

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

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

16 Remove the cable track guide fasteners from the cable track guides at the platform end of the boom. Remove the cable track guides from the boom.

17 Remove the cable clamp from the pivot end of the boom.

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

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

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

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

21 Remove the cable track from the machine and place it on a structure capable of supporting it.

⚠WARNING Crushing hazard. The cable track could become unbalanced and fall if not properly attached to the overhead crane.

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

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

Boom Components

How to Repair the 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 Genie Service Parts, part no. 77896. The kit includes a 4-link section of cable track.

1 Visually inspect the cable track and determine which 4-link section needs to be replaced.

2 Carefully remove the snap rings from each end of the damaged section of cable track.

3 Remove the retaining fasteners from the upper black rollers from the 4-link section of cable track to be replaced. Remove the rollers.

4 Lift up the hoses and cables and carefully remove the damaged 4-link section of cable track.

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

5 Remove the upper rollers from the replacement section of cable track.

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

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 snap rings.

8 Install the rollers onto the new section of cable track.

9 Operate the boom extend/retract function through a full cycle to ensure smooth operation of the new section of cable track.

4-2 Boom

How to Shim the Boom

1 Measure each wear pad.

Boom wear pad specifications	
Boom number one	**Minimum**
Bottom wear pads (extension end of boom)	0.50 inch 12.7 mm
Top and side wear pads (extension end of boom)	0.625 inch 15.9 mm
Boom number two	
Top, bottom and side wear pads (extension end of boom)	0.50 inch 12.7 mm
Bottom wear pads (pivot end of boom)	0.50 inch 12.7 mm
Top and side wear pads (pivot end of boom)	0.625 inch 15.9 mm
Boom number three	
Top, bottom and side wear pads (pivot end of boom)	0.50 inch 12.7 mm

Note: Replace the pad if thickness is less than minimum specification. If thickness is more than minimum specification, perform the following procedure.

2 Extend the boom until the wear pads are accessible.

3 Loosen the wear pad mounting fasteners.

4 Install the new shims under the wear pad to obtain zero clearance and zero drag.

5 Tighten the mounting fasteners.

6 Extend and retract the boom through an entire cycle. Check for tight spots that could cause binding or scraping.

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

How to Remove the Boom

⚠ DANGER Tip-over hazard. This procedure requires the removal of the turntable counterweight. Failure to remove the counterweight before removing the boom assembly will result in the machine tipping over. Do not remove the boom without first removing the counterweight.

⚠ DANGER Tip-over hazard. When installing the boom onto the machine, the boom assembly must be first installed prior to the installation of the counterweight. If the counterweight is installed before the boom assembly, the machine will tip over resulting in death or serious injury.

⚠ DANGER Tip-over hazard. The turntable counterweight is essential for machine stability. Failure to install the counterweight after installing the boom assembly will compromise machine stability resulting in the machine tipping over. Death or serious injury will result.

⚠ WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

1 Remove the jib boom. Refer to Repair Procedure, *How to Remove the Jib Boom.*

2 Remove the cable track. Refer to Repair Procedure, *How to Remove the Cable Track.*

3 Raise the boom until the short and long link arm to boom pivot pins are above the turntable covers.

4 Place a block of wood measuring 4 x 4 x 60 inches / 10 x 10 x 152 cm under the long link arm, across the turntable covers.

5 Slowly lower the boom until the long link arm contacts the wood block. Do not rest the entire weight of the boom on the block. Turn the machine off.

NOTICE Component damage hazard. The turntable covers can become damaged if the weight of the boom is allowed to rest on the block.

6 Place wood blocks between the short link arm and the turntable weldment for support.

7 Insert a 1.125 x 12 inches / 32 x 300 mm eye-bolt through each hole located on the top surface of the counterweight. Secure the eye-bolts in position with flat washers and nuts.

8 Securely attach lifting straps or chains with a minimum rating of 5 tons / 5000 kg to the lifting points on the top of the turntable counterweight. Attach the lifting straps or chains to a 5 ton / 5000 kg overhead crane.

Note: A spreader bar and other hardware may be needed to safely remove the counterweight.

Boom Components

9 Slowly operate the overhead crane to apply tension to the lifting straps. Do not attempt to lift the machine with the overhead crane.

10 Locate and remove the counterweight retaining fastener at the center of the counterweight. Carefully lift the counterweight upwards and remove the counterweight from the machine. Set the counterweight on the ground. Do not leave the counterweight suspended above the ground.

⚠ DANGER Crushing hazard. The turntable counterweight will fall if not properly supported by the overhead crane resulting in death or serious injury. Keep personnel away from the area when removing the counterweight.

11 Attach lifting straps from a 5 ton / 5000 kg overhead crane to each end of the boom. Support the boom. Do not apply any lifting pressure.

12 Support and secure the rod end of the boom lift cylinder to a second overhead crane or similar lifting device.

13 Remove the lift cylinder rod-end pivot pin retaining fasteners. Use a soft metal drift to remove the pin.

⚠ WARNING Crushing hazard. The boom could fall if not properly supported when the lift cylinder rod-end pivot pin is removed.

14 Using auxiliary power, activate the boom down function so the cylinder will retract. Retract the cylinder just enough until the rod end of the cylinder will clear the mounting bracket on the boom. Turn the machine off.

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

15 Using the overhead crane, carefully lower the boom lift cylinder and allow it to rest on the boom rest pad. Protect the cylinder rod from damage.

16 Remove the boom end cover retaining fasteners and remove the cover.

17 Tag, disconnect and plug the boom extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

18 Tag and disconnect the electrical connector for the cable break limit switch.

19 Tag and disconnect all boom wire harness electrical connectors located at the pivot end of the boom.

20 Support the platform leveling master cylinder. Remove the master cylinder rod-end pivot pin retaining fasteners. Place a rod through the pin and twist to remove. Carefully lower the master cylinder down.

21 Tag, disconnect and plug the hydraulic hoses from the bulkhead fittings at the pivot end of the boom. Cap the bulkhead fittings.

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

22 Remove the external snap rings from both boom pivot pins at the short and long link arms. Do not remove the pins.

23 Using the overhead crane, adjust the boom as necessary to relieve pressure from the pivot pins.

24 Use a soft metal drift to remove each boom pivot pin. Carefully remove the boom assembly from the machine and place it on a structure capable of supporting it.

⚠WARNING Crushing hazard. The boom could fall if not properly supported by the overhead crane when each boom pivot pin is removed.

⚠CAUTION Crushing hazard. The long and short link arms may fall if not properly supported when the boom pivot pins are removed.

4-3 Boom Lift Cylinder

The boom lift cylinder raises and lowers the boom. The boom lift cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Boom Lift Cylinder

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

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

1 Raise the boom to a horizontal position.

2 Attach a 5 ton / 5000 kg overhead crane to the boom at the platform end for support. Do not lift the boom.

Boom Components

3 Support and secure both ends of the boom lift cylinder to a second overhead crane or similar lifting device.

4 Remove the pin retaining fastener from the boom lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

⚠WARNING Crushing hazard. The boom will fall if not properly supported when the primary boom rod-end pivot pin is removed.

5 Using auxiliary power, activate the boom down function so the cylinder will retract. Retract the cylinder just enough until the rod end of the cylinder will clear the mounting bracket on the boom. Turn the machine off.

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

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

7 Remove the pin retaining fasteners from the boom lift cylinder barrel-end pivot pins. Do not remove the pins.

8 Use a slide hammer to remove the barrel-end pivot pins.

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

9 Move the boom lift cylinder towards the counterweight end of the machine. Rotate the boom lift cylinder until the barrel-end pivot pin bores will clear the boom linkage.

10 Carefully remove the boom lift cylinder from the machine.

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

4-4
Boom Extension Cylinder

The boom extension cylinder is located inside the boom assembly and incorporates cables and pulleys that are responsible for extending the number 3 boom tube. The primary boom extension cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Boom Extension Cylinder

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

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

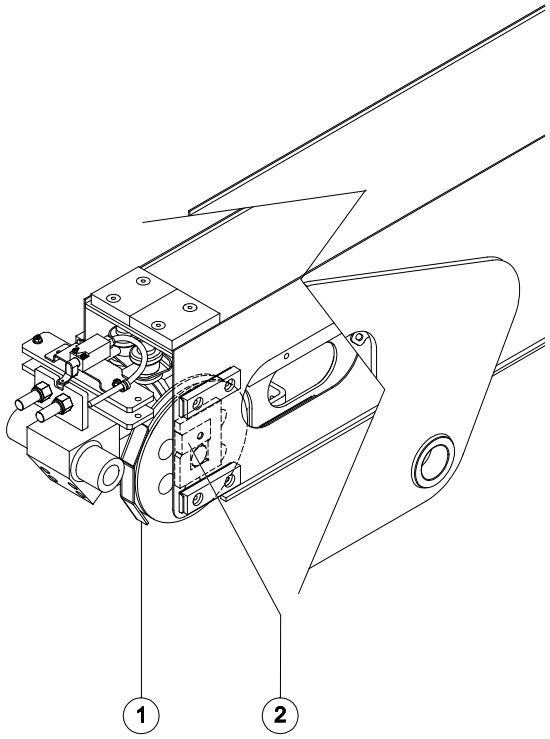
Note: Perform this procedure with the boom fully retracted.

1 Raise the boom to a horizontal position.

2 Remove the boom end cover retaining fasteners and remove the cover.

3 Remove the access covers from both sides of the boom at the pivot end.

4 Fully loosen the lock nuts on the extend cables. Do not remove the nuts.



1 cable guard
2 retaining block

5 Loosen the retract cable nut at the platform end of the boom. Pull the cable rod from the support and let it hang down.

6 Remove the cable guard fasteners and remove the cable guard.

7 Locate the retaining plates that secure the retract cables to the inside of the number 3 boom tube.

8 Remove the cable retaining plates and pull the retract cables off of the pulleys. Lay the cables flat and out of the way.

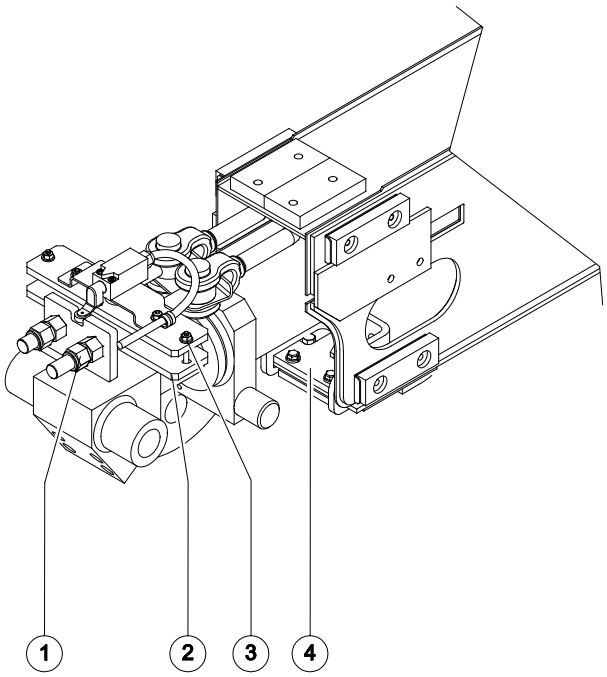
Boom Components

9 Remove the fasteners from the retaining blocks from the extension cylinder saddle. Remove the blocks.

Note: Access the fasteners through the access hole in the outer boom tube at the pivot end.

10 Disconnect the wire connector to the extend cable break limit switch.

11 Remove the retaining fasteners that secure the extend cable mounting plates to the inside of the number 1 boom tube.



1 extend cable lock nuts
2 extend cable mounting plate
3 extend cable mounting plate fastener
4 extend cable bracket

12 Pull back on the extend cable mounting plate until it clears the blocks welded to the inside of the number 1 boom tube.

13 Lift up the extend cable mounting plate and push the extend cables towards the platform to create slack in the cables. Rest the cable and bracket assembly on top of the extend cylinder.

14 Locate the lower extend cable bracket on the bottom of the number 3 boom tube.

15 Remove the lower extend cable bracket mounting fasteners and pull back on the bracket to release it from the number 3 boom tube.

16 While pushing the lower extend cable bracket towards the platform, pull the extend cable mounting plate towards the pivot end of the boom.

17 Secure the extend cable bracket and cables to the cylinder to prevent them from falling off when removing the cylinder.

18 Remove the external snap rings from the extension cylinder pin at the pivot end of the boom.

19 Use a soft metal drift to remove the pin.

20 Tag, disconnect and plug the boom extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

21 Attach a lifting strap from a 5 ton / 5000 kg overhead crane to the lug at the rod end of the boom extension cylinder.

22 Lift the boom extension cylinder with the crane until it clears the cylinder saddle inside the number 2 boom tube.

23 Carefully support and slide the extension cylinder out of the boom.

⚠WARNING Crushing hazard. The extension cylinder could fall when removed from the extension boom if not properly supported.

NOTICE Component damage hazard. Be careful not to damage the cable break limit switch.

NOTICE Component damage hazard. Be careful not to damage the counterbalance valves on the primary boom extension cylinder when removing the cylinder from the primary boom.

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

4-5 Boom Extend and Retract Cables

How to Adjust the Boom Extend/Retract Cables

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

Note: Perform this procedure with the boom in a horizontal position.

1 Start the engine from the ground controls.

2 Raise the boom to a horizontal position.

3 Fully retract the boom.

4 Stop the engine.

5 Remove the boom end cover retaining fasteners and remove the cover.

6 Inspect the threaded ends of the boom extend cables. The threads must be clean and in good condition with no damaged threads.

7 Locate the retract cable adjustment nut on the bottom of the number 1 boom tube at the platform end of the boom. Loosen the nut, but do not remove the nut.

Boom Components

8 Locate the extend cable adjustment nuts on the counterweight end of boom tube #1. Refer to Illustration 1. Loosen the nylock nuts and jam nuts on the cable tension equalizer bracket. Do not remove the nuts.

9 Adjust the extend cable adjustment nut to obtain 6 3/8 inches/16.2 cm to 6 1/2 inches/16.5 cm between the platform end of boom tube #2 and boom tube #3. Refer to illustration 2. There should be approximately 1/2 inch of exposed threads on the adjustment bolts. Refer to Illustration 1.

Note: If the cables have been replaced, be sure the adjustment nuts have been replaced. Do not re-use the existing nuts.

10 Extend the boom until there is approximately 3 feet / 1 m of travel left. Do not fully extend the boom.

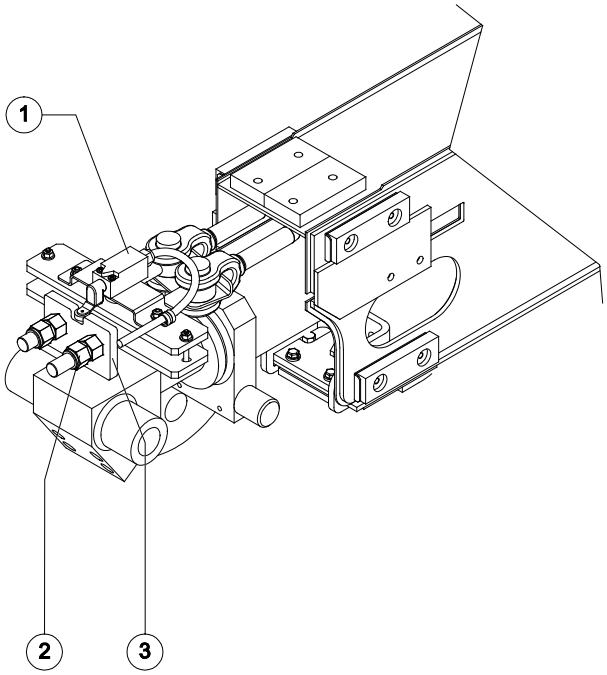


Illustration 1

1 cable break limit switch
2 extend cable adjustment nut
3 extend cable pivot plate

11 Locate the retract cable adjustment nut on the bottom of the number 1 boom tube at the platform end of the boom.

12 Using a dial type torque wrench, torque the retract cable adjustment nut to 32-36 ft lbs / 43-49 Nm using gentle and steady torque.

13 Retract and extend the boom approximately 3 feet / 1 m two times and stop during the extension cycle. This will create slack in the retract cables.

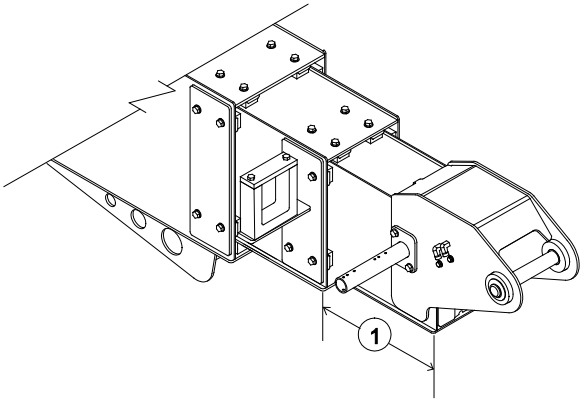
Note: Be sure to not fully extend the boom. Stop when there is approximately 3 feet / 1 m of travel left.

14 Repeat steps 12 and 13 two to three times.

15 Fully extend the boom then retract the boom approximately 12 inches / 30 cm.

16 At the pivot end of the boom, visually inspect the boom extend cables for even cable droop or sag.

Note: If the boom extend cables are uneven, tighten the boom extend cable adjustment nut at the pivot end of the boom for the appropriate cable.



Ilustration 2

1 6.375 inches / 16.2 cm

17 Visually inspect the cable break limit switch arm to be sure the wheel of the limit switch arm is centered in the notch of the pivot plate.

Note: If the boom extend cables are adjusted evenly, the wheel of the limit switch arm should be centered in the notch of the pivot plate.

18 Install the boom end cover at the pivot end of the boom.

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

How to Replace the Boom Extend/Retract Cables

Note: The cable pulleys must also be replaced when replacing the cables.

1 Remove the boom extension cylinder. Refer to Repair Procedure, *How to Remove the Boom Extension Cylinder.*

Boom extend cables:

2 Remove the cables from the lower boom extend cable bracket that attaches to the number 3 boom tube.

3 Remove the rue rings and clevis pins from the boom extend cables located near the extend cable break limit switch.

4 Remove the external snap rings from the boom extend cable pulley pivot pin. Use a soft metal drift to remove the pin.

Note: When driving the pivot pin out, be sure to drive it from the shaped end of the pin.

5 Remove the pulley and boom extend cables from the extension cylinder assembly. Discard the old cables and pulleys.

6 Route the new boom extend cables through the boom extend pulley bracket.

7 Install the new boom extend cable pulley, pivot pin and snap rings.

Note: Be sure the boom extend cables are routed through the grooves of the pulley and the upper wear pad on the extension cylinder.

Boom Components

8 Install the boom extend cable clevis pins and rue rings to the pivot plate near the cable break limit switch.

9 Install the boom extend cables to the lower extend cable bracket that mounts to the number 3 boom tube.

Boom retract cables:

10 Remove the rue rings and clevis pins from the boom retract cables at the platform end of the boom.

11 Attach the cable pulling tool or a rope to one of the boom retract cables at the pivot end of the boom.

Note: A cable pulling tool is available through Genie Service Parts Department (Genie part no. 94510)

12 At the platform end of the boom, pull on the boom retract cable that has the rope attached to it.

13 Pull the old cable completely out of the boom tube. Remove the rope. Discard the old boom retract cable.

14 Securely attach the rope to the same end of the new boom retract cable.

15 At the pivot end of the boom, carefully pull the rope with the new retract cable attached.

16 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.

17 Repeat steps 14 through 19 for the other boom retract cable.

18 At the platform end of the boom, install the retract cables, clevis pins and rue rings to the adjustment plate.

19 Remove and discard the old boom retract pulleys from the pivot end of the boom extension cylinder.

20 Install the new boom retract pulleys to the pivot end of the boom extension cylinder.

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 Adjust the boom extend/retract cables. Refer to Repair Procedure, *How to Adjust the Boom Extend/Retract Cables*.

4-6
Platform Leveling Master Cylinder

The master cylinder acts as a pump for the slave cylinder. It is part of the closed loop hydraulic circuit that keeps the platform level through the entire range of boom motion. The master cylinder is located inside the pivot end of the boom.

How to Remove the Platform Leveling Master Cylinder

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

1 Raise the boom until the master cylinder rod-end pivot pin is accessible.

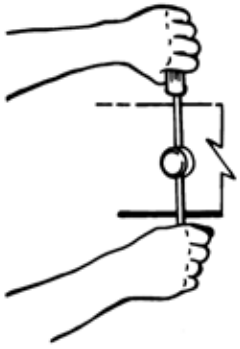
2 Remove the turntable end cover to access the master cylinder.

3 Tag, disconnect and plug the master cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

4 Remove the pin retaining fastener from the master cylinder barrel-end pivot pin.

5 Place a rod through the barrel-end pivot pin and twist to remove the pin.



6 Attach a lifting strap from an overhead crane to the lug on the rod end of the master cylinder.

7 Remove the pin retaining fastener from the rod-end pivot pin.

8 Place a rod through the rod-end pivot pin and twist to remove the pin.

9 Remove the master cylinder from the machine.

⚠WARNING Crushing hazard. The master cylinder could become unbalanced and fall if not properly attached to the overhead crane.

Boom Components

4-7
Primary Boom Angle Sensor

The primary boom angle sensor works in conjunction with the boom extend limit switches, maintaining the working envelope. The primary boom angle sensor is located underneath the swing chassis between the timing link arms.

How to Replace the Primary Boom Angle Sensor

1 From the ground controls lower the primary boom to the stowed position and then rotate the swing chassis so that it is perpendicular to the drive chassis.

2 Push in the red Emergency Stop button at the ground controls and turn the key switch to the off position.

3 Locate the primary boom angle sensor under the swing chassis, between the timing link. Remove the cover to gain access to the sensor.

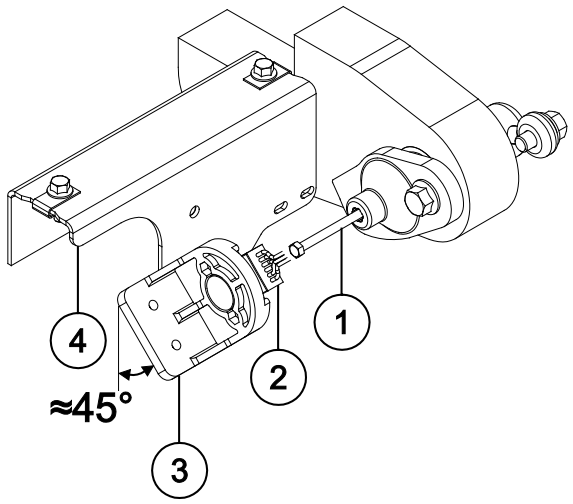
4 Locate and disconnect the angle sensor harness connector.

5 Remove the angle sensor mounting bracket retaining fasteners and set aside to be reused. Remove the angle sensor and bracket assembly.

6 Remove the angle sensor from the mounting bracket and install the new angle sensor using the same fasteners.

7 Referring to the illustration, hold the angle sensor/bracket assembly at an angle away from the mounting plate and match up the hex shaft to the sensor. Rotate the assembly towards the mounting plate and install the angle sensor assembly to the mounting plate using the fasteners removed in step 5. Do not completely tighten at this time.

Note: This will index the sensor to obtain the required voltage to allow calibration.

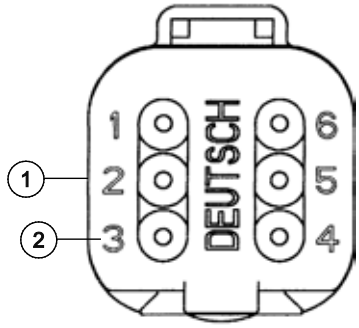


1 hex key
2 boom angle sensor
3 angle sensor mounting bracket.
4 mounting plate

8 Securely connect the angle sensor harness to the main harness.

9 Turn the key switch to platform controls. Pull out the red Emergency Stop buttons at the ground and platform controls to the on position.

10 Using a volt meter set to DC volts, back probe the angle sensor harness connector. Insert the negative lead into terminal 2, the positive lead into terminal 3.



1 terminal 2
2 terminal 3

11 The volt meter should read 2.16V dc to 2.2V dc.

⊙ If the voltage reading is correct, tighten the mounting bracket fasteners and re-install the cover removed in step 3.

⊠ If the voltage is not between 2.16V dc and 2.2V dc, remove the mounting bracket assembly, remove the sensor from the hex key and rotate the assembly to index the sensor and obtain the correct voltage. If the voltage was less then 2.16V dc, rotate the assembly approximately 60° from the mounting plate. If the voltage was more than 2.2V dc rotate the assembly approximately 30° from the mounting plate. Insert the sensor onto the hex key and attach the mounting bracket. Confirm the voltage is between 2.16V dc to 2.2V dc.

12 Tighten the fasteners securing the sensor mounting bracket and re-install the cover.

13 Calibrate the boom angle sensor. Refer to Repair Procedure, *How to Calibrate the Boom Angle Sensor*.

Engines

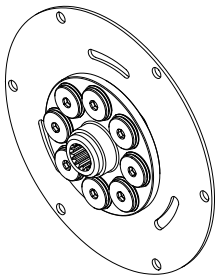
5-1 RPM Adjustment

Refer to Maintenance Procedure in the appropriate Service or Maintenance Manual for your machine, *Check and Adjust the Engine RPM*.

5-2 Flex Plate

The flex plate acts as a coupler between the engine and the pump. It is bolted to the engine flywheel and has a splined center to drive the pump.

Type "B" flex plates combines the pump coupler, as part of the flex plate, which is installed onto the engine flywheel.



Type "B"
(flexplate with coupler combined)

How to Remove the Flex Plate

Note: Perform this procedure with the engine off and cool to the touch.

1 Open the engine side turntable cover.

2 Tag and disconnect the battery cables from the battery(s).

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

3 Tag and disconnect the wiring plug at the electronic displacement controller (EDC), located on the drive pump.

Deutz TD2011L04i models:

1 Tag and disconnect the wiring from the bell housing.

2 Remove the U-bolt from the exhaust flex pipe at the muffler.

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

3 Remove the muffler bracket retaining fasteners from bell housing. Remove the muffler and bracket assembly from the engine.

4 Support the drive pump with an appropriate lifting device. Remove all of the remaining bell housing engine fasteners.

5 Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

6 Remove the flex plate mounting fasteners, and remove the flex plate from the engine flywheel.

Deutz TD 2.9 models:

1 Tag and disconnect the wiring from the bell housing.

2 Support the drive pump with an appropriate lifting device. Remove all of the remaining bell housing engine fasteners.

3 Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

4 Remove the flex plate mounting fasteners, and remove the flex plate from the engine flywheel.

Perkins 804D models:

1 Tag and disconnect the wiring from the bell housing.

2 Remove the exhaust pipe clamp at the muffler.

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

3 Remove the muffler mounting bracket fasteners. Remove the muffler and bracket assembly from the engine.

4 Remove the hose clamps from the air cleaner elbow and the engine intake manifold.

5 Remove the air cleaner mounting bracket fasteners. Remove the air cleaner and bracket assembly from the engine.

6 Support the drive pump with an appropriate lifting device. Remove all of the remaining bell housing engine fasteners.

7 Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

8 Remove the flex plate mounting fasteners, and remove the flex plate from the engine flywheel.

Engines

Perkins 404TD-22 models:

1 Tag and disconnect the wiring from the bell housing.

2 Remove the fasteners supporting the muffler assembly from the bell housing.

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

3 Support the drive pump with an appropriate lifting device. Remove all of the remaining bell housing engine fasteners.

4 Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

5 Remove the flex plate mounting fasteners, and remove the flex plate from the engine flywheel.

How to Install the Flex Plate

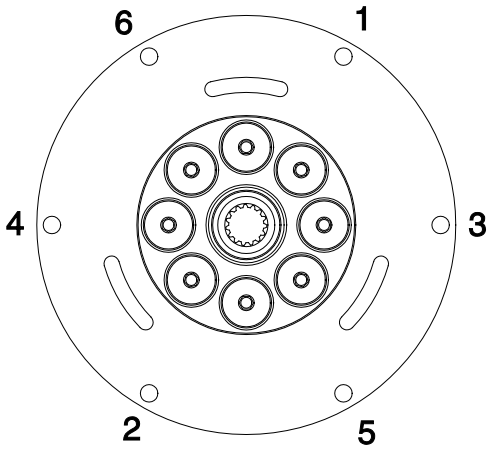
1 Install the flex plate onto the engine flywheel with the raised spline towards the pump. Apply Loctite® removable thread sealant to the mounting screws.

Note: Torque the flex plate mounting bolts in two stages.

Continental models: Torque the flex plate mounting bolts in sequence to 20.8 ft-lbs / 28 Nm.

Deutz models: Torque the flex plate mounting bolts in sequence to 28 ft-lbs / 38 Nm. Torque the flex plate mounting bolts in sequence to 40 ft-lbs / 54 Nm.

Perkins models: Torque the flex plate mounting bolts in sequence to 28 ft-lbs / 38 Nm. Torque the flex plate mounting bolts in sequence to 40 ft-lbs / 54 Nm.



Deutz, Perkins and Continental Flex Plate

2 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.

3 Apply Loctite® removable thread sealant to the pump coupler set screw. Torque the set screw to 61 ft-lbs / 83 Nm.

4 Install the pump onto the pump mounting plate. Apply Loctite® removable thread sealant to the pump retaining fasteners. Torque the pump retaining fasteners to 57 ft-lbs / 77 Nm.

NOTICE Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.

5 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.

6 Install the pump and pump mounting plate assembly onto the engine. Apply Loctite® removable thread sealant to the mounting screws.

Engines

How to Install the Pump and Bell Housing Assembly

1 Install the pump and bell housing assembly.

Deutz models: Torque the bell housing mounting bolts labeled "C" in sequence to 28 ft-lbs / 38 Nm. Then torque the bell housing mounting bolts labeled "C" in sequence to 40 ft-lbs / 54 Nm.

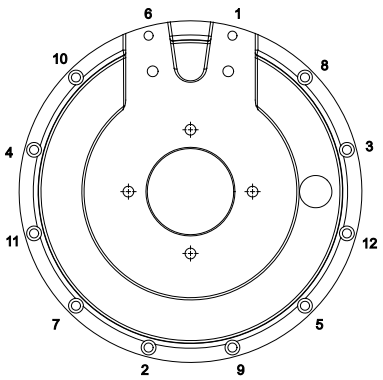
Perkins 804D models: Torque the bell housing mounting bolts in sequence to 28 ft-lbs / 38 Nm and then to 49 ft-lbs / 66 Nm.

Perkins 404F models: Torque the bell housing mounting bolts labeled "B" in sequence to 28 ft-lbs / 38 Nm and the mounting bolts labeled "A" to 49 ft-lbs / 66 Nm. Then torque the bell housing mounting bolts labeled "B" in sequence to 40 ft-lbs / 54 Nm and the mounting bolts labeled "A" to 70 ft-lbs / 95 Nm.

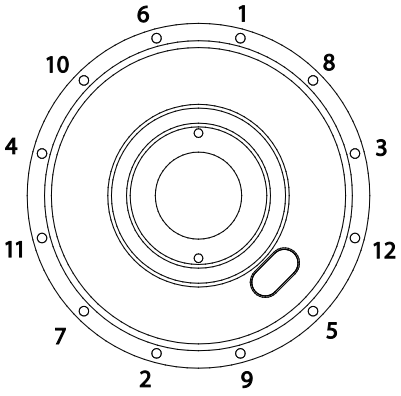
Continental model: Torque the pump mounting plate fasteners in sequence to 23 ft-lbs / 31.2 Nm.

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.

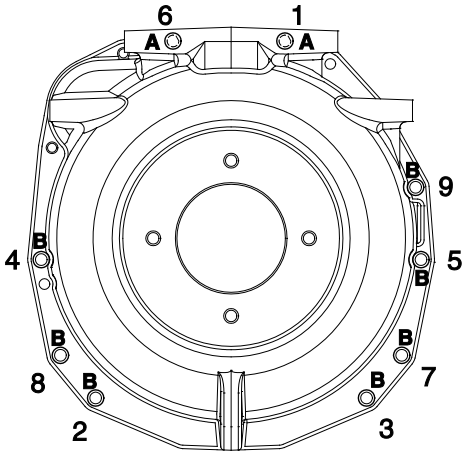
NOTICE Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.



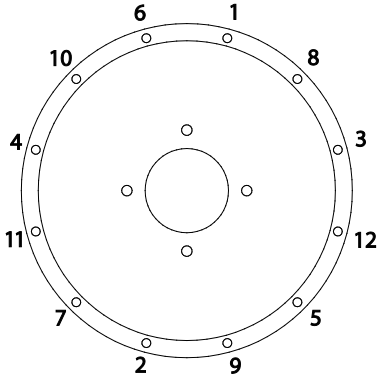
Deutz Pump Mounting Plate



Perkins 804D Pump Mounting Plate



Perkins 404F-22T Pump Mounting Plate



Continental Pump Mounting Plate

6-1
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/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

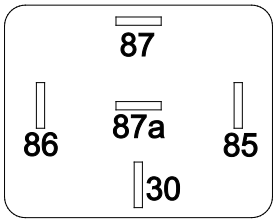
1 Tag and disconnect all the wiring from the relay to be tested.

2 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 with resistor	75 to 85Ω
terminal 87 to 87a and 30	no continuity (infinite Ω)
terminal 87a to 30	continuity (zero Ω)

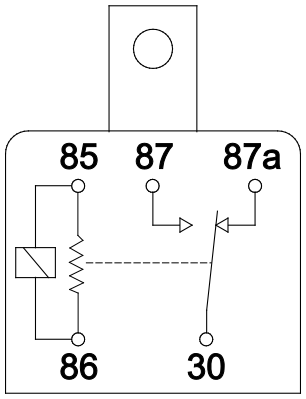
3 Connect 12V DC to terminal 85 and a ground wire to terminal 86, then test the following terminal combinations.

Test	Desired result
terminal 87 to 87a and 30	no continuity (infinite Ω)
terminal 87 to 30	continuity (zero Ω)



- terminal no. 87a - N.C.
- terminal no. 85 - coil negative (-)
- terminal no. 30 - common
- terminal no. 86 - coil positive (+)
- terminal no. 87 - N.O.

Control Relay Schematic



Hydraulic Pumps

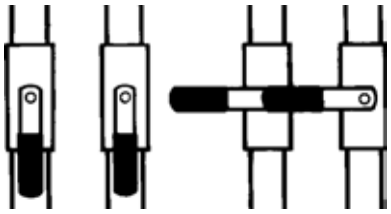
7-1 Function Pump

How to Remove the Function Pump

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

1 Locate the two hydraulic tank valves at the hydraulic tank. Close the valves.

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



open closed

2 Tag, disconnect and plug the function pump hydraulic hoses. Cap the fittings on the pump.

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

3 Support the pump with a suitable lifting device.

4 Remove the pump mounting bolts. Carefully remove the pump.

NOTICE Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the pump.

7-2 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 be performed at an authorized Sauer-Danfoss service center. Contact Genie Product Support to locate your local authorized service center.

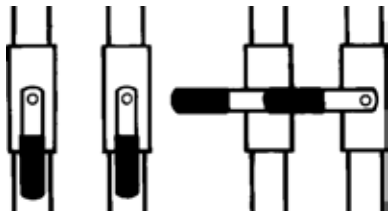
How to Remove the Drive Pump

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 (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Disconnect the wiring plug at the electronic displacement controller (EDC), located on the drive pump.

2 Locate the two hydraulic tank valves at the hydraulic tank. Close the valves.



open closed

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

3 Tag, disconnect and plug the hydraulic hoses from the drive and 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.

4 Support the pumps with a suitable lifting device and remove the two drive pump mounting fasteners.

Hydraulic Pumps

5 Carefully pull the drive pump out until the pump coupler separates from the flex plate.

6 Remove the drive pump from the machine.

NOTICE Component damage hazard. The pump(s) may become unbalanced and fall if not properly supported.

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

How to Prime the Drive Pump

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

1 Connect a 0 to 600 psi / 0 to 40 bar pressure gauge to the diagnostic nipple on the drive pump.

2 **Continental models:** If equipped, close the valve on the LPG tank, then disconnect the hose from the tank. Move the fuel select toggle switch to the LPG position.

Deutz and Perkins models: Disconnect the engine wiring harness from the fuel solenoid at the injector pump.

3 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 300 psi / 20.7 bar.

4 **Continental models**: If equipped, connect the LPG hose to the LPG tank and open the valve on the tank.

Deutz and Perkins models: Connect the engine wiring harness to the fuel solenoid.

5 Start the engine from the ground controls. Check for hydraulic leaks.

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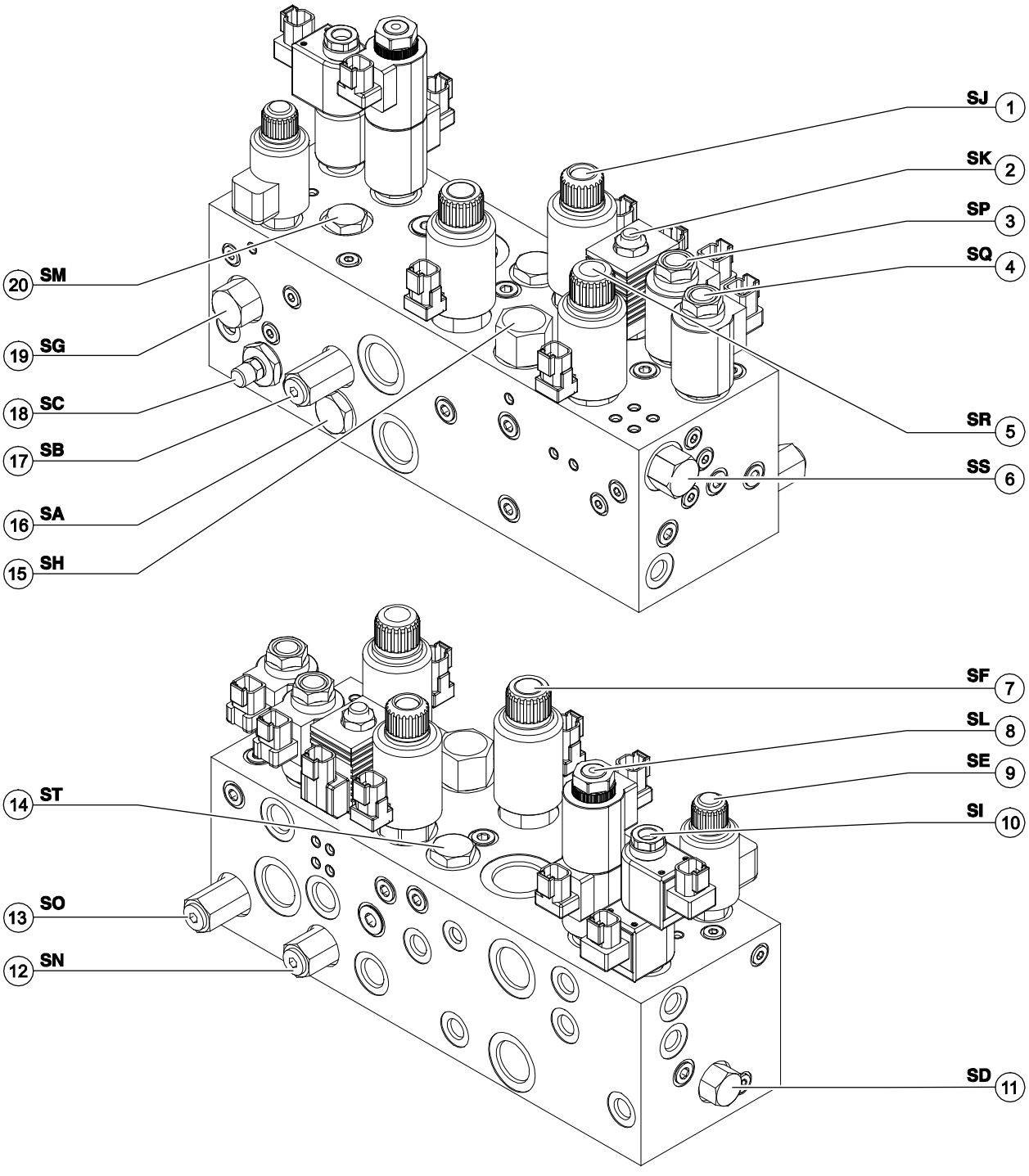
Manifolds

8-1
Function Manifold Components

The function manifold assembly is located on the tank side tray, behind the ground control box.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid Valve, 2 position 3 way	SJ	Boom up	50-55 ft-lbs / 68-75 Nm
2	Solenoid Valve, 2 position 3 way	SK	Boom down	30-35 ft-lbs / 41-47 Nm
3	Solenoid Valve, NO, Poppet	SP	Extend	33-37 ft-lbs / 45-50 Nm
4	Solenoid Valve, NO, Poppet	SQ	Retract	33-37 ft-lbs / 45-50 Nm
5	Proportional solenoid valve	SR	Extend proportional	20-25 ft-lbs / 27-34 Nm
6	Differential sensing valve	SS	Boom extend	30-35 ft-lbs / 41-47 Nm
7	Proportional solenoid valve	SF	Boom up/down proportional	33-37 ft-lbs / 45-50 Nm
8	Solenoid valve, 3 position 4 way	SL	Steering directional	20-25 ft-lbs / 27-34 Nm
9	Proportional solenoid valve	SE	Swing proportional	20-25 ft-lbs / 27-34 Nm
10	Solenoid valve, 3 position 4 way	SI	Swing directional	26-30 ft-lbs / 35-41 Nm
11	Flow regulator valve	SD	Oscillate flow control	20-25 ft-lbs / 27-34 Nm
12	Relief valve, 2400 psi / 165 bar	SN	Boom down relief	20-25 ft-lbs / 27-34 Nm
13	Relief valve, 2400 psi / 165 bar	SO	Boom extend relief	20-25 ft-lbs / 27-34 Nm
14	Check valve, 30 psi / 2.1 bar	ST	Return check valve	30-35 ft-lbs / 41-47 Nm
15	Differential sensing valve	SH	Primary lift	30-35 ft-lbs / 41-47 Nm
16	Check valve	SA	Back flow / check function pump	30-35 ft-lbs / 41-47 Nm
17	Relief valve, 3200 psi / 221 bar	SB	System relief	20-25 ft-lbs / 27-34 Nm
18	Pressure reducing valve	SC	Oscillate pressure control	30-35 ft-lbs / 41-47 Nm
19	Differential sensing valve	SG	Differential sensing/turntable rotate	30-35 ft-lbs / 41-47 Nm
20	Flow regulator valve	SM	Steering flow control	20-25 ft-lbs / 27-34 Nm

Manifolds


SJ 1
SK 2
SP 3
SQ 4
SR 5
SS 6
SF 7
SL 8
SE 9
SI 10
SD 11
SN 12
SO 13
ST 14
SH 15
SA 16
SB 17
SC 18
SG 19
SM 20

Manifolds

8-2 Valve Adjustments - Function Manifold

How to Adjust the System Relief Valve

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

Note: Refer to Function Manifold Component list to locate the system relief valve.

Note: Auxiliary power will be used to perform this procedure. Do not start the engine.

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the diagnostic nipple (ptest) located next to the auxiliary pump.

2 Simultaneously activate and hold the auxiliary power toggle switch and the primary boom retract toggle switch with the primary boom fully retracted. Observe the pressure reading on the pressure gauge. Refer to Specifications, *Hydraulic Specifications*.

3 Locate the system relief valve on the function manifold. Use a wrench to hold the relief valve and remove the cap.

4 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.

5 Repeat step 2 to confirm relief valve pressure.

6 Remove the pressure gauge.

How to Adjust the Boom Down Relief Valve

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

Note: Refer to Function Manifold Component list to locate the boom down relief valve.

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the diagnostic nipple located next to the auxiliary pump.

2 Start the engine from the ground controls.

3 Hold the function enable/rpm select toggle switch to the high idle position and activate and hold the boom down toggle switch with the boom fully lowered. Observe the pressure reading on the pressure gauge. Refer to Specifications, *Hydraulic Specifications*.

4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap on the function manifold.

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 and recheck relief valve pressure.

7 Remove the pressure gauge.

How to Adjust the Boom Extend Relief Valve

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

Note: Refer to Function Manifold Component list to locate the boom extend relief valve.

1 Connect a 0 to 3000 psi / 0 to 200 bar pressure gauge to the diagnostic nipple located next to the auxiliary pump.

2 Start the engine from the ground controls.

3 Hold the function enable/rpm select toggle switch to the high idle position and activate and hold the boom extend toggle switch with the boom fully extended. Observe the pressure reading on the pressure gauge. Refer to Specifications, *Hydraulic Specifications*.

4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap on the function manifold.

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 and recheck relief valve pressure.

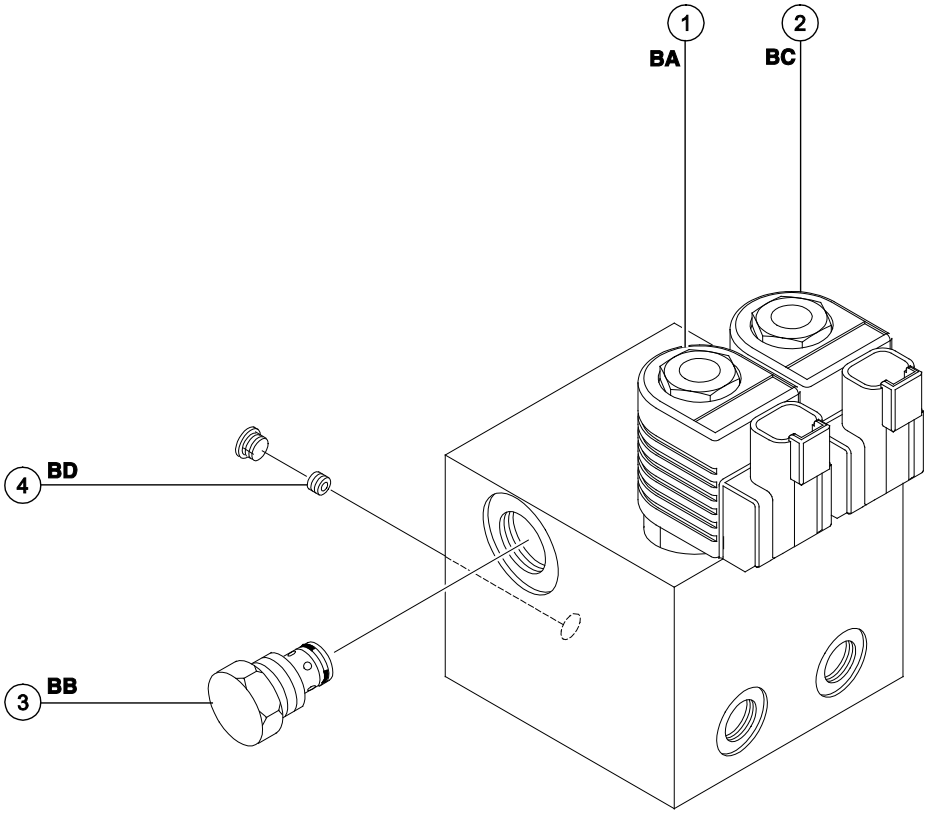
7 Remove the pressure gauge.

Manifolds

8-3
Brake / Two Speed Manifold Components

The brake/two speed manifold is mounted inside the drive chassis.

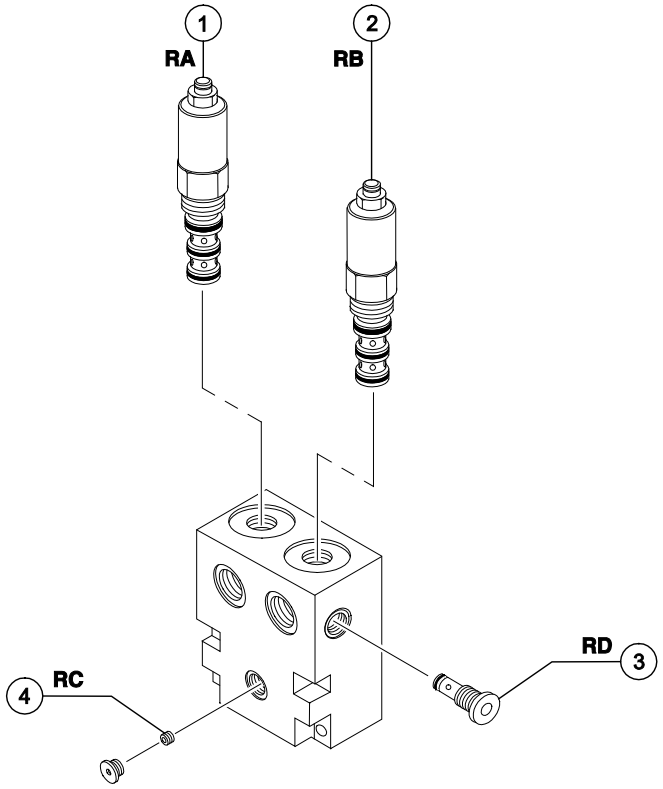
Index No.	Description	Schematic Item	Function	Torque
1	Solenoid Valve, 2 position 3 way	BA	Brake release	20-25 ft-lbs / 27-34 Nm
2	Solenoid Valve, 2 position 3 way	BC	Two-speed motor shift	20-25 ft-lbs / 27-34 Nm
3	Check valve	BB	Brake release circuit	20-25 ft-lbs / 27-34 Nm
4	Orifice, 0.025 inch / 0.63 mm	BD	Turntable rotation brake release	



8-4
Turntable Rotation Manifold Components

The turntable rotation manifold is mounted to the turntable rotation motor at the ground control side of the machine.

Index No.	Description	Schematic Item	Function	Torque
1	Counterbalance valve, 1000 psi	RA	Turntable rotate left	25-30 ft-lbs / 34-41 Nm
2	Counterbalance valve, 1000 psi	RB	Turntable rotate right	25-30 ft-lbs / 34-41 Nm
3	Shuttle valve, 2 position 3 way	RD	Turntable rotation brake release	8-10 ft-lbs / 10-15 Nm
4	Orifice, 0.030 inch / 0.8 mm	RC	Brake release circuit	

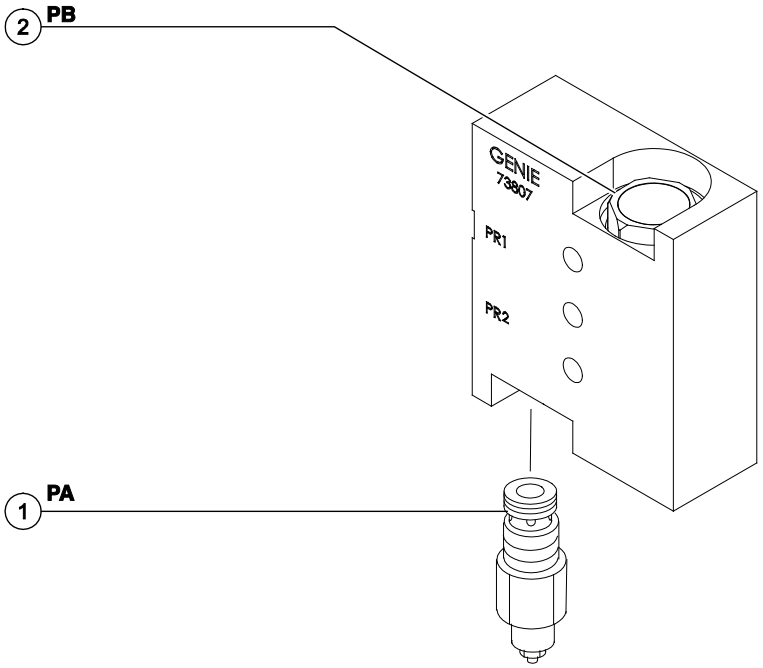


Manifolds

8-5
Platform Rotate Manifold Components

The platform rotate manifold is mounted on the platform rotator.

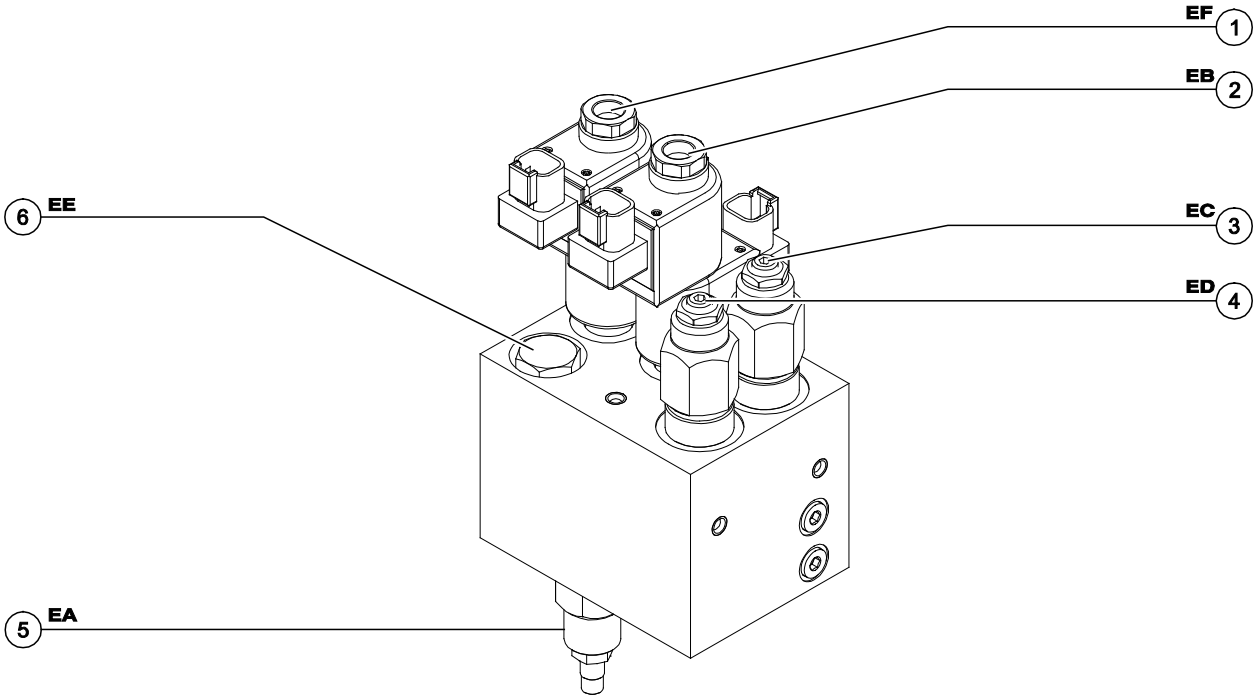
Index No.	Description	Schematic Item	Function	Torque
1	Counterbalance valve, 3300 psi	PA	Platform rotate right	37-44 ft-lbs / 50-60 Nm
2	Counterbalance valve, 3300 psi	PB	Platform rotate left	37-44 ft-lbs / 50-60 Nm



8-6
Platform Manifold Components, S-80

The jib boom / platform rotate manifold is mounted to the platform support.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 3 position 4 way	EF	Platform rotate CW/CCW	30-35 ft-lbs / 41-47 Nm
2	Solenoid valve, 3 position 4 way	EB	Platform level up/down	30-35 ft-lbs / 41-47 Nm
3	Counterbalance valve, 3500 psi	EC	Platform level CB valve	26-30 ft-lbs / 35-41 Nm
4	Counterbalance valve, 3500 psi	ED	Platform level CB valve	26-30 ft-lbs / 35-41 Nm
5	Needle valve	EA	Platform level	20-25 ft-lbs / 27-34 Nm
6	Pressure comp., flow control valve	EE	Platform rotate flow control	33-37 ft-lbs / 45-50 Nm

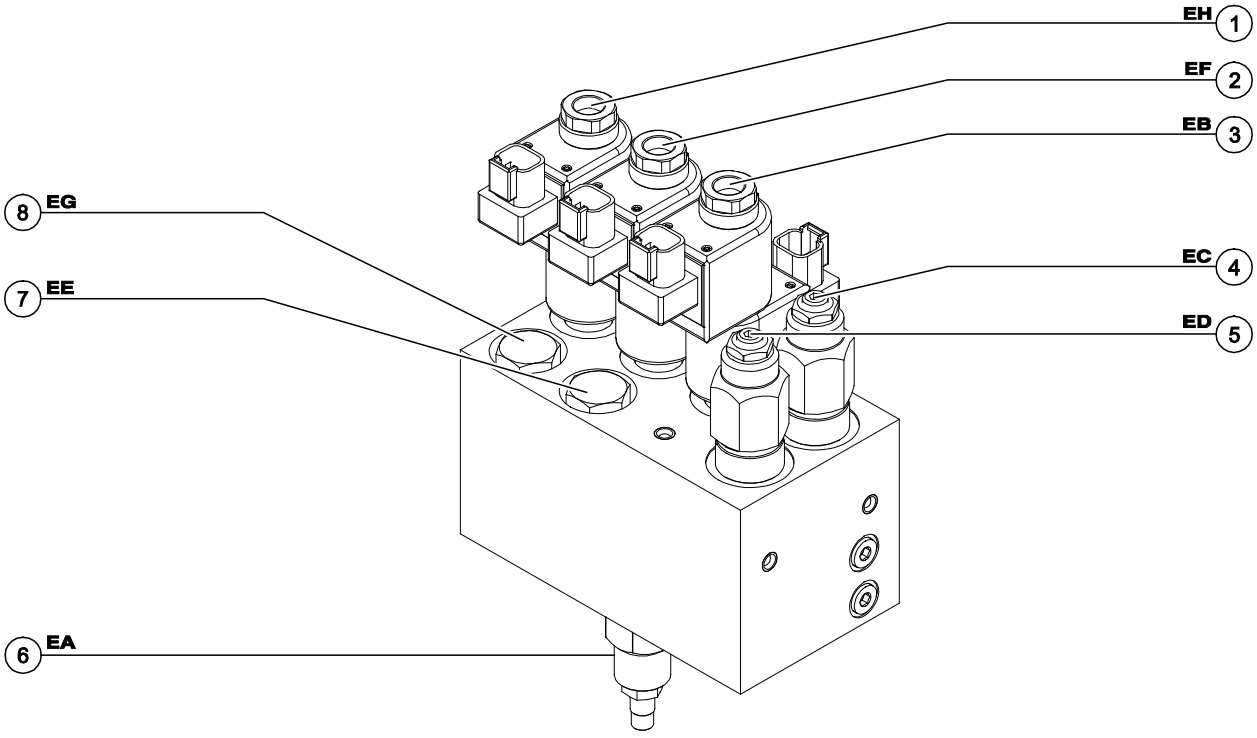


Manifolds

8-7
Platform Manifold Components, S-85

The jib boom / platform rotate manifold is mounted to the platform support.

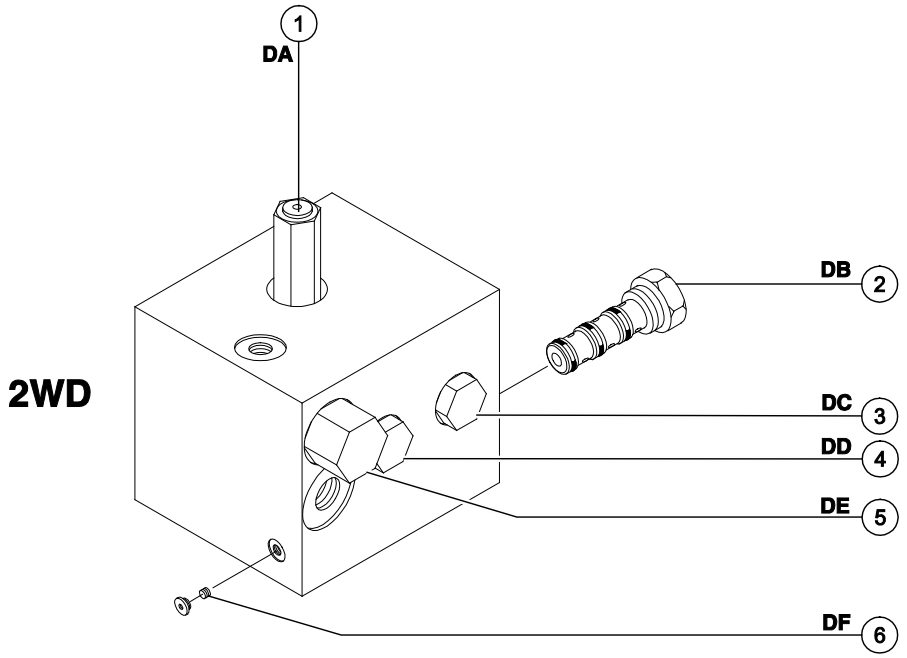
Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 3 position 4 way	EF	Platform rotate CW/CCW	30-35 ft-lbs / 41-47 Nm
2	Solenoid valve, 3 position 4 way	EB	Platform level up/down	30-35 ft-lbs / 41-47 Nm
3	Solenoid valve, 3 position 4 way	EH	Jib boom up/down	30-35 ft-lbs / 41-47 Nm
4	Counterbalance valve, 3500 psi	EC	Platform level CB valve	26-30 ft-lbs / 35-41 Nm
5	Counterbalance valve, 3500 psi	ED	Platform level CB valve	26-30 ft-lbs / 35-41 Nm
6	Needle valve	EA	Platform level	20-25 ft-lbs / 27-34 Nm
7	Pressure comp., flow control valve	EE	Platform rotate flow control	33-37 ft-lbs / 45-50 Nm
8	Pressure comp., flow control valve	EG	Platform rotate flow control	33-37 ft-lbs / 45-50 Nm



8-8
Traction Manifold Components, 2WD

The drive manifold is mounted inside the drive chassis at the non-steer end of the machine.

Index No.	Description	Schematic Item	Function	Torque
1	Relief valve, 280 psi / 19.3 bar	DE	Charge pressure circuit	30-35 ft-lbs / 41-47 Nm
2	Flow divider/combiner valve	DB	Controls flow to drive motors in forward and reverse	90-100 ft-lbs / 120-133 Nm
3	Check valve	DC	Drive circuit	30-35 ft-lbs / 41-47 Nm
4	Check valve	DD	Drive circuit	30-35 ft-lbs / 41-47 Nm
5	Shuttle Valve, 3 position 3 way	DF	Controls flow to drive motors in forward and reverse	50-55 ft-lbs / 67-73 Nm
6	Orifice Plug, 0.070 inch / 1.8 mm	DA	Equalizes flow across flow divider/combiner valve BY	



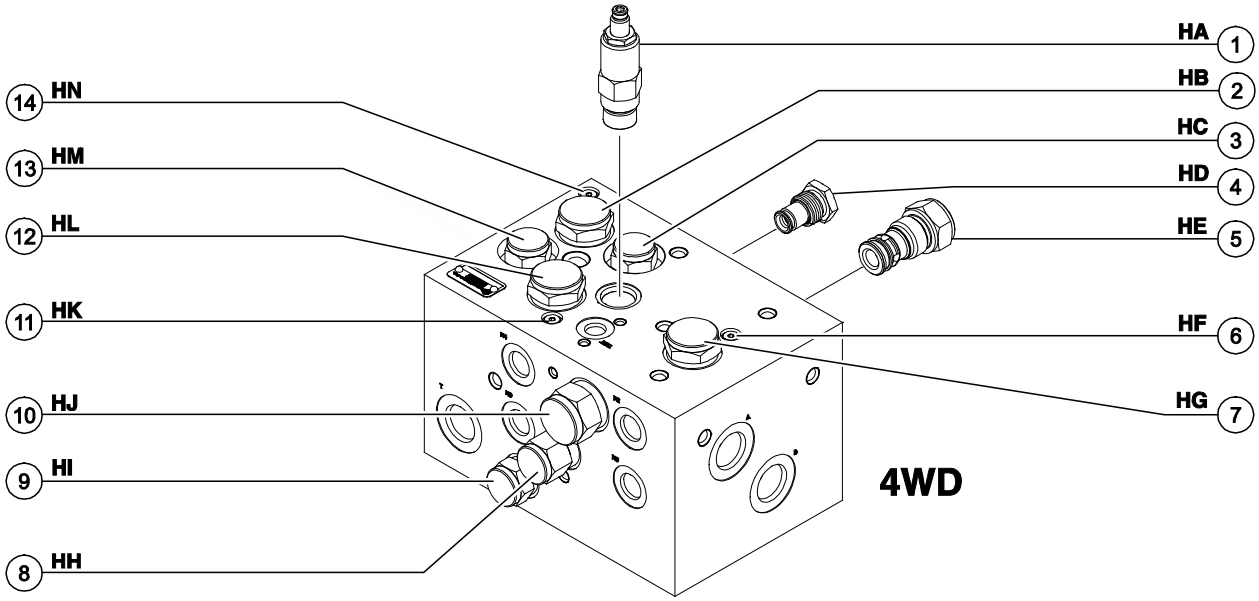
Manifolds

8-9
Traction Manifold Components, 4WD

The drive manifold is mounted inside the drive chassis at the non-steer end of the machine.

Index No.	Description	Schematic Item	Function	Torque
1	Relief valve, 280 psi / 19.3 bar	DE	Charge pressure circuit	35-40 ft-lbs / 48-54 Nm
2	Flow divider/combiner valve	DB	Controls flow to non-steer end drive motors in forward and reverse	80-90 ft-lbs / 108-122 Nm
3	Check valve	DF	Steer end drive motor circuit	35-40 ft-lbs / 48-54 Nm
4	Check valve	DC	Non-steer end drive motor circuit	35-40 ft-lbs / 48-54 Nm
5	Flow divider/combiner valve	CK	Controls flow to flow divider/combiner valves 2 and 13	80-90 ft-lbs / 108-122 Nm
6	Check valve	DD	Non-steer end drive motor circuit	60-70 ft-lbs / 81-95 Nm
7	Orifice, 0.040 inch / 1 mm	DL	Equalizes pressure on both sides of flow divider/combiner valve 5	
8	Orifice, 0.040 inch / 1 mm	DA	Equalizes pressure on both sides of flow divider/combiner valve 2	
9	Orifice, 0.040 inch / 1 mm	DN	Equalizes pressure on both sides of flow divider/combiner valve 13	
10	Check valve	DG	Steer end drive motor circuit	60-70 ft-lbs / 81-95 Nm
11	Check valve	DH	Steer end drive motor circuit	35-40 ft-lbs / 48-54 Nm
12	Shuttle Valve, 3 position 3 way	DJ	Charge pressure circuit that directs hot oil out of low pressure side of drive pump	80-90 ft-lbs / 108-122 Nm
13	Flow divider/combiner valve	DM	Controls flow to steer end drive motors in forward and reverse	80-90 ft-lbs / 108-122 Nm
14	Check valve	DP	Non-steer end drive motor circuit	35-40 ft-lbs / 48-54 Nm

Manifolds

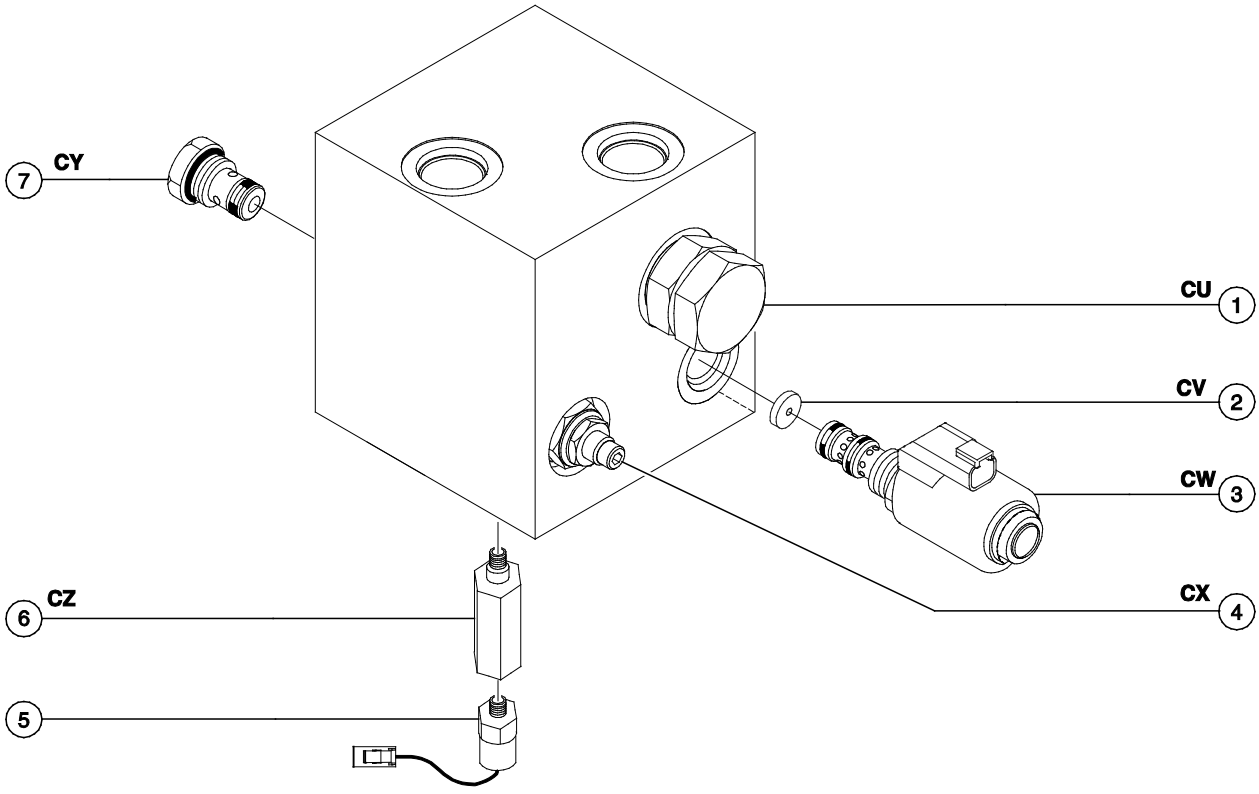

HA
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HB
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HC
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HD
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HE
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HF
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HN
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HM
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HL
11
HK
10
HJ
9
HI
8
HH
4WD

Manifolds

8-10
Diverter Manifold Components (welder option)

The oil diverter manifold is mounted to the hydraulic generator located in the engine compartment.

Index No.	Description	Schematic Item	Function	Torque
1	Directional valve	CU	Diverter valve	80-90 ft-lbs / 108-122 Nm
2	Orifice disc, 0.031 inch / 0.8 mm	CV	Delays shift to drive	
3	Solenoid Valve	CW	Pilot valve to diverter	35-40 ft-lbs / 47-54 Nm
4	Relief valve	CX	Charge pressure circuit	35-40 ft-lbs / 47-54 Nm
5	Pressure switch	CZ	Power to relay	16 ft-lbs / 22 Nm
6	Connector	---	For pressure switch	11 ft-lbs / 15 Nm
7	Check valve	CY	Prevents oil to generator	35-40 ft-lbs / 47-54 Nm



8-11
Valve Adjustments - Traction Manifold

How to Adjust the Hot Oil Relief Valve

Note: The pressure differential between the charge pump relief valve (located in the drive pump) and the hot oil shuttle relief valve (located in the traction manifold) is necessary to return hot oil from the closed loop drive circuit to the hydraulic tank for cooling. This pressure differential must be maintained at 40 psi / 3 bar.

Note: Two people will be required to perform this procedure.

1 Open the engine side turntable cover and connect a 0 to 600 psi / 0 to 40 bar pressure gauge to the diagnostic nipple on the drive pump.

2 Start the engine from the platform controls and allow the engine to run at low idle. Note the pressure reading on the pressure gauge.

3 Turn the engine off and connect a 0 to 600 psi / 0 to 40 bar pressure gauge to the diagnostic nipple located on the traction manifold.

4 Start the engine from the platform controls and drive the machine slowly in the forward direction. Note the pressure reading on the pressure gauge.

5 Turn the engine off, and remove the hot oil shuttle relief valve cap (item BJ). Adjust the internal hex socket clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.

6 Repeat steps 4 and 5 until a pressure differential (between the charge pump reading and the hot oil shuttle relief valve) of 40 psi / 3 bar is obtained.

Manifolds

8-12 Valve Coils

How to Test a Coil

A properly functioning coil provides an electromotive force which operates the solenoid valve. Critical to normal operation is continuity within the coil that provides this force field.

Since coil resistance is sensitive to temperature, resistance values outside specification can produce erratic operation. When coil resistance decreases below specification, amperage increases. As resistance rises above specification, voltage increases.

While valves may operate when coil resistance is outside specification, maintaining coils within specification will help ensure proper valve function over a wide range of operating temperatures.

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

1 Tag and disconnect the wiring from the coil to be tested.

2 Test the coil resistance.

⊙ Result: The resistance should be within specification, plus or minus 30%.

⊠ Result: If the resistance is not within specification, plus or minus 30%, replace the coil.

Valve Coil Resistance Specification

Note: The following coil resistance specifications are at an ambient temperature of 68°F / 20°C. As valve coil resistance is sensitive to changes in air temperature, the coil resistance will typically increase or decrease by 4% for each 18°F / 10°C that your air temperature increases or decreases from 68°F / 20°C.

Valve Coil Resistance Specification	
Proportional solenoid valve (schematic items SE, SF and SR)	4.8Ω
2 position 3 way solenoid valve (schematic items SJ and SK)	6.3Ω
2 position 2 way solenoid valve (schematic items SP and SQ)	5.9Ω
3 position 4 way solenoid valve (schematic items EB, EF, EH, SI and SL)	6.3Ω

How to Test a Coil Diode

Properly functioning coil diodes protect the electrical circuit by suppressing voltage spikes. Voltage spikes naturally occur within a function circuit following the interruption of electrical current to a coil. Faulty diodes can fail to protect the electrical system, resulting in a tripped circuit breaker or component damage.

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

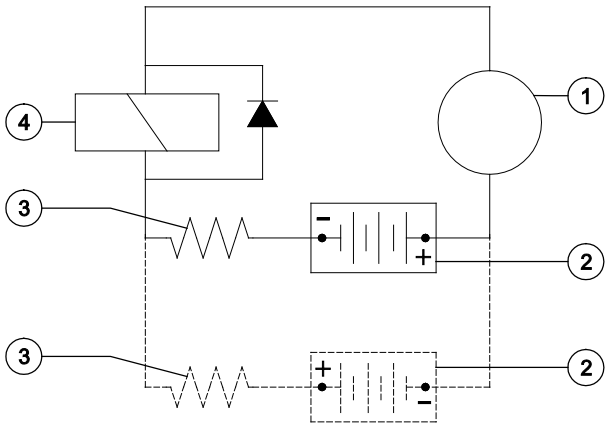
1 Test the coil for resistance. Refer to Repair Procedure, *How to Test a Coil*.

2 Connect a 10W resistor to the negative terminal of a known good 9V DC battery. Connect the other end of the resistor to a terminal on the coil.

Resistor 10Ω

Genie part number 27287

Note: The battery should read 9V DC or more when measured across the terminals.



1 multimeter
2 9v DC battery
3 10Ω resistor
4 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.

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

9-1
Fuel Tank

How to Remove the Fuel Tank

⚠ 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.

⚠ DANGER Explosion and fire hazard. When transferring fuel, connect a grounding wire between the machine and pump or container.

⚠ DANGER Explosion and fire hazard. Never drain or store fuel in an open container due to the possibility of fire.

1 Turn the manual fuel shutoff valve to the closed position (if equipped).

2 Remove the fuel filler cap from the tank.

3 Using an approved hand-operated pump, drain the fuel tank into a suitable container. Refer to Specifications, *Machine 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 gasoline and diesel fuel.

4 Tag, disconnect, drain and plug the supply and return fuel hoses. Cap the fittings on the fuel tank.

5 Remove the fuel tank retaining fasteners.

6 Remove the fuel tank from the machine.

NOTICE Component damage hazard. The fuel tank is plastic and may become damaged if allowed to fall.

NOTICE Component damage hazard. When installing the plastic fuel tank, do not overtighten the retaining fasteners.

Note: Clean the fuel tank and inspect for damage before installing it onto the machine.

9-2 Hydraulic Tank

The primary functions of the hydraulic tank are to cool, clean and de-aerate the hydraulic fluid during operation. The tank utilizes internal suction strainers for the pump supply hoses and has an external return filter equipped with a filter condition indicator.

How to Remove the Hydraulic Tank

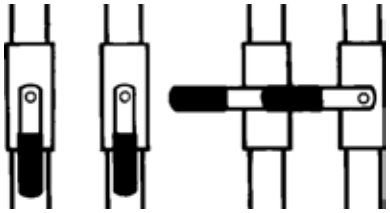
NOTICE Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system and cause severe component damage. Dealer service is recommended.

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

1 Remove the fuel tank. Refer to Repair Procedure, *How to Remove the Fuel Tank*.

2 Close the two hydraulic tank valves located at the hydraulic tank (if equipped).

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



open closed

3 Remove the drain plug from the hydraulic tank and completely drain the tank into a container of suitable capacity. Refer to Specifications, *Machine Specifications*.

4 Tag, disconnect and plug the two suction hoses that are attached to the hydraulic tank.

5 Tag and disconnect and plug the hose from the return filter. Cap the fitting on the return filter housing.

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

7 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.

8 Remove the four fasteners securing the tank to the chassis bulkhead.

9 Remove the hydraulic tank from the machine.

Fuel and Hydraulic Tanks

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

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

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

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

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

14 Install the hydraulic tank onto the machine.

15 Install the two suction hoses and the supply hose for the auxiliary power unit.

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

17 Clean up any oil that may have spilled.

18 Open the hydraulic tank shutoff valves (if equipped).

NOTICE Component damage hazard. Be sure to open the two hydraulic tank shutoff valves (if equipped) and prime the pump after installing the hydraulic tank.

Note: Always use pipe thread sealant when installing the drain plug and strainers.

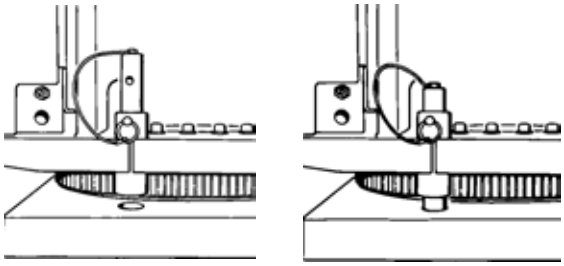
Turntable Rotation Components

10-1
Turntable Rotation Drive Hub Assembly

How to Remove the Turntable Rotation Drive Hub Assembly

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

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



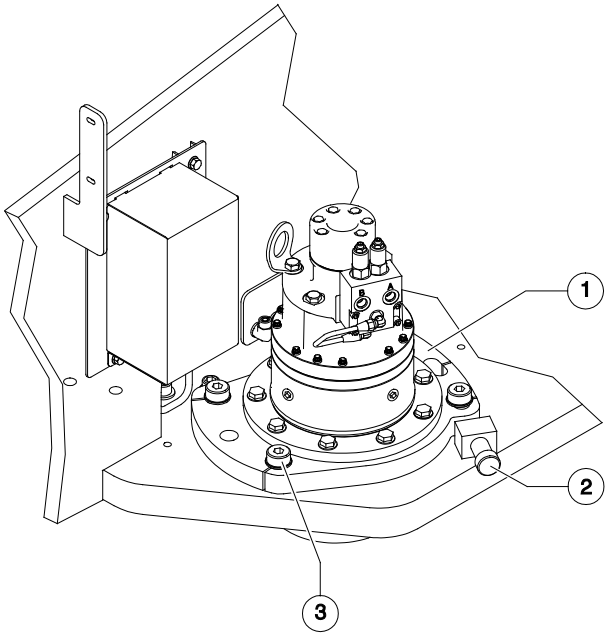
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2 Tag, disconnect and plug the hydraulic hoses from the drive motor. Cap the fittings on the motor.

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

3 Loosen the backlash pivot plate and adjustment bolts.

4 Attach a suitable lifting device to the lifting eyes on the drive hub assembly.



1 backlash pivot plate
2 adjustment bolt with lock nut
3 backlash pivot plate mounting bolts

5 Remove the backlash pivot plate mounting bolts. Carefully remove the drive hub assembly from the machine.

⚠WARNING Crushing hazard. The turntable rotate drive hub assembly could become unbalanced and fall when removed from the machine if not properly supported by the lifting device.

When installing the drive hub assembly:

6 Install the drive hub. Apply removable thread locking compound to fastener threads.Torque the backlash pivot plate mounting fasteners to specification. Refer to Specifications, *Machine Torque Specifications*.

7 Install the brake and then the motor onto the drive hub. Apply removable thread locking compound to fastener threads.Torque the motor/brake mounting fasteners to

Turntable Rotation Components

specification. Refer to Specifications, *Machine Torque Specifications*.

8 Adjust turntable rotation gear backlash. Refer to Repair Procedure, *How to Adjust the Turntable Rotation Gear Backlash*.

How to Remove the Turntable Rotation Hydraulic Motor

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

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

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

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

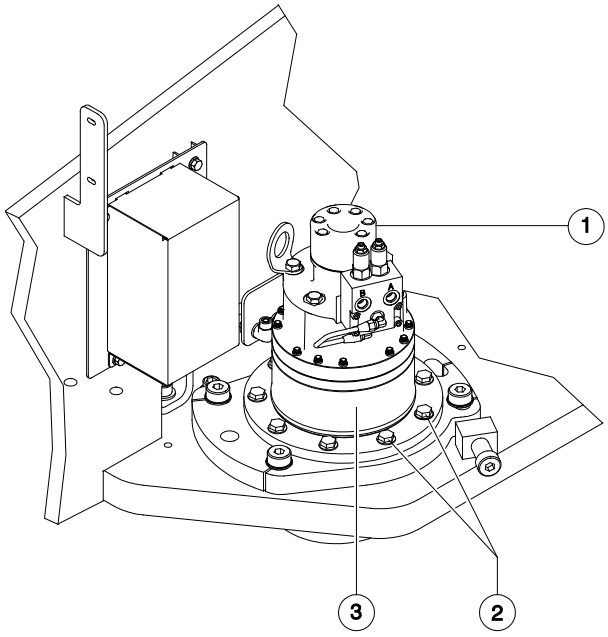
3 Remove the hydraulic tube that connects from the counterbalance manifold to the brake. Cap the fittings on the brake and manifold.

⚠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 motor/brake mounting fasteners. Carefully remove the motor from the brake.

Turntable Rotation Components

5 Clean up any oil that may have spilled.



1 motor
2 drive hub mounting bolts
3 drive hub with brake

How to Adjust the Turntable Rotation Gear Backlash

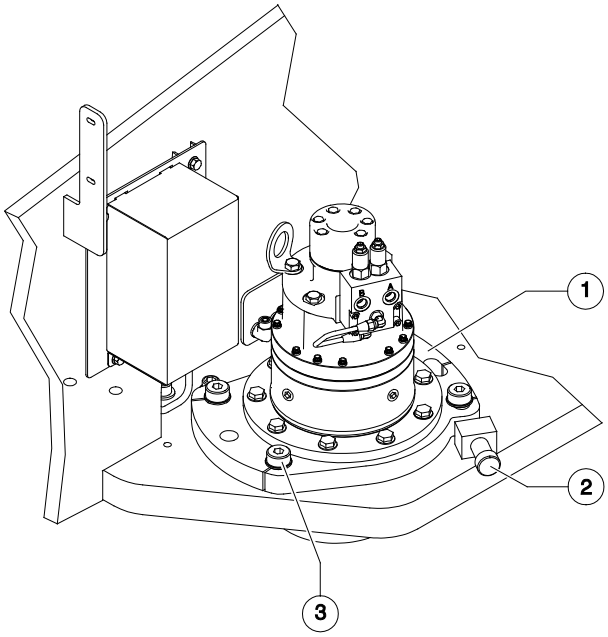
The turntable rotation drive hub is mounted on an adjustable plate that controls the gap between the rotation motor pinion gear and the turntable bearing ring gear.

Note: Perform this procedure with the boom between the non-steer end tires and with the machine on a firm and level surface.

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

Note: The turntable rotation lock pin is located next to the boom rest pad.

2 Loosen the backlash pivot plate mounting fasteners.



1 backlash pivot plate
2 adjustment bolt with lock nut
3 backlash pivot plate mounting bolts

Turntable Rotation Components

3 Push the backlash pivot plate towards the turntable as far as possible (this will push the rotation gear into the turntable bearing ring gear).

4 Loosen the lock nut on the adjustment bolt.

5 Turn the adjustment bolt clockwise until it contacts the backlash pivot plate.

6 Turn the adjustment bolt one half turn counterclockwise. Tighten the lock nut on the adjustment bolt.

7 Rotate the backlash pivot plate away from the turntable until it contacts the adjustment bolt. Then torque the mounting fasteners on the backlash pivot plate. Refer to Specifications, *Machine Torque Specifications*.

8 Rotate the turntable through an entire rotation. Check for tight spots that could cause binding. Readjust if necessary.

11-1
Yoke and Drive Hub

How to Remove the Yoke and Drive Hub Assembly

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

1 Remove the pin retaining fasteners from both the steer cylinder and the tie rod cylinder pivot pins. Remove the pins.

2 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.

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

4 Block the non-steer wheels, and center a lifting jack of ample capacity under the steer axle.

5 Raise the machine approximately 6 inches / 15 cm and place blocks under the chassis for support.

6 Remove the lug nuts. Remove the tire and wheel assembly.

7 Remove the hydraulic hose clamp retaining fastener from the top of the yoke pivot pin.

8 Remove the drive motor mounting fasteners.

9 Slide the drive motor shaft out of the drive hub and remove the drive motor from the machine.

10 Remove the pin retaining fasteners from the upper and lower yoke pivot pins.

11 Support and secure the yoke and drive hub assembly to a lifting jack.

12 Use a slide hammer to remove the upper yoke pivot pin. Use a soft metal drift to drive the lower yoke pivot pin down and out.

⚠WARNING Crushing hazard. The yoke and drive hub assembly could become unbalanced and fall when the yoke pivot pins are removed if not properly supported and secured to the lifting jack.

13 Place the yoke and drive hub assembly on a flat surface with the drive hub facing down.

14 Remove the drive hub mounting fasteners that attach the drive hub to the yoke. Remove the yoke from the drive hub. Refer to Specifications, *Machine Torque Specifications*.

Note: Replace the thrust washer when installing the yoke and drive hub assembly onto the axle.

Steer Axle Components

11-2 Drive Motors

How to Remove a Drive Motor

NOTICE 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 (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the drive motor access covers from both sides of the inner axle.

2 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.

3 Remove the drive motor mounting fasteners.

4 Slide the drive motor shaft out of the drive hub, and remove the drive motor from the machine.

11-3 Drive Hub

How to Remove a Drive Hub

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

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

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

3 Center a lifting jack of ample capacity under the non-steer axle.

4 Raise the machine approximately 6 inches / 15 cm and place blocks under the chassis for support.

5 Remove the wheel lug nuts, then the tire and wheel assembly.

6 Place a second lifting jack under the drive hub for support and secure the drive hub to the lifting jack.

7 Remove the drive hub mounting fasteners that attach the drive hub to the axle. Remove the drive hub.

⚠WARNING Crushing hazard. The drive hub could become unbalanced and fall if not properly supported by an overhead crane or lifting device when removed from the machine.

Note: Do not re-use the drive hub mounting fasteners. Genie specifications require the use of new fasteners.

11-4
Steer Cylinders

How to Remove a Steer Cylinder

There are two identical steer cylinders that work in parallel. They are part of the same hydraulic circuit, but move in opposite directions. The tie rod cylinder maintains equal movement of the tires.

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

1 Tag, disconnect and plug the hydraulic hoses from the steer 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.

2 Remove the hose bracket mounting fastener on the steer cylinder barrel-end pivot pin.

3 Remove the pin retaining fasteners from the steer cylinder pivot pins. Remove the pivot pin from each end of the steer cylinder.

4 Remove the steering cylinder from the machine.

Non-steer Axle Components

12-1 Drive Motors

How to Remove a Drive Motor

This procedure is the same as the steer axle procedure. Refer to Repair Procedure, *How to Remove a Drive Motor*.

12-2 Drive Hub

How to Remove a Drive Hub

This procedure is the same as the steer axle procedure. Refer to Repair Procedure, *How to Remove a Drive Hub*.

Oscillating Axle Components

13-1 Oscillating Axle Cylinders

The oscillating axle cylinders extend and retract between the drive chassis and the oscillating axle. The cylinders are equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure. The valves are not adjustable.

How to Remove an Oscillating Axle Cylinder

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

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

1 Rotate the turntable until the boom is between the steer tires.

2 Remove the fasteners from the drive chassis cover at the steer end. Remove the cover.

3 Tag, disconnect and plug the oscillating axle 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 Remove the pin retaining fasteners from the rod-end pivot pin. Use a soft metal drift to remove the pin.

5 Attach a lifting strap from an overhead crane to the barrel end of the oscillating cylinder.

6 Remove the pin retaining fasteners from the barrel-end pivot pin. Use a soft metal drift to remove the pin.

7 Remove the cylinder from the machine.

⚠ CAUTION Crushing hazard. The oscillate cylinder may become unbalanced and fall when removed from the machine if not properly attached to the overhead crane.

Oscillating Axle Components

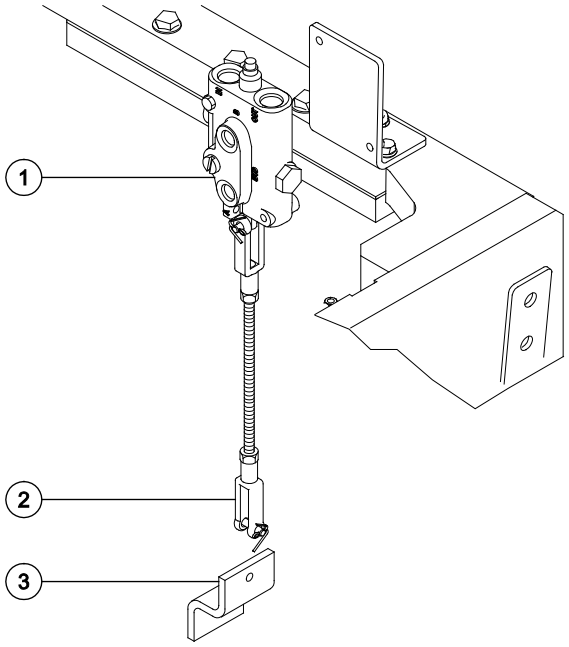
13-2
Oscillate Directional Valve

How to Adjust the Oscillate Relief Valve

1 Connect a 0 to 2000 psi / 0 to 150 bar pressure gauge to the diagnostic nipple located on the function manifold.

2 Remove the drive chassis cover from the non-steer end of the machine.

3 Disconnect the directional valve linkage, by removing the clevis yoke from the drive chassis.



1 oscillate valve
2 clevis yoke
3 drive chassis

4 Start the engine from the ground controls.

5 With the engine running, manually activate the valve and observe the pressure reading on the pressure gauge. Refer to Specifications, *Hydraulic Component Specifications*.

6 Turn the engine off.

7 Locate the relief valve on the function manifold (item SC).

8 Loosen the jam nut on the relief valve.

9 Turn the valve clockwise to increase the pressure or counterclockwise to decrease the pressure.

⚠WARNING Tip-over hazard. Do not adjust the relief valve higher than specified.

10 Tighten the jam nut.

11 Repeat steps 4 through 10 to confirm the oscillate relief valve pressure.

Note: The oscillate pressure required is while the oscillate cylinders are in motion. Do not dead head the cylinders to either side.

12 Turn the engine off, remove the pressure gauge and assemble the directional valve linkage.

13 Install the cover on the non-steer end of the drive chassis.

Oscillating Axle Components

How to Set Up the Directional Valve Linkage

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

1 Lower the boom to the stowed position.

2 Use a "bubble type" level to be sure the surface the machine is on is completely level.

⚠ DANGER Tip-over hazard. Failure to perform this procedure on a firm, level surface will compromise the stability of the machine and could result in the machine tipping over.

3 Check the tire pressure in all four tires and add air if needed to meet specification.

4 Remove the drive chassis cover from the non-steer end of the machine.

5 Disconnect the linkage clevis yoke from the axle.

6 Place a "bubble type" level on the turntable rotate bearing plate at the non-steer end. Confirm whether the drive chassis is completely level.

7 If the drive chassis is not level, start the engine and push up or pull down on the linkage adjustment rod until the machine is completely level.

8 Verify that the ground and drive chassis are completely level.

9 Loosen the jamb nuts and adjust the length of the rod by turning the clevis yoke until the clevis yoke can be pinned to the axle.

10 Install the cotter pin and tighten the jamb nuts.

11 Measure the gap between the drive chassis and the non-steer axle on both sides (from the inside of the drive chassis).

⊙ Result: The measurements should be equal.

Note: The gap on both sides should be between 0.150 inch / 0.381 cm and 0.170 inch / 0.432 cm.

12 Add or remove shims between the oscillation stop bar and the drive chassis to achieve the proper gap.

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Fault Codes



Observe and Obey:

- R Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine
- R Immediately tag and remove from service a damaged or malfunctioning machine.
- R Repair any machine damage or malfunction before operating the machine.
- R Unless otherwise specified, perform each procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Key switch in the off position with the key removed
  - The red Emergency Stop button in the off position at both the ground and platform controls
  - Wheels chocked
  - All external AC power supply disconnected from the machine
  - Boom in the stowed position
  - Turntable secured with the turntable rotation lock
  - Welder disconnected from the machine (if equipped with the weld cable to platform option)

Before Troubleshooting:

- R Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- R Be sure that all necessary tools and test equipment are available and ready for use.
- R Read each appropriate fault code thoroughly. Attempting short cuts may produce hazardous conditions.
- R Be aware of the following hazards and follow generally accepted safe workshop practices.

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

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

Control System Fault Codes

Control System

How to Retrieve Control System Fault Codes

At least one fault code is present when the alarm at the platform controls produces two short beeps every 30 seconds for 10 minutes.

Perform this procedure with the engine off, the key switch turned to platform controls and the red Emergency Stop button pulled out to the on position at both the ground and platform controls.

1 Open the platform control box lid.

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

2 Locate the red and yellow fault LEDs on the ALC-500 circuit board inside the platform control box. Do not touch the circuit board.

NOTICE Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. 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.

3 **Determine the error source:** The red LED indicates the error source and will flash two separate codes. The first code will indicate the first digit of the two digit code, flashing once per second. It will then pause for 1.5 seconds and flash the second digit once per 0.5 second.

Note: When the red LED is flashing the code, the yellow LED will be on solid.

4 **Determine the error type:** The yellow LED indicates the error type and will flash two separate codes. The first code will indicate the first digit of the two digit code, flashing once per second. It will then pause for 1.5 seconds and flash the second digit once per 0.5 second.

Note: When the yellow LED is flashing the code, the red LED will be on solid.

5 Use the fault code table on the following pages to aid in troubleshooting the machine by pinpointing the area or component affected.

Control System Fault Codes

Error Source		Error Type		Condition	Solution
ID	Name	ID	Name		
21	Primary Up / Down Joystick	11	Value at 5.0 V	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
		12	Value Too High		
		15	Value Too Low		
		16	Value at 0 V		
		17	Not calibrated	Joystick Speed and Direction frozen at zero and neutral.	Calibrate Joystick.
22	Primary Up / Down Directional Valves	21	Fault	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
23	Primary Up / Down Flow Valve	12	Value Too High	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
		15	Value Too Low		
		17	Not calibrated	Normal function except threshold for one or both directions is zero.	Calibrate valve threshold.
24	Angle sensor	11	Value at 5.0 V	Reduced function speed.	Retract before lowering required. Dual capacity models.
		12	Value Too High		
		15	Value Too Low		Power up controller with problem corrected.
		16	Value at 0 V		
		17	Not calibrated		Calibrate angle sensor.
		31	Invalid setup	Initiate 1 -second beep of Alarm.	Retract before lowering required. Dual capacity models.
					Calibrate angle sensor.
26	Angle sensor cross check	19	Out of Range	Reduced function speed.	Retract before lowering required. Dual capacity models.
					Power up controller with problem corrected.
31	Secondary Up / Down. Joystick	11	Value at 5.0 V	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
		12	Value Too High		
		15	Value Too Low		
		16	Value at 0 V		
		17	Not calibrated	Joystick Speed and Direction frozen at zero and neutral.	Calibrate Joystick.

Control System Fault Codes

Error Source		Error Type		Condition	Solution
ID	Name	ID	Name		
32	Secondary Up / Down. Directional Valves	21	Fault	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
33	Secondary Up / Down Flow Valve	12	Value Too High	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
		15	Value Too Low		
		17	Not calibrated	Normal function except threshold for one or both directions is zero.	Calibrate valve threshold.
34	primary Boom Extend / Retract Limit Switches	31	Invalid setup	Initiate 1 -second beep of Alarm. 1000lb. Mode: Required retract into FULLY RETRACTED state before lowering. 500lb. Mode: Operates normally. Dual capacity models.	Fully retract, then lower boom. Check and service ext/ret and fully stowed switches.
41	Turntable Rotate Joystick	11	Value at 5.0 V	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
		12	Value Too High		
		15	Value Too Low		
		16	Value at 0 V		
		17	Not calibrated	Initiate 1 -second beep of Alarm.	Calibrate Joystick.
42	Turntable Rotate Directional Valves	21	Fault	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
		17	Not calibrated	Normal function except threshold for one or both directions is zero.	Calibrate valve threshold.
43	Turntable Rotate Flow Valve	12	Value Too High	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
		15	Value Too Low		
		17	Not calibrated	Normal function except threshold for one or the other direction is zero. Display message on LCD.	Calibrate valve threshold.
44	Drive Enable Override Switch	21	Fault	Drive enable override direction is frozen at neutral.	Power up controller with problem corrected.
45	Platform Level Switch	21	Fault	Platform level frozen at neutral.	Power up controller with problem corrected.
46	Primary Extend / Retract Switch	21	Fault	Platform Extend / Retract frozen at neutral.	Power up controller with problem corrected.

Control System Fault Codes

Error Source		Error Type		Condition	Solution
ID	Name	ID	Name		
51	Drive Joystick	11	Value at 5.0 V	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
		12	Value Too High		
		15	Value Too Low		
		16	Value at 0 V		
		17	Not calibrated	Joystick Speed and Direction frozen at zero and neutral.	Calibrate Joystick.
53	Drive Flow Valve (EDC)	12	Value Too High	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
		15	Value Too Low		
		17	Not calibrated	Normal function except threshold for one or both directions is zero.	Calibrate valve threshold.
54	Propel Brake Valve	21	Fault	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
55	Propel High Motor Speed Valve	21	Fault	Motor speed frozen in the low state.	Power up controller with problem corrected.
56	Platform Level Valve	21	Fault	Direction frozen at zero and neutral.	Power up controller with problem corrected.
57	Foot switch / ECU Power Crosscheck	12	Value Too High	Direction frozen at zero and neutral.	Power up controller with problem corrected.
		15	Value Too Low		
61	Steer Joystick	11	Value at 5.0 V	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
		12	Value Too High		
		15	Value Too Low		
		16	Value at 0 V		
		17	Not calibrated	Joystick Speed and Direction frozen at zero and neutral.	Calibrate Joystick.
62	Steer Direction Valves	21	Fault	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Power up controller with problem corrected.
81	Platform Load Sense Overload	21	Fault	Limited Speed and Direction frozen at zero and neutral, Alarm sounds.	Self-clearing (transient)

Fault Code Display - Deutz and Perkins Models

How to Retrieve Active Engine Fault Codes - Deutz D 2.9 L4 and Perkins 404F-22 Models

The ECM constantly monitors the engine by the use of sensors on the engine. The ECM also uses signals from the sensors to initiate sequential fuel injection and make constant and instantaneous changes to ignition timing, fuel delivery and throttle position to maintain the engine's running condition at its highest efficiency while at the same time keeping exhaust emissions to a minimum. When a sensor fails or returns signals that are outside of set parameters, the ECM will store a fault code in memory that relates to the appropriate sensor. One or more fault LED's will illuminate on the display located at the ground control box. The active fault code will also be displayed on the LCD screen.

Note: The Perkins 404F-22 is equipped with an engine fault LED located at the platform control box.

If an engine fault occurs that does not result in an engine shutdown, the engine rpm will go into limp home mode resulting in the loss of high rpm.

When operating from the platform, if the red Emergency Stop button is pushed in, the active fault code(s) will be erased from the display.

Start the engine from the ground control box and operate various boom functions to verify that an active engine fault occurs and is shown on the display.

Note: All faults are stored in the Previous Fault history menu. These faults will not be erased when corrective action has been completed.

With an active fault and the engine running: (preferred method)

1 At the ground controls, activate the auxiliary pump toggle switch to shut the engine off.

Note: Do not push in the red Emergency Stop button or turn the key switch to the off position.

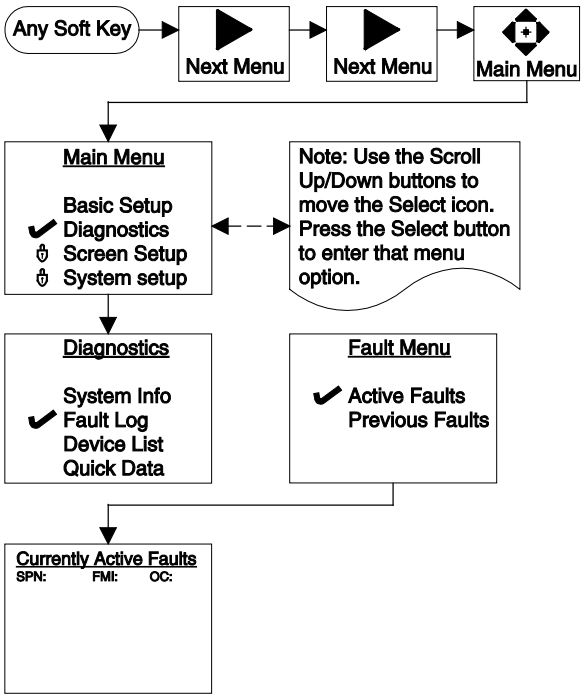
2 Press any soft key below the display.

3 Use the scroll up / down keys to check for multiple engine fault codes.

With the engine not running:

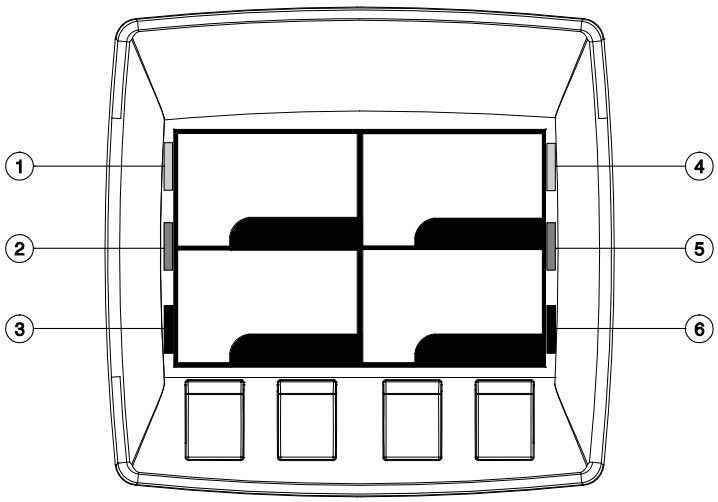
1 At the ground controls, turn the key switch to ground controls and pull out the red Emergency Stop button.

2 Navigate to the Active Fault Menu and use the scroll up / down keys to check for multiple engine fault codes.



Fault Code Display - Deutz and Perkins Models

Flashing and Solid LED's - Deutz D 2.9 L4 and Perkins 404F-22 Models



1 Left green LED:

Flashing, engine fault detected. Contact service.

Solid, fault acknowledged. Contact service.

2 Left amber LED: (Perkins models)

Solid,

a) Regeneration is inhibited. No service required.

b) High exhaust temperature during regeneration mode. No service required.

3 Left red LED:

Flashing, engine fault detected. Contact service.

Flashing with right flashing amber LED, engine soot level over 140%. Engine shut down. Contact service.

4 Right green LED:

Flashing, engine fault detected. Contact service.

Solid, fault acknowledged. Contact service.

5 Right amber LED: (Perkins models)

Solid with left amber LED on solid, regeneration has been inhibited and engine soot level is between 80 - 100%. Regeneration is required.

Flashing with left amber LED on solid, regeneration has been inhibited and soot level is between 100 - 140%. Engine rpm is de-rated. Regeneration is required.

Flashing with left and right red LED's flashing, engine soot level over 140%. Engine shut down. Contact service.

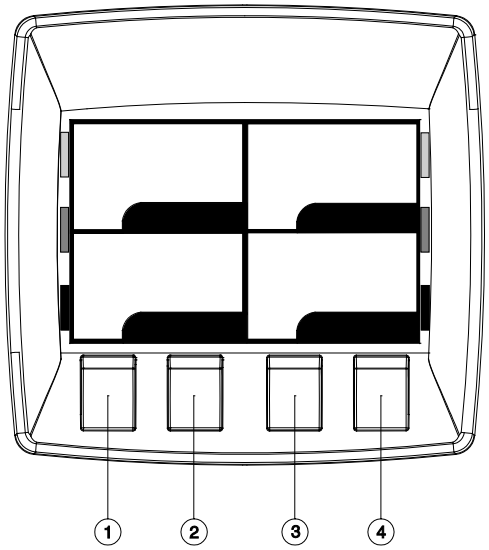
6 Right red LED:

Flashing, engine fault detected. Contact service.

Flashing with right flashing amber LED, engine soot level over 140%. Engine shut down. Contact service.

Fault Code Display - Deutz and Perkins Models

Soft Key Functions and Icons - Deutz D 2.9 L4 and Perkins 404F-22 Models



1 Next menu • Exit / Back one screen • Decrease brightness (-)

2 Brightness / Contrast • Scroll up • Increase • Increase brightness (+)

3 Regeneration forced • Scroll down • Decrease • Decrease contrast (-)

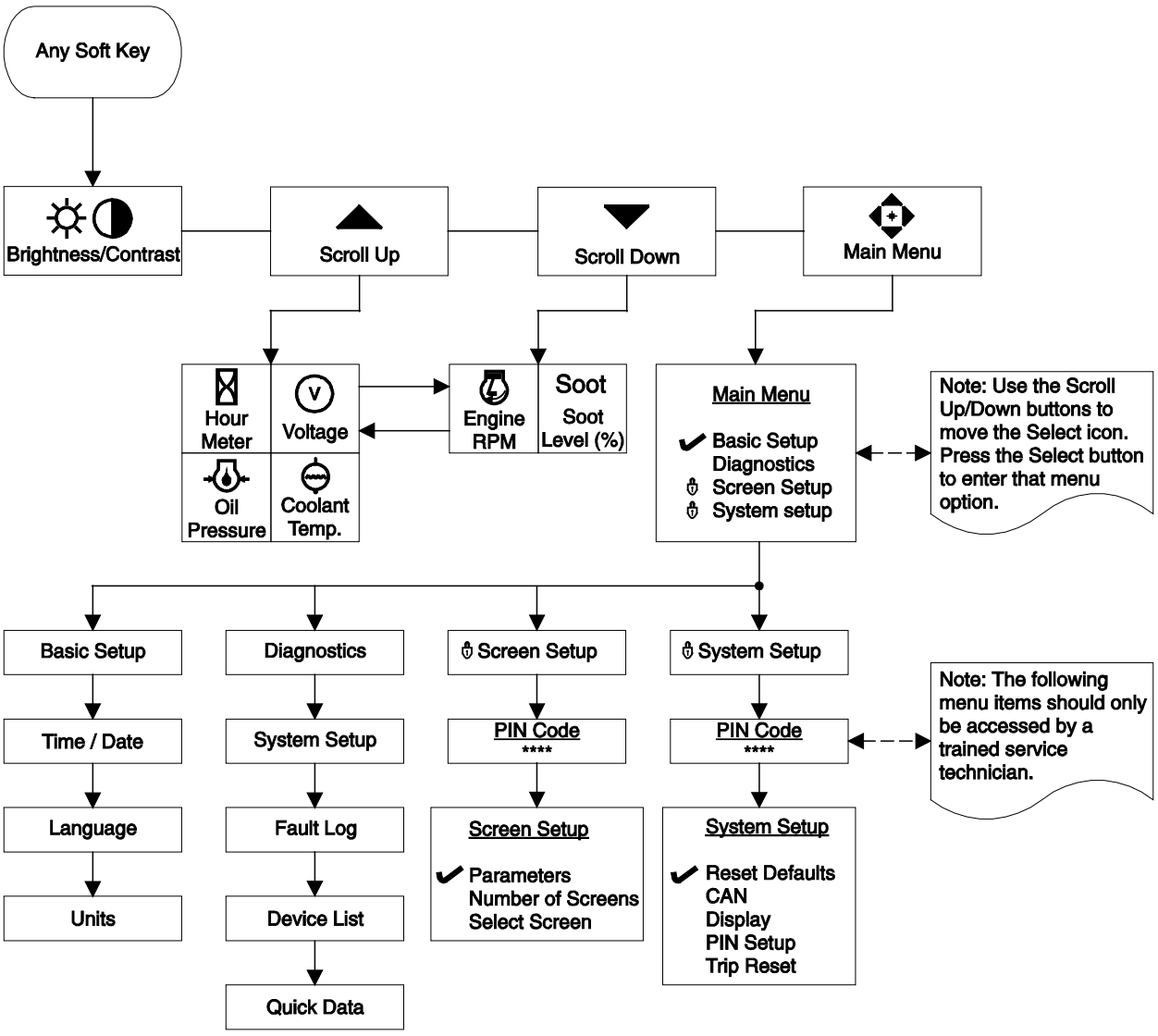
4 Regeneration inhibited • Select / Next • Main menu • Increase contarst (+)

Next Menu	Brightness/ Contrast	Initiate Switch	Inhibit Switch
Exit / Back One Screen	Scroll Up	Scroll Down	Select
Main Menu	Hour Meter	Oil Pressure	Coolant Temp.
Engine RPM	Soot Soot Level Percent (%)	Voltage	Pin # Protected

Note: Regeneration, initiate, inhibit and soot only apply to the Perkins 404F-22 models.

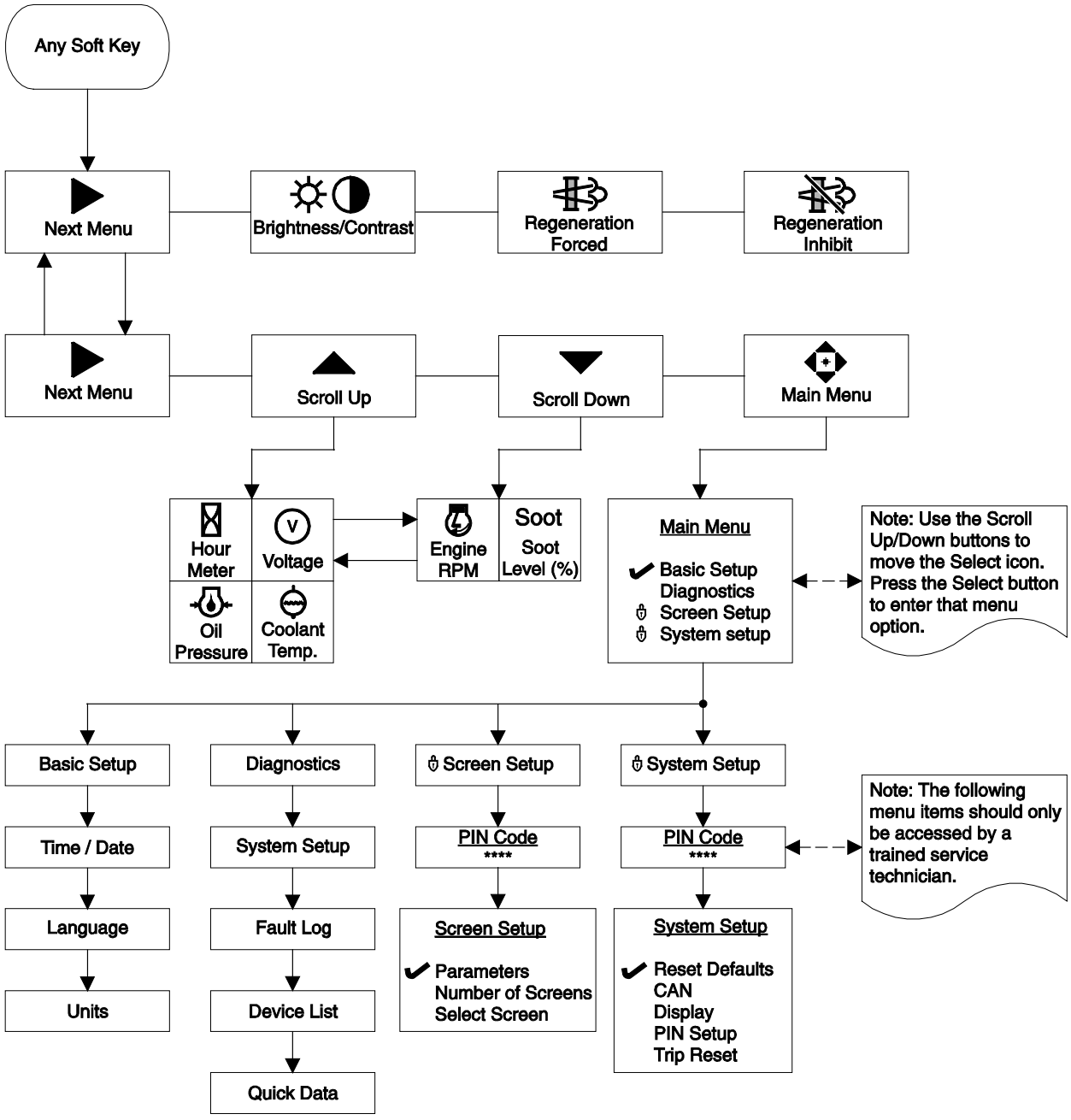
Fault Code Display - Deutz and Perkins Models

Main Menu Structure - Deutz D 2.9 L4 Models



Fault Code Display - Deutz and Perkins Models

Main Menu Structure - Perkins 404F-22 Models



Deutz D 2.9 L4 Engine Fault Codes

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

SPN	FMI	KWP	Description
51	3	1019	EGR-Valve, short circuit to battery
51	3	1024	Position sensor error of actuator EGR-Valve; signal range check high
51	3	1226	EGR-Valve; short circuit to battery (A02)
51	3	1227	EGR-Valve; short circuit to battery (A67)
51	4	1020	EGR-Valve; short circuit to ground
51	4	1025	Position sensor error actuator EGR-Valve; signal range check low
51	4	1228	EGR-Valve; short circuit to ground (A02)
51	4	1229	EGR-Valve; short circuit to ground (A67)
1	4	1232	Actuator error EGR-Valve; Voltage below threshold
51	5	1015	Actuator error EGR-Valve; signal range check low
51	5	1017	Actuator EGR-Valve; open load
51	5	1023	Actuator error EGR-Valve; signal range check low
51	5	1223	Actuator EGR-Valve; open load
51	6	1014	Actuator error EGR-Valve; signal range check high
51	6	1022	Actuator error EGR-Valve; signal range check high
51	6	1224	Actuator EGR-Valve; over current
51	6	1230	Actuator error EGR-Valve; Overload by short-circuit
51	7	1016	Actuator position for EGR-Valve not plausible
51	11	1231	Actuator error EGR-Valve; Power stage over temp due to high current
51	12	1018	Actuator EGR-Valve; powerstage over temperature
51	12	1021	Mechanical actuator defect EGR-Valve
51	12	1225	Actuator EGR-Valve; over temperature
94	1	474	Low fuel pressure; warning threshold exceeded
94	1	475	Low fuel pressure; shut off threshold exceeded
94	3	472	Sensor error low fuel pressure; signal range check high
94	4	473	Sensor error low fuel pressure; signal range check low
97	3	464	Sensor error water in fuel; signal range check high
97	4	465	Sensor error water in fuel; signal range check low
97	12	1157	Water in fuel level prefilter; maximum value exceeded
100	0	734	High oil pressure; warning threshold exceeded
100	0	735	High oil pressure; shut off threshold exceeded
100	1	736	Low oil pressure; warning threshold exceeded
100	1	737	Low oil pressure; shut off threshold exceeded
100	3	732	Sensor error oil pressure; signal range check high
100	4	733	Sensor error oil pressure sensor; signal range check low
102	2	88	Charged air pressure above warning threshold
102	2	89	Charged air pressure above shut off threshold
102	4	777	Sensor error charged air press.; signal range check low

Deutz D 2.9 L4 Engine Fault Codes

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

SPN	FMI	KWP	Description
105	0	996	High charged air cooler temperature; warning threshold exceeded
105	0	997	High charged air cooler temperature; shut off threshold exceeded
105	3	994	Sensor error charged air temperature; signal range check high
105	4	995	Sensor error charged air temperature; signal range check low
108	3	412	Sensor error ambient air press.; signal range check high
108	4	413	Sensor error ambient air press.; signal range check low
110	0	98	High coolant temperature; warning threshold exceeded
110	0	99	High coolant temperature; shut off threshold exceeded
110	3	96	Sensor error coolant temp.; signal range check high
110	4	97	Sensor error coolant temp.; signal range check low
111	1	101	Coolant level too low
132	11	1	Air flow sensor load correction factor exceeding the maximum drift limit; plausibility error
132	11	2	Air flow sensor load correction factor exceeding drift limit; plausibility error
132	11	3	Air flow sensor low idle correction factor exceeding the maximum drift limit
132	11	4	Air flow sensor load correction factor exceeding the maximum drift limit
157	3	877	Sesnor error rail pressure; signal range check high
157	4	878	Sensor error rail pressure; signal range check low
168	0	1180	Physical range check high for battery voltage
168	1	1181	Physical range check low for battery voltage
168	2	47	High battery voltage; warning threshold exceeded
168	2	48	Low battery voltage; warning threshold exceeded
168	3	45	Sensor error battery voltage; signal range check high
168	4	46	Sensor error battery voltage; signal range check low
171	3	417	Sensor error environment temperature; signal range check high
171	4	418	Sensor error environment temperature; signal range check low
172	0	1182	Physical range check high for intake air temperature
172	1	1183	Physical range check low for intake air temperature
172	2	9	Sensor ambient air temperature; plausibility error
172	2	983	Intake air sensor; plausibility error
172	3	981	Sensor error intake air; signal range check high
172	4	982	Sensor error intake air sensor; signal range check low
174	0	481	High low fuel temperature; warning threshold exceeded
174	0	482	High Low fuel temperature; shut off threshold exceeded
175	0	740	Physical range check high for oil temperature
175	0	745	High oil temperature; warning threshold exceeded
175	0	746	High oil temperature; shut off threshold exceeded
175	1	741	Physical range check low for oil temperature

Deutz D 2.9 L4 Engine Fault Codes

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

SPN	FMI	KWP	Description
175	2	738	Sensor oil temperature; plausibility error
175	2	739	Sensor oil temperature; plausibility error oil temperature too high
175	3	743	Sensor error oil temperature; signal range check high
175	4	744	Sensor error oil temperature; signal range check low
190	0	389	Engine speed above warning threshold (FOC-Level 1)
190	2	421	Offset angle between crank- and camshaft sensor is too large
190	8	419	Sensor camshaft speed; disturbed signal
190	8	422	Sensor crankshaft speed; disturbed signal
190	11	390	Engine speed above warning threshold (FOC-Level 2)
190	12	420	Sensor camshaft speed; no signal
190	12	423	Sensor crankshaft speed; no signal
190	14	391	Engine speed above warning threshold (Overrun Mode)
190	14	1222	Camshaft- and Crankshaft speed sensor signal not available on CAN
411	0	791	Physical range check high for differential pressure Venturiunit (EGR)
411	1	792	Physical range check low for differential pressure Venturiunit (EGR)
411	3	795	Sensor error differential pressure Venturiunit (EGR); signal range check high
411	4	381	Physical range check low for EGR differential pressure
411	4	796	Sensor error differential pressure Venturiunit (EGR); signal range check low
412	3	1007	Sensor error EGR cooler downstream temperature; signal range check high
412	4	1008	Sensor error EGR cooler downstream temperature; signal range check low
520	9	306	Timeout Error of CAN-Receive-Frame TSC1TR; Setpoint
597	2	49	Break lever mainswitch and break lever redundancy switch status not plausible
624	3	971	SVS lamp; short circuit to batt.
624	4	972	SVS lamp; short circuit to grd.
624	5	969	SVS lamp; open load
624	12	970	SVS lamp; powerstage over temperature
630	12	376	Access error EEPROM memory (delete)
630	12	377	Access error EEPROM memory (read)
630	12	378	Access error EEPROM memory (write)
639	14	84	CAN-Bus 0 "BusOff-Status"
651	3	580	Injector 1 (in firing order); short circuit
651	4	586	High side to low side short circuit in the injector 1 (in firing order)
651	5	568	Injector 1 (in firing order); interruption of electric connection
652	3	581	Injector 2 (in firing order); short circuit
652	4	587	High side to low side short circuit in the injector 2 (in firing order)
652	5	569	Injector 2 (in firing order); interruption of electric connection
653	3	582	Injector 3 (in firing order); short circuit
653	4	588	High side to low side short circuit in the injector 3 (in firing order)
653	5	570	Injector 3 (in firing order); interruption of electric connection

Deutz D 2.9 L4 Engine Fault Codes

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

SPN	FMI	KWP	Description
654	3	583	Injector 4 (in firing order); short circuit
654	4	589	High side to low side short circuit in the injector 4 (in firing order)
654	5	571	Injector 4 (in firing order); interruption of electric connection
676	11	543	Cold start aid relay error.
676	11	544	Cold start aid relay open load
677	3	956	Starter relay high side; short circuit to battery
677	3	960	Starter relay low side; short circuit to battery
677	4	957	Starter relay high side; short circuit to ground
677	4	961	Starter relay low side; short circuit to ground
677	5	958	Starter relay; no load error
677	12	959	Starter relay; powerstage over temperature
703	3	426	Engine running lamp; short circuit to battery
703	4	427	Engine running lamp; short circuit to ground
703	5	424	Engine running lamp; open load
703	12	425	Engine running lamp; powerstage over temperature
729	5	545	Cold start aid relay open load
729	12	547	Cold start aid relay; over temperature error
898	9	305	Timeout Error of CAN-Receive-Frame TSC1TE; Setpoint
1079	13	946	Sensor supply voltage monitor 1 error (ECU)
1080	13	947	Sensor supply voltage monitor 2 error (ECU)
1109	2	121	Engine shut off demand ignored
1136	0	1398	Physikal range check high for ECU temperature
1136	1	1399	Physikal range check low for ECU temperature
1136	3	1400	Sensor error ECU temperature; signal range check high
1136	4	1401	Sensor error ECU temperature; signal range check low
1176	3	849	Sensor error pressure sensor upstream turbine; signal range check high
1176	4	850	Sensor error pressure sensor downstream turbine; signal range check high
1180	0	1193	Physical range check high for exhaust gas temperature upstream turbine
1180	0	1460	Turbocharger Wastegate CAN feedback; warning threshold exceeded
1180	0	1462	Exhaust gas temperature upstream turbine; warning threshold exceeded
1180	1	1194	Physical range check low for exhaust gas temperature upstream turbine
1180	1	1461	Turbocharger Wastegate CAN feedback; shut off threshold exceeded
1180	1	1463	Exhaust gas temperature upstream turbine; shut off threshold exceeded
1180	3	1067	Sensor error exhaust gas temperature upstream turbine; signal range check high
1180	11	1066	Sensor exhaust gas temperature upstream turbine; plausibility error
1188	2	1414	Wastegate; status message from ECU missing

Deutz D 2.9 L4 Engine Fault Codes

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

SPN	FMI	KWP	Description
1188	7	1415	Wastegate actuator; blocked
1188	11	1411	Wastegate actuator; internal error
1188	11	1412	Wastegate actuator; EOL calibration not performed correctly
1188	11	1416	Wastegate actuator; over temperature (> 145øC)
1188	11	1417	Wastegate actuator; over temperature (> 135øC)
1188	11	1418	Wastegate actuator; operating voltage error
1188	13	1413	Wastegate actuator calibration deviation too large, recalibration required
1231	14	85	CAN-Bus 1 "BusOff-Status"
1235	14	86	CAN-Bus 2 "BusOff-Status"
1237	2	747	Override switch; plausibility error
1322	12	610	Too many recognized misfires in more than one cylinder
1323	12	604	Too many recognized misfires in cylinder 1 (in firing order)
1324	12	605	Too many recognized misfires in cylinder 2 (in firing order)
1325	12	606	Too many recognized misfires in cylinder 3 (in firing order)
1326	12	607	Too many recognized misfires in cylinder 4 (in firing order)
2659	0	1524	Physical range check high for EGR exhaust gas mass flow
2659	1	1525	Physical range check low for EGR exhaust gas mass flow
2659	2	1523	Exhaust gas recirculation AGS sensor; plausibility error
2659	2	1527	AGS sensor temperature exhaust gas mass flow; plausibility error
2659	12	1526	Exhaust gas recirculation; AGS sensor has "burn off" not performed
2797	4	1337	Injector diagnostics; timeout error of short circuit to ground measurement cyl. Bank 0
2798	4	1338	Injector diagnostics; timeout error of short circuit to ground measurement cyl. Bank 1
2798	4	1339	Injector diagnostics; short circuit to ground monitoring Test in Cyl. Bank 0
2798	4	1340	Injector diagnostics; short circuit to ground monitoring Test in Cyl. Bank 1
3224	2	127	DLC Error of CAN-Receive-Frame AT1IG1 NOX Sensor (SCR-system upstream cat; DPF-system downstream cat); length of frame incorrect
3224	9	128	Timeout Error of CAN-Receive-Frame AT1IG1; NOX sensor upstream
3248	4	1047	Sensor error particle filter downstream temperature; signal range check low
3699	2	1616	DPF differential pressure sensor and a further sensor or actuator CRT system defective
3699	2	1617	Temperature sensor us. and ds. DOC simultaneously defect
3699	14	1615	Maximum stand-still-duration reached; oil exchange required
4765	0	1039	Physical range check high for exhaust gas temperature upstream (DOC)
4765	1	1042	Physical range check low for exhaust gas temperature upstream (DOC)

Deutz D 2.9 L4 Engine Fault Codes

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

SPN	FMI	KWP	Description
4766	0	1029	Physical range check high for exhaust gas temperature downstream (DOC)
4766	1	1032	Physical range check low for exhaust gas temperature downstream (DOC)
4768	2	1036	Sensor exhaust gas temperature upstream (DOC); plausibility error
4768	3	1044	Sensor error exhaust gas temperature upstream (DOC); signal range check high
4768	4	1045	Sensor error exhaust gas temperature upstream (DOC) signal range check low
4769	2	1026	Sensor exhaust gas temperature downstream (DOC); plausibility error
4769	3	1034	Sensor error exhaust gas temperature downstream (DOC); signal range check high
4769	4	1035	Sensor error exhaust gas temperature downstream (DOC); signal range check low
523006	3	34	Controller mode switch; short circuit to battery
523006	4	35	Controller mode switch; short circuit to ground
523008	1	648	Manipulation control was triggered
523008	2	649	Timeout error in Manipulation control
523009	9	825	Pressure Relief Valve (PRV) reached maximun allowed opening count
523009	10	833	Pressure relief valve (PRV) reached maximun allowed open time
523212	9	171	Timeout Error of CAN-Receive-Frame ComEngPrt; Engine Protection
523216	9	198	Timeout Error of CAN-Receive-Frame PrHtEnCmd; pre-heat command, engine command
523240	9	179	Timeout CAN-message FunModCtl; Function Mode Control
523350	4	565	Injector cylinder-bank 1; short circuit
523352	4	566	Injector cylinder-bank 2; short circuit
523354	12	567	Injector powerstage output defect
523470	2	826	Pressure Relief Valve (PRV) forced to open; performed by pressure increase
523470	2	827	Pressure Relief Valve (PRV) forced to open; performed by pressure shock
523470	7	876	Maximum rail pressure in limp home mode exceeded (PRV)
523470	11	831	The PRV can not be opened at this operating point with a pressure shock
523470	11	832	Rail pressure out of tolerance range
523470	12	828	Open Pressure Relief Valve (PRV); shut off condition
523470	12	829	Open Pressure Relief Valve (PRV); warning condition
523470	14	830	Pressure Relief Valve (PRV) is open
523550	12	980	T50 start switch active for too long
523601	13	948	Sensor supply voltage monitor 3 error (ECU)
523603	9	126	Timeout Error of CAN-Receive-Frame AMB; Ambient Temperature Sensor

Deutz D 2.9 L4 Engine Fault Codes

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

SPN	FMI	KWP	Description
523605	9	300	Timeout Error of CAN-Receive-Frame TSC1AE; Traction Control
523606	9	301	Timeout Error of CAN-Receive-Frame TSC1AR; Retarder
523612	12	387	Internal software error ECU; injection cut off
523612	12	612	Internal ECU monitoring detection reported error
523612	12	613	Internal ECU monitoring detection reported error
523612	12	614	Internal ECU monitoring detection reported error
523612	12	615	Internal ECU monitoring detection reported error
523612	12	616	Internal ECU monitoring detection reported error
523612	12	617	Internal ECU monitoring detection reported error
523612	12	618	Internal ECU monitoring detection reported error
523612	12	619	Internal ECU monitoring detection reported error
523612	12	620	Internal ECU monitoring detection reported error
523612	12	621	Internal ECU monitoring detection reported error
523612	12	623	Internal ECU monitoring detection reported error
523612	12	624	Internal ECU monitoring detection reported error
523612	12	625	Internal ECU monitoring detection reported error
523612	12	627	Internal ECU monitoring detection reported error
523612	12	628	Internal ECU monitoring detection reported error
523612	12	637	Internal ECU monitoring detection reported error
523612	12	1170	Internal software error ECU
523612	14	973	Softwarereset CPU SWReset_0
523612	14	974	Softwarereset CPU SWReset_1
523612	14	975	Softwarereset CPU SWReset_2
523613	0	856	Maximum positive deviation of rail pressure exceeded (RailMeUn0)
523613	0	857	Maximum positive deviation of rail pressure in metering unit exceeded (RailMeUn1)
523613	0	858	Railsystem leakage detected (RailMeUn10)
523613	0	859	Maximum negative deviation of rail pressure in metering unit exceeded (RailMeUn2)
523613	0	860	Negative deviation of rail pressure second stage (RailMeUn22)
523613	0	862	Maximum rail pressure exceeded (RailMeUn4)
523613	1	861	Minimum rail pressure exceeded (RailMeUn3)
523613	2	864	Setpoint of metering unit in overrun mode not plausible
523615	3	594	Metering unit (Fuel-System); short circuit to battery highside
523615	3	596	Metering unit (Fuel-System); short circuit to battery low side
523615	4	595	Metering unit (Fuel-System); short circuit to ground high side
523615	4	597	Metering Unit (Fuel-System); short circuit to ground low side
523615	5	592	Metering unit (Fuel-System); open load
523615	12	593	Metering unit (Fuel-System); powerstage over temperature
523619	2	488	Physical range check high for exhaust gas temperature upstrem (SCR-CAT)
523698	11	122	Shut off request from supervisory monitoring function

Deutz D 2.9 L4 Engine Fault Codes

SPN = Suspect Parameter Number
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KWP = Keyword Protocol

SPN	FMI	KWP	Description
523717	12	125	Timeout Error of CAN-Transmit-Frame AmbCon; Weather environments
523718	3	1488	SCR mainrelay; short circuit to battery (only CV56B)
523718	4	1489	SCR mainrelay; short circuit to ground (only CV56B)
523718	5	1486	SCR mainrelay; open load (only CV56B)
523718	12	1487	SCR mainrelay; powerstage over temperature (only CV56B)
523766	9	281	Timeout Error of CAN-Receive-Frame Active TSC1AE
523767	9	282	Timeout Error of CAN-Receive-Frame Passive TSC1AE
523768	9	283	Timeout Error of CAN-Receive-Frame Active TSC1AR
523769	9	284	Timeout Error of CAN-Receive-Frame Passive TSC1AR
523770	9	285	Timeout Error of CAN-Receive-Frame Passive TSC1DE
523776	9	291	Timeout Error of CAN-Receive-Frame TSC1TE - active
523777	9	292	Passive Timeout Error of CAN-Receive-Frame TSC1TE; Setpoint
523778	9	293	Active Timeout Errorof CAN-Receive-Frame TSC1TR
523779	9	294	Passive Timeout Error of CAN-Receive-Frame TSC1TR
523788	12	299	Timeout Error of CAN-Transmit-Frame TrbCH; Status Wastegate
523793	9	202	Timeout Error of CAN-Receive-Frame UAA10; AGS sensor service message
523794	9	203	Timeout Error of CAN-Receive-Frame UAA11; AGS sensor data
523895	13	559	Check of missing injector adjustment value programming (IMA) injector 1 (in firing order)
523896	13	560	check of missing injector adjustment value programming (IMA) injector 2 (in firing order)
523897	13	561	check of missing injector adjustment value programming (IMA) injector 3 (in firing order)
523898	13	562	check of missing injector adjustment value programming (IMA) injector 4 (in firing order)
523910	6	1261	Air Pump; over current
523913	3	74	Sensor error glow plug control diagnostic line voltage; signal range check high
523913	4	75	Sensor error glow plug control diagnostic line voltage; signal range check low
523914	3	78	Glow plug control; short circuit to battery
523914	4	79	Glow plug control; short circuit to ground
523914	5	76	Glow plug control; open load
523914	5	1216	Glow plug control release line; short circuit error
523914	11	1217	Glow plug control; internal error
523914	12	77	Glow plug control; powerstage over temperature
523919	2	1378	Sensor air pump airpressure; plausibility error
523920	2	1379	Sensor exhaust gas back pressure burner; plausibility error

Deutz D 2.9 L4 Engine Fault Codes

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

SPN	FMI	KWP	Description
523922	7	1262	Burner Shut Off Valve; blocked closed
523922	7	1264	Burner Shut Off Valve; blocked closed
523929	0	109	Fuel Balance Control integrator injector 1 (in firing order); maximum value exceeded
523929	1	115	Fuel Balance Control integrator injector 1 (in firing order); minimum value exceeded
523930	0	110	Fuel Balance Control integrator injector 2 (in firing order); maximum value exceeded
523930	1	116	Fuel Balance Control integrator injector 2 (in firing order); minimum value exceeded
523931	0	111	Fuel Balance Control integrator injector 3 (in firing order); maximum value exceeded
523931	1	117	Fuel Balance Control integrator injector 3 (in firing order); minimum value exceeded
523932	0	112	Fuel Balance Control integrator injector 4 (in firing order); maximum value exceeded
523932	1	118	Fuel Balance Control integrator injector 4 (in firing order); minimum value exceeded
523935	12	168	Timeout Error of CAN-Transmit-Frame EEC3VOL1; Engine send messages
523936	12	169	Timeout Error of CAN-Transmit-Frame EEC3VOL2; Engine send messages
523946	0	1158	Zero fuel calibration injector 1 (in firing order); maximum value exceeded
523946	1	1164	Zero fuel calibration injector 1 (in firing order); minimum value exceeded
523947	0	1159	Zerofuel calibration injector 2 (in firing order); maximum value exceeded
523947	1	1165	Zerofuel calibration injector 2 (in firing order); minimum value exceeded
523948	0	1160	Zerofuel calibration injector 3 (in firing order); maximum value exceeded
523948	1	1166	Zerofuel calibration injector 3 (in firing order); minimum value exceeded
523949	0	1161	Zerofuel calibration injector 4 (in firing order); maximum value exceeded
523949	1	1167	Zerofuel calibration injector 4 (in firing order); minimum value exceeded
523960	0	1011	Physical range check high for EGR cooler downstream temp.
523960	0	1458	High exhaust gas temperature EGR cooler downstream; warning threshold exceeded
523960	1	1012	Physical range check low for EGR cooler downstream temp.
523960	1	1459	High exhaust gas temperature EGR cooler downstream; shut off threshold exceeded
523980	14	1187	Bad quality of reduction agent detected
523981	11	918	Urea-tank without heating function (heating phase)
523982	0	360	Powerstage diagnosis disabled; high battery voltage
523982	1	361	Powerstage diagnosis disabled; low battery voltage

Deutz D 2.9 L4 Engine Fault Codes

SPN = Suspect Parameter Number
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KWP = Keyword Protocol

SPN	FMI	KWP	Description
523988	3	1245	Charging lamp; short circuit to battery
523988	4	1246	Charging lamp; short circuit to ground
523988	5	1243	Charging lamp; open load
523988	12	1244	Charging lamp; over temp.
523998	4	1327	Injector cylinder bank 2 slave; short circuit
523999	12	1328	Injector powerstage output Slave defect
524014	1	1254	Air pressure glow plug flush line; below limit
524016	2	1259	Amount of air is not plausible to pump speed
524016	2	1260	Calculated amount of air is not plausible to HFM reading
524016	11	1258	HFM sensor; electrical fault
524021	11	1263	Burner fuel line pipe leak behind Shut Off Valve
524024	11	1302	Deviation of the exhaust gas temp. setpoint to actual value downstream (DOC) too high
524028	2	1431	CAN message PROEGRActr; plausibility error
524029	2	1432	Timeout Error of CAN-Receive-Frame ComEGRActr - exhaust gas recirculation positioner
524030	7	1440	EGR actuator; internal error
524031	13	1441	EGR actuator; calibration error
524032	2	1442	EGR actuator; status message EGRCust is missing
524033	7	1443	EGR actuator; due to overload in Save Mode
524034	3	1438	Disc separator; short circuit to battery
524034	4	1439	Disc separator; short circuit to ground
524034	5	1436	Disc Separator; open load
524034	12	1437	Disc Separator; powerstage over temperature
524035	12	1341	Injector diagnostics; time out error in the SPI communication
524057	2	1505	Electric fuel pump; fuel pressure build up error
524097	9	1663	Timeout error of CAN-Transmit-Frame DPFBrnAirPmpCtl
524098	9	1664	Timeout error of CAN-Transmit-Frame ComDPFBrnPT
524099	9	1665	Timeout error of CAN-Transmit-Frame ComDPFC1
524100	9	1666	Timeout error of CAN-Transmit-Frame ComDPFHisDat
524101	9	1667	Timeout error of CAN-Transmit-Frame ComDPFTstMon

Deutz D 2.9 L4 Engine Fault Codes

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

SPN	FMI	KWP	Description
524102	9	1674	Timeout error of CAN-Receive-Frame ComRxDPFBrnAirPmpCtl
524103	9	1675	Timeout error of CAN-Receive-Frame ComRxDPFBrnAirPmp
524104	9	1676	Timeout error of CAN-Receive-Frame ComRxDPFCtl
524105	9	1668	Timeout error of CAN-Transmit-Frame ComEGRMsFlw
524106	9	1677	Timeout error of CAN-Receive-Frame ComRxEGRMsFlw1
524107	9	1678	Timeout error of CAN-Receive-Frame ComRxEGRMsFlw2
524108	9	1669	Timeout error of CAN-Transmit-Frame ComEGRTVActr
524109	9	1679	Timeout error of CAN-Receive-Frame ComRxEGRTVActr
524110	9	1670	Timeout error of CAN-Transmit-Frame ComETVActr
524111	9	1680	Timeout error of CAN-Receive-Frame ComRxETVActr
524112	9	1671	Timeout ComITVActr
524113	9	1681	Timeout error of CAN-Receive-Frame ComRxITVActr
524114	9	1659	Timeout error of CAN-Transmit-Frame A1DOC
524115	9	1660	Timeout error of CAN-Transmit-Frame AT1S
524116	9	1661	Timeout error of CAN-Transmit-Frame SCR2
524117	9	1662	Timeout error of CAN-Transmit-Frame SCR3
524118	9	1672	Timeout error of CAN-Receive-Frame ComRxCM1
524119	9	1673	Timeout error of CAN-Receive-Frame ComRxCustSCR3
524120	9	1682	Timeout error of CAN-Receive-Frame ComRxSCRHtDiag
524121	9	1683	Timeout error of CAN-Receive-Frame ComRxTrbChActr
524122	9	1684	Timeout error of CAN-Receive-Frame ComRxUQSens
524123	9	1685	Timeout error of CAN-Receive-Frame ComSCRHtCtl
524124	9	1686	Timeout error of CAN-Receive-Frame ComTxAT1IMG
524125	9	1687	Timeout error of CAN-Receive-Frame ComTxTrbChActr

Perkins 404F-22 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

SPN	FMI	Description
29	3	Accelerator Pedal Position 2: Voltage Above Normal
29	4	Accelerator Pedal Position 2: Voltage Below Normal
91	3	Accelerator Pedal Position 1: Voltage Above Normal
91	4	Accelerator Pedal Position 1: Voltage Below Normal
100	1	Engine Oil Pressure :Low- most severe (3)
108	3	Barometric Pressure : Voltage Above Normal
108	4	Barometric Pressure : Voltage Below Normal
110	3	Engine Coolant Temperature : Voltage Above Normal
110	4	Engine Coolant Temperature : Voltage Below Normal
110	15	Engine Coolant Temperature : High -least severe (1)
168	0	Battery Potential/ Power Input 1 : High- most severe (3)
168	3	Battery Potential/ Power Input 1: Voltage Above Normal
168	4	Battery Potential/ Power Input 1: Voltage Below Normal
172	3	Engine Air Inlet Temperature: Voltage Above Normal
172	4	Engine Air Inlet Temperature: Voltage Below Normal
190	0	Engine Speed : High- most severe (3)
190	8	Engine Speed : Abnormal Frequency, Pulse Width or Period
558	3	Accelerator Pedal1 Low Idle Switch: Voltage Above Normal
558	4	Accelerator Pedal1 Low Idle Switch: Voltage Below Normal
638	6	Engine Fuel Rack Actuator: Current Above Normal
639	14	J1939 Network#1: Special Instruction
723	3	Engine Speed Sensor #2: Voltage Above Normal
723	4	Engine Speed Sensor #2: Voltage Below Normal
723	8	Engine Speed Sensor#2: Abnormal Frequency, Pulse Width or Period"
723	10	Engine Speed Sensor #2: Abnormal Rate of Change
733	3	Engine Rack Position Sensor: Voltage Above Normal
733	4	Engine Rack Position Sensor: Voltage Below Normal
1485	7	ECU Main Relay : Not Responding Property
2840	11	ECU Instance: Other Failure Mode
2840	12	ECU Instance: Failure
2840	13	ECU Instance: Out of Calibration
2970	3	Accelerator Pedal 2 Low Idle Switch: Voltage Above Normal
2970	4	Accelerator Pedal 2 Low Idle Switch: Voltage Below Normal
3241	1	Exhaust Gas Temperature 1: Low-most severe (3)
3241	3	Exhaust Gas Temperature 1: Voltage Above Normal
241	4	Exhaust Gas Temperature 1: Voltage Below Normal
3241	15	Exhaust Gas Temperature 1: High-least severe (1)
3241	16	Exhaust Gas Temperature 1: High-moderate severity (2)
3242	1	Particulate Trap Intake Gas Temp: Low- most severe(3)"
3242	3	Particulate Trap Intake Gas Temp: Voltage Above Normal"
3242	4	Particulate Trap Intake Gas Temp: Voltage Below Normal"
3242	15	Particulate Trap Intake Gas Temp: High - least severe(1)"
3242	16	Particulate Trap Intake Gas Temp: High-moderate severity (2)

Perkins 404F-22 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

SPN	FMI	Description
3251	3	Particulate Trap Differential Pressure: Voltage Above Normal
3251	4	Particulate Trap Differential Pressure: Voltage Below Normal
3473	7	Aftertreatmert #1 Failed to Ignite: Not Responding Properly
3473	11	Aftertreatmert #1 Failed to Ignite : Other Failure Mode
3484	0	Aftertreatmert #1 Ignition : High-most severe (3)
3484	3	Aftertreatmert #1 Ignition : Voltage Above Normal
3484	4	Aftertreatmert #1 Ignition : Voltage Below Normal
3556	6	Aftertreatmert 1 Hydrocarbon Doser 1: Current Above Normal
3610	3	Diesel Particulate Filter Outlet Pressure or 1: Voltage Above Normal"
3610	4	DieselParticulate Filter Outlet Pressure Sensor 1: Voltage Below Normal
3713	7	DPF Active Regeneration Inhibited Due to System Timeout: Not Responding Properly
3713	31	DPF Active Regeneration Inhibited Due to System Timeout
3719	0	Particulate Trap #1 Soot Load Percent: High- most severe (3)
3719	16	Particulate Trap #1 Soot Load Percent: High-moderate severity (2)
4016	6	High Current Auxiliary Power Relay 1: Current Above Normal
4201	3	Engine Speed Sensor #1: Voltage Above Normal
4201	4	Engine Speed Sensor #1: Voltage Below Normal
4201	8	Engine Speed Sensor #1: Abnormal Frequency, Pulse \Nidth, or Period
4201	10	Engine Speed Sensor #1: Abnormal Rate of Change
4765	1	Aftertreatmert #1 Diesel Oxidation Catalyst Intake Gas Temperature: Low-most severe (3)
4765	3	Aftertreatmert #1 Diesel Oxidation Catalyst Intake Gas Temperature: Voltage Above Normal
4765	4	Aftertreatmert #1 Diesel Oxidation Catalyst Intake Gas Temperature: Voltage Below Normal
4765	15	Aftertreatmert #1Diesel Oxidation Catalyst Intake Gas Temperature: High-least severe (1)
4765	16	Aftertreatmert #1 Diesel Oxidation Catalyst Intake Gas Temperature: High-moderate severity (2)
5487	3	Aftertreatmert 1 Burner Unit Combustion Chamber Temperature: Voltage Above Normal
5487	4	Aftertreatmert 1 Burner Unit Combustion Chamber Temperature: Voltage Below Normal
6581	6	Aftertreatmert 1 Hydrocarbon Doser 2 : Current Above Normal

Schematics



Observe and Obey:

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

Before Troubleshooting:

- R Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- R Be sure that all necessary tools and test equipment are available and ready for use.

About This Section

There are two groups of schematics in this section.

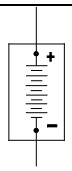
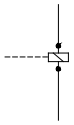
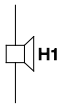
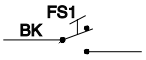
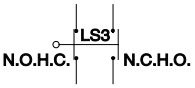
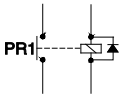
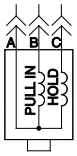
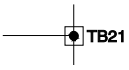
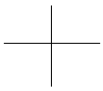
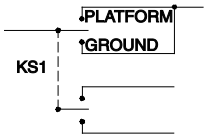
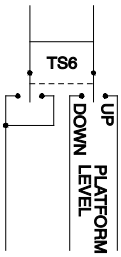
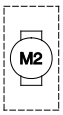
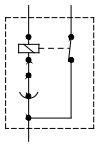
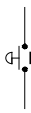
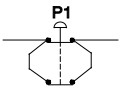
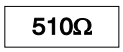
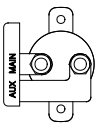
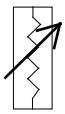
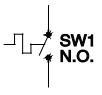
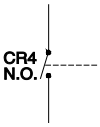
Electrical Schematics

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

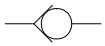
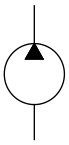
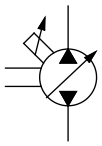
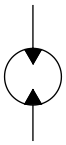
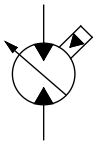
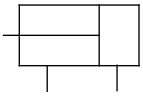
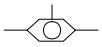
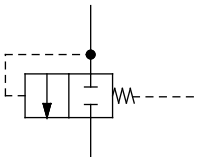
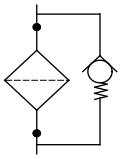
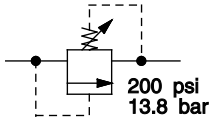
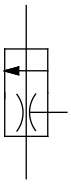
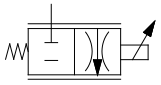
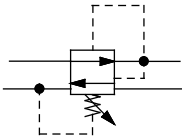
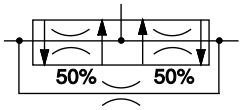
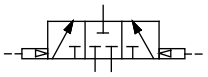
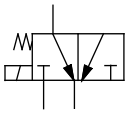
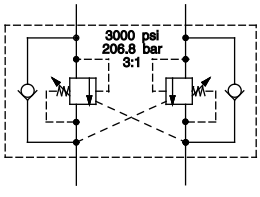
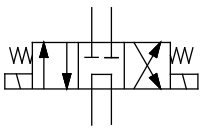
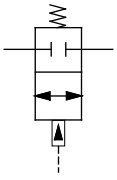
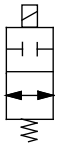
Hydraulic Schematics

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

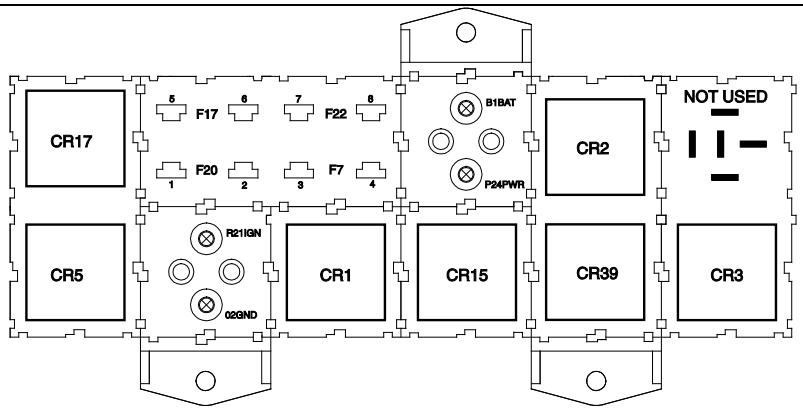
Electrical Symbol Legend

				
Battery	Coil, solenoid or relay	Horn or alarm	Flashing beacon	Gauge
				
Diode	Hour meter	LED	Fuse with amperage	Foot switch
				
T-circuits connect	Limit Switch	Power relay	Coil with suppression	Fuel or RPM solenoid
				
Connection - no terminal	T-circuits connect at terminal	Circuits crossing no connection	Quick disconnect terminal	Circuit breaker with amperage
				
Key switch	Toggle Switch DPDT	Toggle Switch SPDT	Pump or Motor	Tilt sensor
				
Horn button - normally open	Emergency Stop button - normally closed	Resistor with ohm value	Battery separator	Gauge sending unit
				
Oil temperature switch normally open	Coolant temperature switch - normally open	Oil pressure switch normally closed	Control relay contact normally open	Diode starting aid, glow plug or flame ignitor

Hydraulic Symbols Legend

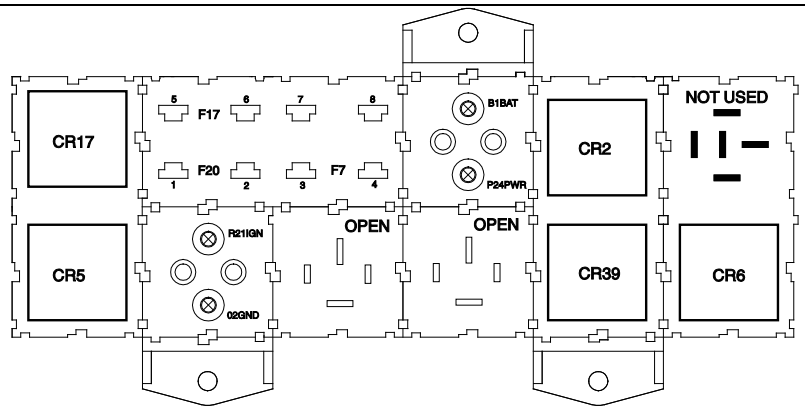
 Orifice with size	 Check valve	 Shut off valve	 Brake
 Pump, fixed displacement	 Pump, bi-directional variable displacement	 Motor, bi-directional	 Motor, 2 speed bi-directional
 Cylinder, double acting	 Pump, prime mover (engine or motor)	 Shuttle valve. 2 position, 3 way	 Differential sensing valve
 Filter with bypass relief valve	 Relief valve with pressure setting	 Priority flow regulator	 Solenoid operated proportional valve
 Pressure reducing valve	 Flow divider/combiner valve	 Pilot operated 3 position, 3 way shuttle valve	 Solenoid operated 2 position, 3 way directional valve
 Counterbalance valve with pressure and pilot ratio	 Solenoid operated 3 position 4 way directional valve	 Pilot operated 2 position, 2 way directional valve	 2 position, 2 way solenoid valve

Relay and Fuse Panel Legend - Deutz TD2011L04i



Deutz TD2011L04i

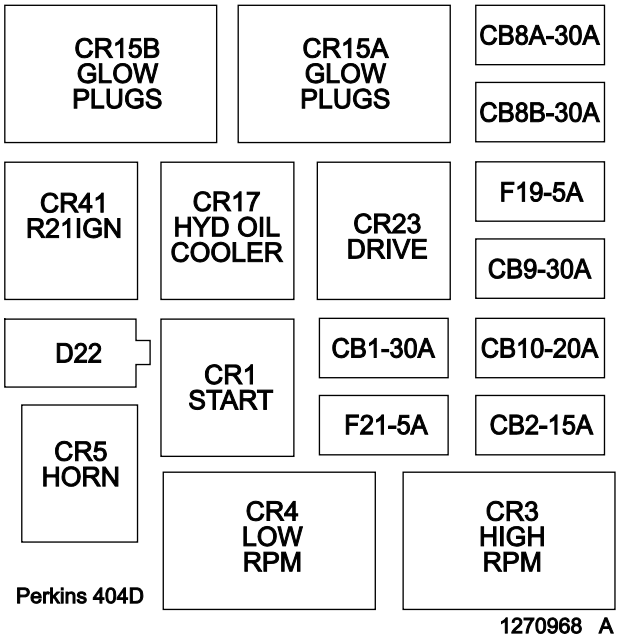
Label	Description
CR1	START RELAY
CR2	IGNITION / FUEL RELAY
CR3	HIGH IDLE RELAY
CR5	HORN RELAY
CR15	GLOW PLUG RELAY
CR17	HYDRAULIC OIL COOLER RELAY
CR39	AUXILIARY PUMP RELAY
F7	FUSE, 30A, OIL COOLER FAN / HORN
F17	FUSE, 30A, ENGINE / AUXILIARY PUMP
F20	FUSE, 20A, ENGINE RPM SOLENOID
F22	FUSE, 60A, GLOW PLUGS



Deutz TD2.9 L4

Label	Description
CR2	ENGINE / IGNITION RELAY
CR5	HORN RELAY
CR6	FUEL PUMP RELAY
CR17	HYDRAULIC OIL COOLER RELAY
CR39	VDROP RELAY
F7	FUSE, 20A, B1BAT, P116PWR
F17	FUSE, 20A, B1BAT, P24PWR
F20	FUSE, 20A, B1BAT, P35PWR

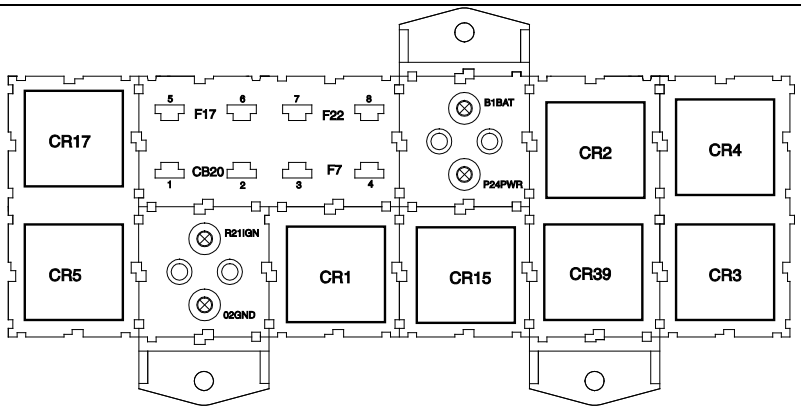
Engine Relay Layout - Perkins 404D-22T



Perkins 404D-22T

Circuit Breakers		
CB1	30A	See Elec Schem for circuits
CB2	15A	See Elec Schem for circuits
CB9	30A	See Elec Schem for circuits
CB10	20A	See Elec Schem for circuits
CB8A	30A	See Elec Schem for circuits
CB8B	30A	See Elec Schem for circuits
Fuses		
F19	5A	See Elec Schem for circuits
F21	5A	See Elec Schem for circuits
Diode		
D22	6A	Alternator Ext.
Relays		
CR1	Start	
CR3	High RPM	
CR4	Low RPM	
CR5	Horn	
CR17	Hydraulic oil cooler (option)	
CR15A	Glow plugs	
CR15B	Glow Plugs	

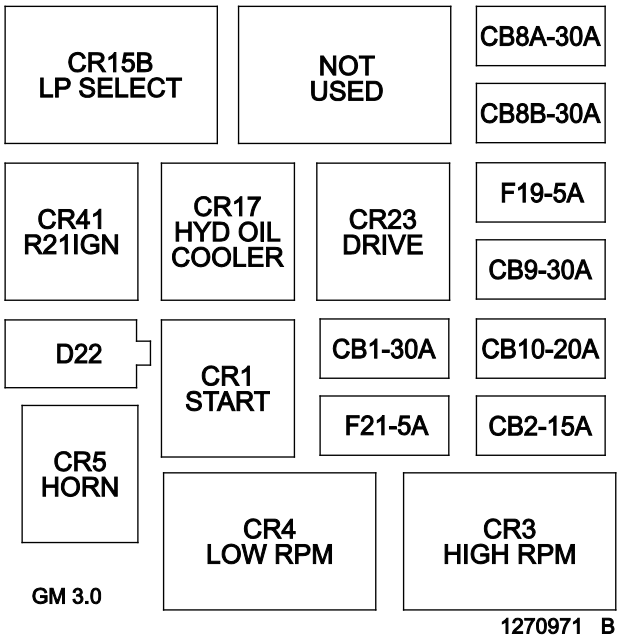
Relay and Fuse Panel Legend - Perkins 804D-33



Perkins 804D-33

Label	Description
CB20	CIRCUIT BREAKER, 10A, ENGINE RPM SOLENOID
CR1	START RELAY
CR2	IGNITION / FUEL RELAY
CR3	HIGH IDLE RELAY
CR4	ENGINE RPM SOLENOID RELAY
CR5	HORN RELAY
CR15	GLOW PLUG RELAY
CR17	HYDRAULIC OIL COOLER RELAY
CR39	AUXILIARY PUMP RELAY
F7	FUSE, 30A, OIL COOLER FAN / HORN
F17	FUSE, 30A, ENGINE / AUXILIARY PUMP
F20	FUSE, 60A, GLOW PLUGS

Engine Relay Layout - GM 3.0L



GM 3.0L

Fuses

CB8A	30A	See Elec Schem for circuits
CB8B	30A	See Elec Schem for circuits
F19	5A	See Elec Schem for circuits
F21	5A	See Elec Schem for circuits
CB9	30A	See Elec Schem for circuits
CB10	20A	See Elec Schem for circuits
CB1	30A	See Elec Schem for circuits
CB2	15A	See Elec Schem for circuits

Diode

D22	6A	Alternator Ext.

Relays

CR1	Engine start
CR3	High RPM.
CR5	Horn
CR17	Hydraulic OIl Cooler
CR23	Drive
CR41	R21IGN

Connector Pin Legends

C1 DT06-12SA (Gray)

Pin #	Circuit #	Color
1	C27AUX	RD
2	C28TTA	RD/BK
3	C29MS	RD/WH
4	C30EDC+	WH
5	C31EDC-	WH/BK
6	C32BRK	WH/RD
7	C33STR	BK
8	C34SA	BK/WH
9	C35RPM	BK/RD
10	C36STC	BL
11	C37STCC	BL/BK
12	C132PLI1	BL/WH (CE)
12	C177LS	BL/WH (S-80X)

C2 DT06-12SB (Black)

Pin #	Circuit #	Color
1	C39LP	BL/RD
2	C40LS	OR
3	C41RPM	OR/BK
4	C42LS	OR/RD
5	C46HRN	GR
6	P134PWR	GR/BK
7	C45GEN	GR/WH
8	C123PBS	GR/RD
9	P109ANG	OR/WH
10	SNSR GND	LT BR
11	PLUG	
12	PLUG	

C3 DT06-12SC (Green)

Pin #	Circuit #	Color
1	C1PBU	RD
2	C2PBD	RD/BK
3	C3PBF	RD/WH
4	C4TRL	WH
5	C5TRR	WH/BK
6	C6TRF	WH/RD
7	C7PBE	BK
8	C8PBR	BK/WH
9	C9PERF	BK/RD
10	C132PLI2	BL (CE)
11	C59CNK	BL/BK
12	C133PLA	BL/WH (CE)
12	P109LS	BL/WH (S-80X)

C4 DT06-12SD (Brown)

Pin #	Circuit #	Color
1	C13DRE	BL/RD
2	C14PLU	OR
3	C15PLD	OR/BK
4	V155PCE	OR/RD
5	C17PRL	GR
6	C18PRR	GR/BK
7	C43JU	GR/WH
8	C44JD	RD/OR
9	C49DLITE	OR/GR
10	SPARE	LT BR
11	PLUG	
12	PLUG	

Connector Pin Legends

C6 Function Manifold

Pin #	Circuit #	Color
1	C1PBU	RD
2	C2PBD	RD/BK
3	C3PBF	RD/WH
4	C4TRL	WH
5	C5TRR	WH/BK
6	C6TRF	WH/RD
7	C7PBE	BK
8	C8PBR	BK/WH
9	C9PERF	BK/RD
10		
11	C59CNK	BL/BK
12	P210PWR	BK (S-80X)
13	C13DRE	BL/RD
14		
15		
16	C109LS	GR/WH (S-80X)
17		
18		
19		
20		
21	C177LS	BL/RD (S-80X)
22	C42LS	OR/RD
23	P134PWR(A)	RD
24	P134PWR(B)	RD
25	P134PWR(C)	RD
26		
27		
28	C28TTA	RD/BK
29		
30	C211LO	BL/BK (S-80X)
31	C118LSR	OR
32		
33	C123PBS	RD/BK
34	SNSR GND	BR
35	P109ANG	GR/WH
36	C36STC	BL
37	C37STCC	BL/BK
38	C212LO	GR/BK (S-80X)
39	C45GEN	GR/WH
40	C40LS	OR

C7 DTP06-4S, 12V Power to Platform

Pin #	Circuit #	Color
1	P22PWR	BK
2	P23PWR	WH
3	BATGND	BR
4	PLUG	

C9 FS DT04-4P, Footswitch

Pin #	Circuit #	Color
1	P26ESTP	BK
2	P24FS	WH
3	P25FS	RD
4	PLUG	

J22 Platform Manifold

Pin #	Circuit #	Color
1	GND	BR
2	GND	BR
3	C18PRR	GR/BK
4	C17PRL	GR
5	C43JU	GR
6	C44JD	GR/BK
7	C14PLU	OR
8	C15PLD	OR/BK
9	GND	BR
10	GND	BR
11	GND	BR
12	GND	BR

J3 ALC500 Power/Valve Input

Pin #	Circuit #	Color
1	GND	BR
2	P24FS	WH
3	P26ESTP	BK
4	P24FS	WH

Connector Pin Legends

J1 ALC500 Input

Pin #	Circuit #	Color
1	C165TRS	WH/RD
2	C164PES	RD/WH
3	C163PLS	WH/BK
4	C160JPL	WH/RD
5	C159STC	BL/WH
6	C144DER	BL/WH
7	C143DEL	BL/BK
8	C29MS	RD/WH
9	P109ANG	GR/WH
10	SNSR GND	BR
11	P162JPW2	OR
12	JSGND2	BR
13	P162JPW1	OR
14	JSGND1	BR
15	C28TTA	RD/BK
16	C13DRE(A)	BL/RD

J2 ALC500 Output

Pin #	Circuit #	Color
1	C40LS	OR
2	C123PBS	RD/BK
3	C13DRE	BL/RD
4	C42LS	OR/RD
5	C41RPM	OR/BK
6	C1PBU	RD
7	C2PBD	RD/BK
8	C3PBF	RD/WH
9	C4TRL	WH
10	C5TRR	WH/BK
11	C6TRF	WH/RD
12	C7PBE	BK
13	C8PBR	BK/WH
14	C9PERF	BK/RD
15	C30EDC+	WH
16	C31EDC-	WH/BK
17	C36STC	BL
18	C37STCC	BL/BK
19	C32BRK	WH/RD
20	C29MS	RD/WH

J8 S-80X Model

Pin #	Circuit #	Color
1	P109LS	GR/WH
2	C184PL	WH
3	NC	
4	NC	
5	C169LED2	BL
6	P109LS	GR/WH
7	C177LS	BL/RD
8	SNSR GND	BR
9	NC	
10	C169LED1	GR

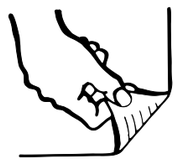
J144 Engine Plug - Deutz 2011L04i

Pin #	Circuit #	Color
1	C41RPM	OR/BK
2	C107AF	WH
3	C26TSR	WH/RD
4	C24TS	WH
5	C25PSR	WH/BK
6	C24PS	WH
7	R21IGN	WH(14)
8	GND	BR
9		
10		

Connector Pin Legends

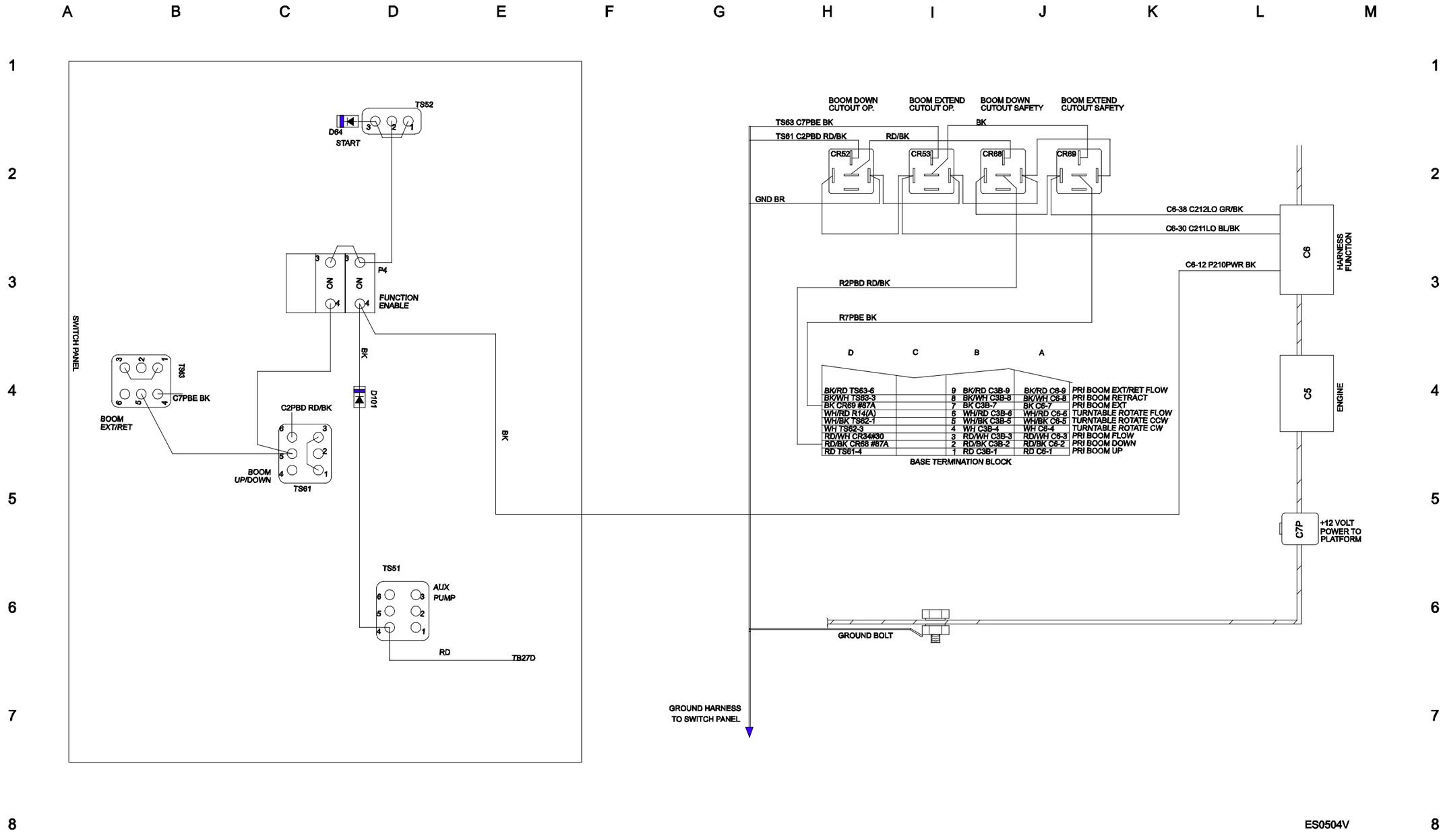
	Deutz 2011L04i		Perkins 804		Continental TME27	
Pin #	**Circuit #**	**Color**	**Circuit #**	**Color**	**Circuit #**	**Color**
1	P24PWR	RD	P24PWR	RD	P23PWR	RD
2	C41RPM	OR/BK	C41RPM	OR/BK	C41RPM	OR/BK
3	C21IGN	WH	C21IGN	WH		
4						
5	C33STR	BK	C33STR	BK	C33STR	BK
6	C27AUX	RD	C27AUX	RD	C27AUX	RD
7	C46HRN	GR	C46HRN	GR	C46HRN	GR
8					C127TSW	GR
9					C35RPM	BK/RD
10					C39LP	BL/RD
11	R21IGN	WH(14)	R21IGN	WH(14)	R21IGN	WH(14)
12						
13					C108ESL	BL/WH
14						
15	C24TSPS	WH	C24TSPS	WH	P24PWR	RD
16						
17					R24PWR	RD
18	C35RPM	BK/RD	C35RPM	BK/RD		
19	V155PCE	OR/RD	V155PCE	OR/RD	V155PCE	OR/RD
20	C31EDC-	WH/BK	C31EDC-	WH/BK	C31EDC-	WH/BK
21	C30EDC+	WH	C30EDC+	WH	C30EDC+	WH
22	C34SA	BK/WH	C34SA	BK/WH		
23	C32BRK	WH/RD	C32BRK	WH/RD	C32BRK	WH/RD
24	C29MS	RD/WH	C29MS	RD/WH	C29MS	RD/WH

S-80X Ground Control Box Wiring Diagram

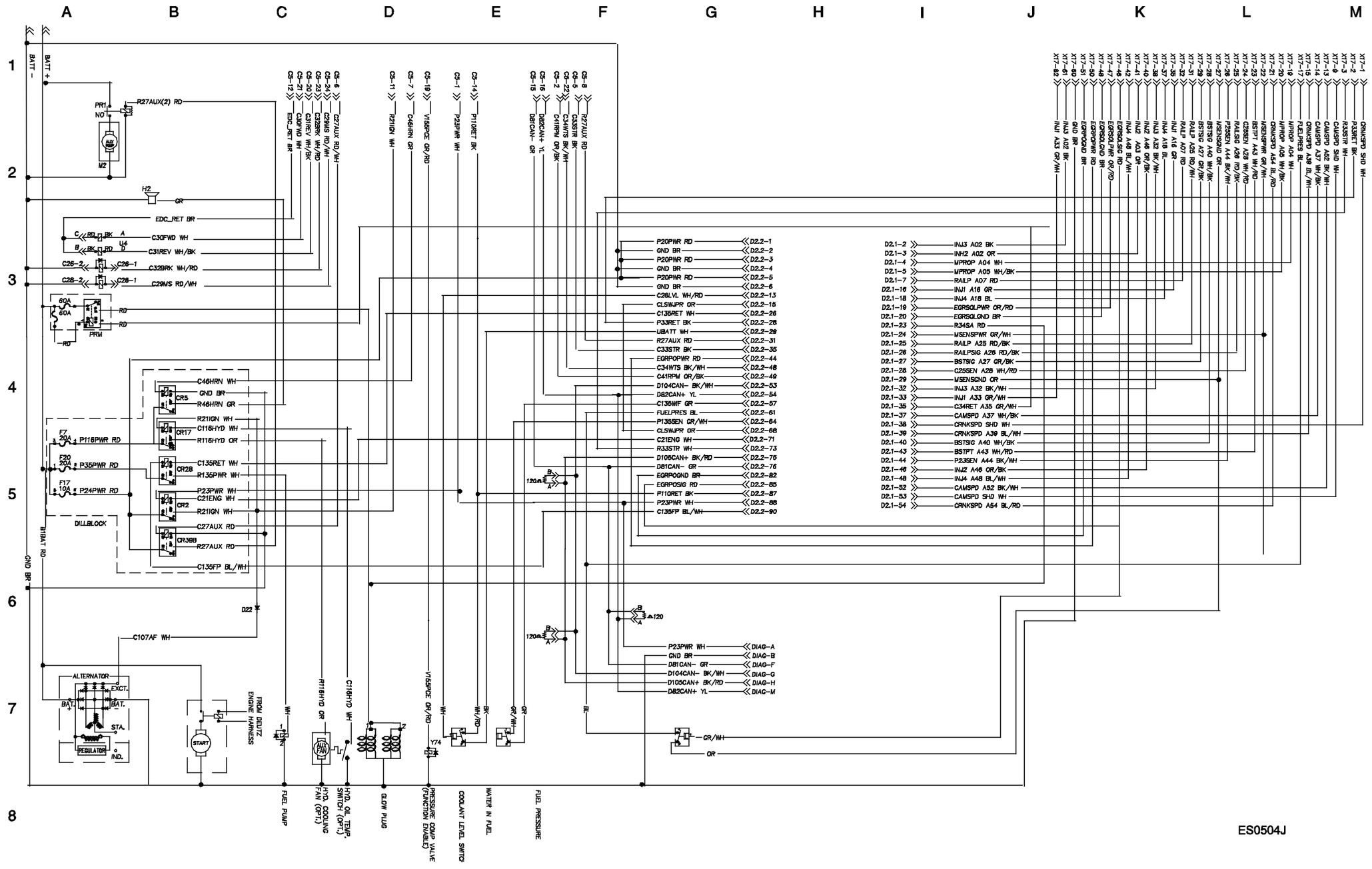


S-80X Ground Control Box Wiring Diagram

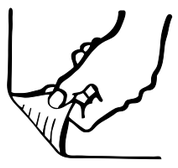
Use this wiring diagram with each S-80X Ground Control Box Schematic



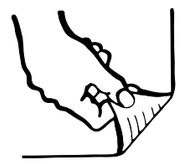
Deutz TD2.9 L4 Engine Harness



Deutz TD2.9 L4 Engine Harness

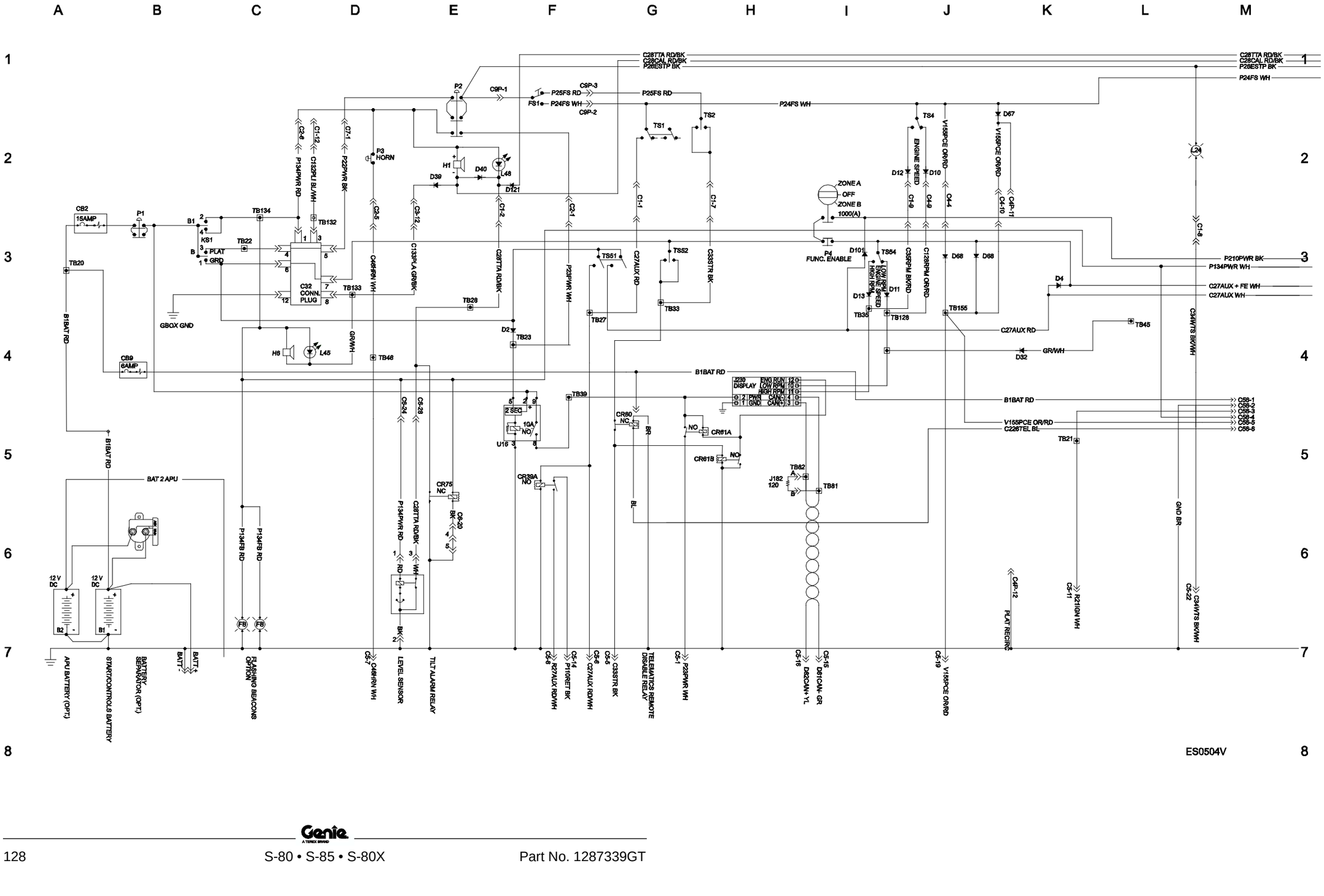


Electrical Schematic, S-80X - Deutz TD2.9 L4 Models (ANSI / CSA)



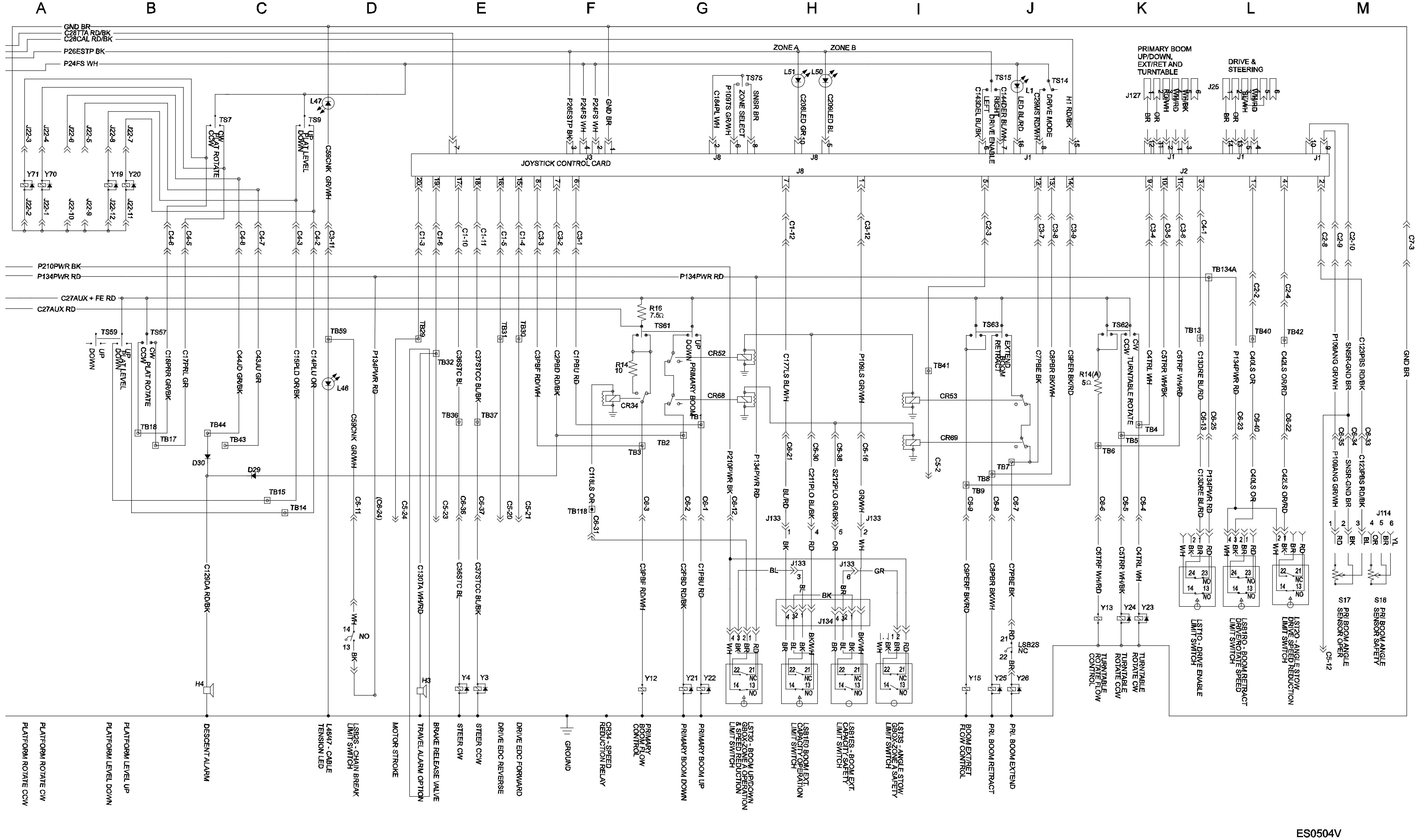
Electrical Schematic, S-80X

Deutz TD2.9 L4 Models (ANSI / CSA)



Electrical Schematic, S-80X

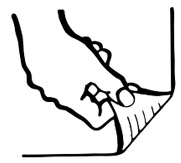
Deutz TD2.9 L4 Models (ANSI / CSA)



Electrical Schematic, S-80X - Deutz TD2.9 L4 Models (ANSI / CSA)



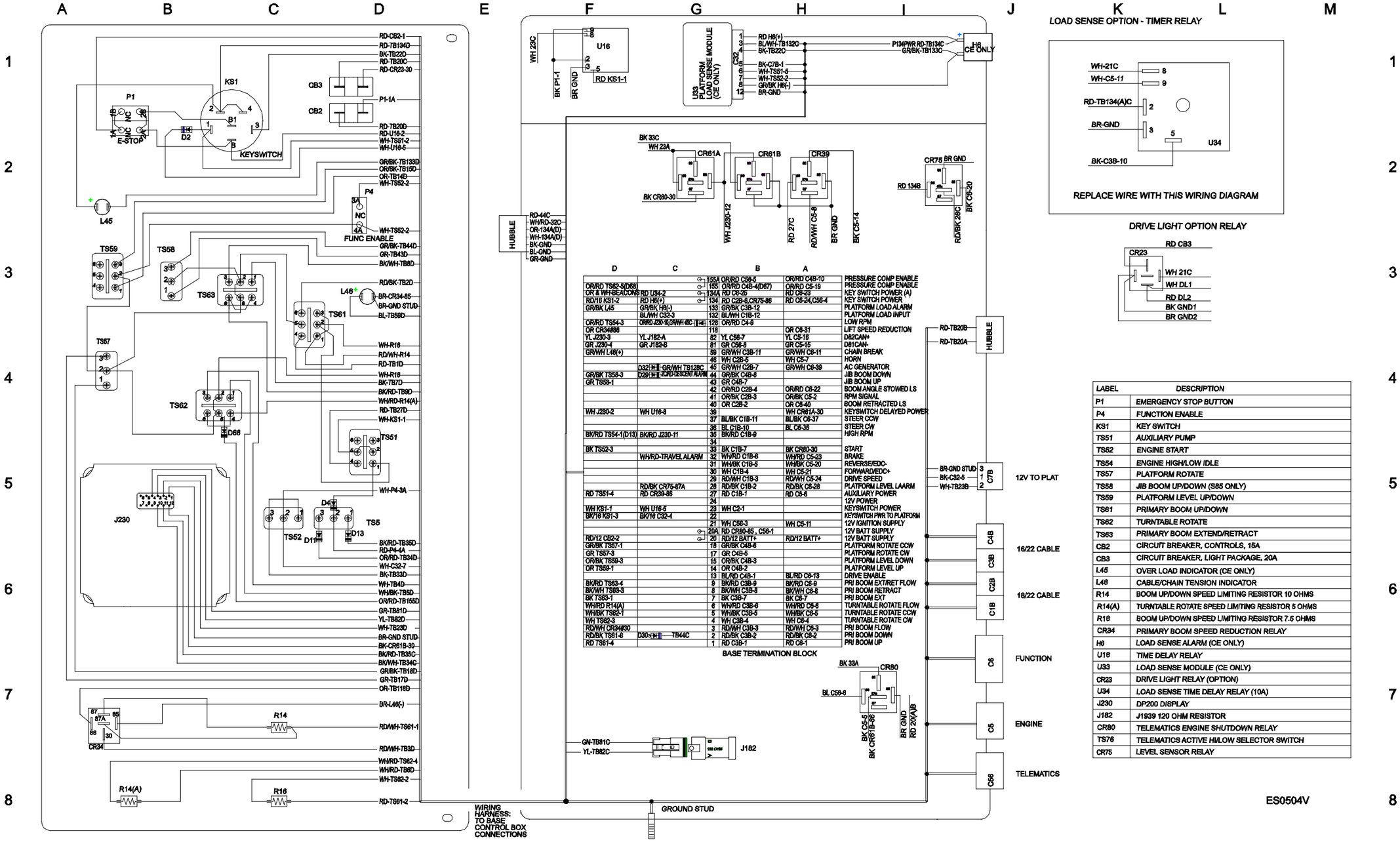
Ground Control Box, S-80X - Deutz TD2.9 L4 Models (ANSI / CSA)



Ground Control Box, S-80X

Deutz TD2.9 L4 Models (ANSI / CSA)

Refer to S-80X Ground Control Box Wiring Diagram for additional wiring.

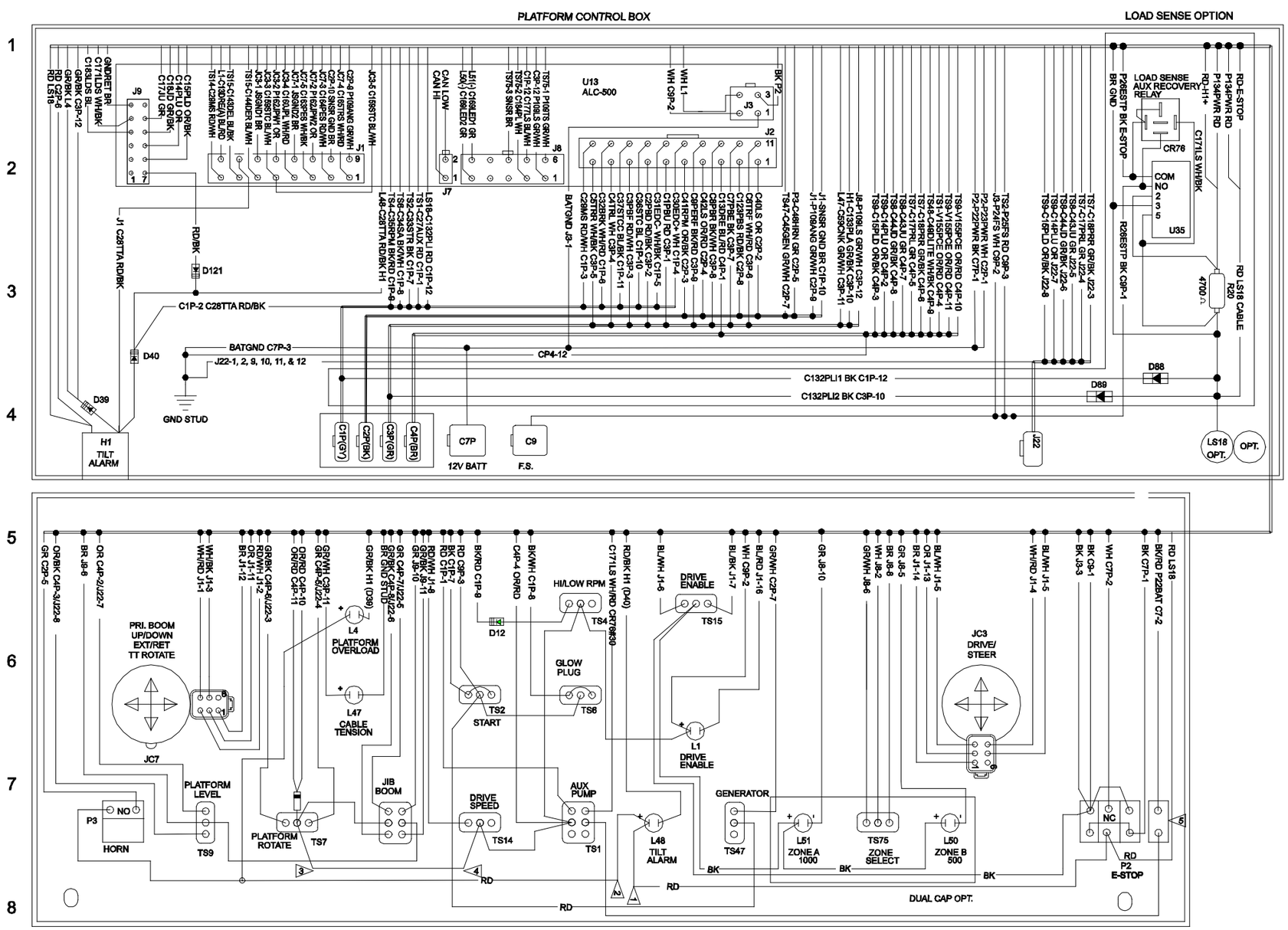


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS54	ENGINE HIGH/LOW IDLE
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS63	PRIMARY BOOM EXTEND/RETRACT
CB2	CIRCUIT BREAKER, CONTROLS, 15A
CB3	CIRCUIT BREAKER, LIGHT PACKAGE, 20A
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
R14(A)	TURNTABLE ROTATE SPEED LIMITING RESISTOR 5 OHMS
R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H6	LOAD SENSE ALARM (CE ONLY)
U16	TIME DELAY RELAY
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
U34	LOAD SENSE TIME DELAY RELAY (10A)
J230	DP200 DISPLAY
J182	J1939 120 OHM RESISTOR
CR80	TELEMATICS ENGINE SHUTDOWN RELAY
TS76	TELEMATICS ACTIVE HI/LOW SELECTOR SWITCH
CR75	LEVEL SENSOR RELAY

ES0504V

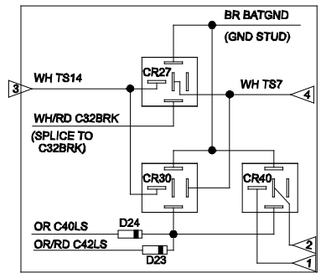
Platform Control Box, S-80X

Deutz TD2.9 L4 Models (ANSI / CSA)



COMPONENT INDEX

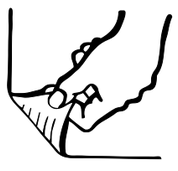
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
L1	DRIVE ENABLE LED
L4	PLATFORM OVERLOAD LED (CE ONLY)
L47	CABLE/CHAIN TENSION LED
L48	TILT ALARM LED (ANSI/CSA ONLY)
L50	ZONE B, 500 LB
L51	ZONE A, 1000 LB
JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT
	(DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE
	(DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD



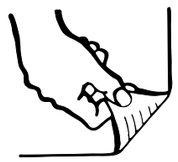
CE UNITS
REPLACE WIRE WITH THIS WIRING DIAGRAM

ES0504V

Platform Control Box, S-80X - Deutz TD2.9 L4 Models (ANSI / CSA)

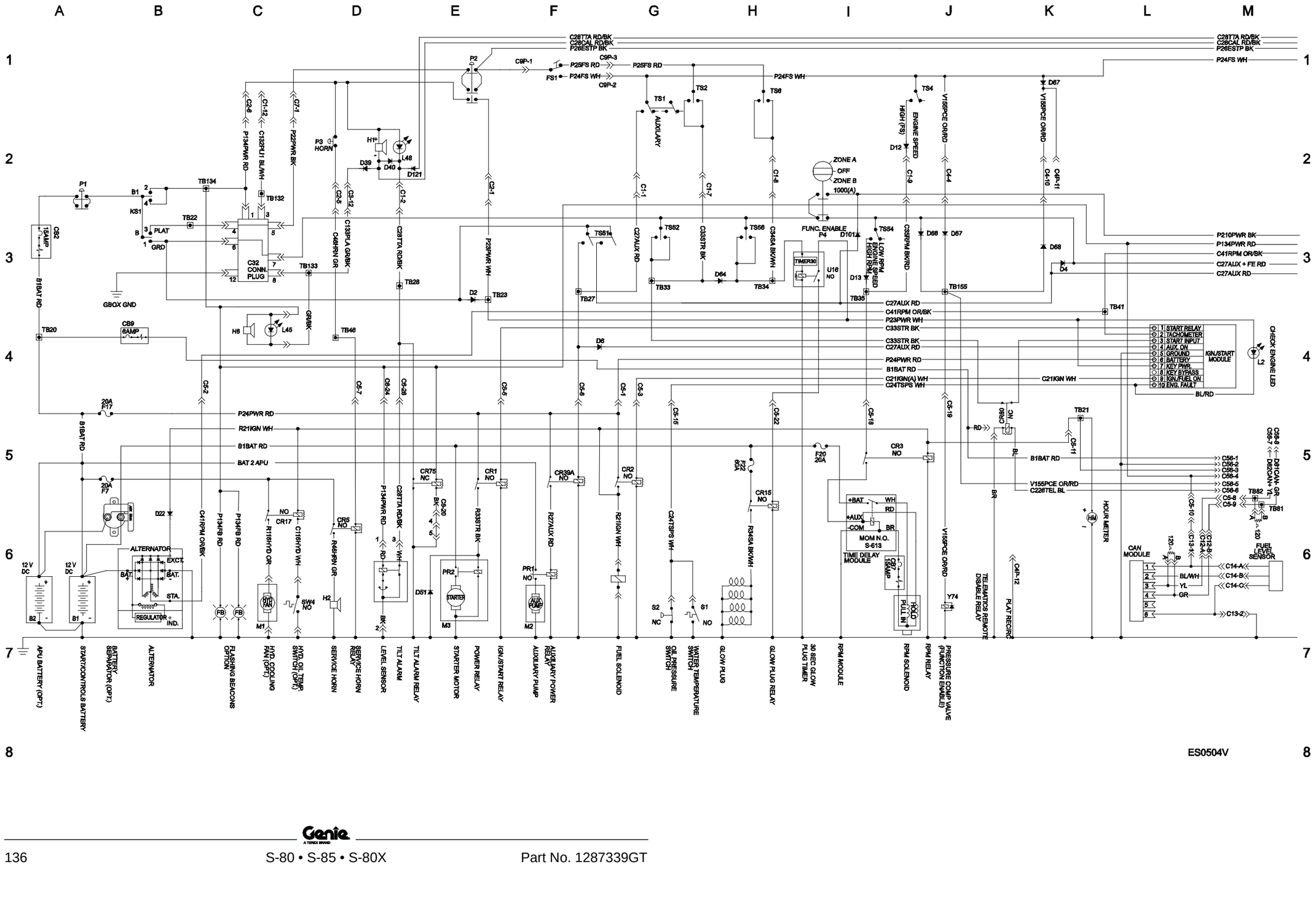


Electrical Schematic, S-80X - Deutz TD2011L04i Models (ANSI / CSA)



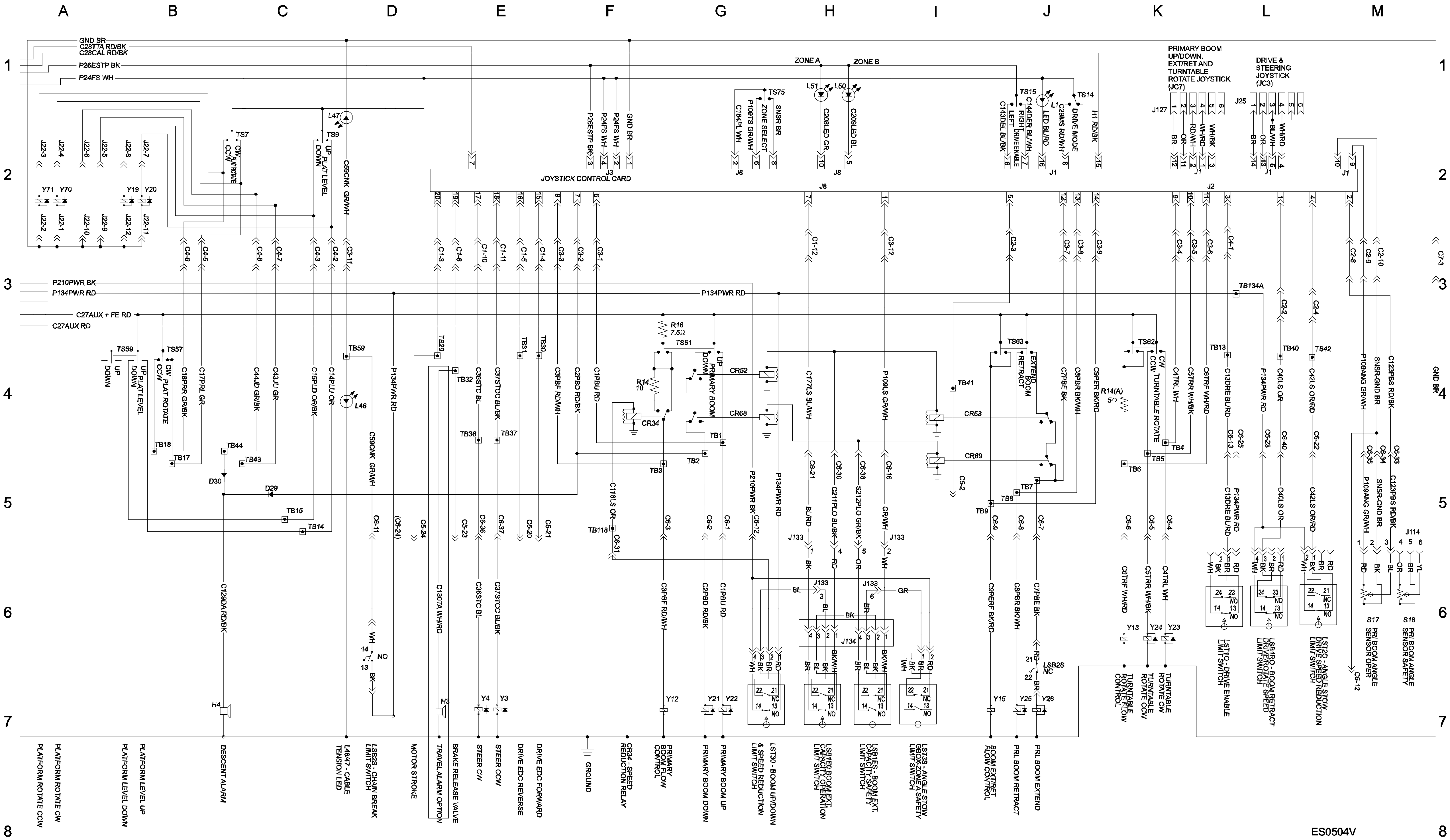
Electrical Schematic, S-80X

Deutz TD2011L04i Models (ANSI / CSA)

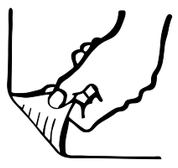


Electrical Schematic, S-80X

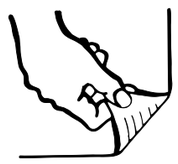
Deutz TD2011L04i Models (ANSI / CSA)



Electrical Schematic, S-80X - Deutz TD2011L04i Models (ANSI / CSA)



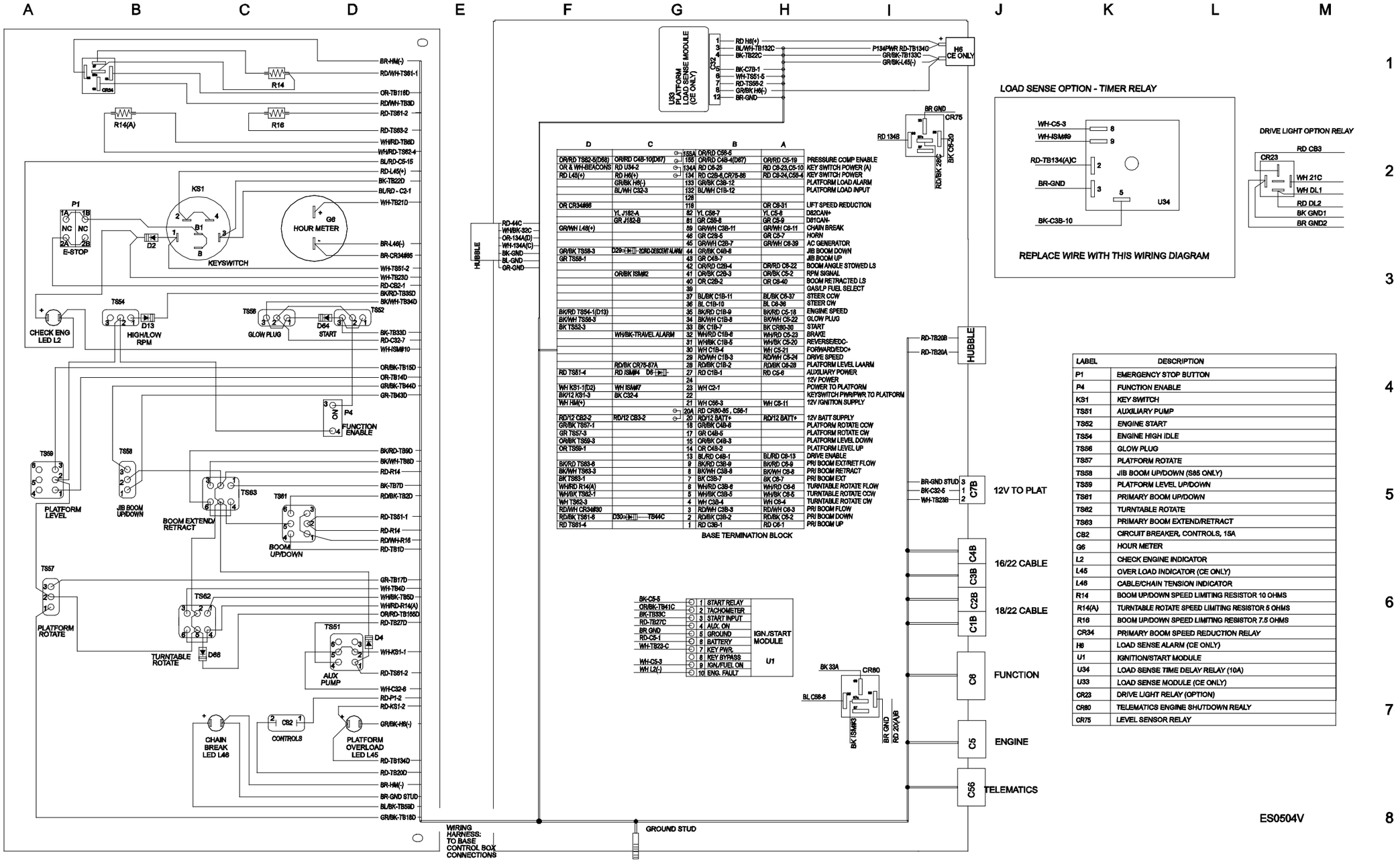
Ground Control Box, S-80X - Deutz TD2011L04i Models (ANSI / CSA)



Ground Control Box, S-80X

Deutz TD2011L04i Models (ANSI / CSA)

Refer to S-80X Ground Control Box Wiring Diagram for additional wiring.

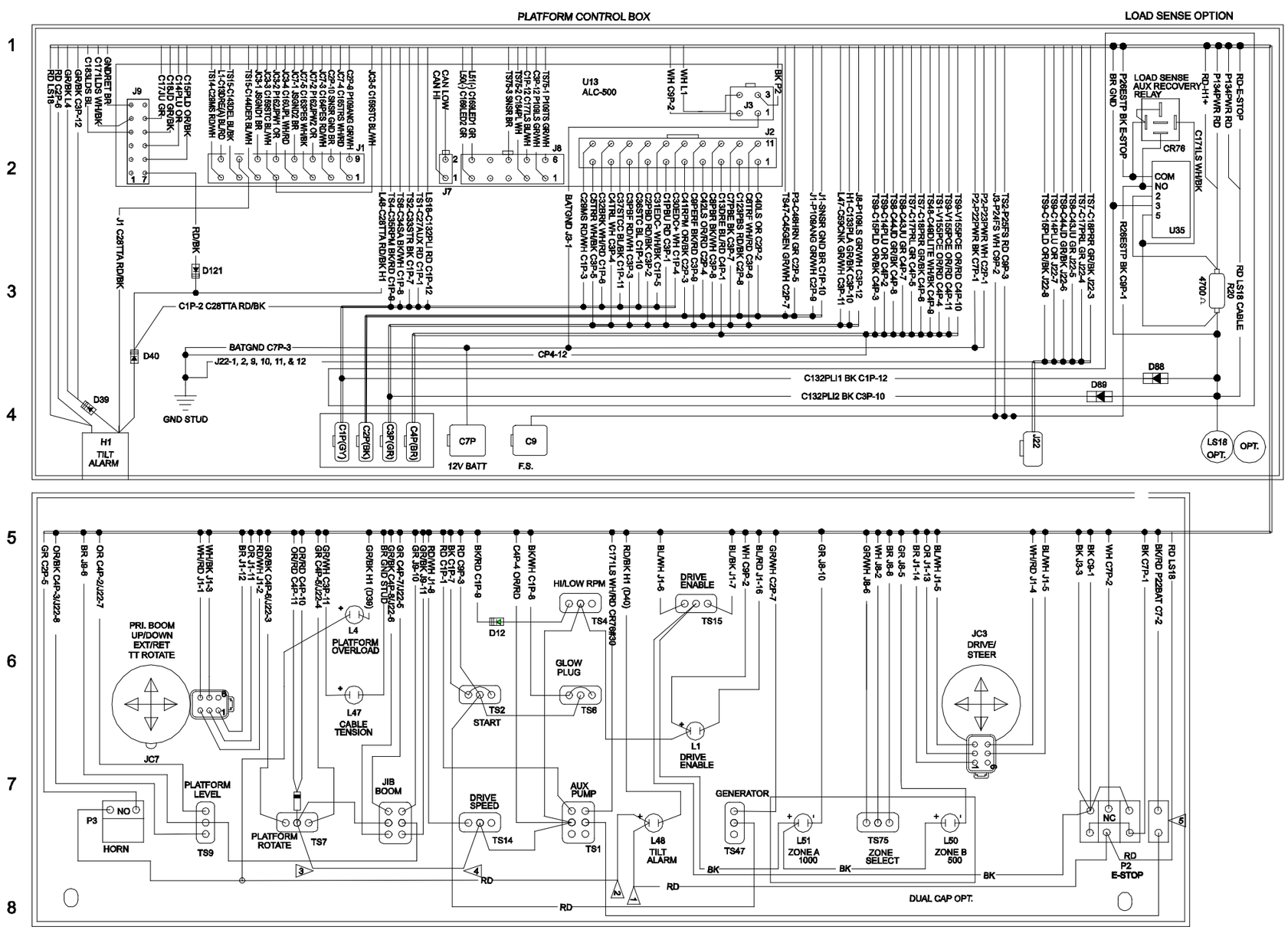


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS54	ENGINE HIGH IDLE
TS56	GLOW PLUG
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS63	PRIMARY BOOM EXTEND/RETRACT
CB2	CIRCUIT BREAKER, CONTROLS, 15A
G6	HOUR METER
L2	CHECK ENGINE INDICATOR
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
R14(A)	TURNTABLE ROTATE SPEED LIMITING RESISTOR 5 OHMS
R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H6	LOAD SENSE ALARM (CE ONLY)
U1	IGNITION/START MODULE
U34	LOAD SENSE TIME DELAY RELAY (10A)
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
CR80	TELEMATICS ENGINE SHUTDOWN REALY
CR75	LEVEL SENSOR RELAY

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Platform Control Box, S-80X

Deutz TD2011L04i Models (ANSI / CSA)



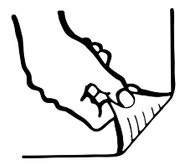
COMPONENT INDEX	
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
L1	DRIVE ENABLE LED
L4	PLATFORM OVERLOAD LED (CE ONLY)
L47	CABLE/CHAIN TENSION LED
L48	TILT ALARM LED (ANSI/CSA ONLY)
L50	ZONE B, 500 LB
L51	ZONE A, 1000 LB
JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT
	(DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE
	(DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD

5 CE AND AUS ONLY

Platform Control Box, S-80X - Deutz TD2011L04i Models (ANSI / CSA)



Electrical Schematic, S-80X - Perkins 404TD-22 Models (ANSI / CSA)

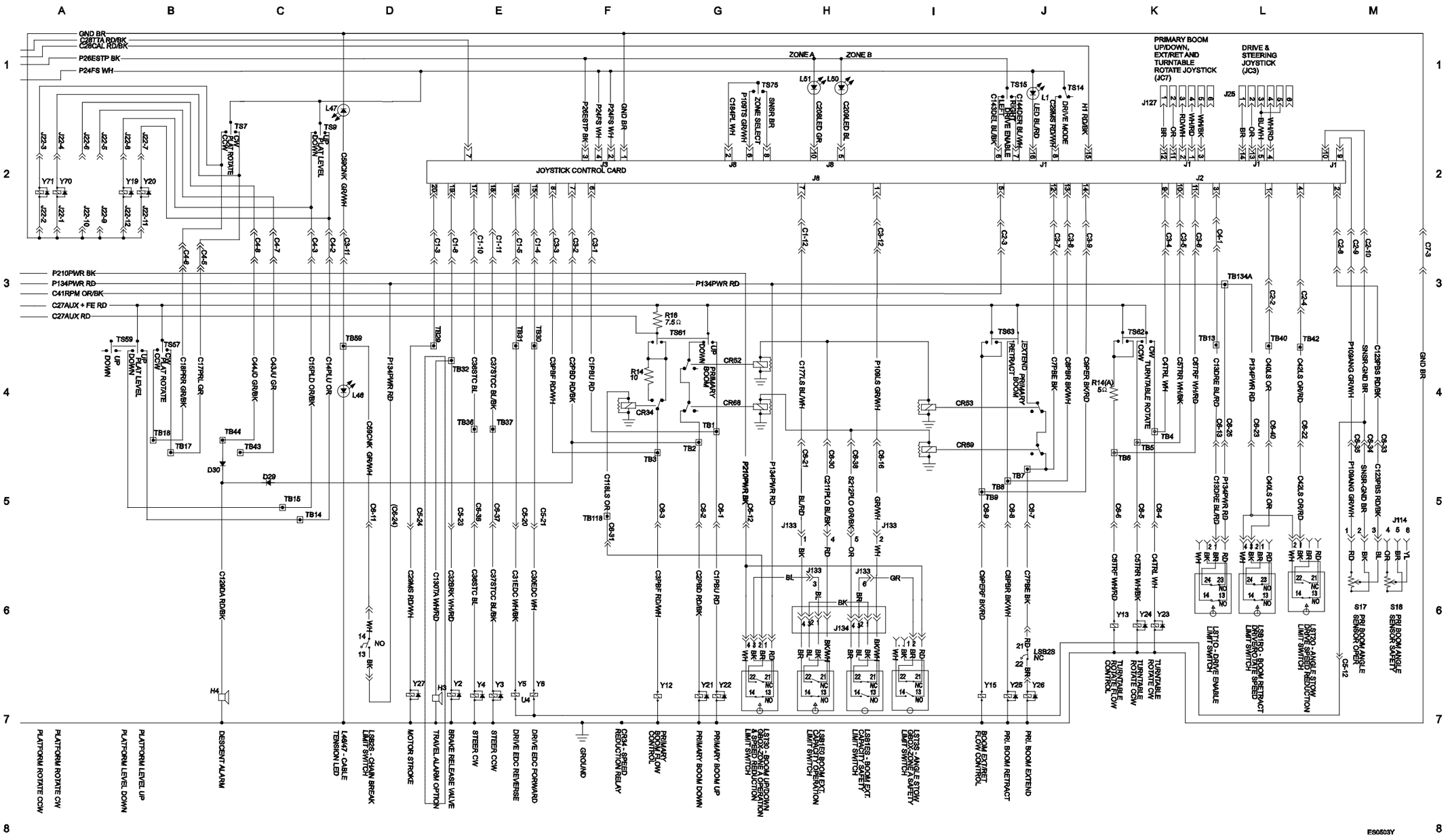


Electrical Schematic, S-80X

Perkins 404TD-22 Models (ANSI / CSA)

Electrical Schematic, S-80X

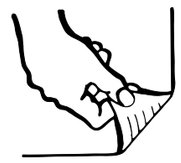
Perkins 404TD-22 Models (ANSI / CSA)



Electrical Schematic, S-80X - Perkins 404TD-22 Models (ANSI / CSA)



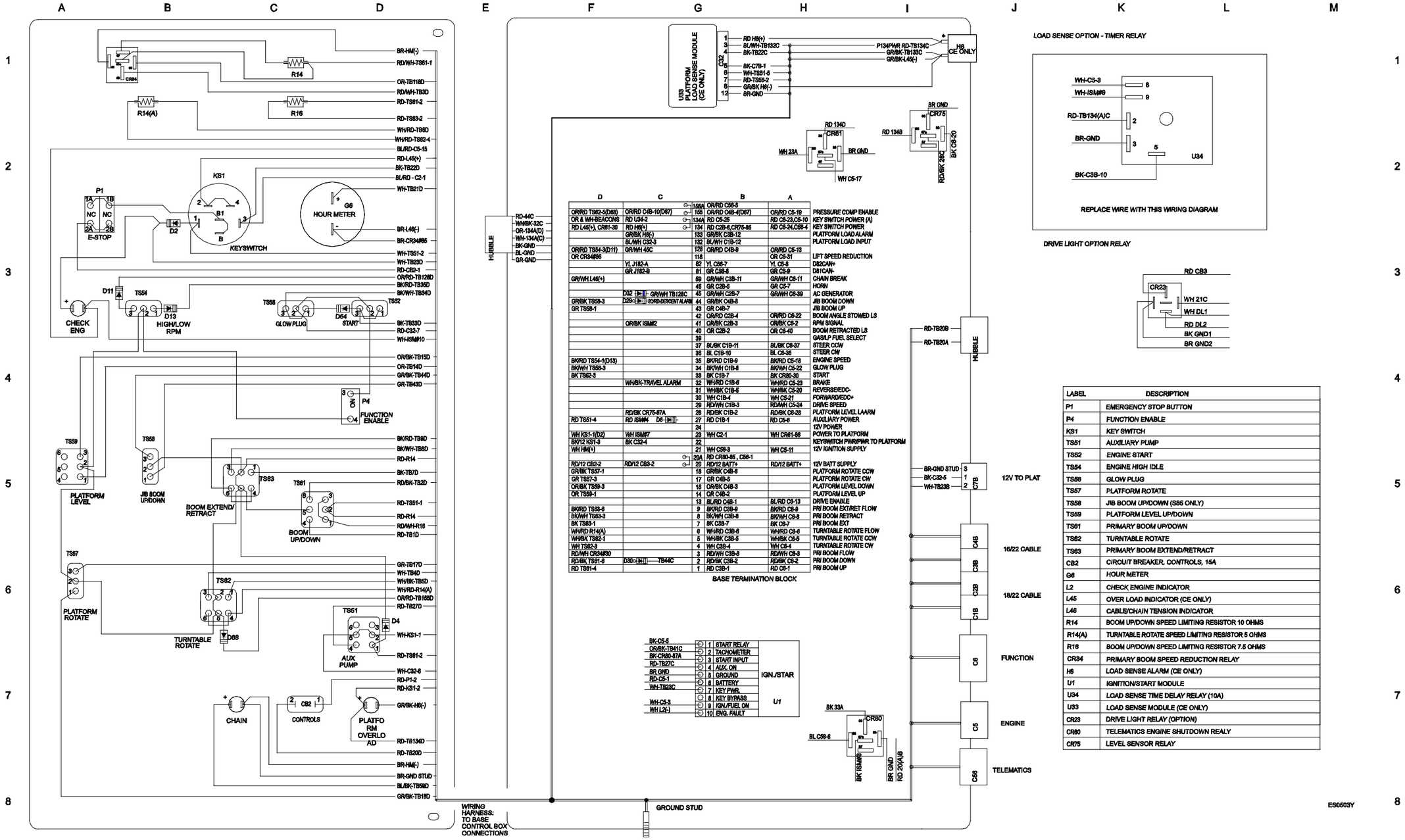
Ground Control Box, S-80X - Perkins 404TD-22 Models (ANSI / CSA)



Ground Control Box, S-80X

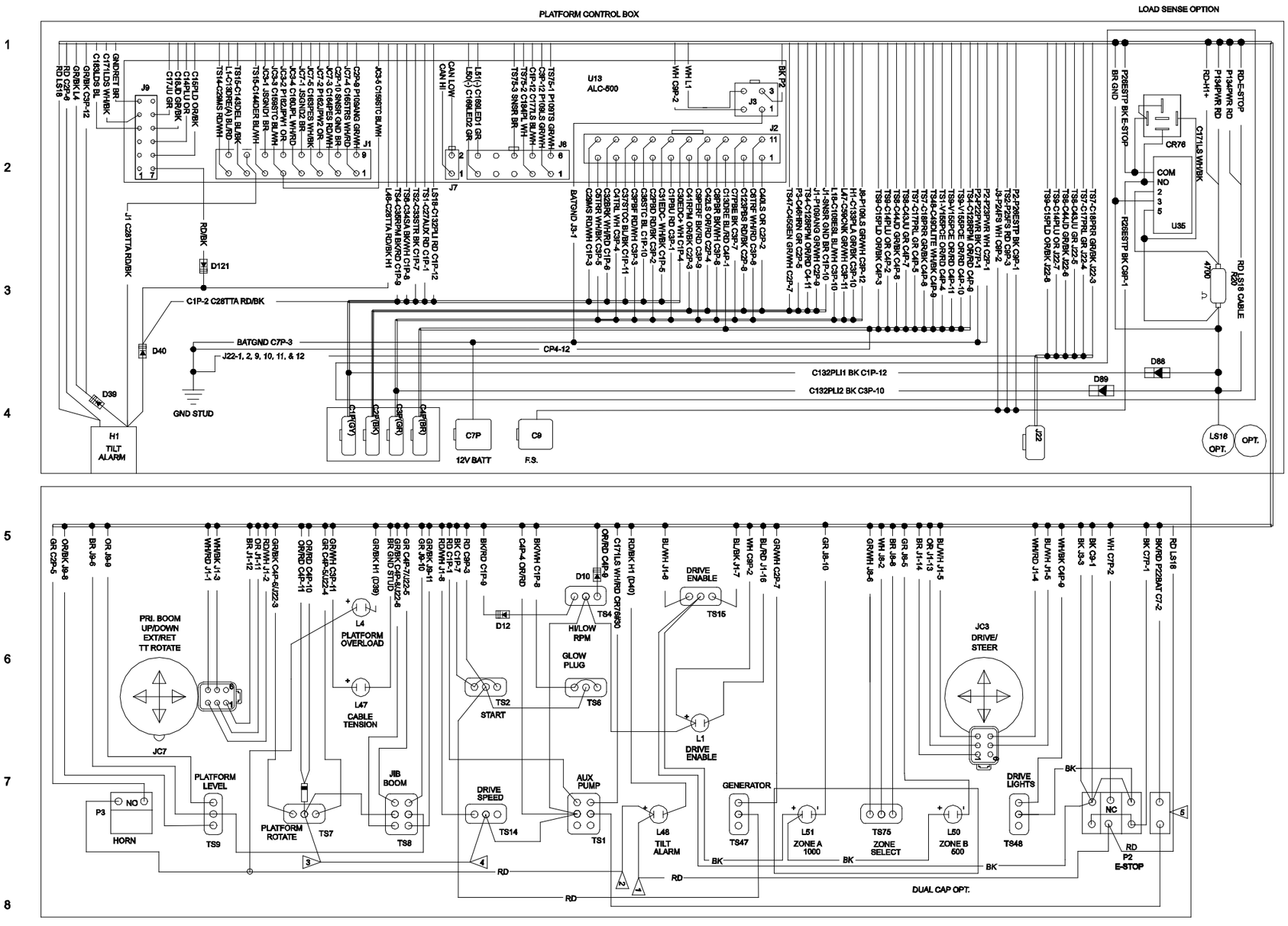
Perkins 404TD-22 Models (ANSI / CSA)

Refer to S-80X Ground Control Box Wiring Diagram for additional wiring.

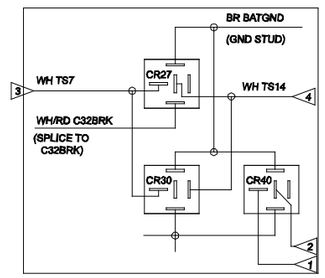


Platform Control Box, S-80X

Perkins 404TD-22 Models (ANSI / CSA)

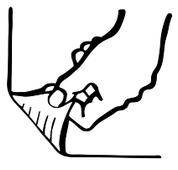


COMPONENT INDEX	
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
L1	DRIVE ENABLE LED
L4	PLATFORM OVERLOAD LED (CE ONLY)
L47	CABLE/CHAIN TENSION LED
L48	TILT ALARM LED (ANSI/CSA ONLY)
L50	ZONE B, 500 LB
L51	ZONE A, 1000 LB
JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT
	(DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE
	(DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD
CR27	LIFT/DRIVE SELECT RELAY
CR30	MACHINE STOWED BYPASS RELAY
CR40	CE TILT LED OUT OF STOWED RELAY
CR76	LOAD SENSE RECOVERY RELAY

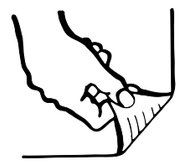


ES0503Y

Platform Control Box, S-80X - Perkins 404TD-22 Models (ANSI / CSA)

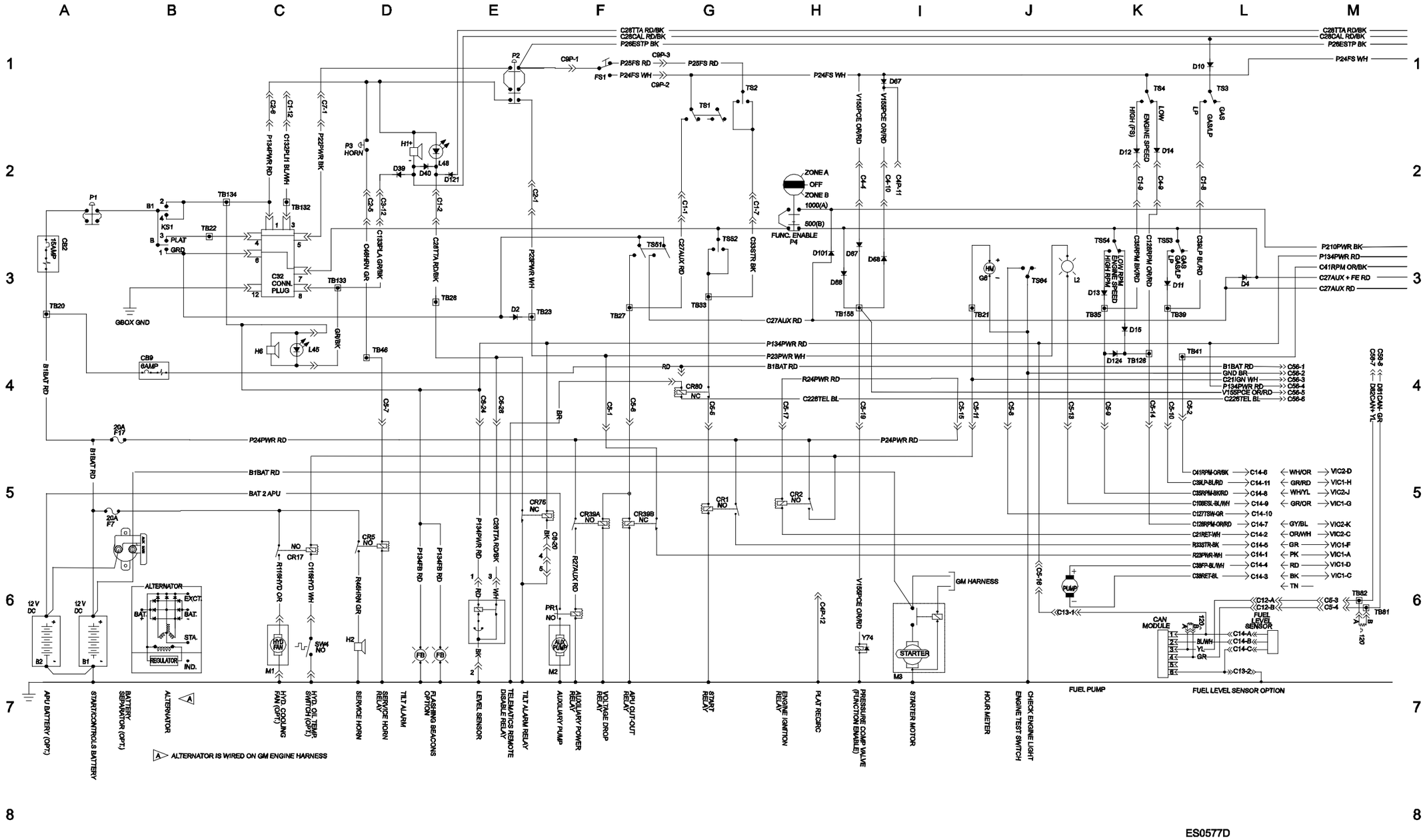


Electrical Schematic, S-80X – GM 3.0L Models (ANSI / CSA)



Electrical Schematic, S-80X

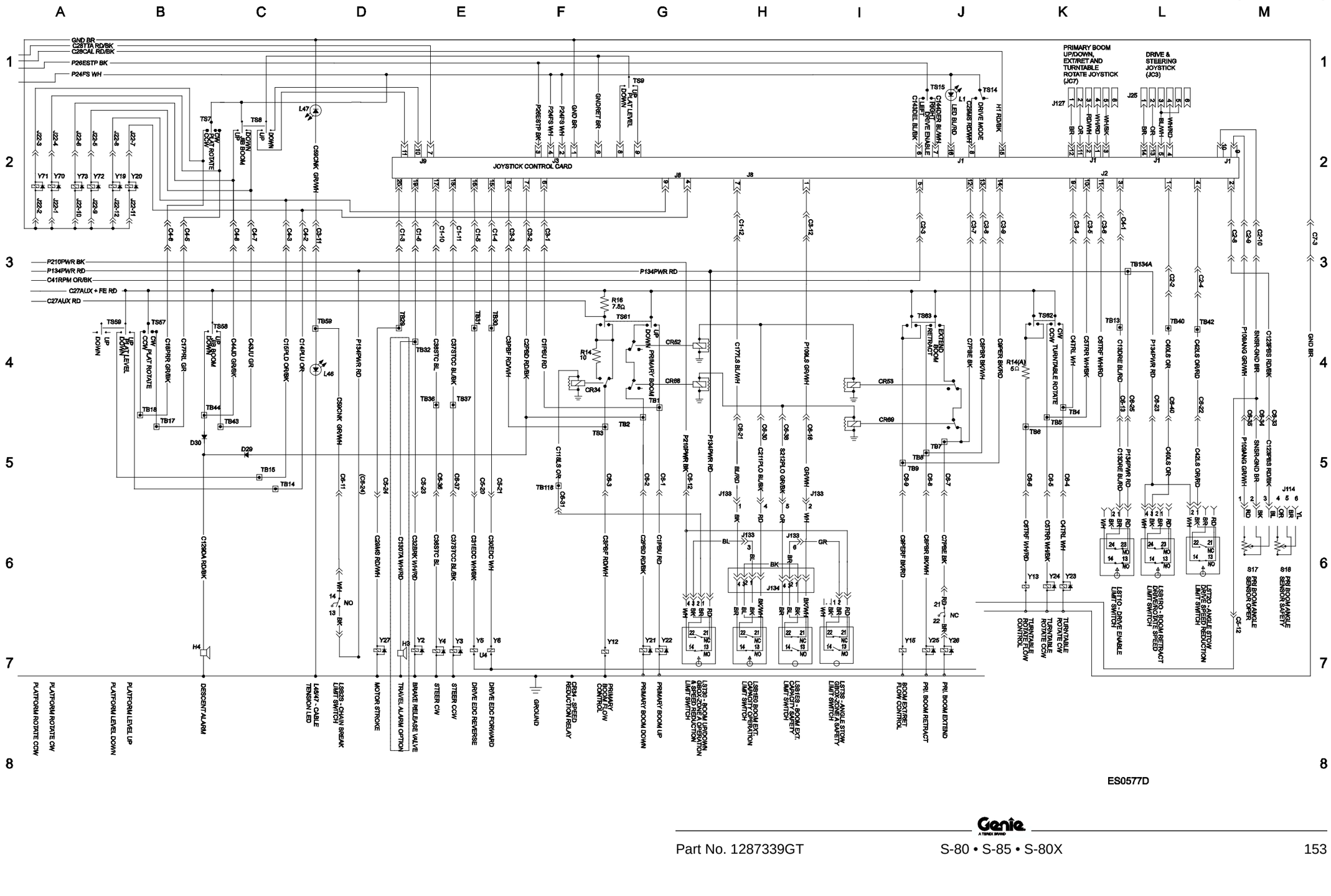
GM 3.0L Models (ANSI / CSA)



ES0577D

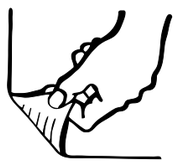
Electrical Schematic, S-80X

GM 3.0L Models (ANSI / CSA)

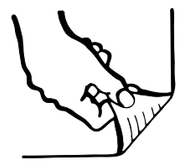


ES0577D

Electrical Schematic, S-80X – GM 3.0L Models (ANSI / CSA)



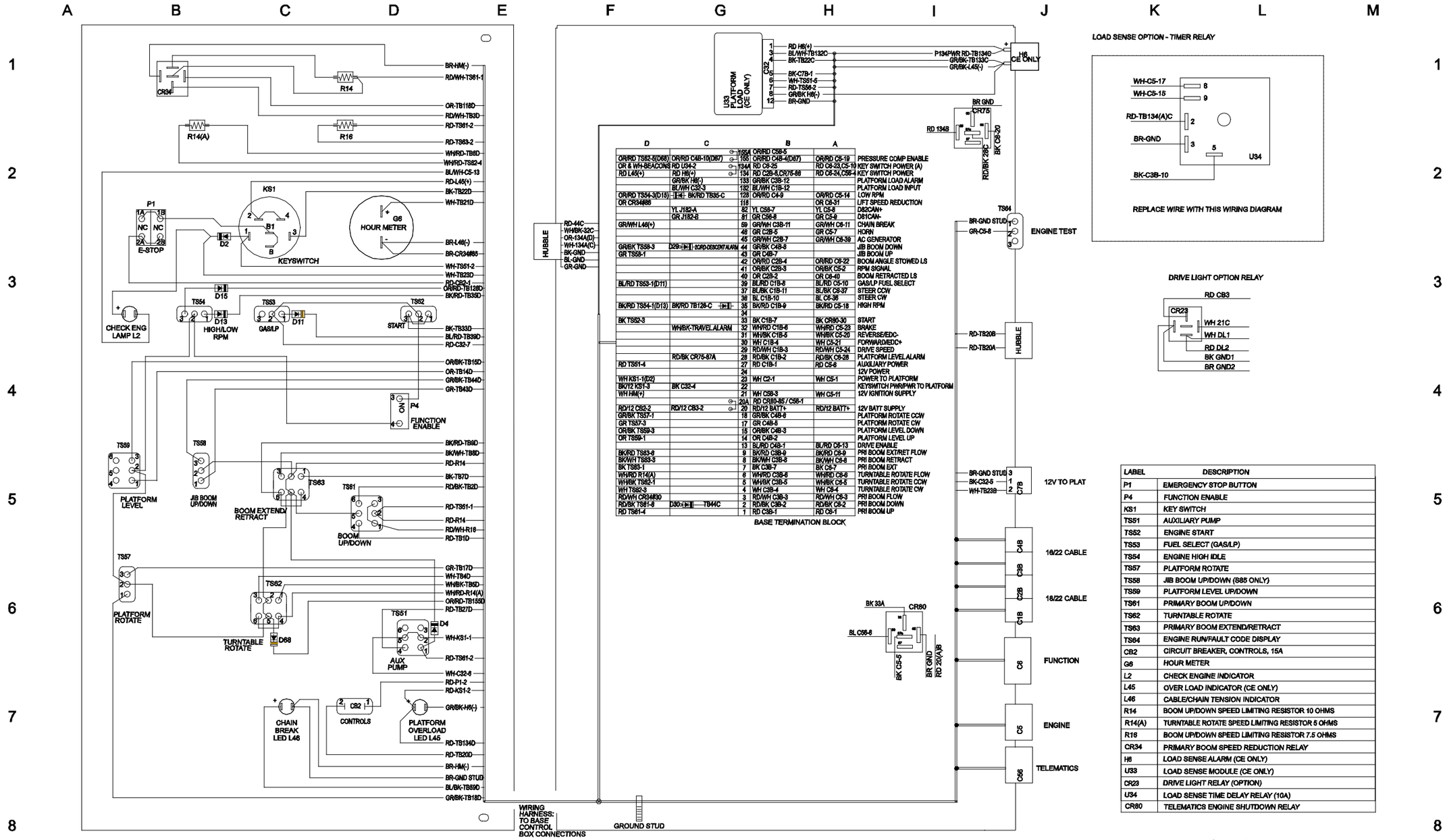
Ground Control Box, S-80X - GM 3.0L Models (ANSI / CSA)



Ground Control Box, S-80X

GM 3.0L Models (ANSI / CSA)

Refer to S-80X Ground Control Box Wiring Diagram for additional wiring.

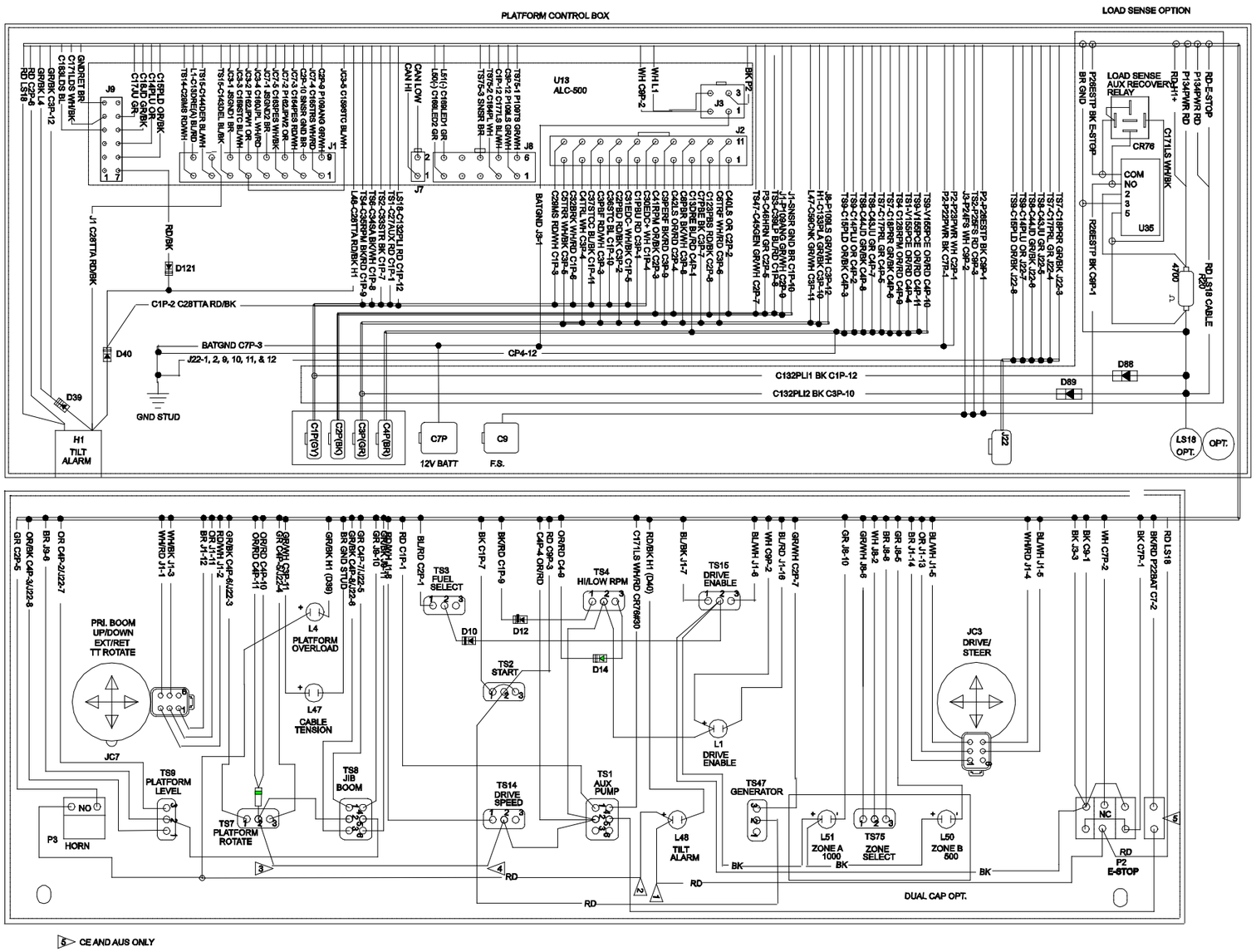


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS53	FUEL SELECT (GAS/LP)
TS54	ENGINE HIGH IDLE
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS63	PRIMARY BOOM EXTEND/RETRACT
TS64	ENGINE RUN/FAULT CODE DISPLAY
CB2	CIRCUIT BREAKER, CONTROLS, 15A
G6	HOUR METER
L2	CHECK ENGINE INDICATOR
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
R14(A)	TURNTABLE ROTATE SPEED LIMITING RESISTOR 5 OHMS
R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H6	LOAD SENSE ALARM (CE ONLY)
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
U34	LOAD SENSE TIME DELAY RELAY (10A)
CR80	TELEMATICS ENGINE SHUTDOWN RELAY

ES0577D

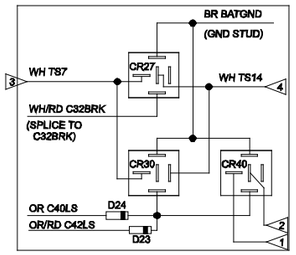
Platform Control Box, S-80X

GM 3.0L Models (ANSI / CSA)



COMPONENT INDEX

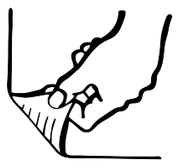
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
L1	DRIVE ENABLE LED
L4	PLATFORM OVERLOAD LED (CE ONLY)
L47	CABLE/CHAIN TENSION LED
L48	TILT ALARM LED (ANSI/CSA ONLY)
L50	ZONE B, 500 LB
L51	ZONE A, 1000 LB
JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT (DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE (DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD



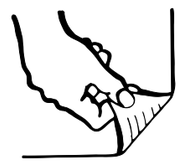
CE UNITS
REPLACE WIRE WITH THIS WIRING DIAGRAM

ES0577D

Platform Control Box, S-80X - GM 3.0L Models (ANSI / CSA)

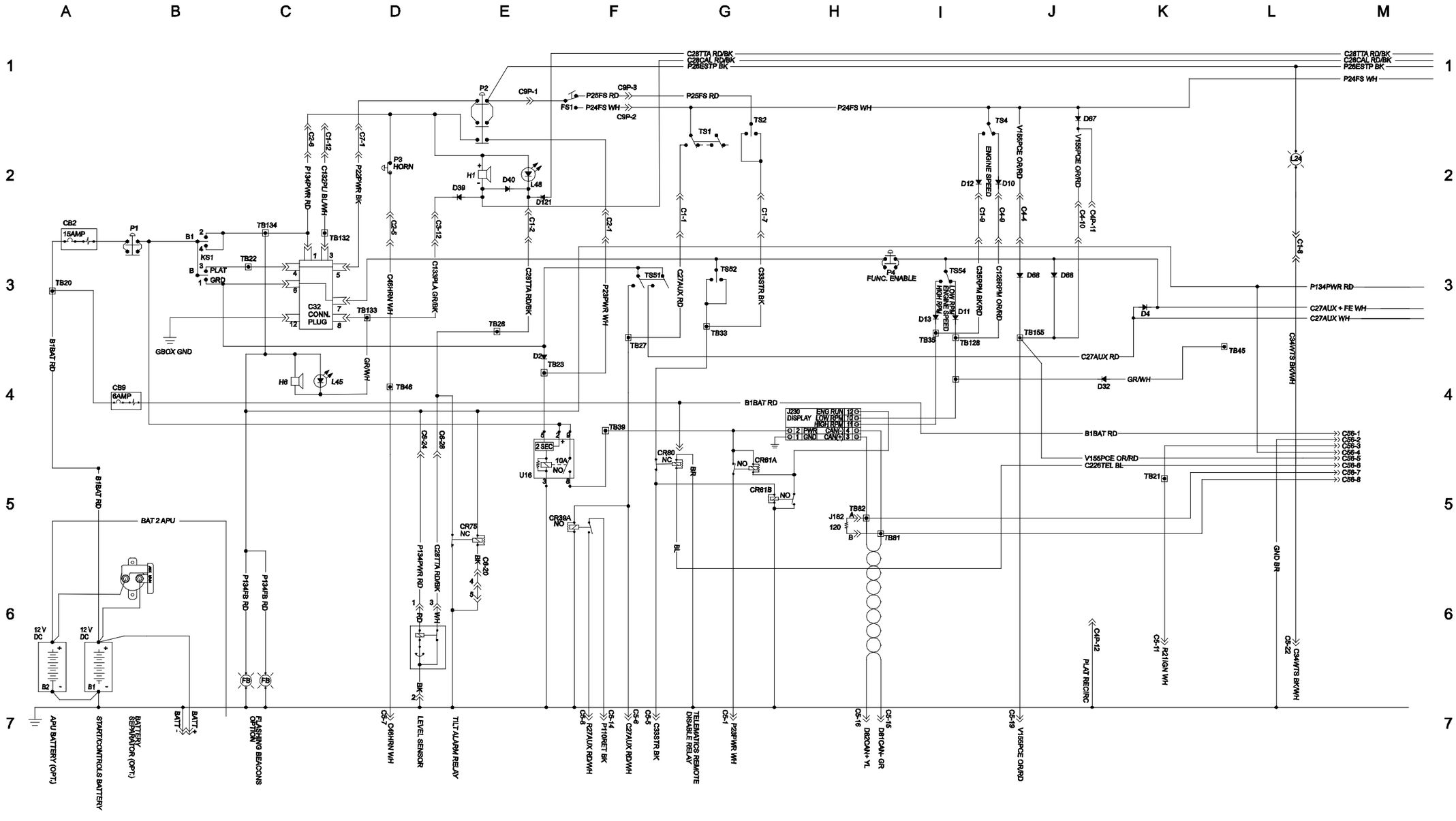


Electrical Schematic, S-80 • S-85 - Deutz TD2.9 L4 Models (ANSI / CSA)



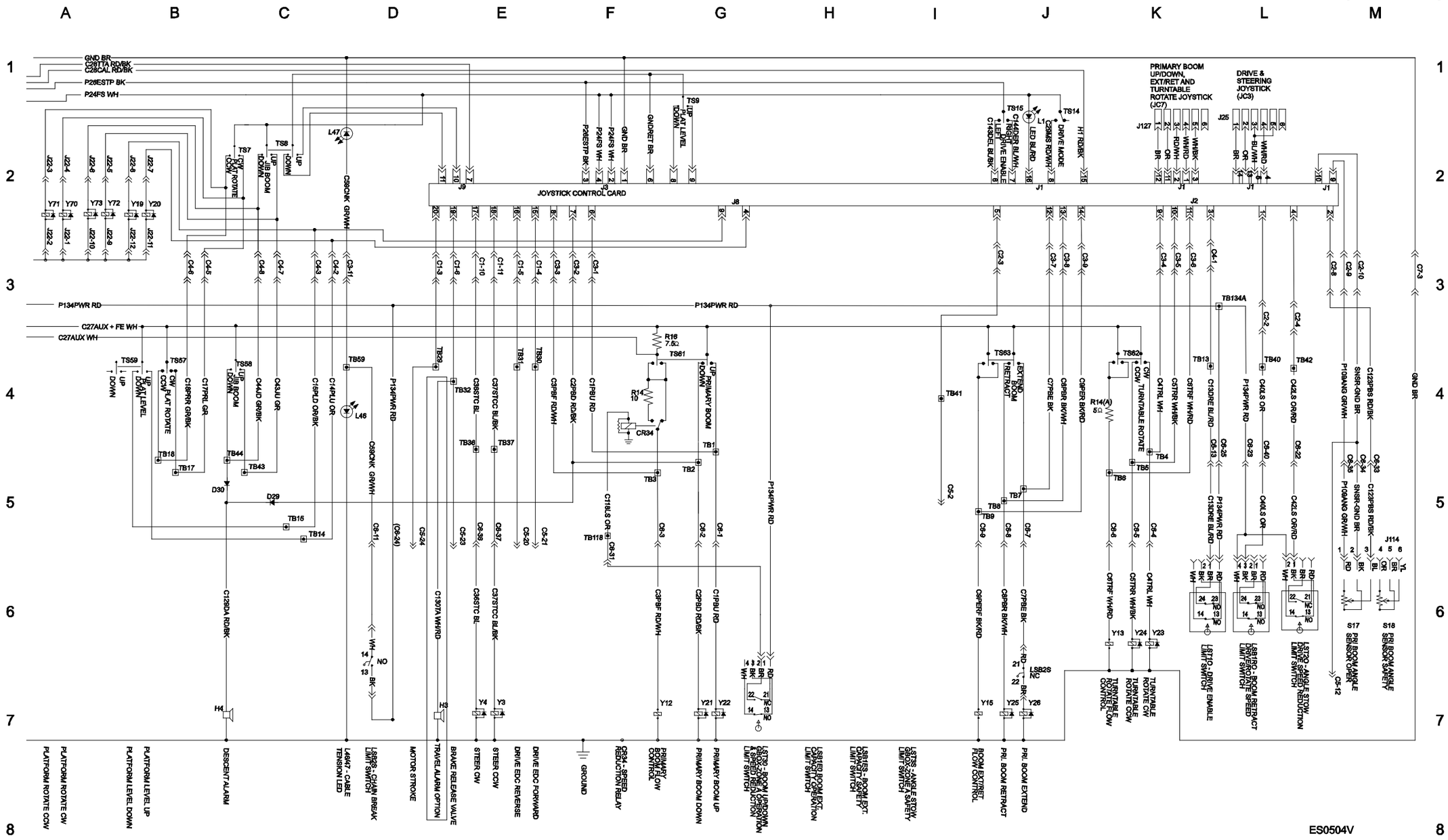
Electrical Schematic, S-80 • S-85

Deutz TD2.9 L4 Models (ANSI / CSA)



Electrical Schematic, S-80 • S-85

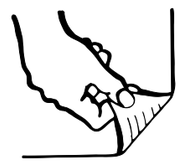
Deutz TD2.9 L4 Models (ANSI / CSA)



Electrical Schematic, S-80 • S-85 - Deutz TD2.9 L4 Models (ANSI / CSA)

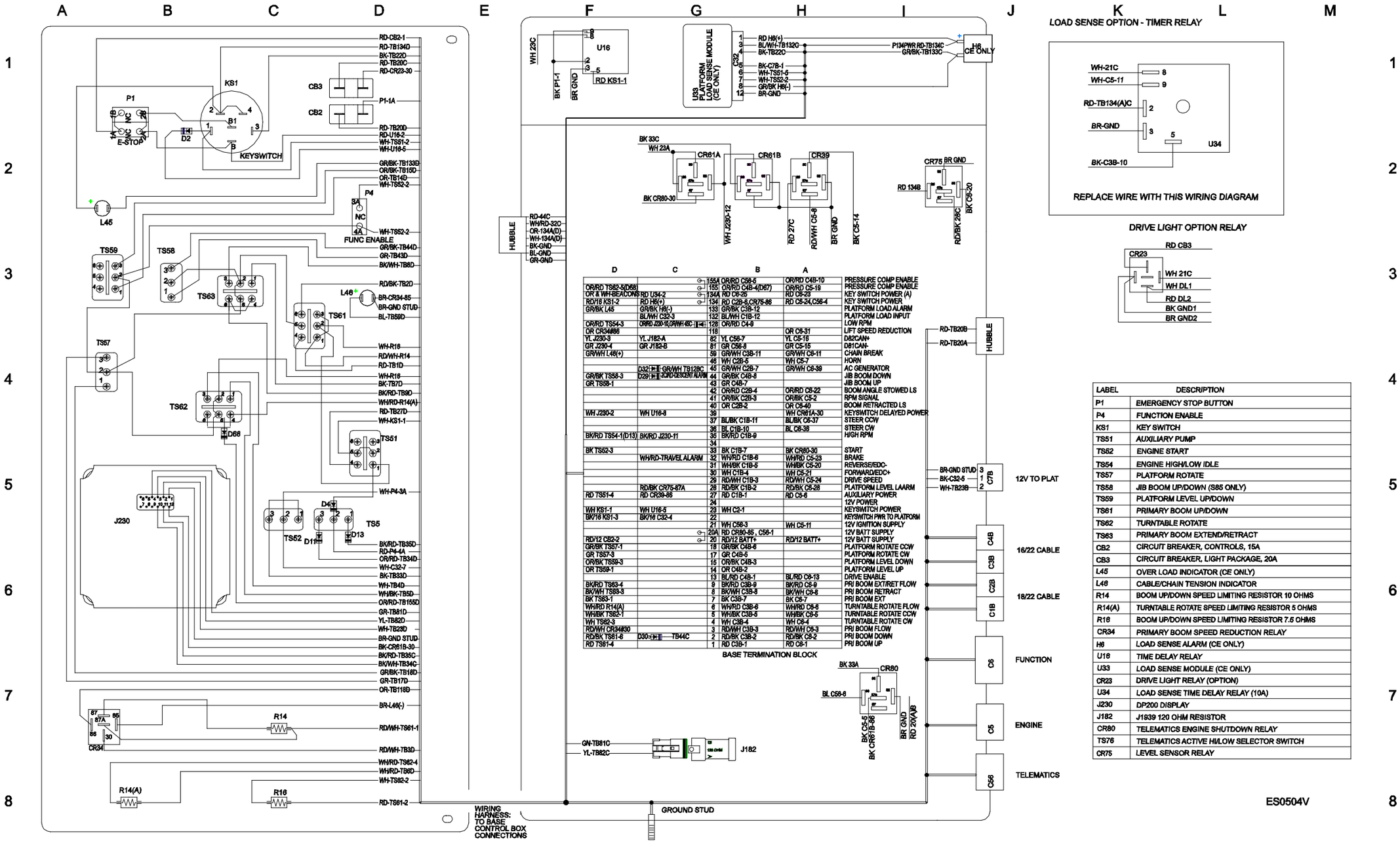


Ground Control Box, S-80 • S-85 - Deutz TD2.9 L4 Models (ANSI / CSA)



Ground Control Box, S-80 • S-85

Deutz TD2.9 L4 Models (ANSI / CSA)

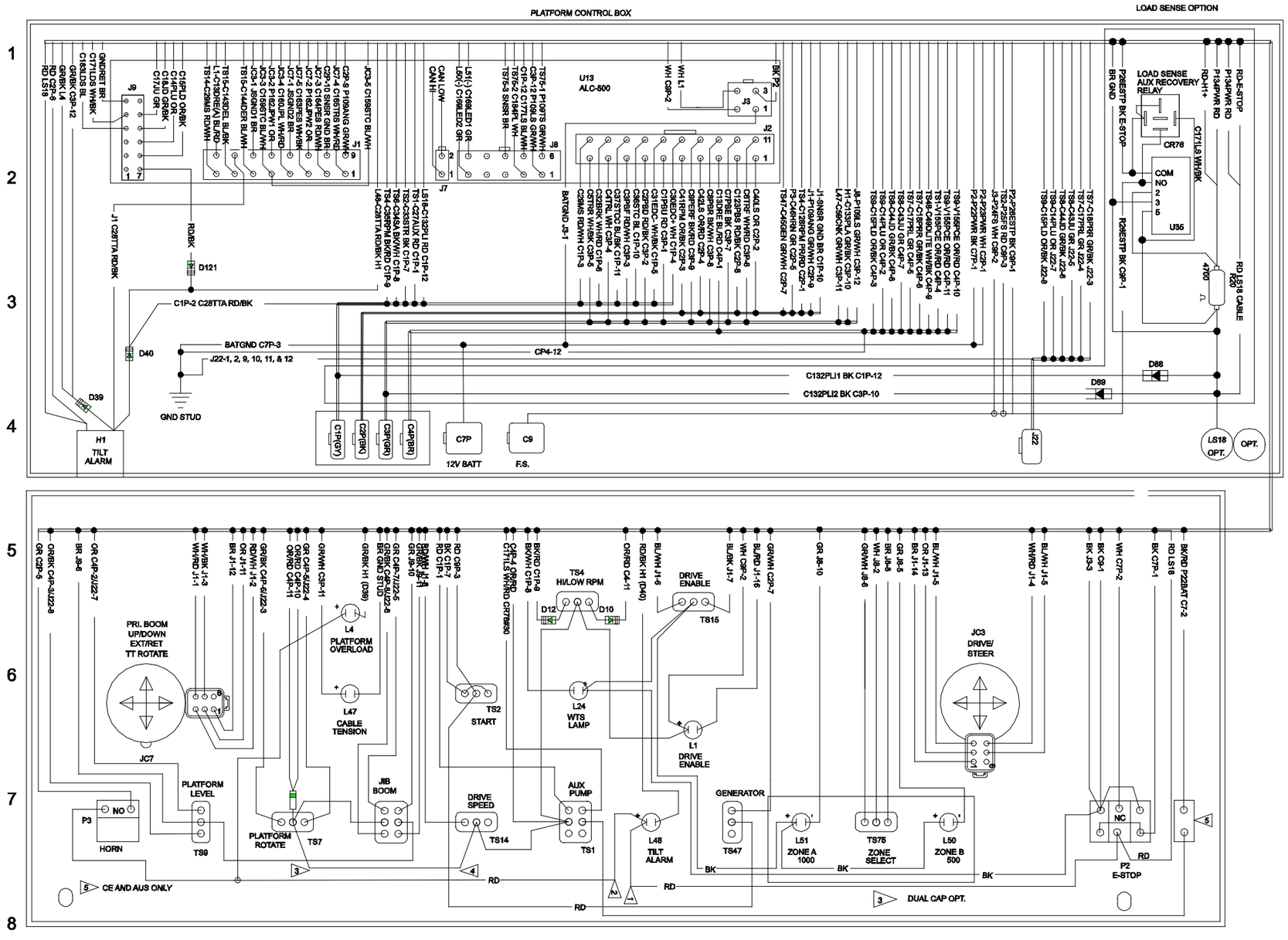


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS54	ENGINE HIGH/LOW IDLE
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS63	PRIMARY BOOM EXTEND/RETRACT
CB2	CIRCUIT BREAKER, CONTROLS, 15A
CB3	CIRCUIT BREAKER, LIGHT PACKAGE, 20A
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
R14(A)	TURNTABLE ROTATE SPEED LIMITING RESISTOR 5 OHMS
R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H6	LOAD SENSE ALARM (CE ONLY)
U16	TIME DELAY RELAY
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
U34	LOAD SENSE TIME DELAY RELAY (10A)
J230	DP200 DISPLAY
J182	J1939 120 OHM RESISTOR
CR80	TELEMATICS ENGINE SHUTDOWN RELAY
TS76	TELEMATICS ACTIVE HI/LOW SELECTOR SWITCH
CR75	LEVEL SENSOR RELAY

ES0504V

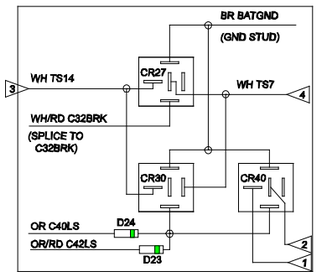
Platform Control Box, S-80 • S-85

Deutz TD2.9 L4 Models (ANSI / CSA)



COMPONENT INDEX

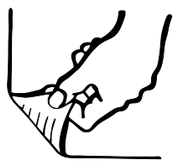
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
L1	DRIVE ENABLE LED
L4	PLATFORM OVERLOAD LED (CE ONLY)
L47	CABLE/CHAIN TENSION LED
L48	TILT ALARM LED (ANSI/CSA ONLY)
L50	ZONE B, 500 LB
L51	ZONE A, 1000 LB
JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT
	(DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE
	(DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD



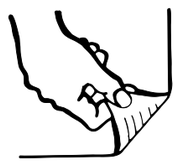
CE UNITS
REPLACE WIRE WITH THIS WIRING DIAGRAM

ES0504V

Platform Control Box, S-80 • S-85 - Deutz TD2.9 L4 Models (ANSI / CSA)

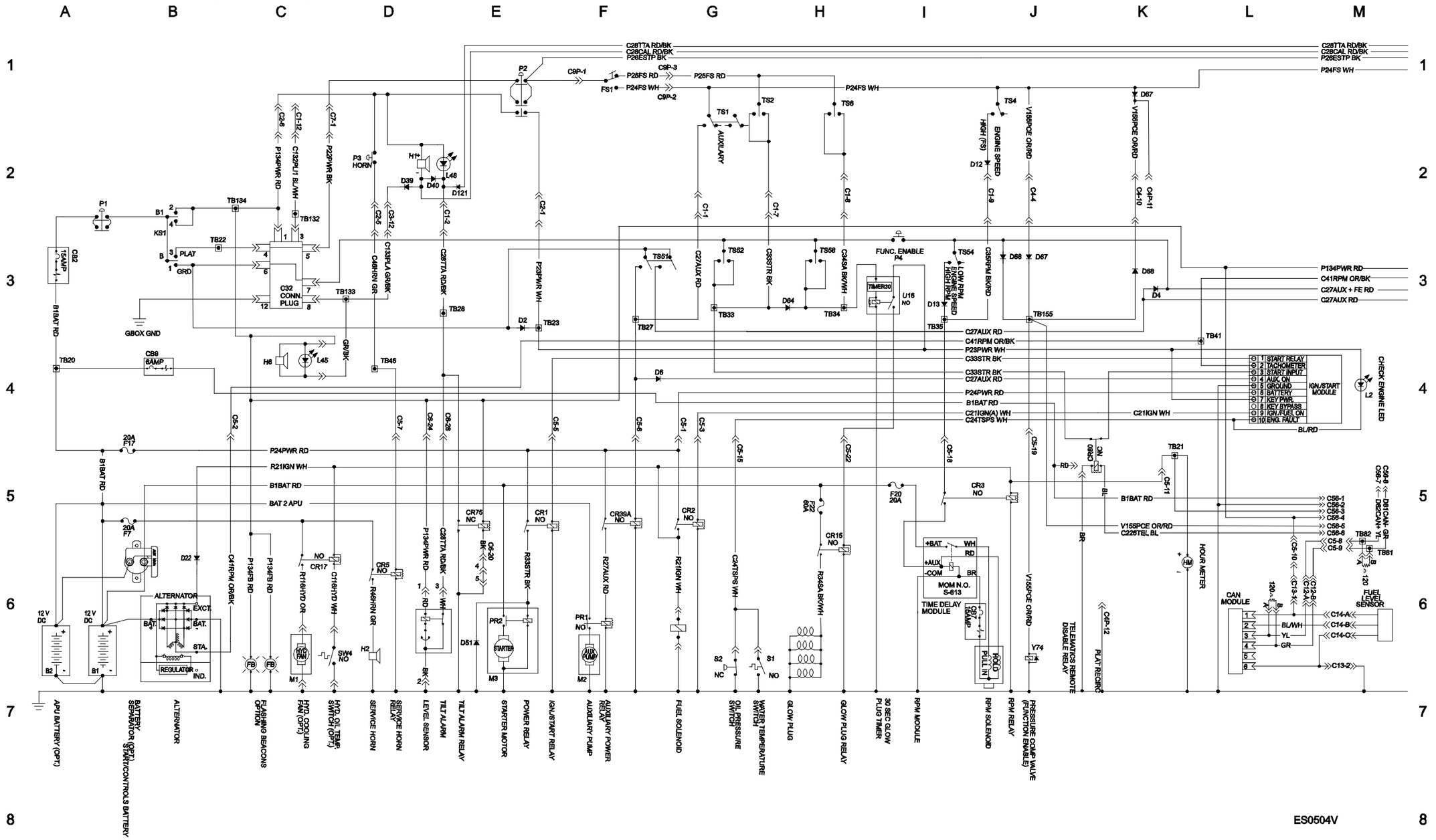


Electrical Schematic, S-80 • S-85 - Deutz TD2011L04i Models (ANSI / CSA)



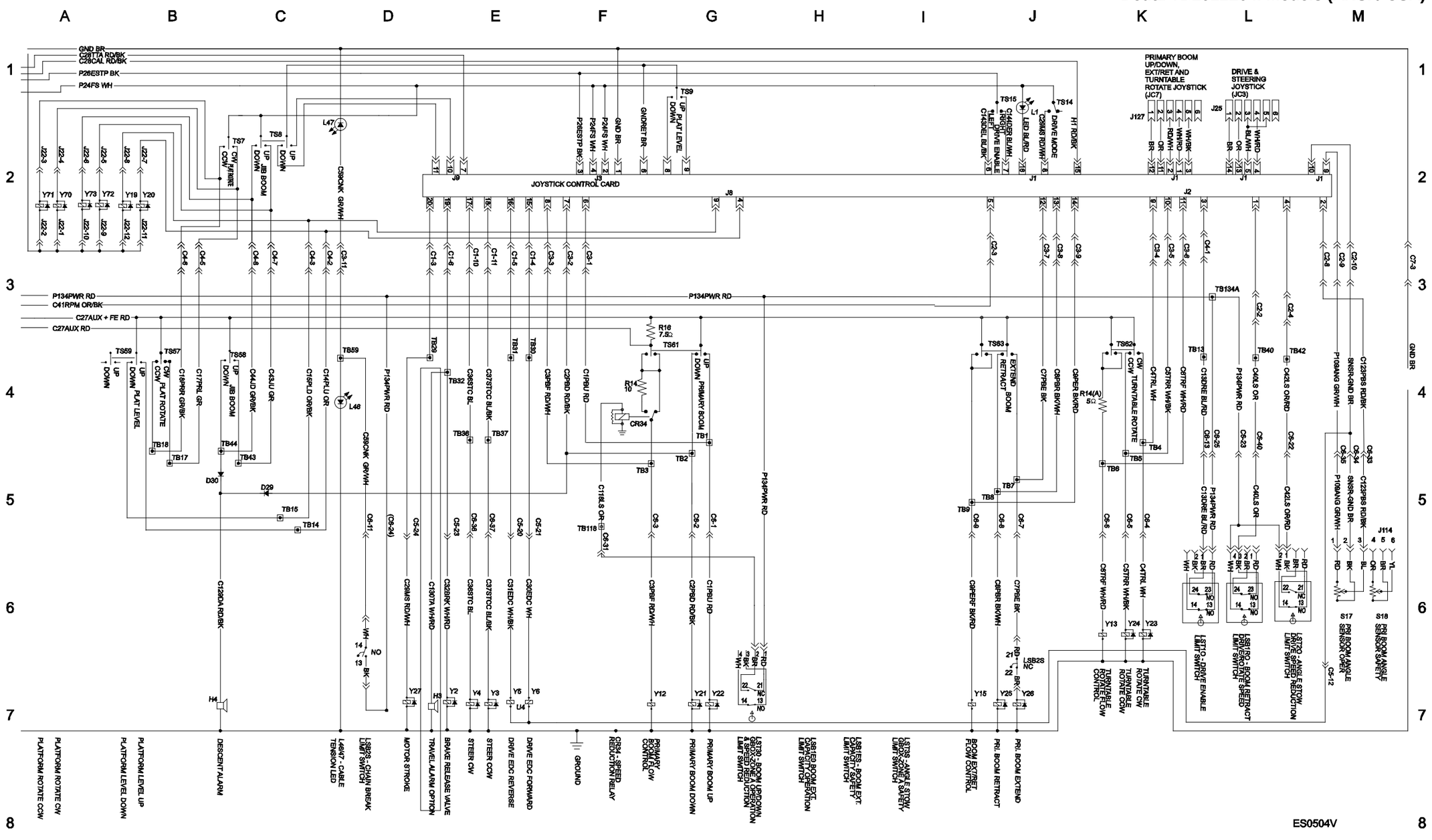
Electrical Schematic, S-80 • S-85

Deutz TD2011L04i Models (ANSI / CSA)



Electrical Schematic, S-80 • S-85

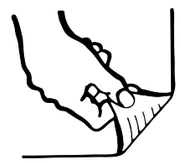
Deutz TD2011L04i Models (ANSI / CSA)



Electrical Schematic, S-80 • S-85 - Deutz TD2011L04i Models (ANSI / CSA)

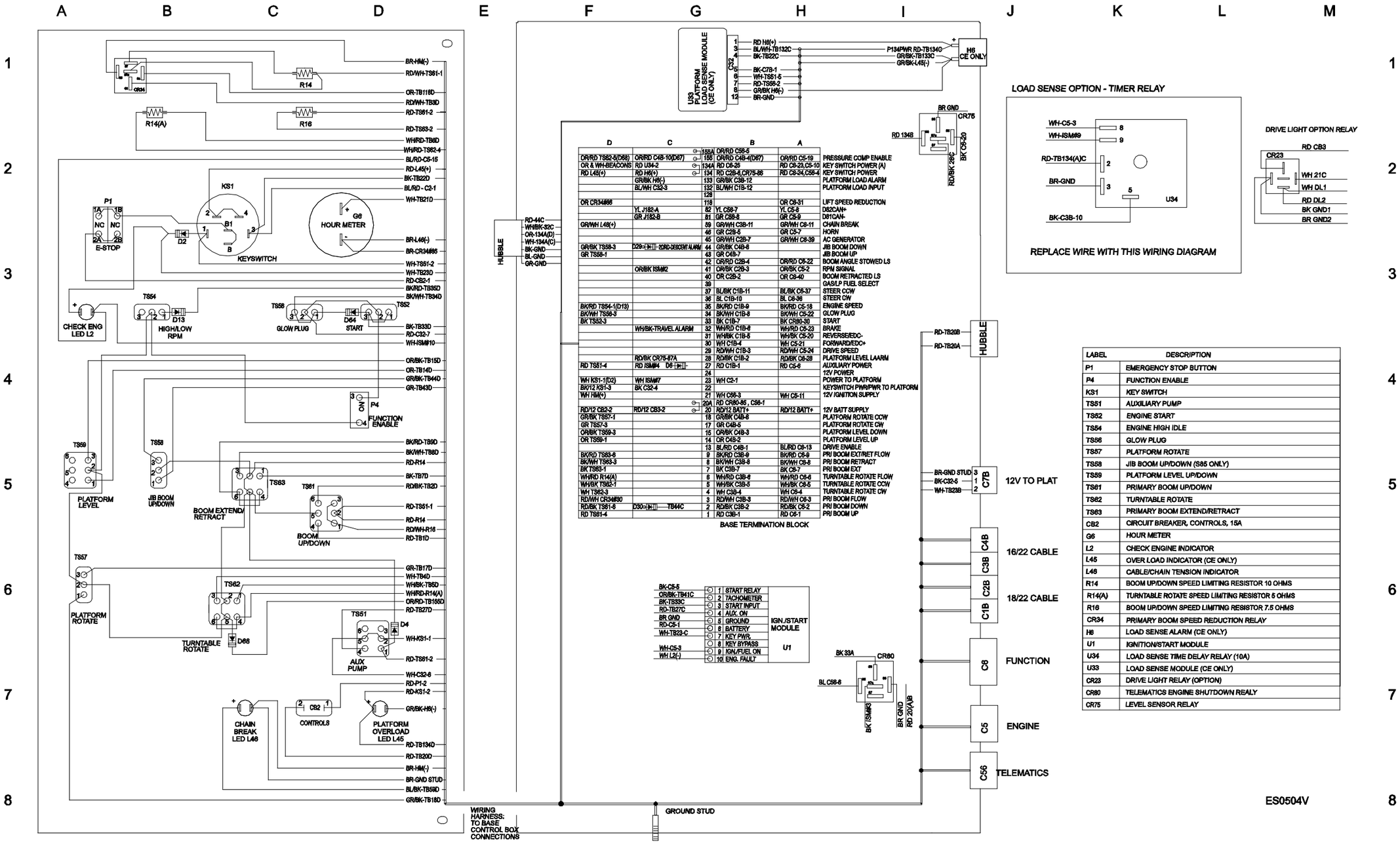


Ground Control Box, S-80 • S-85 - Deutz TD2011L04i Models (ANSI / CSA)



Ground Control Box, S-80 • S-85

Deutz TD2011L04i Models (ANSI / CSA)

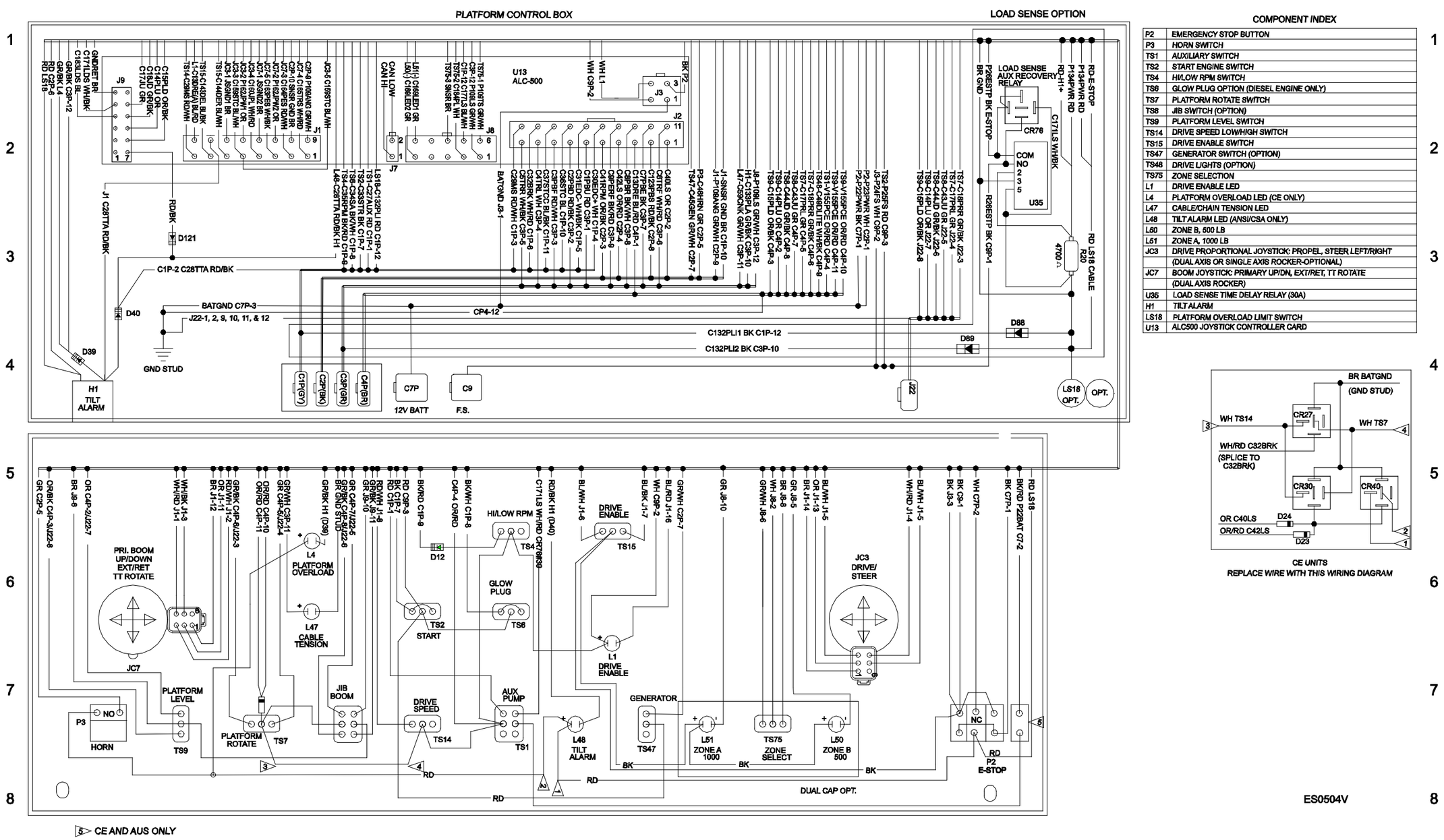


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS54	ENGINE HIGH IDLE
TS56	GLOW PLUG
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS63	PRIMARY BOOM EXTEND/RETRACT
CB2	CIRCUIT BREAKER, CONTROLS, 15A
G6	HOUR METER
L2	CHECK ENGINE INDICATOR
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
R14(A)	TURNTABLE ROTATE SPEED LIMITING RESISTOR 5 OHMS
R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H8	LOAD SENSE ALARM (CE ONLY)
U1	IGNITION/START MODULE
U34	LOAD SENSE TIME DELAY RELAY (10A)
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
CR80	TELEMATICS ENGINE SHUTDOWN REALY
CR75	LEVEL SENSOR RELAY

ES0504V

Platform Control Box, S-80 • S-85

Deutz TD2011L04i Models (ANSI / CSA)



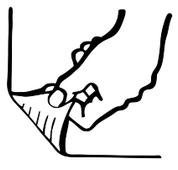
COMPONENT INDEX

P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
L1	DRIVE ENABLE LED
L4	PLATFORM OVERLOAD LED (CE ONLY)
L47	CABLE/CHAIN TENSION LED
L48	TILT ALARM LED (ANSI/CSA ONLY)
L50	ZONE B, 500 LB
L51	ZONE A, 1000 LB
JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT
	(DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE
	(DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD

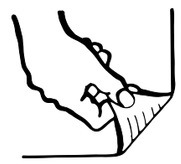
CE UNITS
REPLACE WIRE WITH THIS WIRING DIAGRAM

ES0504V

Platform Control Box, S-80 • S-85 - Deutz TD2011L04i Models (ANSI / CSA)

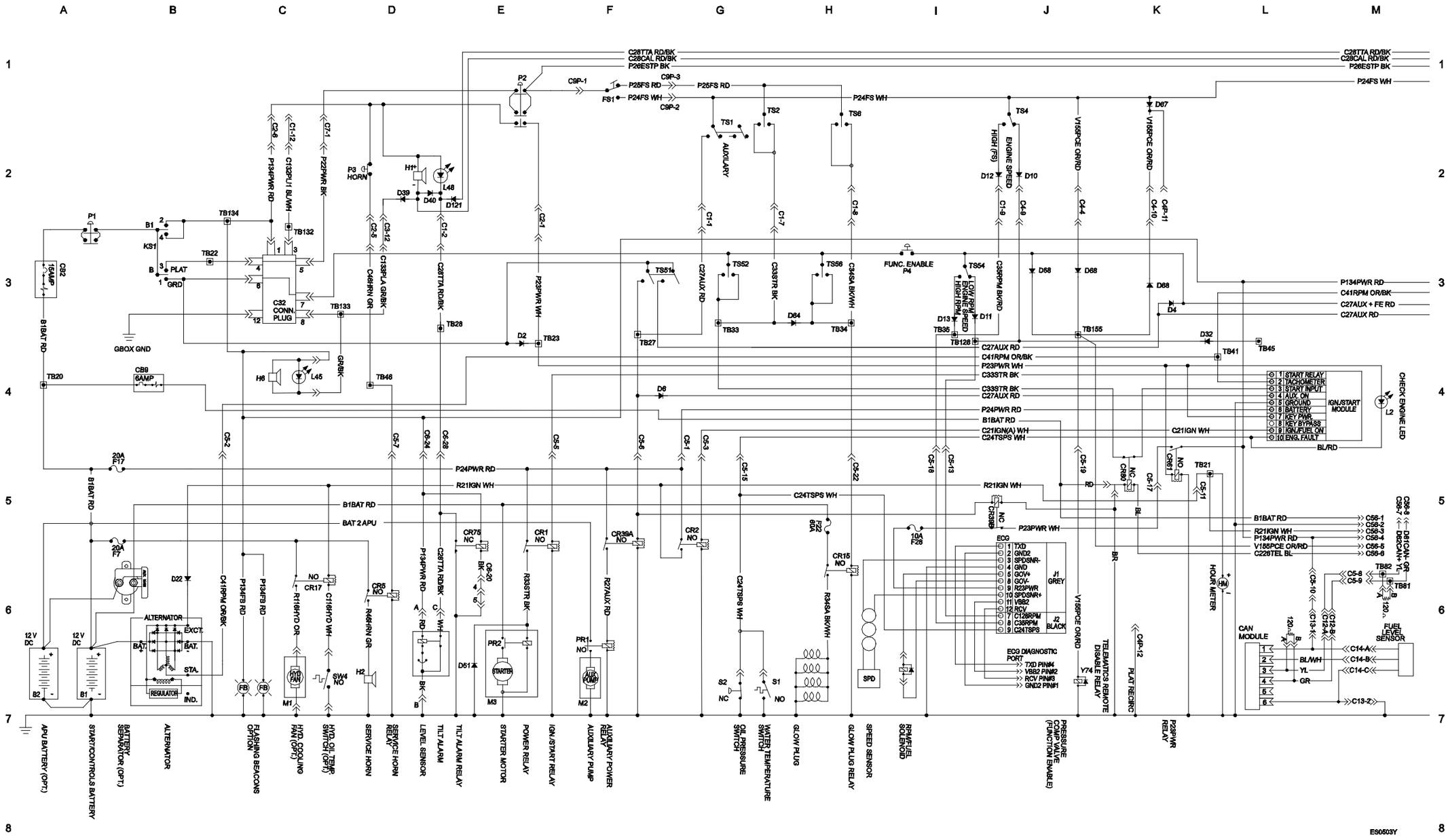


Electrical Schematic, S-80 • S-85 - Perkins 404TD-22 Models (ANSI / CSA)



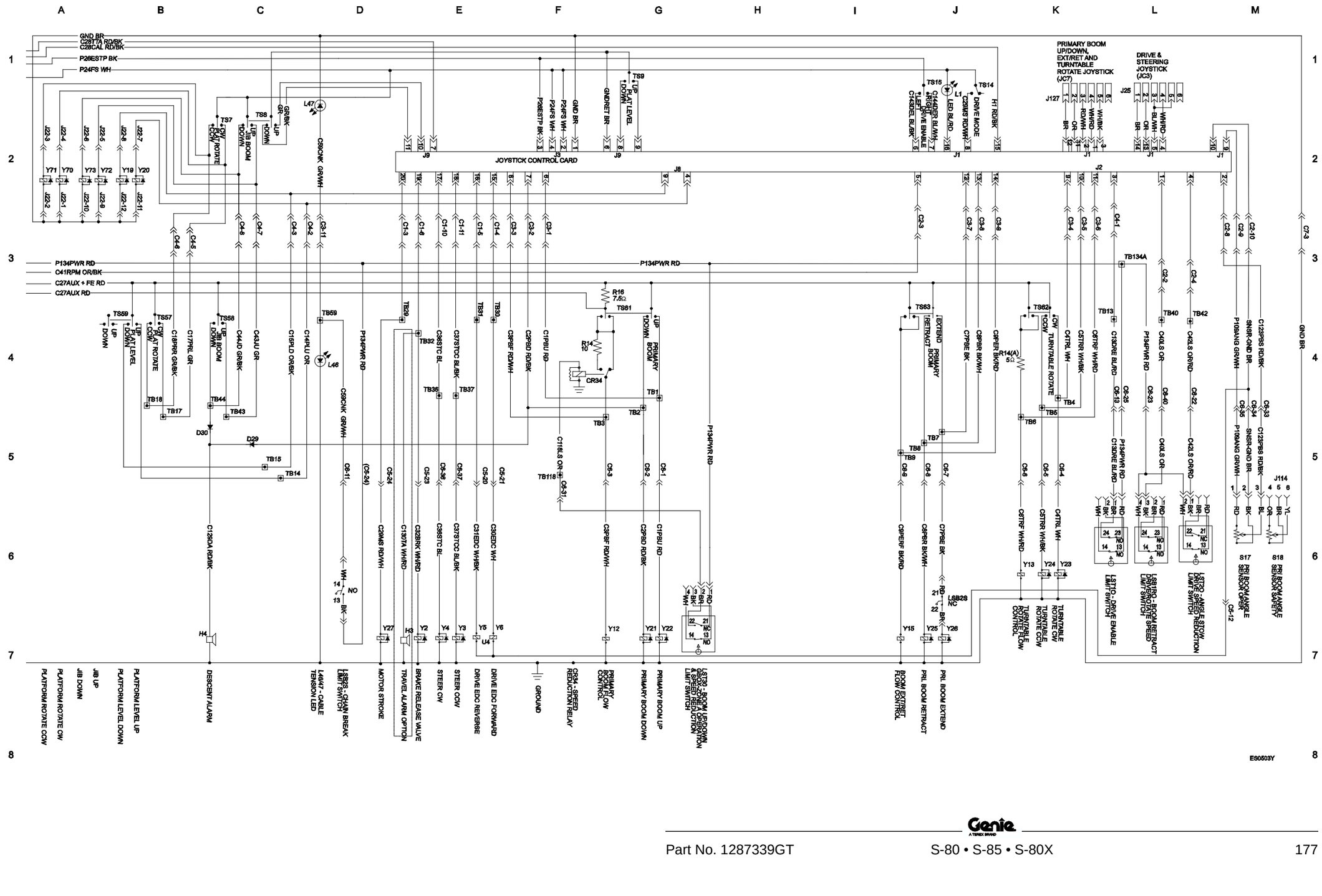
Electrical Schematic, S-80 • S-85

Perkins 404TD-22 Models (ANSI / CSA)

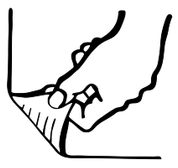


Electrical Schematic, S-80 • S-85

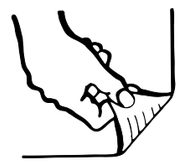
Perkins 404TD-22 Models (ANSI / CSA)



Electrical Schematic, S-80 • S-85 - Perkins 404TD-22 Models (ANSI / CSA)

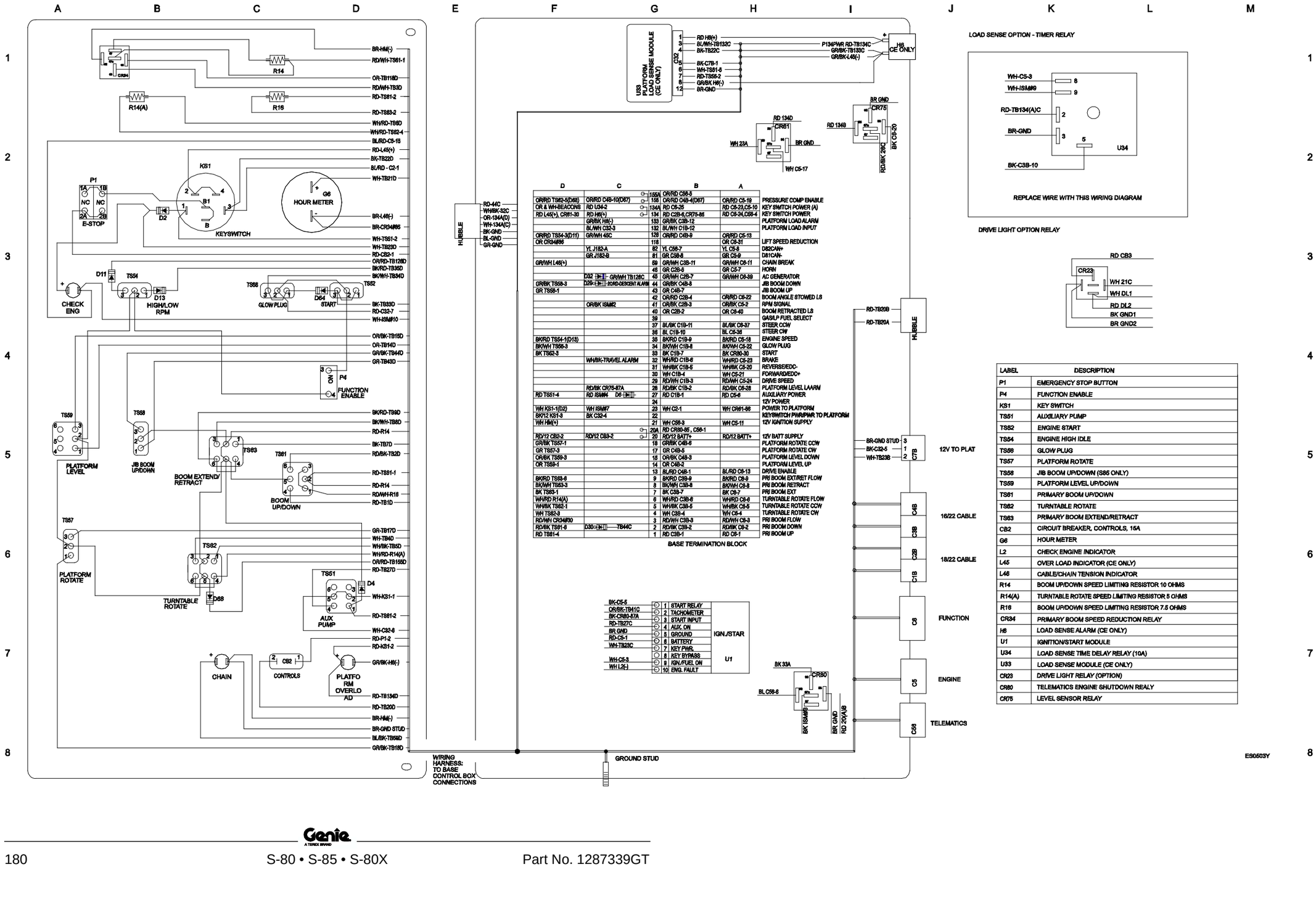


Ground Control Box, S-80 • S-85 - Perkins 404TD-22 Models (ANSI / CSA)



Ground Control Box, S-80 • S-85

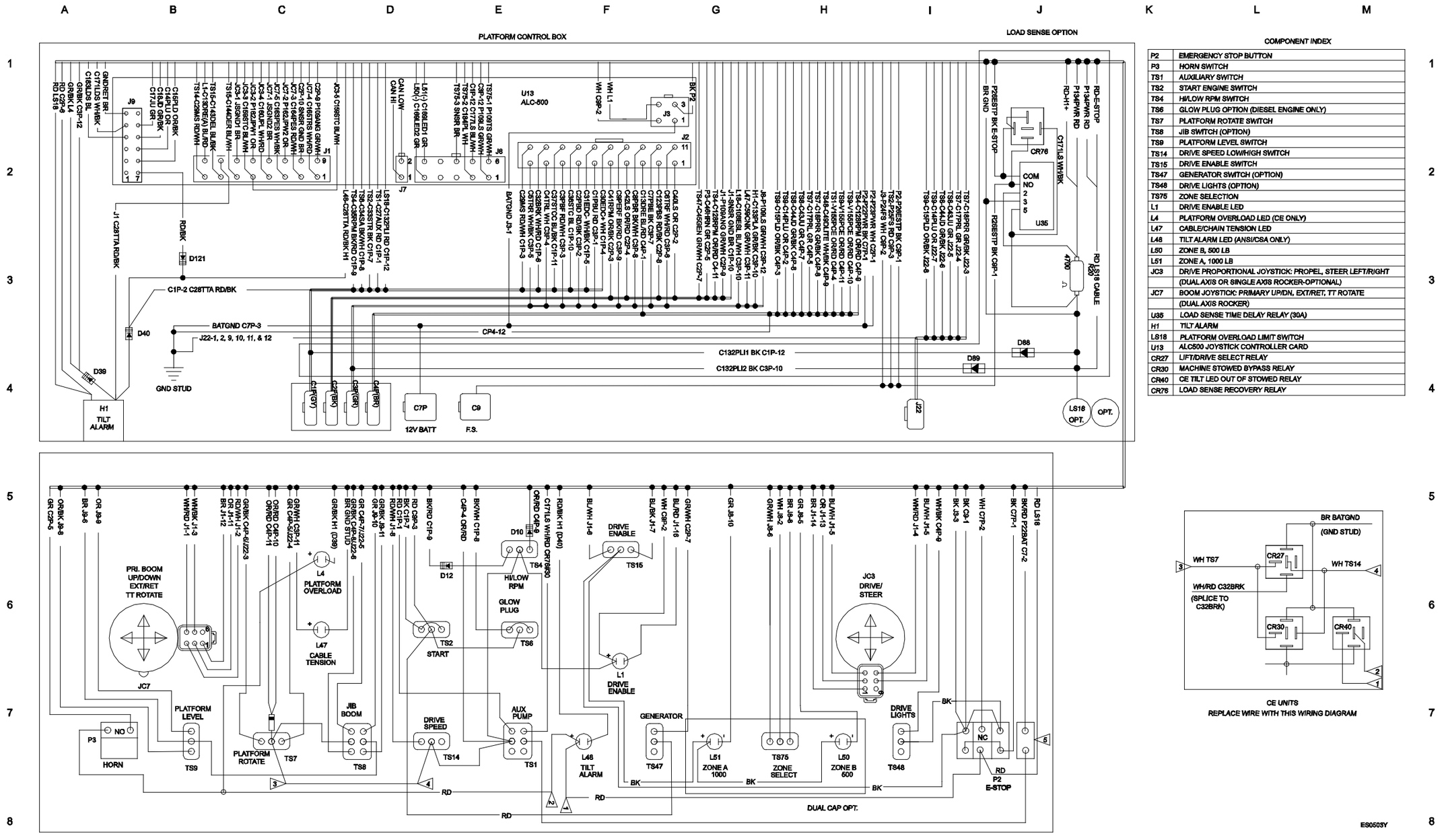
Perkins 404TD-22 Models (ANSI / CSA)



LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS54	ENGINE HIGH IDLE
TS56	GLOW PLUG
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS83	PRIMARY BOOM EXTEND/RETRACT
CB2	CIRCUIT BREAKER, CONTROLS, 15A
G6	HOUR METER
L2	CHECK ENGINE INDICATOR
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
R14(A)	TURNTABLE ROTATE SPEED LIMITING RESISTOR 5 OHMS
R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H8	LOAD SENSE ALARM (CE ONLY)
U1	IGNITION/START MODULE
U34	LOAD SENSE TIME DELAY RELAY (10A)
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
CR80	TELEMATICS ENGINE SHUTDOWN REALY
CR75	LEVEL SENSOR RELAY

Platform Control Box, S-80 • S-85

Perkins 404TD-22 Models (ANSI / CSA)



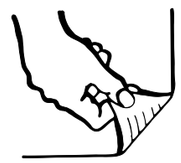
COMPONENT INDEX

P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
L1	DRIVE ENABLE LED
L4	PLATFORM OVERLOAD LED (CE ONLY)
L47	CABLE/CHAIN TENSION LED
L48	TILT ALARM LED (ANSI/CSA ONLY)
L50	ZONE B, 500 LB
L51	ZONE A, 1000 LB
JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT
	(DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE
	(DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD
CR27	LIFT/DRIVE SELECT RELAY
CR30	MACHINE STOWED BYPASS RELAY
CR40	CE TILT LED OUT OF STOWED RELAY
CR76	LOAD SENSE RECOVERY RELAY

Platform Control Box, S-80X - Perkins 404TD-22 Models (ANSI / CSA)

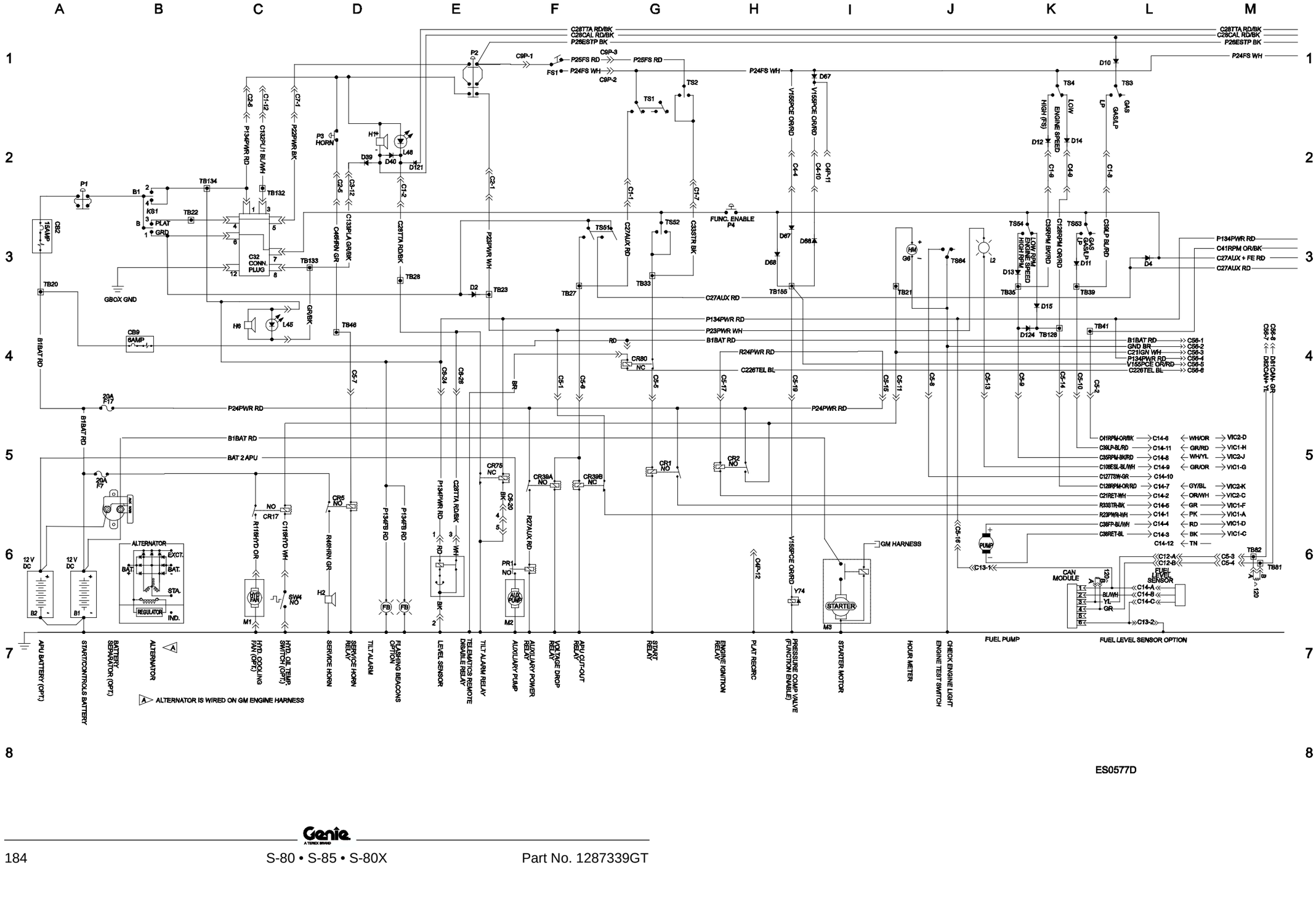


Electrical Schematic, S-80 • S-85 - GM 3.0L Models (ANSI / CSA)



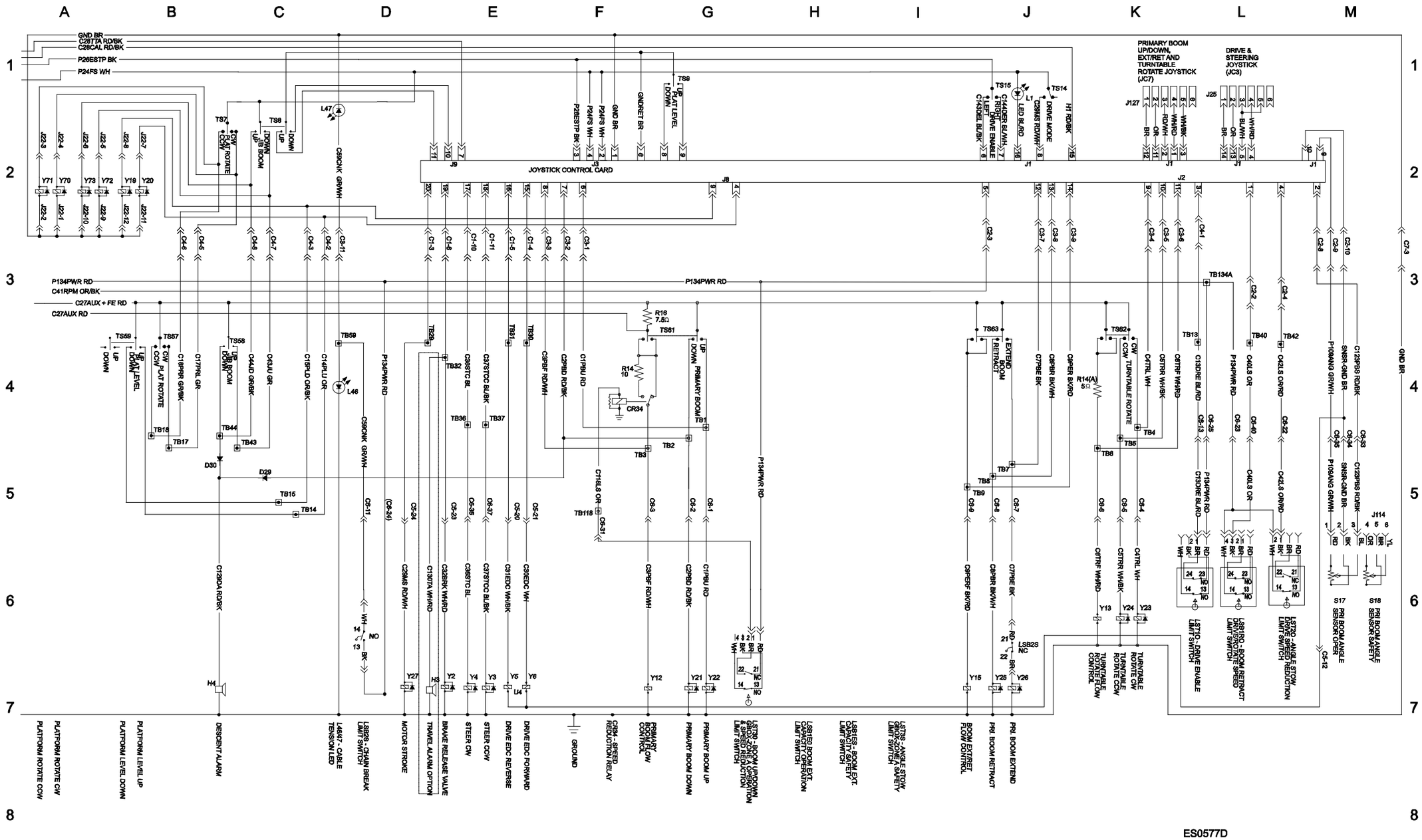
Electrical Schematic, S-80 • S-85

GM 3.0L Models (ANSI / CSA)

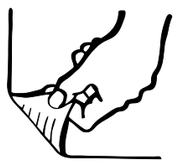


Electrical Schematic, S-80 • S-85

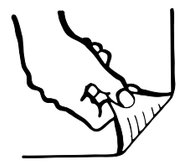
GM 3.0L Models (ANSI / CSA)



Electrical Schematic, S-80 • S-85 - GM 3.0L Models (ANSI / CSA)

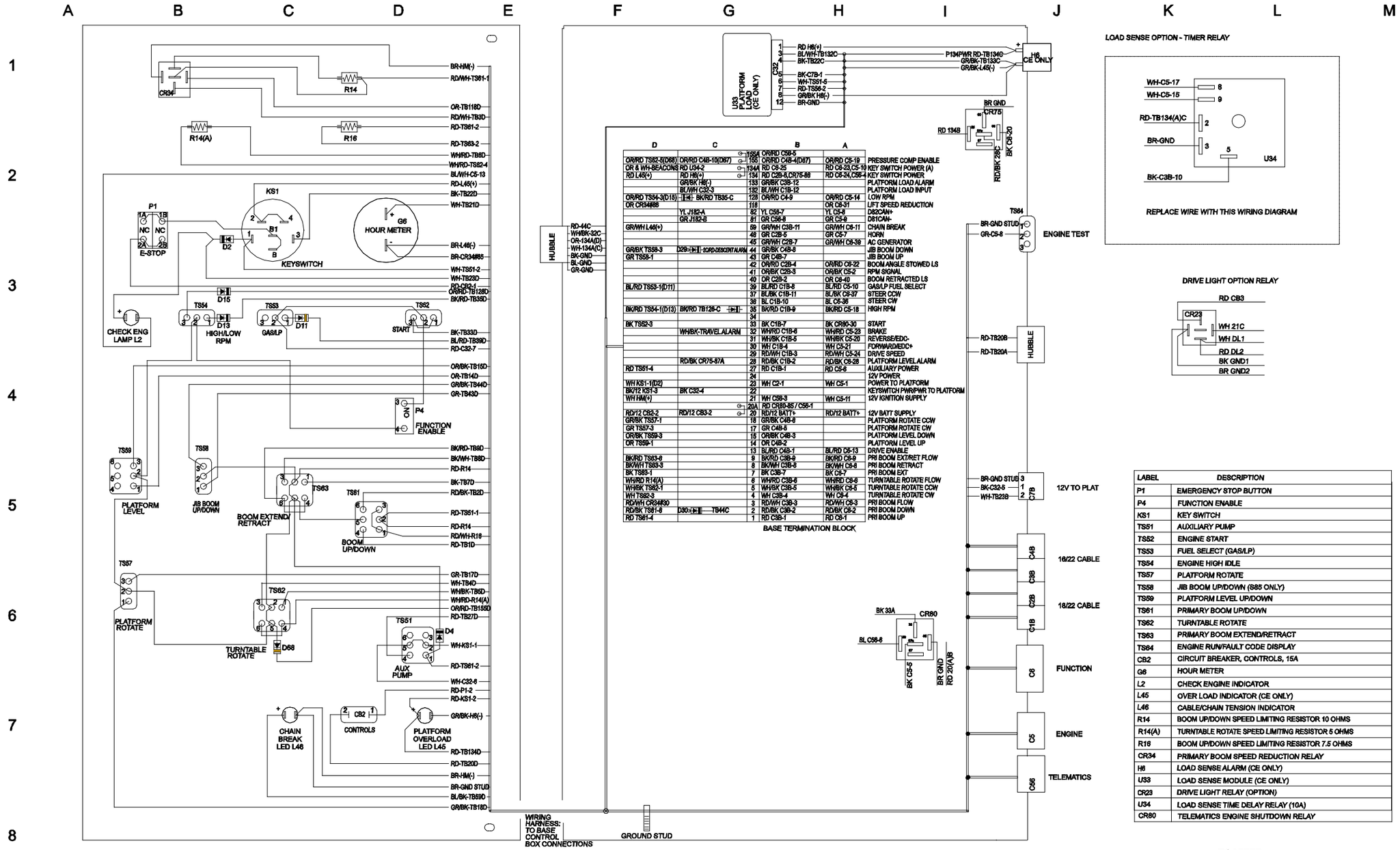


Ground Control Box, S-80 • S-85 - GM 3.0L Models (ANSI / CSA)



Ground Control Box, S-80 • S-85

GM 3.0L Models (ANSI / CSA)

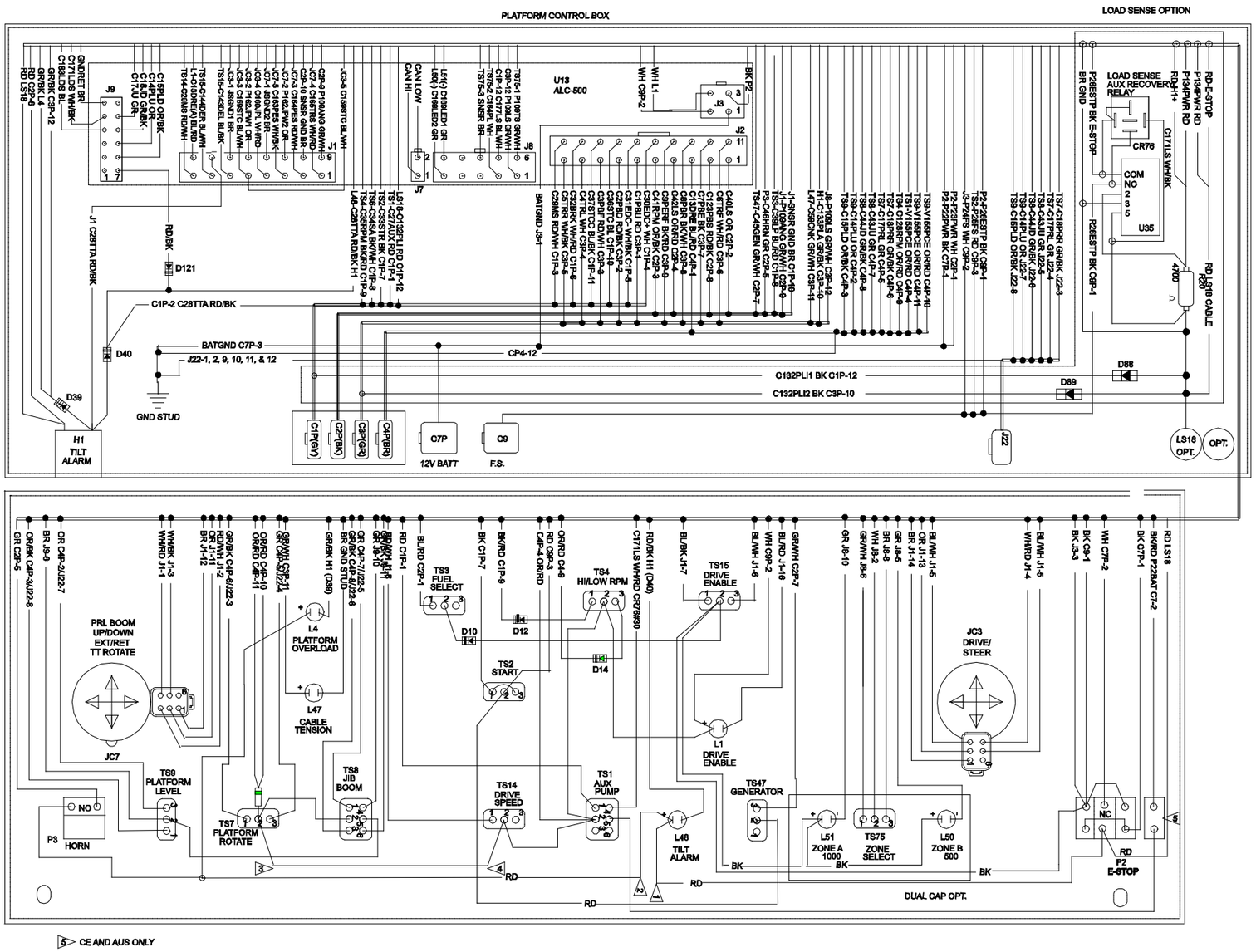


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS53	FUEL SELECT (GAS/LP)
TS54	ENGINE HIGH IDLE
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS63	PRIMARY BOOM EXTEND/RETRACT
TS64	ENGINE RUN/FAULT CODE DISPLAY
CB2	CIRCUIT BREAKER, CONTROLS, 15A
G6	HOUR METER
L2	CHECK ENGINE INDICATOR
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
R14(A)	TURNTABLE ROTATE SPEED LIMITING RESISTOR 5 OHMS
R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H6	LOAD SENSE ALARM (CE ONLY)
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
U34	LOAD SENSE TIME DELAY RELAY (10A)
CR80	TELEMATICS ENGINE SHUTDOWN RELAY

ES0577D

Platform Control Box, S-80 • S-85

GM 3.0L Models (ANSI / CSA)



COMPONENT INDEX

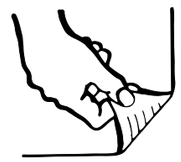
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
L1	DRIVE ENABLE LED
L4	PLATFORM OVERLOAD LED (CE ONLY)
L47	CABLE/CHAIN TENSION LED
L48	TILT ALARM LED (ANSI/CSA ONLY)
L50	ZONE B, 500 LB
L51	ZONE A, 1000 LB
JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT (DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE (DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD

ES0577D

Platform Control Box, S-80 • S-85 - GM 3.0L Models (ANSI / CSA)

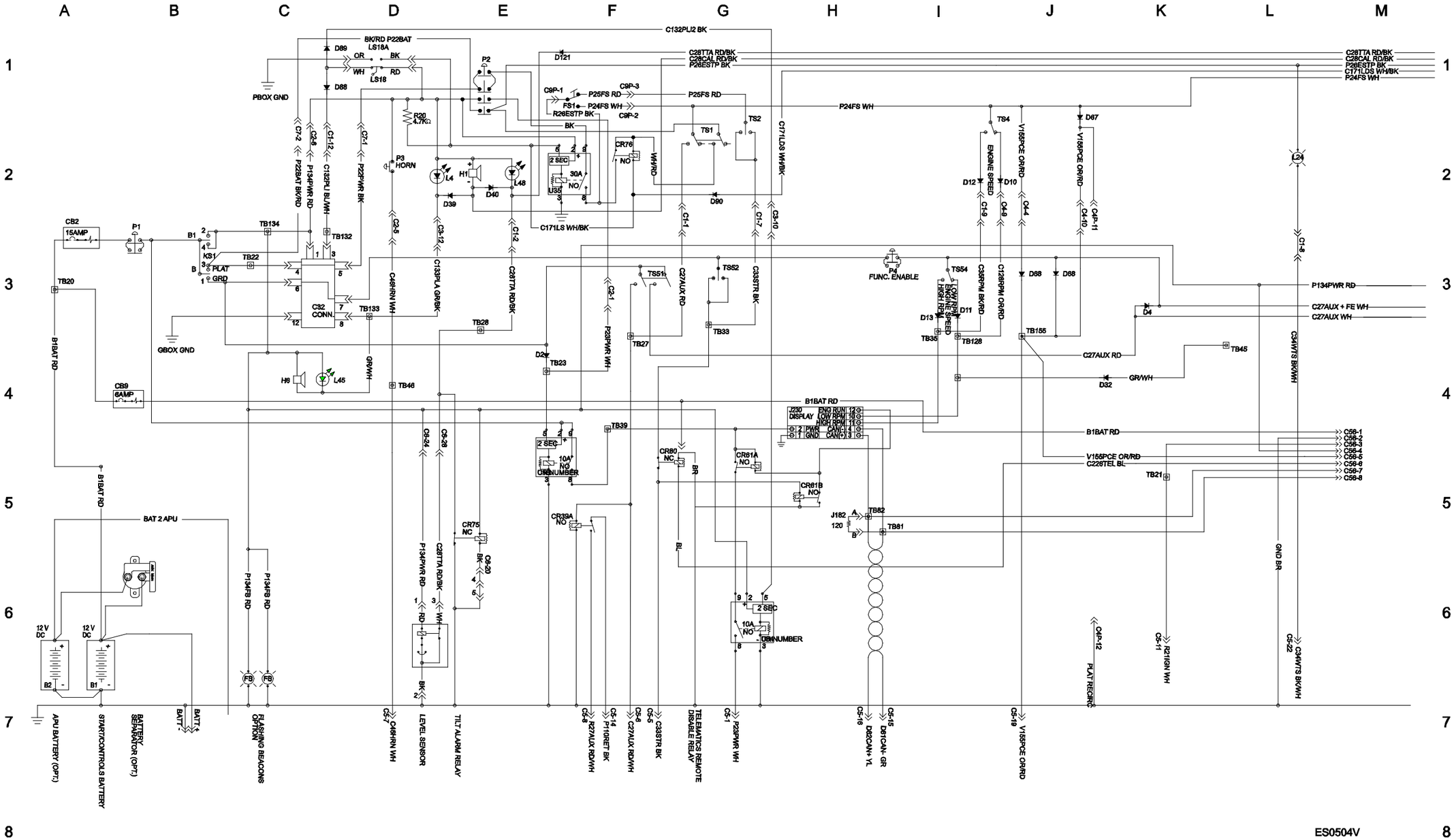


Electrical Schematic, S-80 • S-85 - Deutz TD2.9 L4 Models (CE)



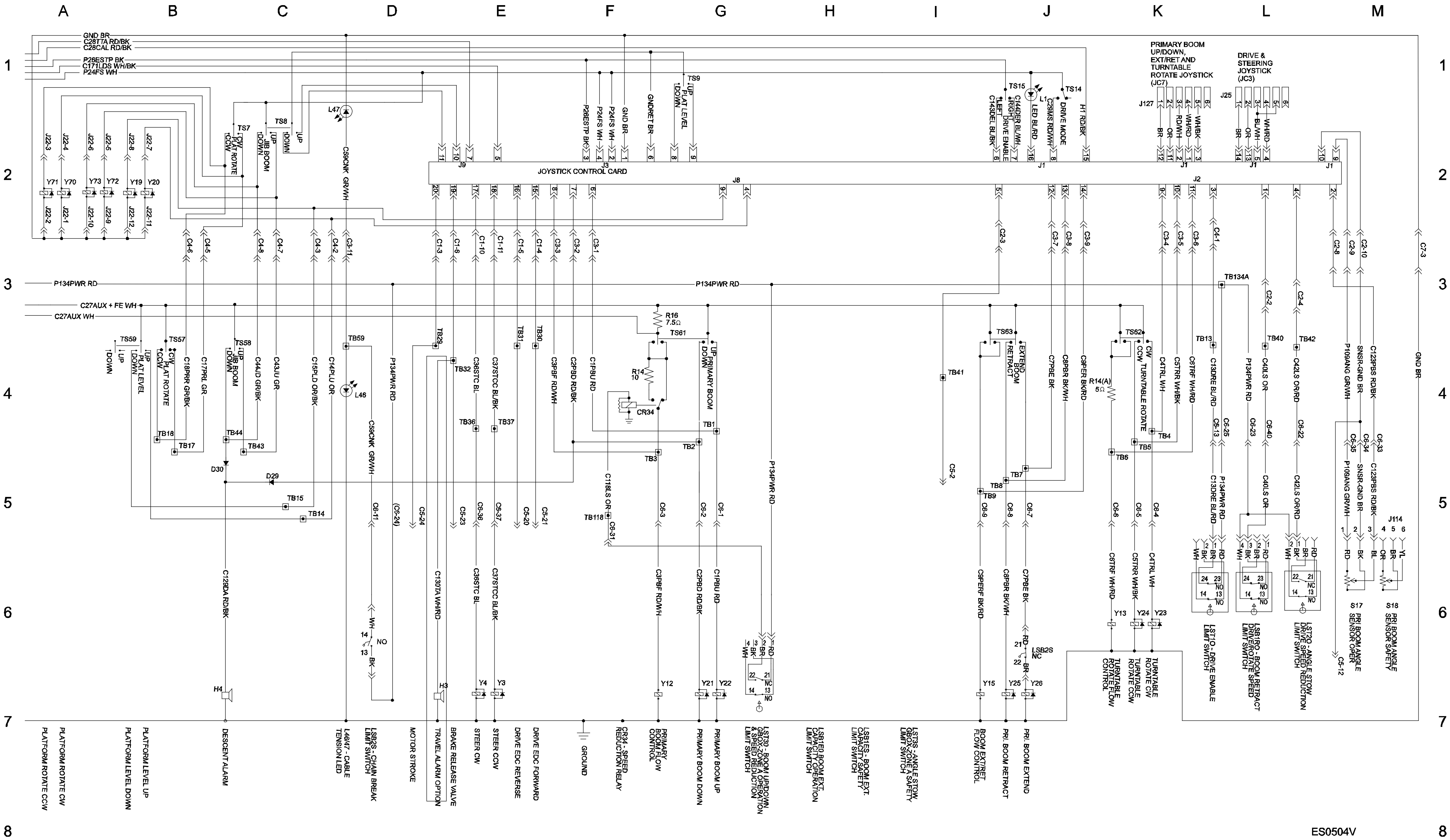
Electrical Schematic, S-80 • S-85

Deutz TD2.9 L4 Models (CE)



Electrical Schematic, S-80 • S-85

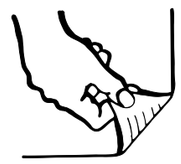
Deutz TD2.9 L4 Models (CE)



Electrical Schematic, S-80 • S-85 - Deutz TD2.9 L4 Models (CE)

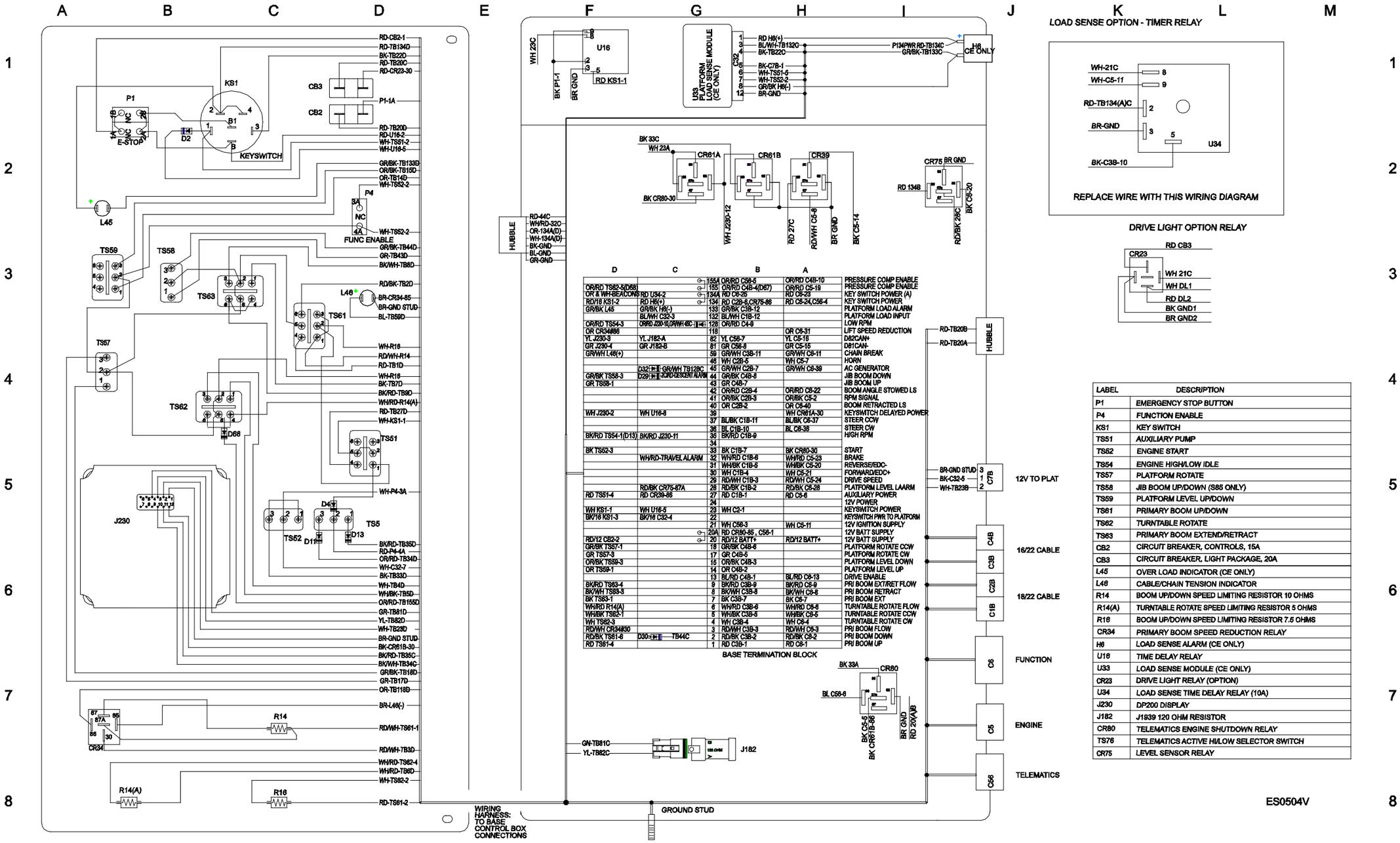


Ground Control Box, S-80 • S-85 - Deutz TD2011L04i Models (CE)



Ground Control Box, S-80 • S-85

Deutz TD2.9 L4 Models (CE)

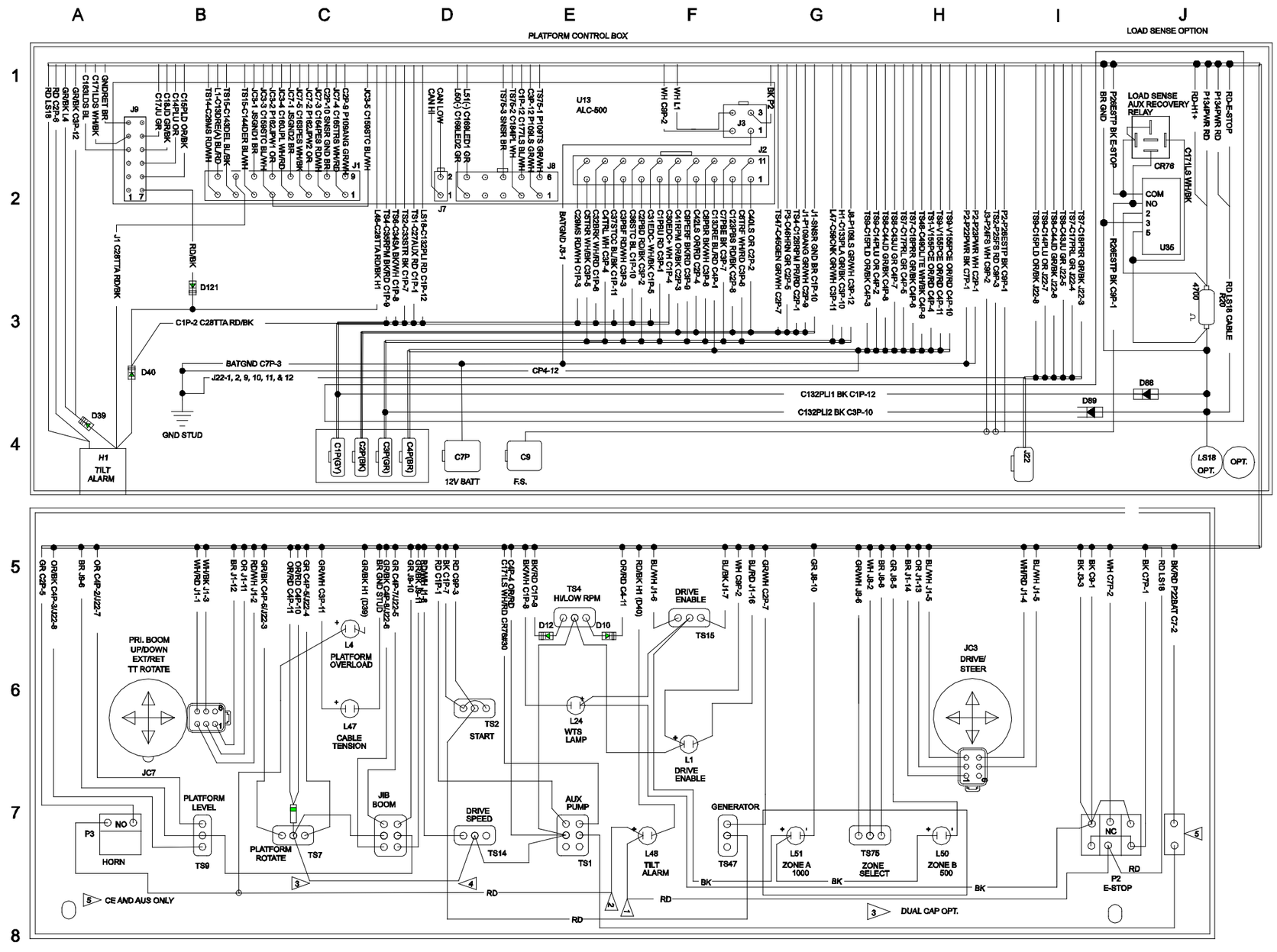


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS54	ENGINE HIGH/LOW IDLE
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS63	PRIMARY BOOM EXTEND/RETRACT
CB2	CIRCUIT BREAKER, CONTROLS, 15A
CB3	CIRCUIT BREAKER, LIGHT PACKAGE, 20A
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
R14(A)	TURNTABLE ROTATE SPEED LIMITING RESISTOR 5 OHMS
R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H6	LOAD SENSE ALARM (CE ONLY)
U16	TIME DELAY RELAY
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
U34	LOAD SENSE TIME DELAY RELAY (10A)
J230	DP200 DISPLAY
J182	J1939 120 OHM RESISTOR
CR80	TELEMATICS ENGINE SHUTDOWN RELAY
TS76	TELEMATICS ACTIVE HI/LOW SELECTOR SWITCH
CR75	LEVEL SENSOR RELAY

ES0504V

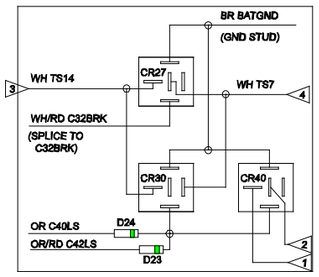
Platform Control Box, S-80 • S-85

Deutz TD2.9 L4 Models (CE)



COMPONENT INDEX

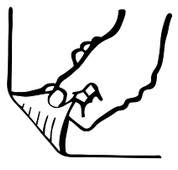
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
L1	DRIVE ENABLE LED
L4	PLATFORM OVERLOAD LED (CE ONLY)
L47	CABLE/CHAIN TENSION LED
L48	TILT ALARM LED (ANSI/CSA ONLY)
L50	ZONE B, 500 LB
L51	ZONE A, 1000 LB
JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT
	(DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE
	(DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD



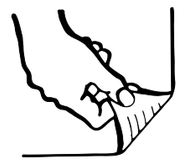
CE UNITS
REPLACE WIRE WITH THIS WIRING DIAGRAM

ES0504V

Platform Control Box, S-80 • S-85 - Deutz TD2011L04i Models (CE)

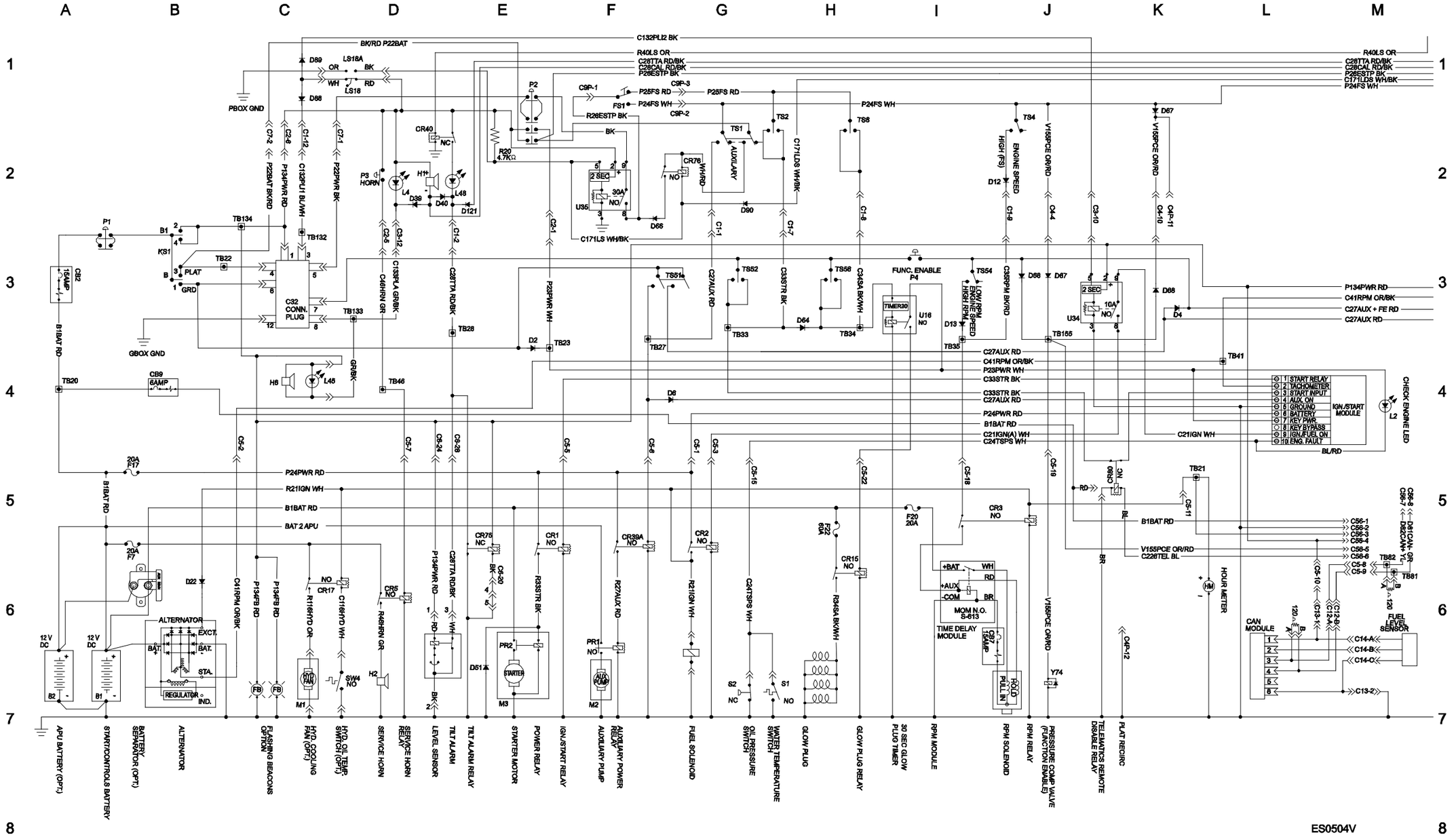


Electrical Schematic, S-80 • S-85 - Deutz TD2011L04i Models (CE)



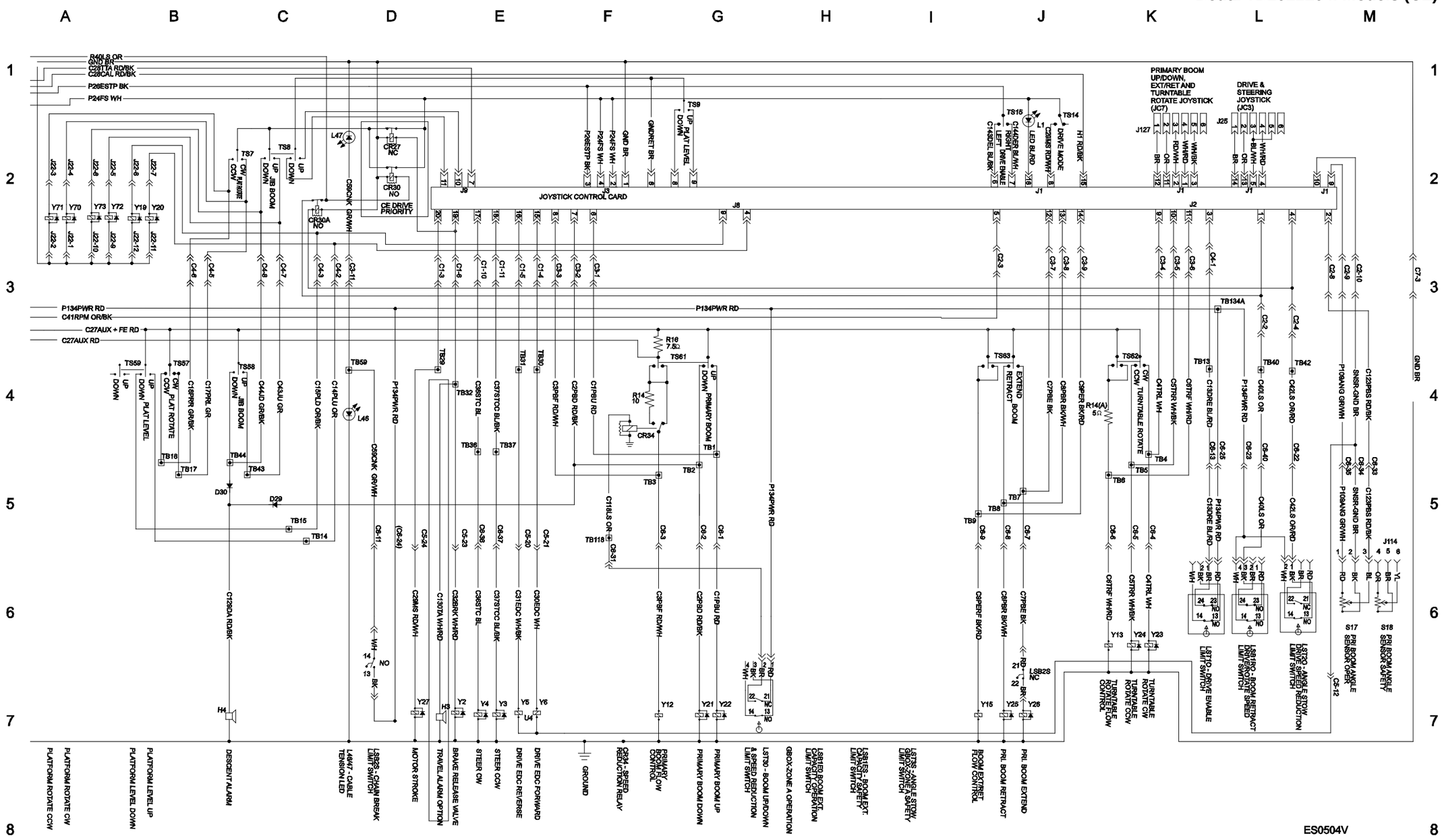
Electrical Schematic, S-80 • S-85

Deutz TD2011L04i Models (CE)

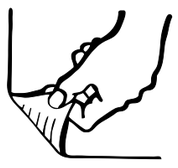


Electrical Schematic, S-80 • S-85

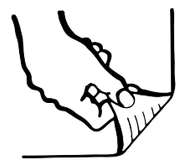
Deutz TD2011L04i Models (CE)



Electrical Schematic, S-80 • S-85 - Deutz TD2011L04i Models (CE)

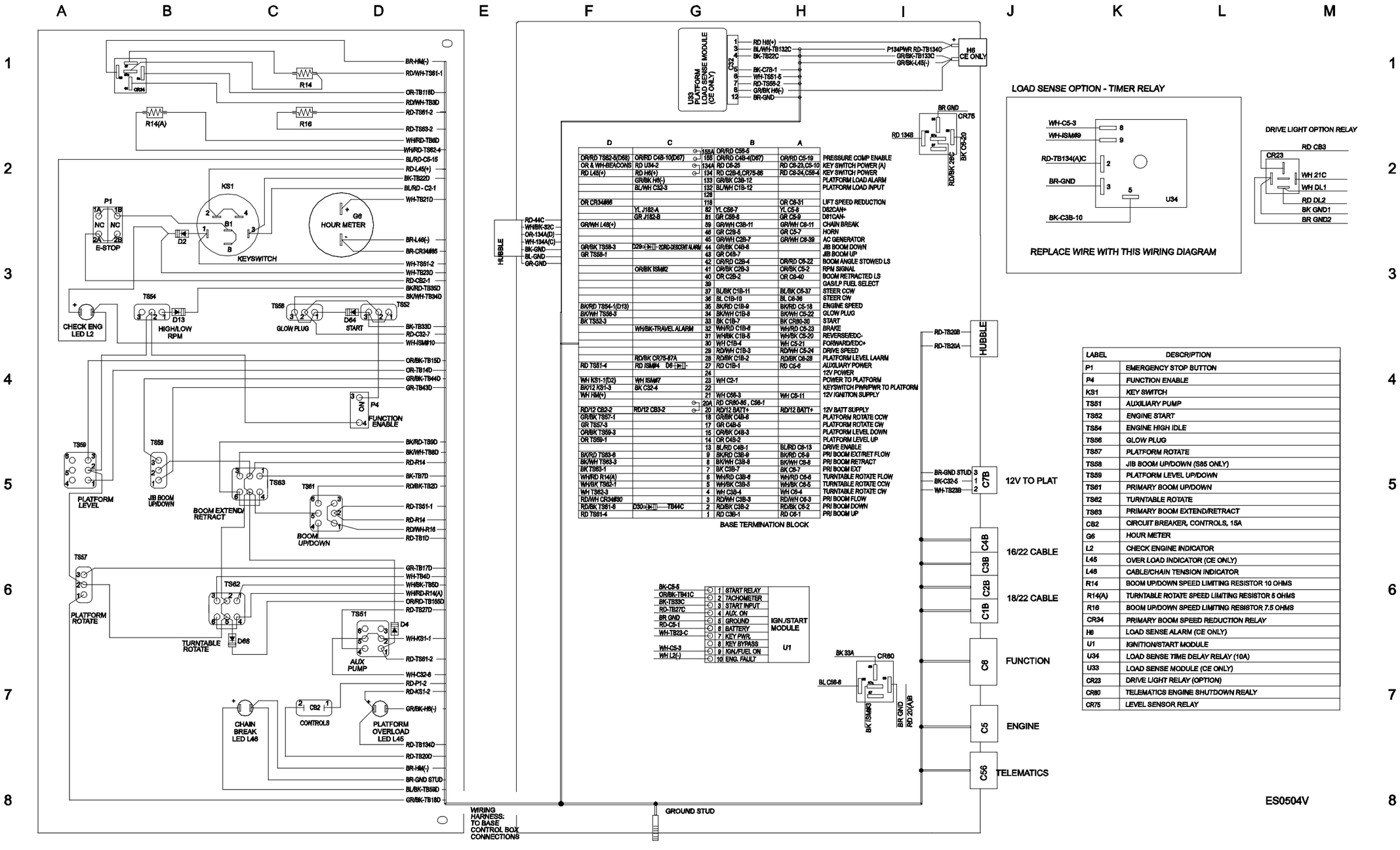


Ground Control Box, S-80 • S-85 - Deutz TD2011L04i Models (CE)



Ground Control Box, S-80 • S-85

Deutz TD2011L04i Models (CE)

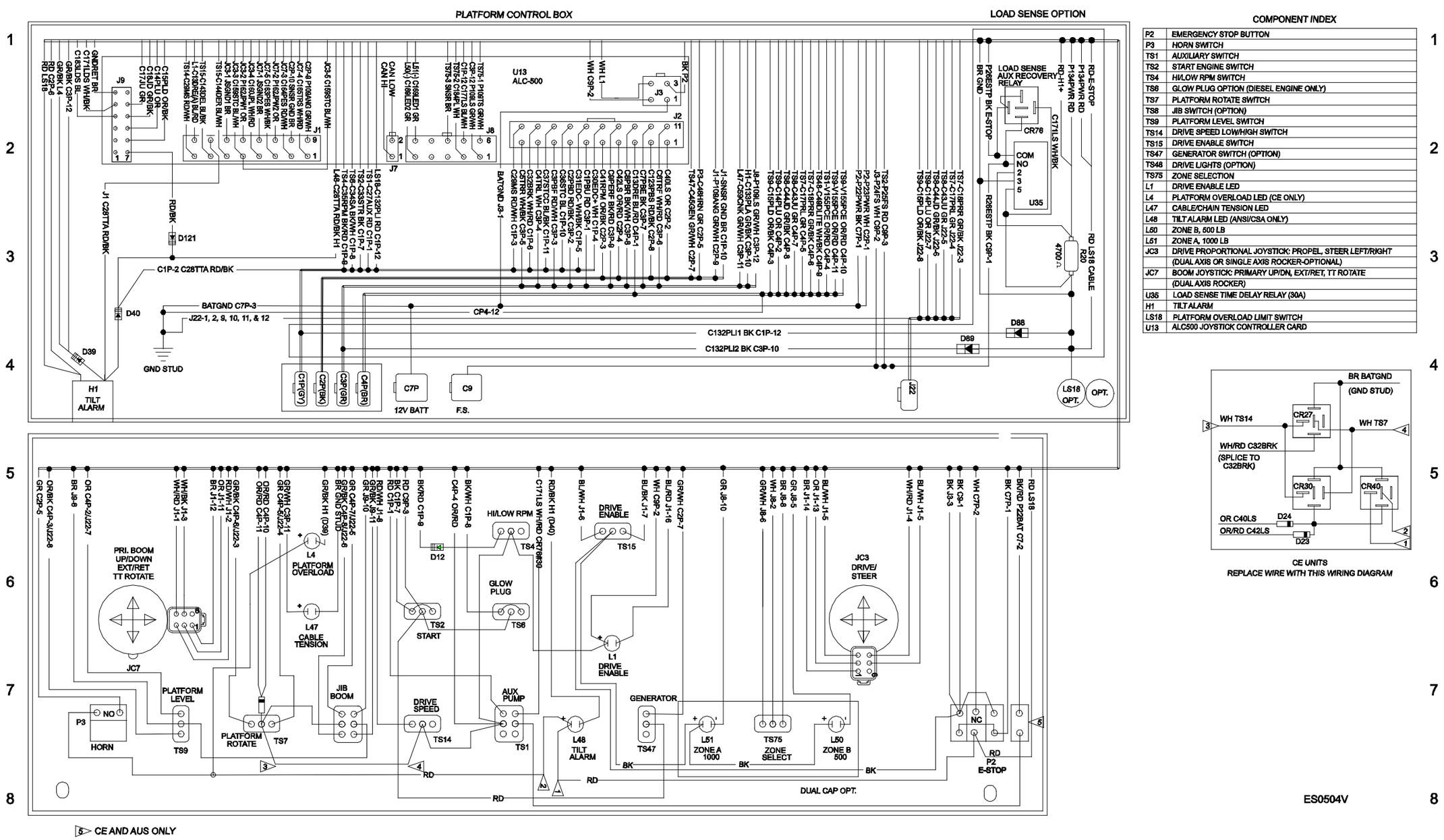


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS54	ENGINE HIGH IDLE
TS56	GLOW PLUG
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS63	PRIMARY BOOM EXTEND/RETRACT
CB2	CIRCUIT BREAKER, CONTROLS, 15A
G6	HOUR METER
L2	CHECK ENGINE INDICATOR
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
R14(A)	TURNTABLE ROTATE SPEED LIMITING RESISTOR 5 OHMS
R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H8	LOAD SENSE ALARM (CE ONLY)
U1	IGNITION/START MODULE
U34	LOAD SENSE TIME DELAY RELAY (10A)
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
CR80	TELEMATICS ENGINE SHUTDOWN REALY
CR75	LEVEL SENSOR RELAY

ES0504V

Platform Control Box, S-80 • S-85

Deutz TD2011L04i Models (CE)



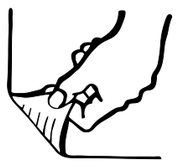
COMPONENT INDEX

P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
L1	DRIVE ENABLE LED
L4	PLATFORM OVERLOAD LED (CE ONLY)
L47	CABLE/CHAIN TENSION LED
L48	TILT ALARM LED (ANSI/CSA ONLY)
L50	ZONE B, 500 LB
L51	ZONE A, 1000 LB
JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT
	(DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE
	(DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD

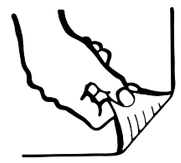
CE UNITS
REPLACE WIRE WITH THIS WIRING DIAGRAM

ES0504V

Platform Control Box, S-80 • S-85 - Deutz TD2011L04i Models (CE)

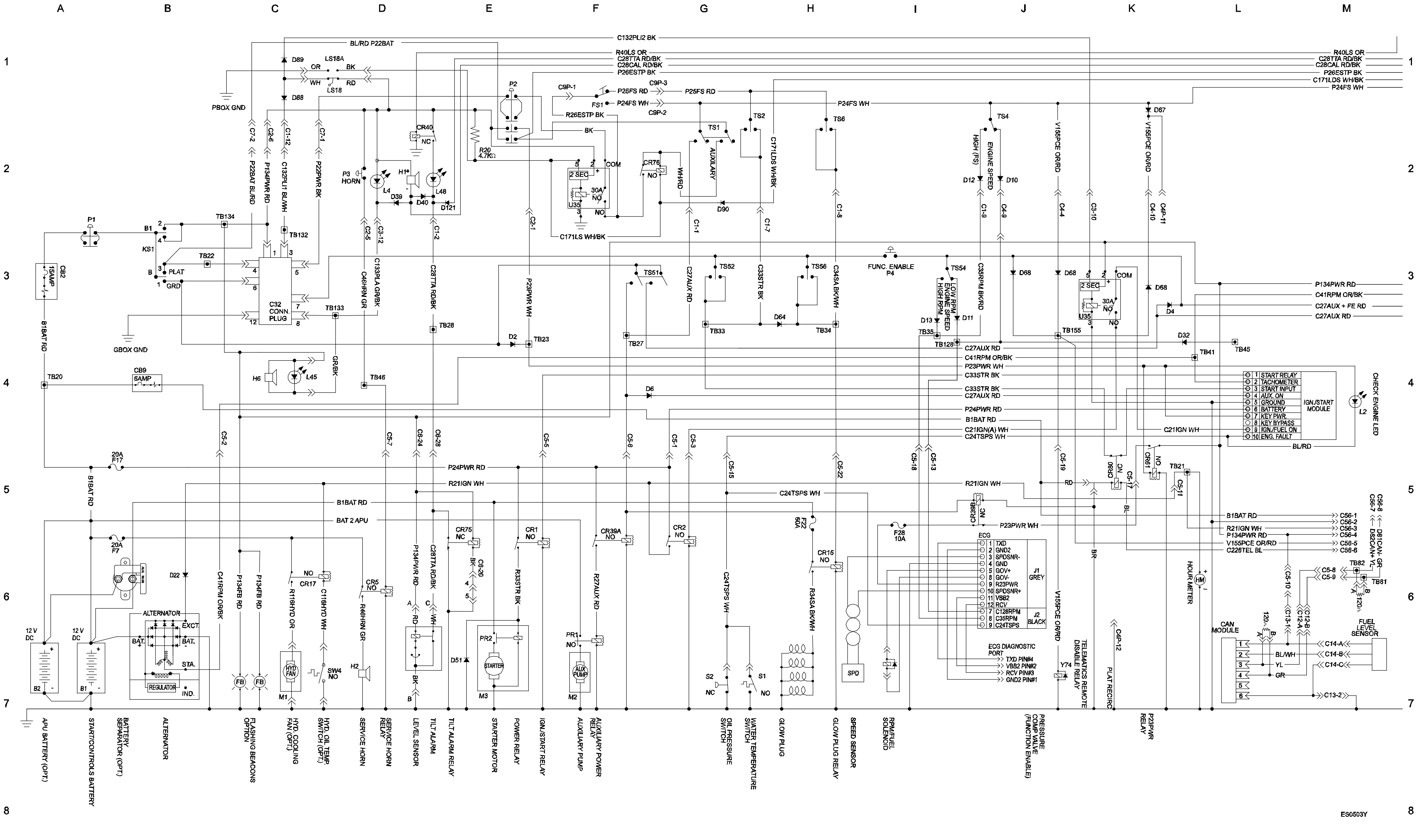


Electrical Schematic, S-80 • S-85 - Perkins 404TD-22 Models (CE)



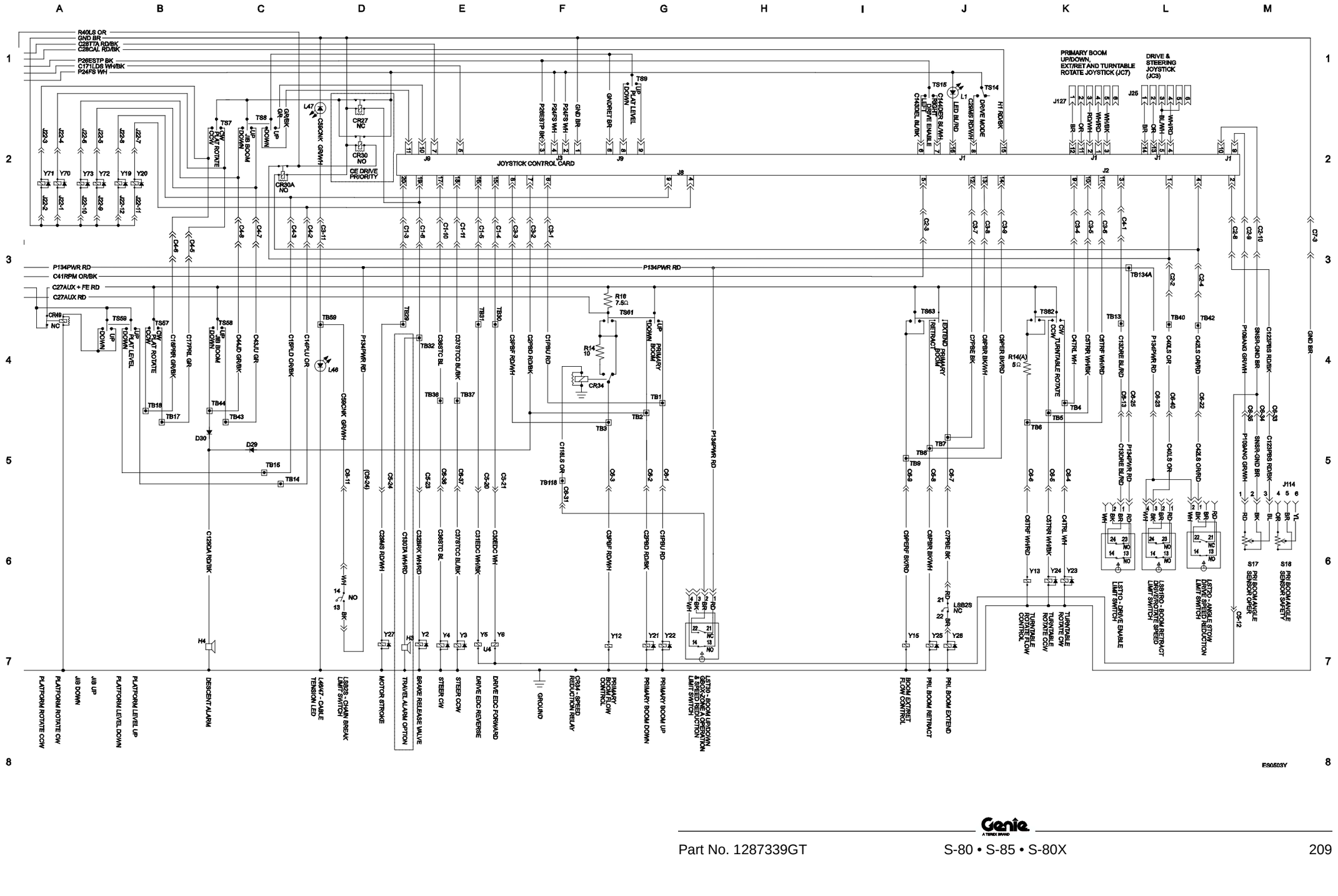
Electrical Schematic, S-80 • S-85

Perkins 404TD-22 Models (CE)

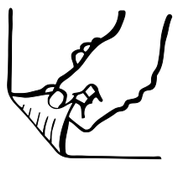


Electrical Schematic, S-80 • S-85

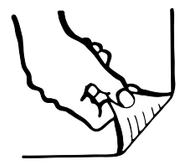
Perkins 404TD-22 Models (CE)



Electrical Schematic, S-80 • S-85 - Perkins 404TD-22 Models (CE)

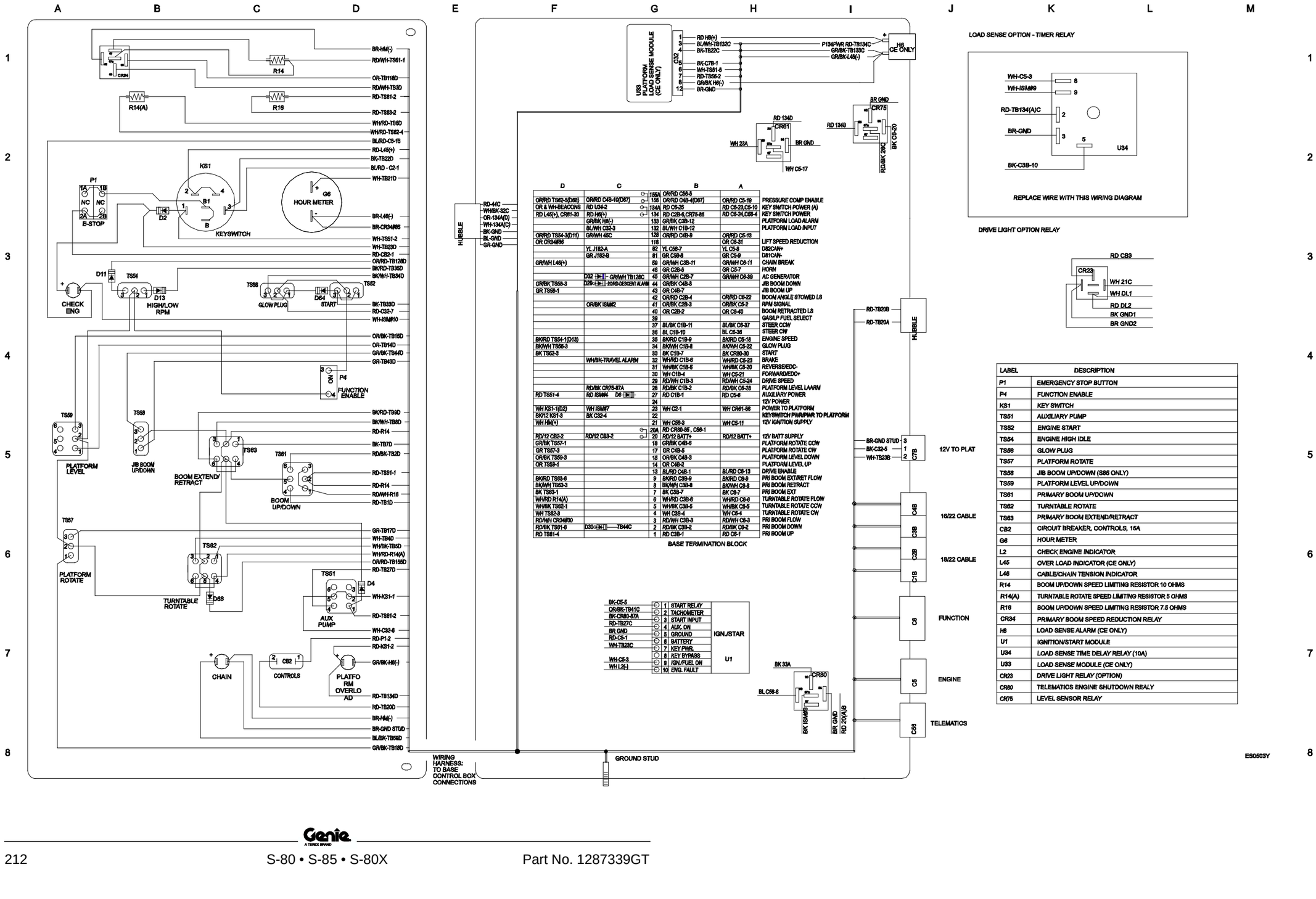


Ground Control Box, S-80 • S-85 - Perkins 404TD-22 Models (CE)



Ground Control Box, S-80 • S-85

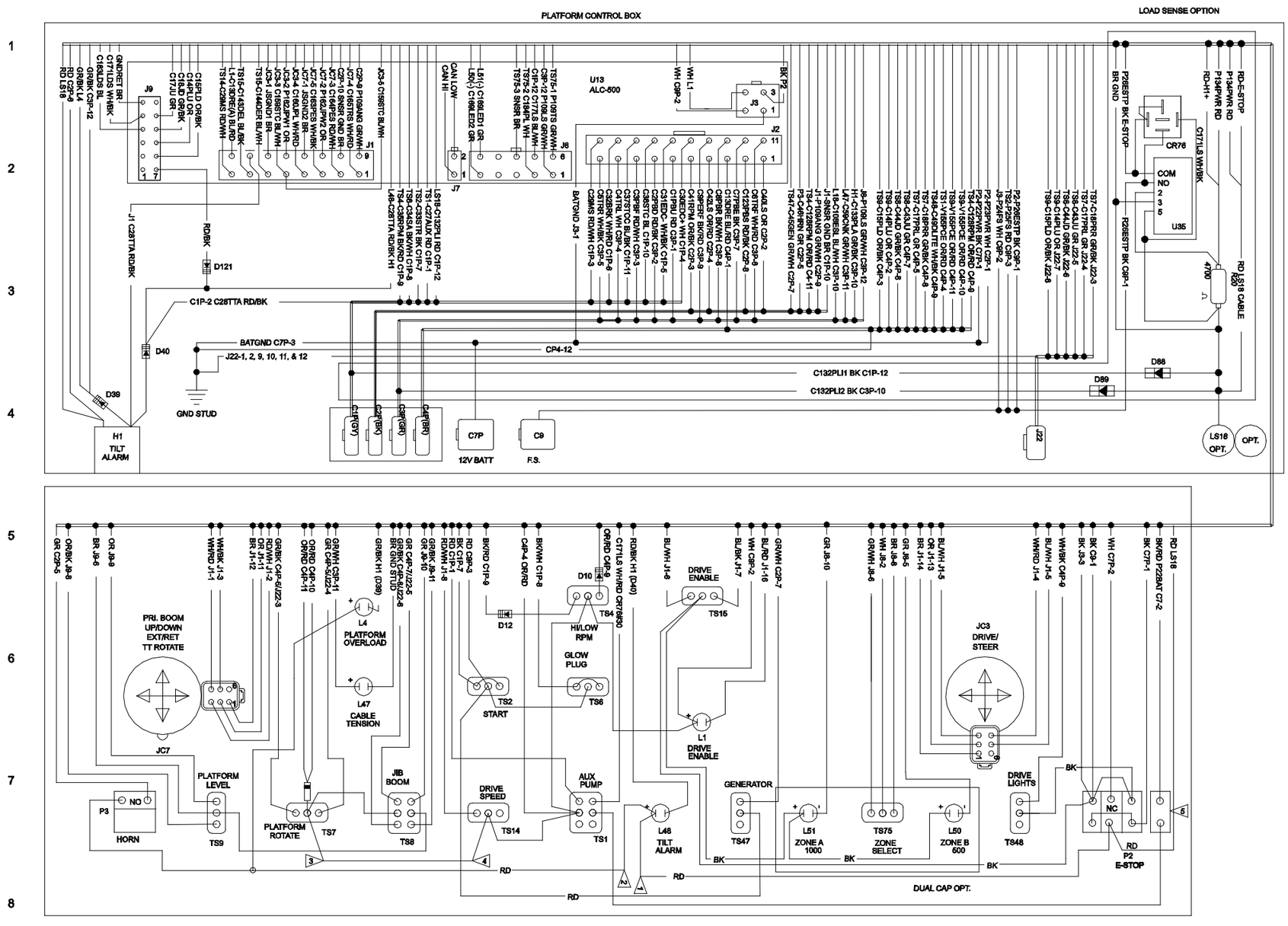
Perkins 404TD-22 Models (CE)



LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS54	ENGINE HIGH IDLE
TS56	GLOW PLUG
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS63	PRIMARY BOOM EXTEND/RETRACT
CB2	CIRCUIT BREAKER, CONTROLS, 15A
G6	HOUR METER
L2	CHECK ENGINE INDICATOR
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
R14(A)	TURNTABLE ROTATE SPEED LIMITING RESISTOR 5 OHMS
R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H6	LOAD SENSE ALARM (CE ONLY)
U1	IGNITION/START MODULE
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
CR80	TELEMATICS ENGINE SHUTDOWN REALY
CR75	LEVEL SENSOR RELAY

Platform Control Box, S-80 • S-85

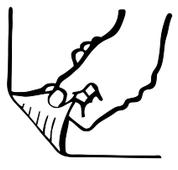
Perkins 404TD-22 Models (CE)



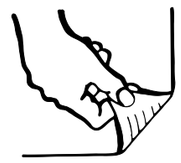
COMPONENT INDEX

P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
L1	DRIVE ENABLE LED
L4	PLATFORM OVERLOAD LED (CE ONLY)
L47	CABLE/CHAIN TENSION LED
L48	TILT ALARM LED (ANSI/CSA ONLY)
L50	ZONE B, 500 LB
L51	ZONE A, 1000 LB
JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT
	(DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE
	(DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD
CR27	LIFT/DRIVE SELECT RELAY
CR30	MACHINE STOWED BYPASS RELAY
CR40	CE TILT LED OUT OF STOWED RELAY
CR76	LOAD SENSE RECOVERY RELAY

Platform Control Box, S-80 • S-85 - Perkins 404TD-22 Models (CE)

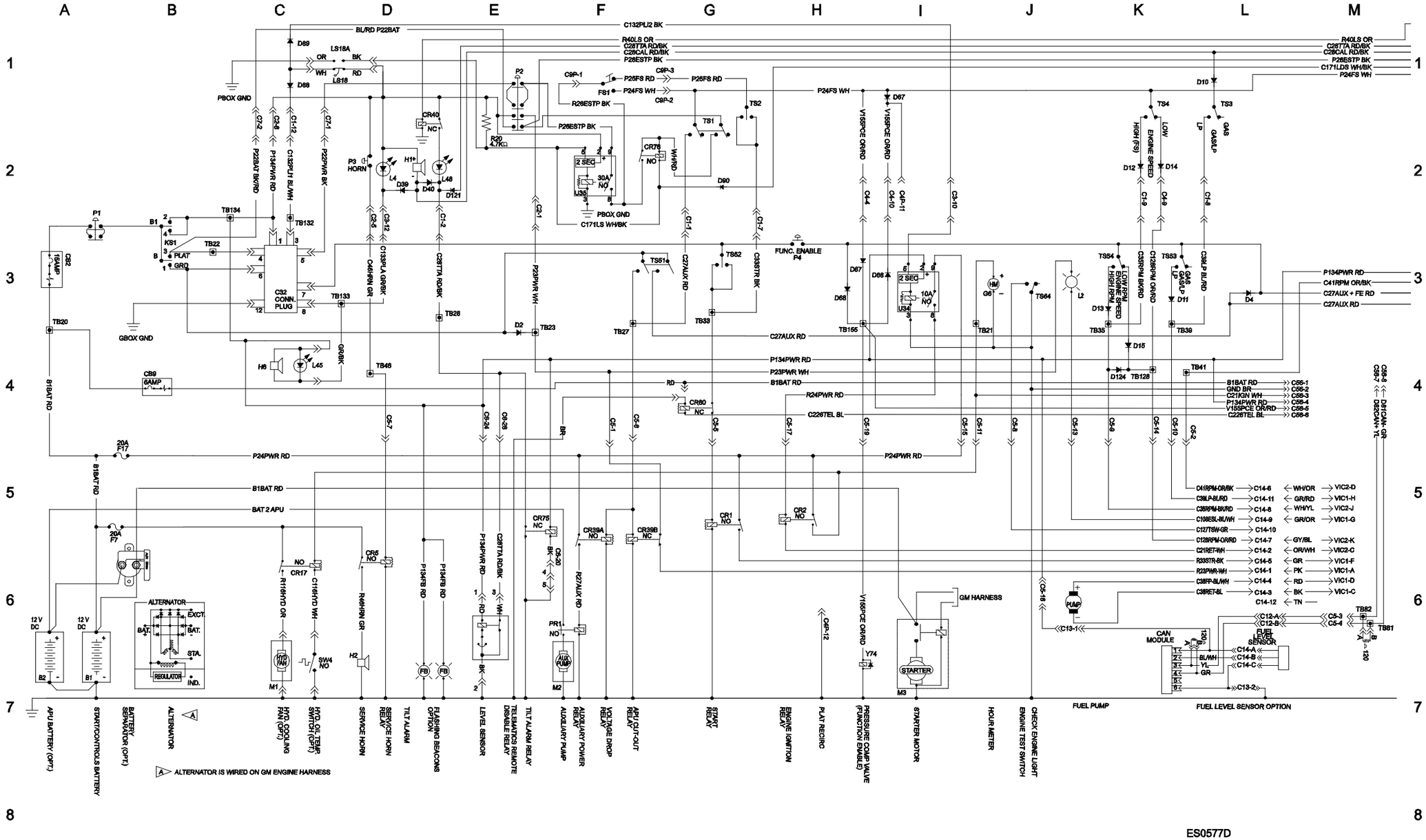


Electrical Schematic, S-80 • S-85 - GM 3.0L Models (CE)



Electrical Schematic, S-80 • S-85

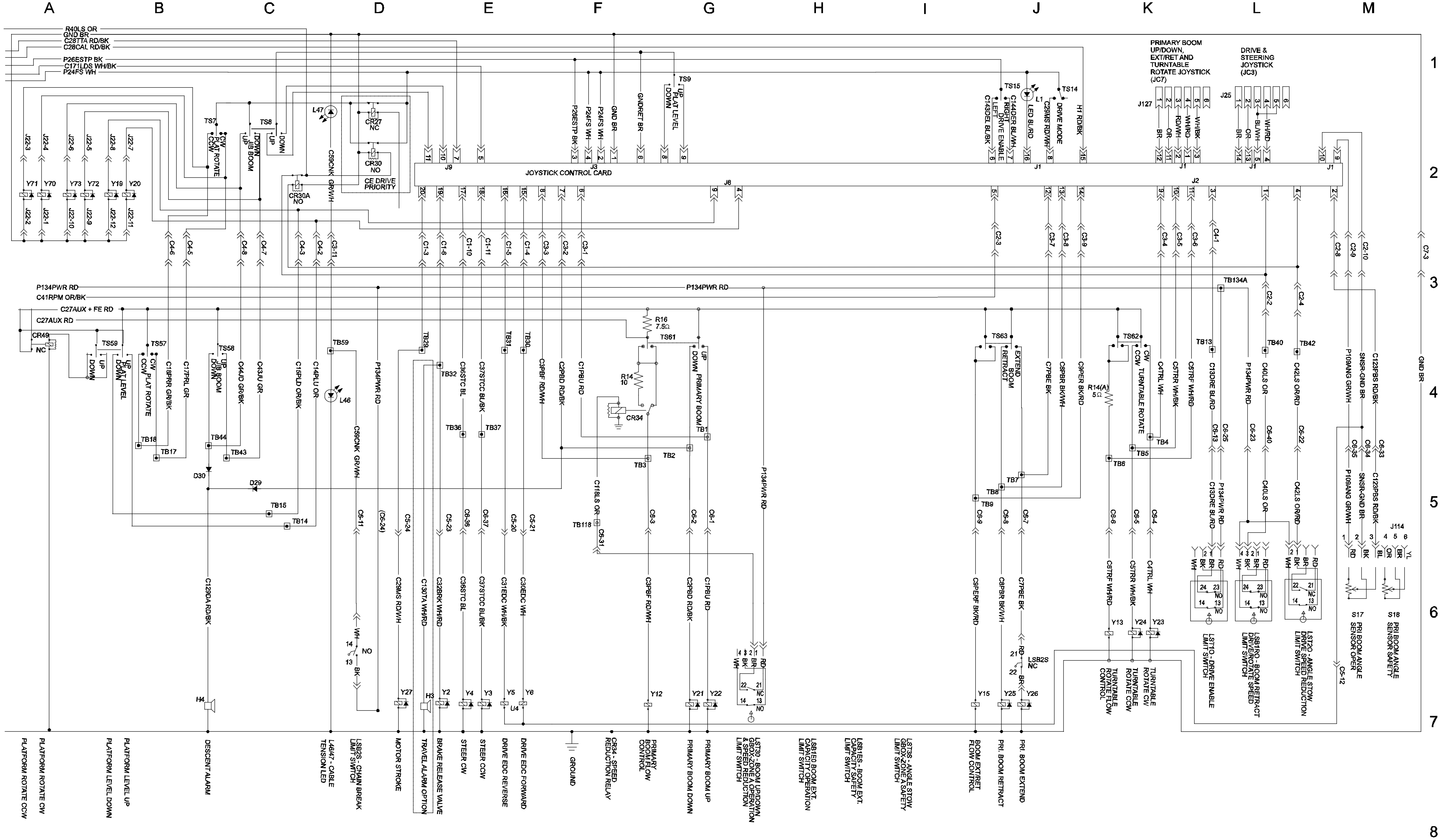
GM 3.0L Models (CE)



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Electrical Schematic, S-80 • S-85

GM 3.0L Models (CE)

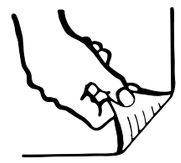


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Electrical Schematic, S-80 • S-85 - GM 3.0L Models (CE)

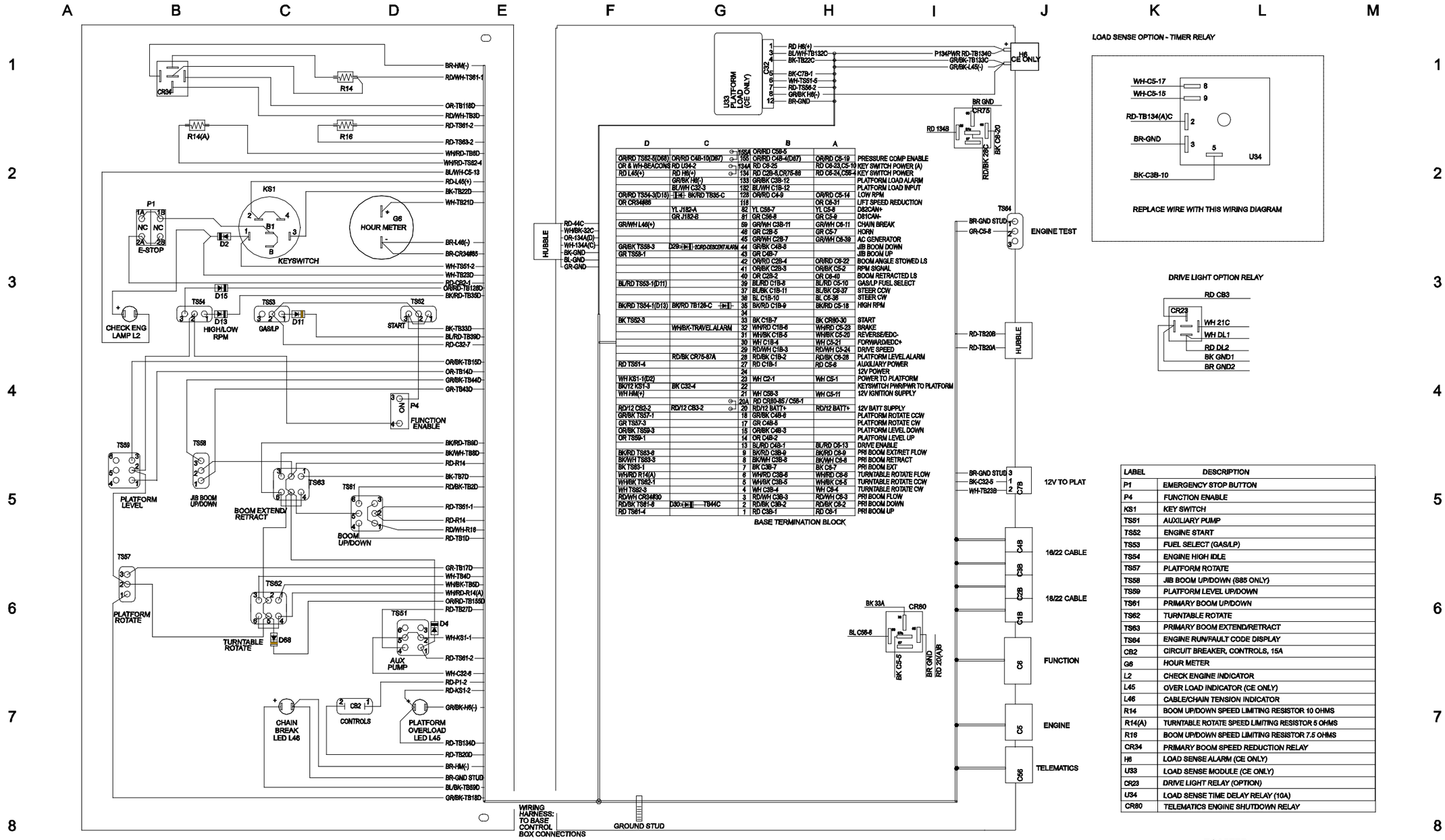


Ground Control Box, S-80 • S-85 - GM 3.0L Models (CE)



Ground Control Box, S-80 • S-85

GM 3.0L Models (CE)



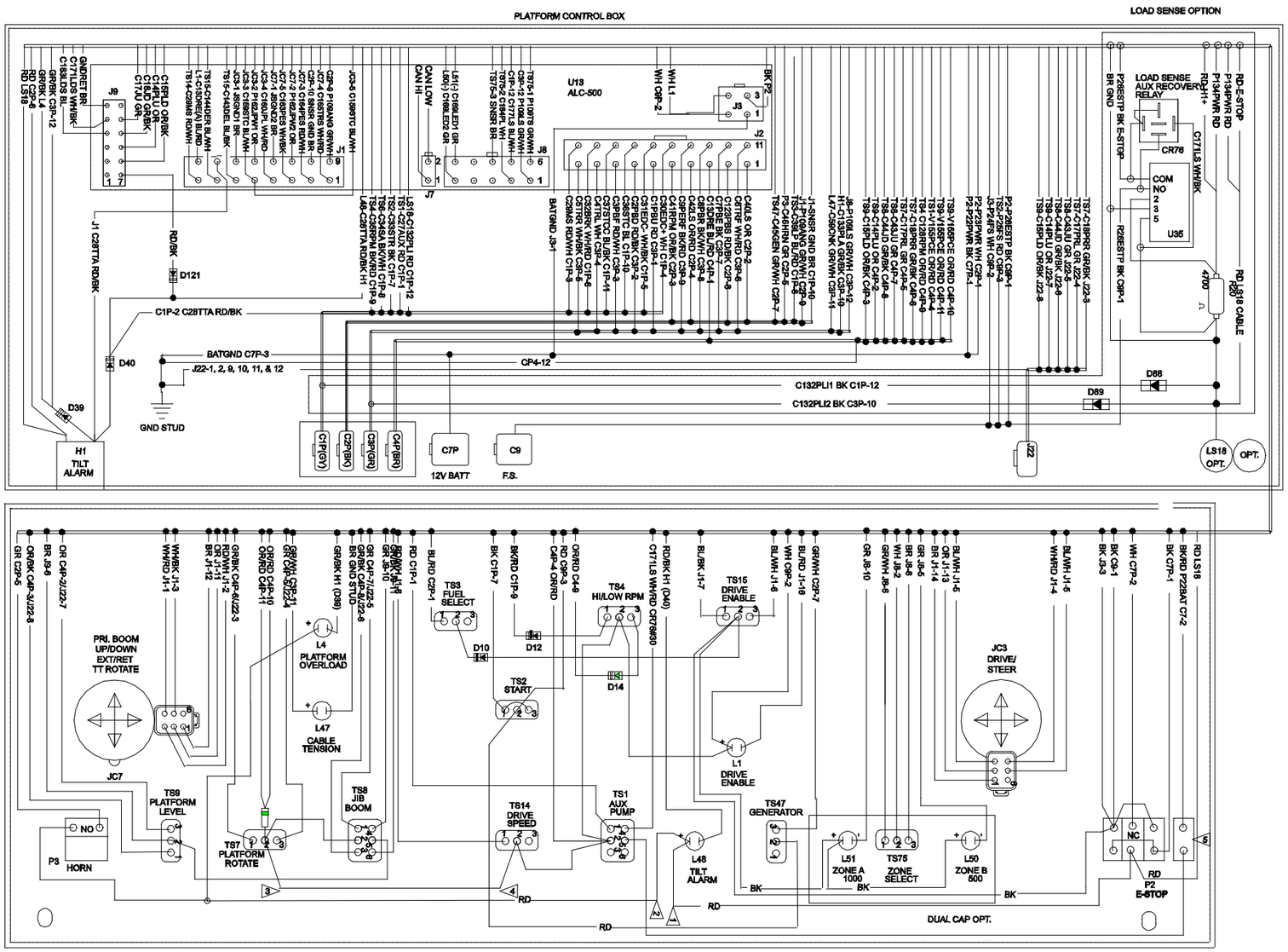
D	C		B	A	
		155A	OR/RD C58-4		
OR/RD TS82-5(D68)	OR/RD C4B-10(D87)	155	OR/RD C4B-4(D87)	OR/RD C5-19	PRESSURE COMP ENABLE
OR & WH-BEACONS	RD U34-2	134A	RD C8-25	RD C8-23,C5-19	KEY SWITCH POWER (A)
RD L45(+)	RD H6(+)	134	RD C2B-8,CR75-86	RD C5-24,C58-4	KEY SWITCH POWER
	GR/BK H6(-)	133	GR/BK C3B-12		PLATFORM LOAD ALARM
	BL/WH C32-3	132	BL/WH C1B-12		PLATFORM LOAD INPUT
OR/RD TS54-3(D18)	BK/RD TB35-C	128	OR/RD C4-9	OR/RD C5-14	LOW RPM
OR CR34/85		118		OR C8-31	LIFT SPEED REDUCTION
	YL J182-A	82	YL C58-7	YL C5-8	D82CAN+
	GR J182-B	81	GR C58-8	GR C5-9	D81CAN-
GR/WH L46(+)		59	GR/WH C3B-11	GR/WH C8-11	CHAIN BREAK
		48	GR C2B-5	GR C5-7	HORN
		45	GR/WH C2B-7	GR/WH C8-39	AC GENERATOR
GR/BK TS58-3	D29 2GRD-DESCENT ALARM	44	GR/BK C4B-8		JIB BOOM DOWN
GR TS58-1		43	GR C4B-7		JIB BOOM UP
		42	OR/RD C2B-4	OR/RD C8-22	BOOM ANGLE STOWED LS
		41	OR/BK C2B-3	OR/BK C5-2	RPM SIGNAL
		40	OR C2B-2	OR C8-40	BOOM RETRACTED LS
BL/RD TS53-1(D11)		39	BL/RD C1B-8	BL/RD C5-10	GAS/LP FUEL SELECT
		37	BL/BK C1B-11	BL/BK C8-37	STEER CCW
		36	BL C1B-10	BL C5-36	STEER CW
BK/RD TS54-1(D13)	BK/RD TB126-C	35	BK/RD C1B-9	BK/RD C5-18	HIGH RPM
		34			
BK TS52-3		33	BK C1B-7	BK CR80-30	START
	WH/BK-TRAVEL ALARM	32	WH/RD C1B-6	WH/RD C5-23	BRAKE
		31	WH/BK C1B-5	WH/BK C5-20	REVERSE/EDC-
		30	WH C1B-4	WH C5-21	FORWARD/EDC+
		29	RD/WH C1B-3	RD/WH C5-24	DRIVE SPEED
	RD/BK CR75-87A	28	RD/BK C1B-2	RD/BK C5-28	PLATFORM LEVEL ALARM
RD TS51-4		27	RD C1B-1	RD C5-6	AUXILIARY POWER
		24			12V POWER
WH K51-1(D2)		23	WH C2-1	WH C5-1	POWER TO PLATFORM
BK/12 KS1-3	BK C32-4	22			KEYSWITCH PWR/PWR TO PLATFORM
WH HM(+)		21	WH C58-3	WH C5-11	12V IGNITION SUPPLY
		20A	RD CR80-85 / C58-1		
RD/12 CB2-2	RD/12 CB3-2	20	RD/12 BATT+	RD/12 BATT+	12V BATT SUPPLY
GR/BK TS57-1		18	GR/BK C4B-8		PLATFORM ROTATE CCW
GR TS57-3		17	GR C4B-5		PLATFORM ROTATE CW
OR/BK TS59-3		15	OR/BK C4B-3		PLATFORM LEVEL DOWN
OR TS59-1		14	OR C4B-2		PLATFORM LEVEL UP
		13	BL/RD C4B-1	BL/RD C5-13	DRIVE ENABLE
BK/RD TS63-6		9	BK/RD C3B-9	BK/RD C5-9	PRI BOOM EXT/RET FLOW
BK/WH TS63-3		8	BK/WH C3B-8	BK/WH C5-8	PRI BOOM RETRACT
BK TS65-1		7	BK C3B-7	BK C5-7	PRI BOOM EXT
WH/RD R14(A)		6	WH/RD C3B-6	WH/RD C5-6	TURNTABLE ROTATE FLOW
WH/BK TS62-1		5	WH/BK C3B-5	WH/BK C5-5	TURNTABLE ROTATE CCW
WH TS62-3		4	WH C3B-4	WH C5-4	TURNTABLE ROTATE CW
RD/WH CR34/30		3	RD/WH C3B-3	RD/WH C5-3	PRI BOOM FLOW
RD/BK TS61-6	D30 TB44C	2	RD/BK C3B-2	RD/BK C5-2	PRI BOOM DOWN
RD TS61-4		1	RD C3B-1	RD C5-1	PRI BOOM UP

LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS53	FUEL SELECT (GAS/LP)
TS54	ENGINE HIGH IDLE
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS63	PRIMARY BOOM EXTEND/RETRACT
TS64	ENGINE RUN/FAULT CODE DISPLAY
CB2	CIRCUIT BREAKER, CONTROLS, 15A
G6	HOUR METER
L2	CHECK ENGINE INDICATOR
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
R14(A)	TURNTABLE ROTATE SPEED LIMITING RESISTOR 5 OHMS
R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H6	LOAD SENSE ALARM (CE ONLY)
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
U34	LOAD SENSE TIME DELAY RELAY (10A)
CR80	TELEMATICS ENGINE SHUTDOWN RELAY

ES0577D

Platform Control Box, S-80 • S-85

GM 3.0L Models (CE)



COMPONENT INDEX

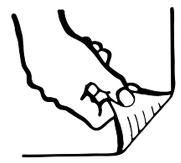
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
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L48	TILT ALARM LED (ANSI/CSA ONLY)
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JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT (DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE (DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD

ES0577D

Platform Control Box, S-80 • S-85 - GM 3.0L Models (CE)

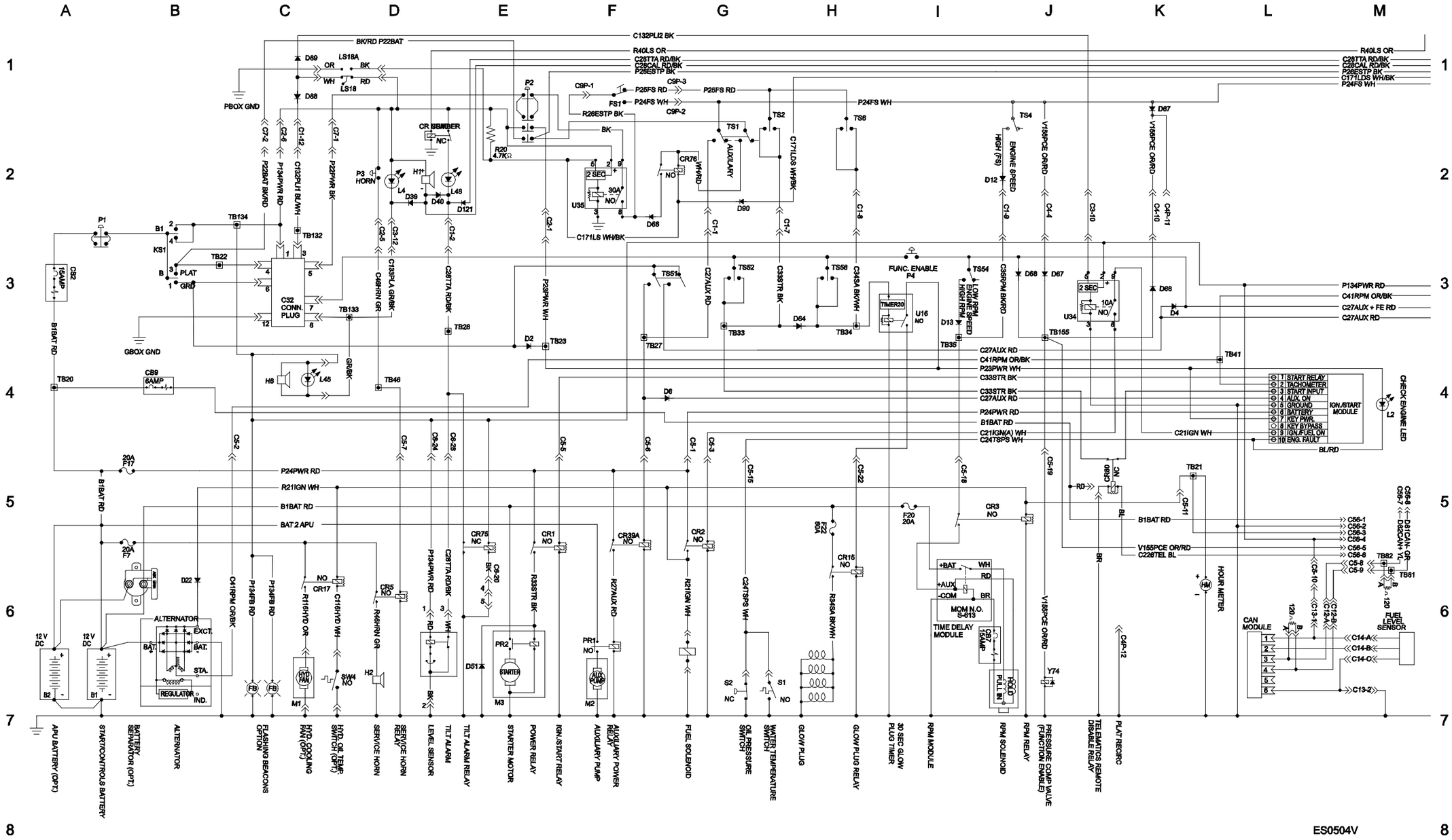


Electrical Schematic, S-80 • S-85 - Deutz TD2011L04i Models (AS)



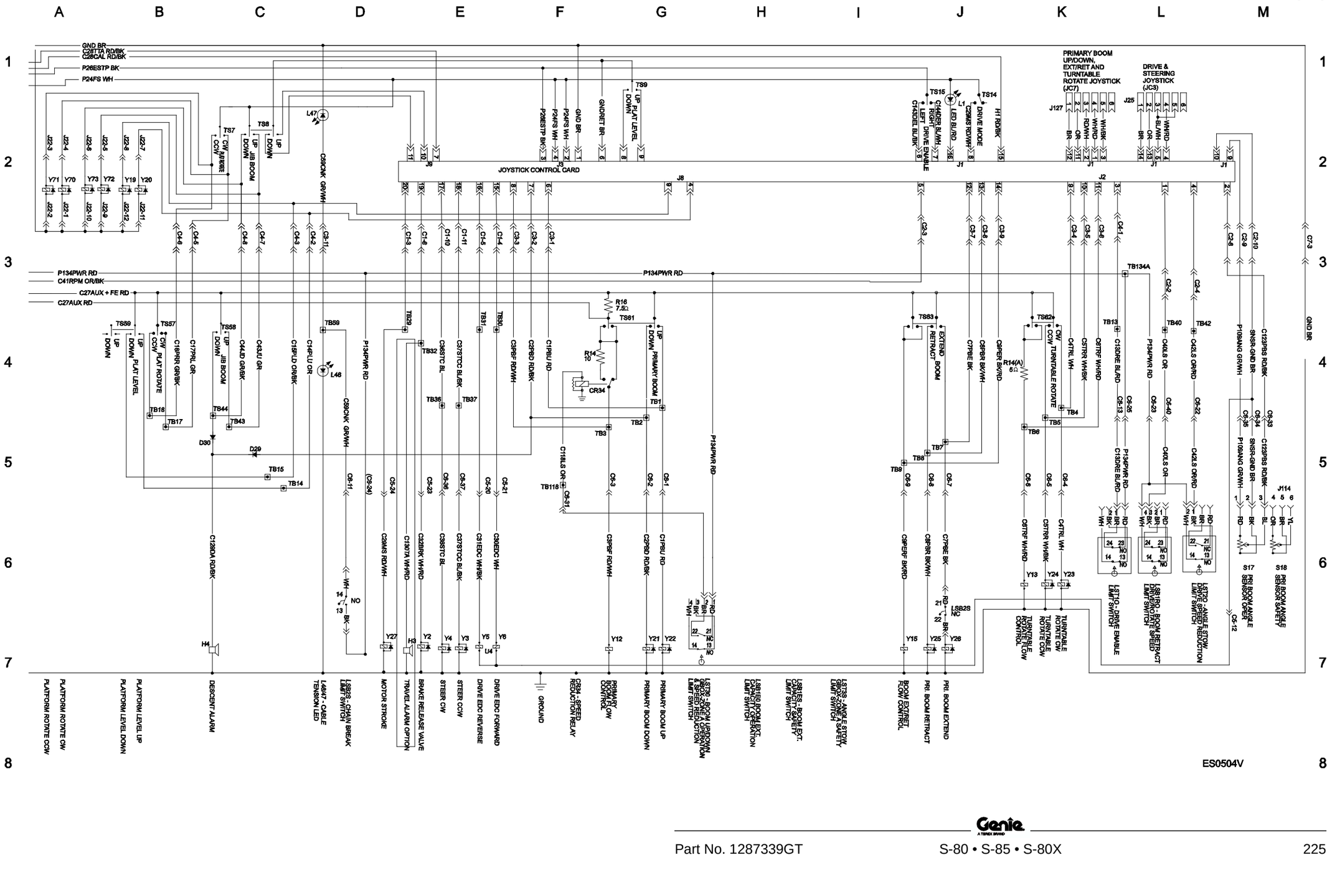
Electrical Schematic, S-80 • S-85

Deutz TD2011L04i Models (AS)

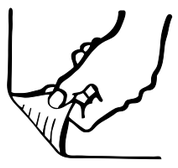


Electrical Schematic, S-80 • S-85

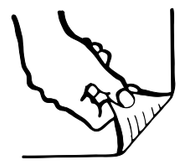
Deutz TD2011L04i Models (AS)



Electrical Schematic, S-80 • S-85 - Deutz TD2011L04i Models (AS)

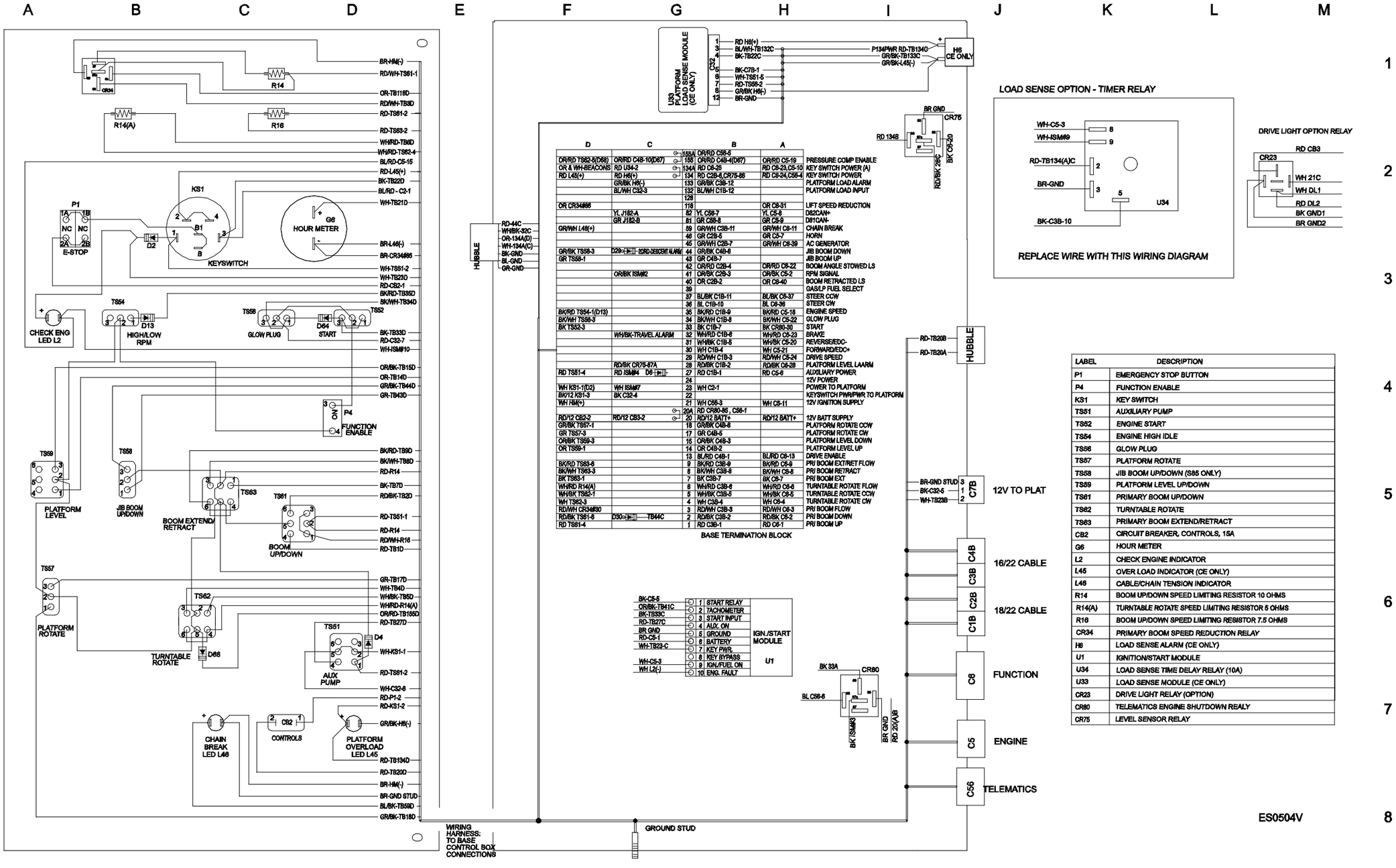


Ground Control Box, S-80 • S-85 - Deutz TD2011L04i Models (AS)



Ground Control Box, S-80 • S-85

Deutz TD2011L04i Models (AS)

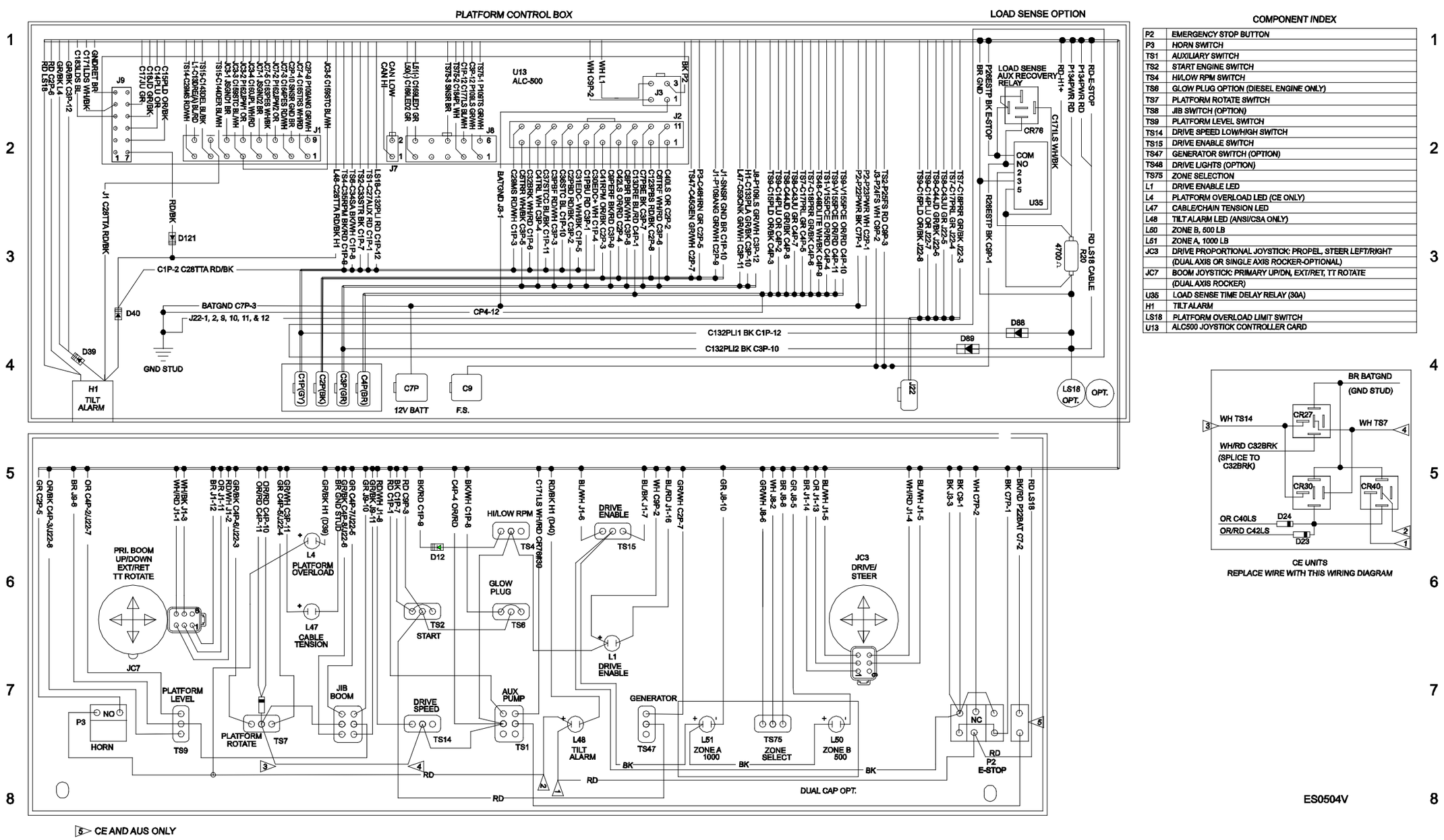


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS54	ENGINE HIGH IDLE
TS56	GLOW PLUG
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS63	PRIMARY BOOM EXTEND/RETRACT
CB2	CIRCUIT BREAKER, CONTROLS, 15A
G6	HOUR METER
L2	CHECK ENGINE INDICATOR
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
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R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H6	LOAD SENSE ALARM (CE ONLY)
U1	IGNITION/START MODULE
U34	LOAD SENSE TIME DELAY RELAY (10A)
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
CR80	TELEMATICS ENGINE SHUTDOWN REALY
CR75	LEVEL SENSOR RELAY

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Platform Control Box, S-80 • S-85

Deutz TD2011L04i Models (AS)



COMPONENT INDEX

P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
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LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD

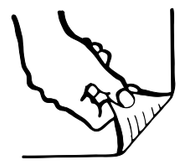
CE UNITS
REPLACE WIRE WITH THIS WIRING DIAGRAM

ES0504V

Platform Control Box, S-80 • S-85 - Deutz TD2011L04i Models (AS)

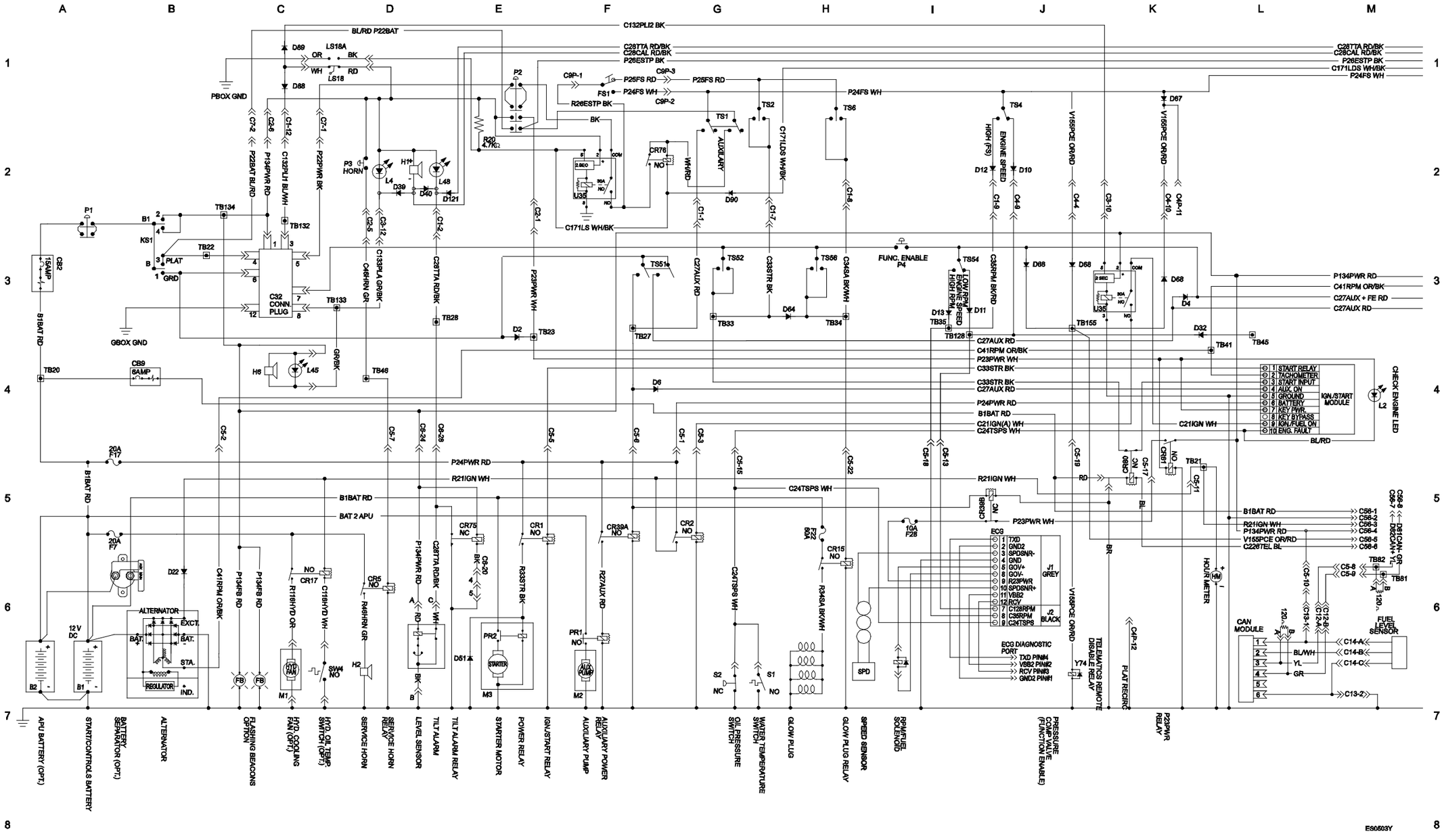


Electrical Schematic, S-80 • S-85 - Perkins 404TD-22 Models (AS)



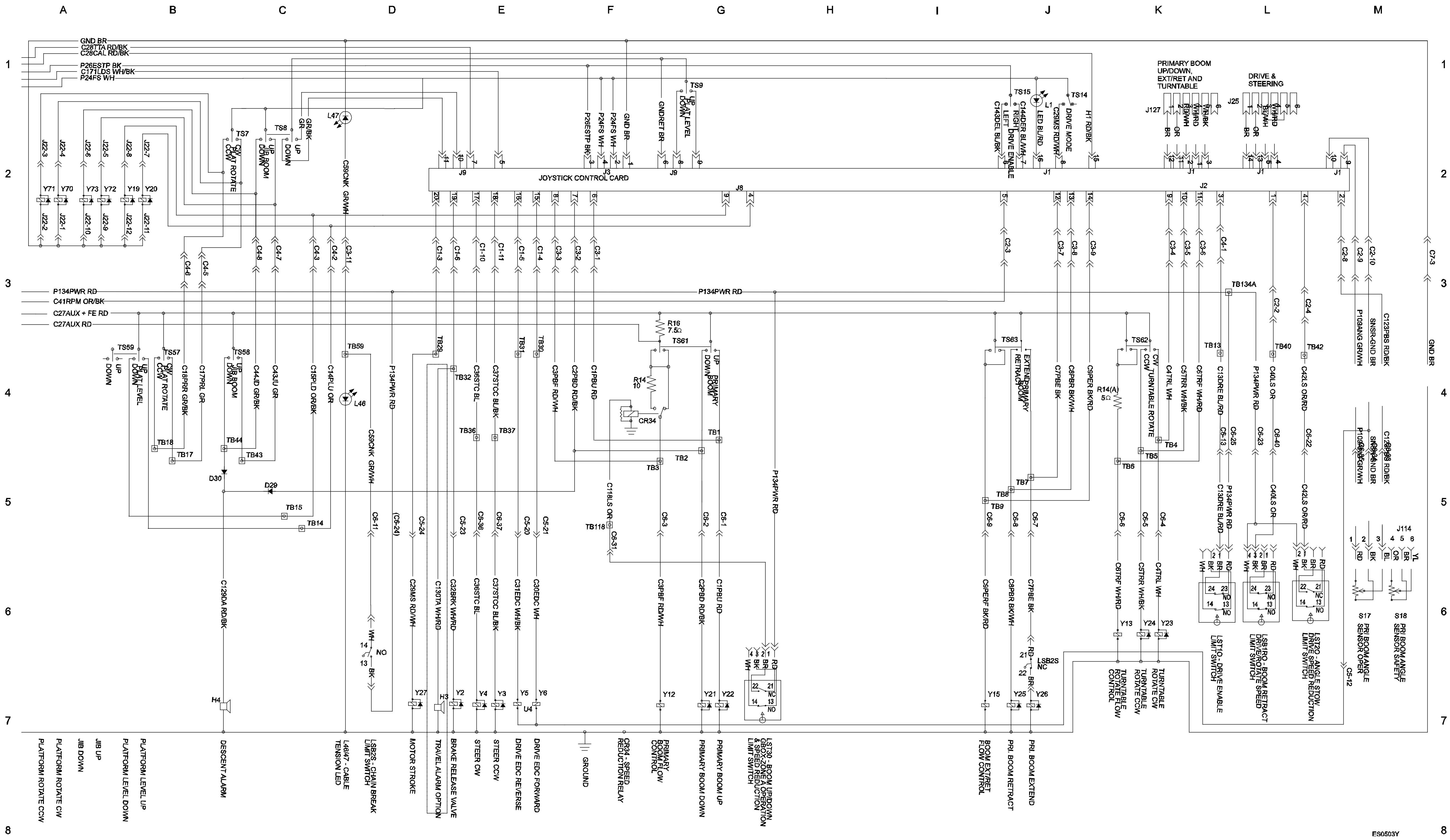
Electrical Schematic, S-80 • S-85

Perkins 404TD-22 Models (AS)

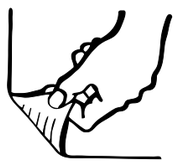


Electrical Schematic, S-80 • S-85

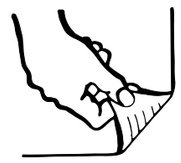
Perkins 404TD-22 Models (AS)



Electrical Schematic, S-80 • S-85 - Perkins 404TD-22 Models (AS)

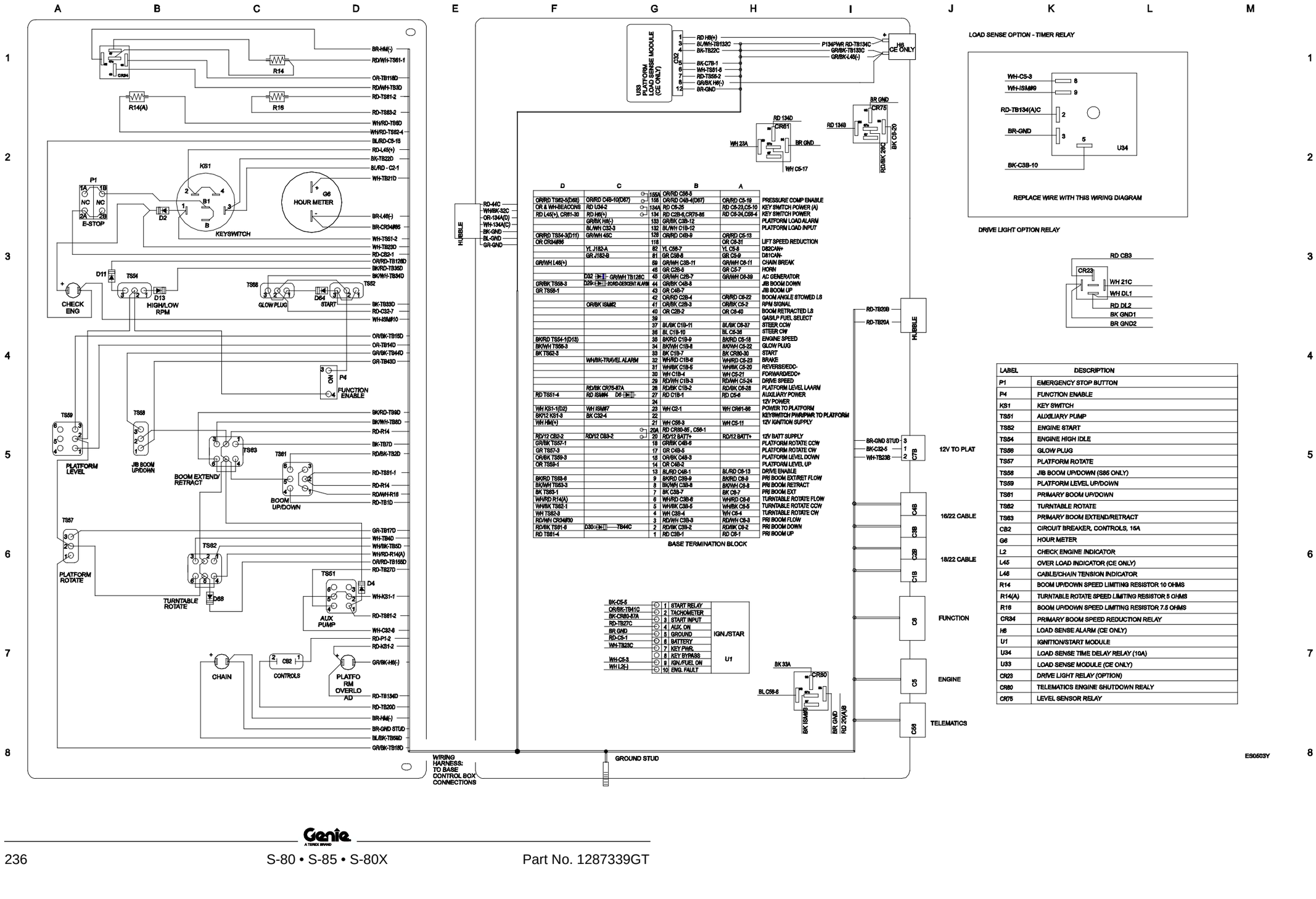


Ground Control Box, S-80 • S-85 - Perkins 404TD-22 Models (AS)



Ground Control Box, S-80 • S-85

Perkins 404TD-22 Models (AS)

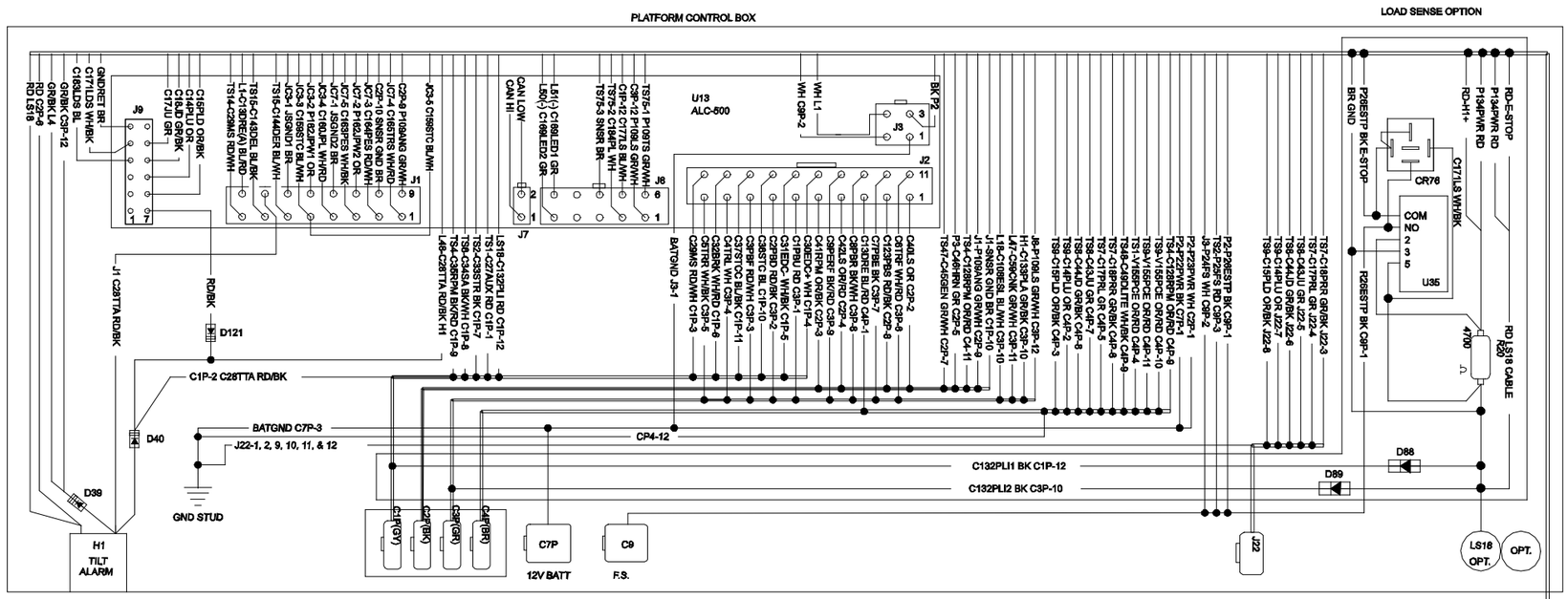


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U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
CR80	TELEMATICS ENGINE SHUTDOWN REALY
CR75	LEVEL SENSOR RELAY

ES0503Y

Platform Control Box, S-80 • S-85

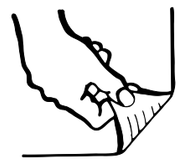
Perkins 404TD-22 Models (AS)



Platform Control Box, S-80 • S-85 - Perkins 404TD-22 Models (AS)

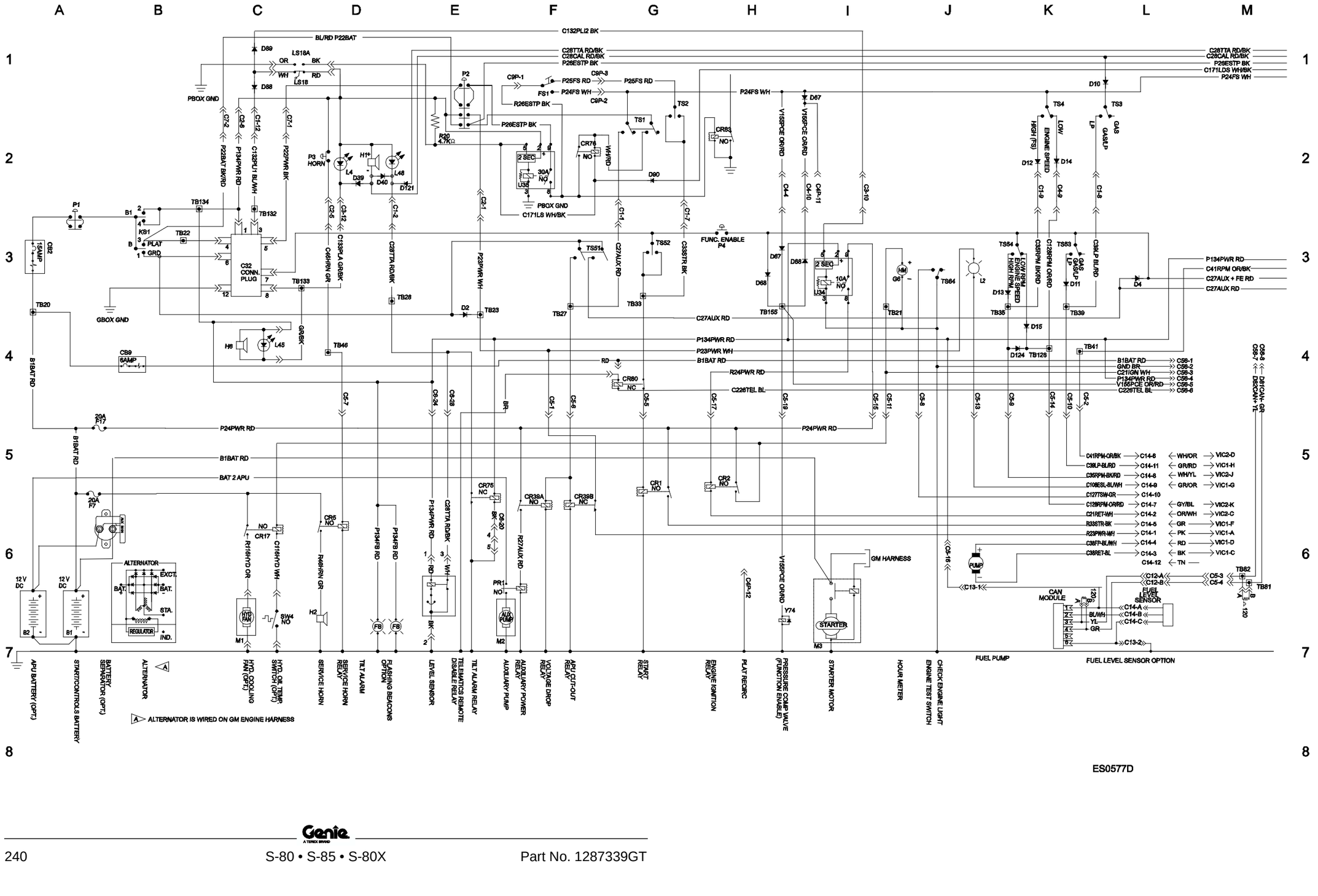


Electrical Schematic, S-80 • S-85 - GM 3.0L Models (AS)



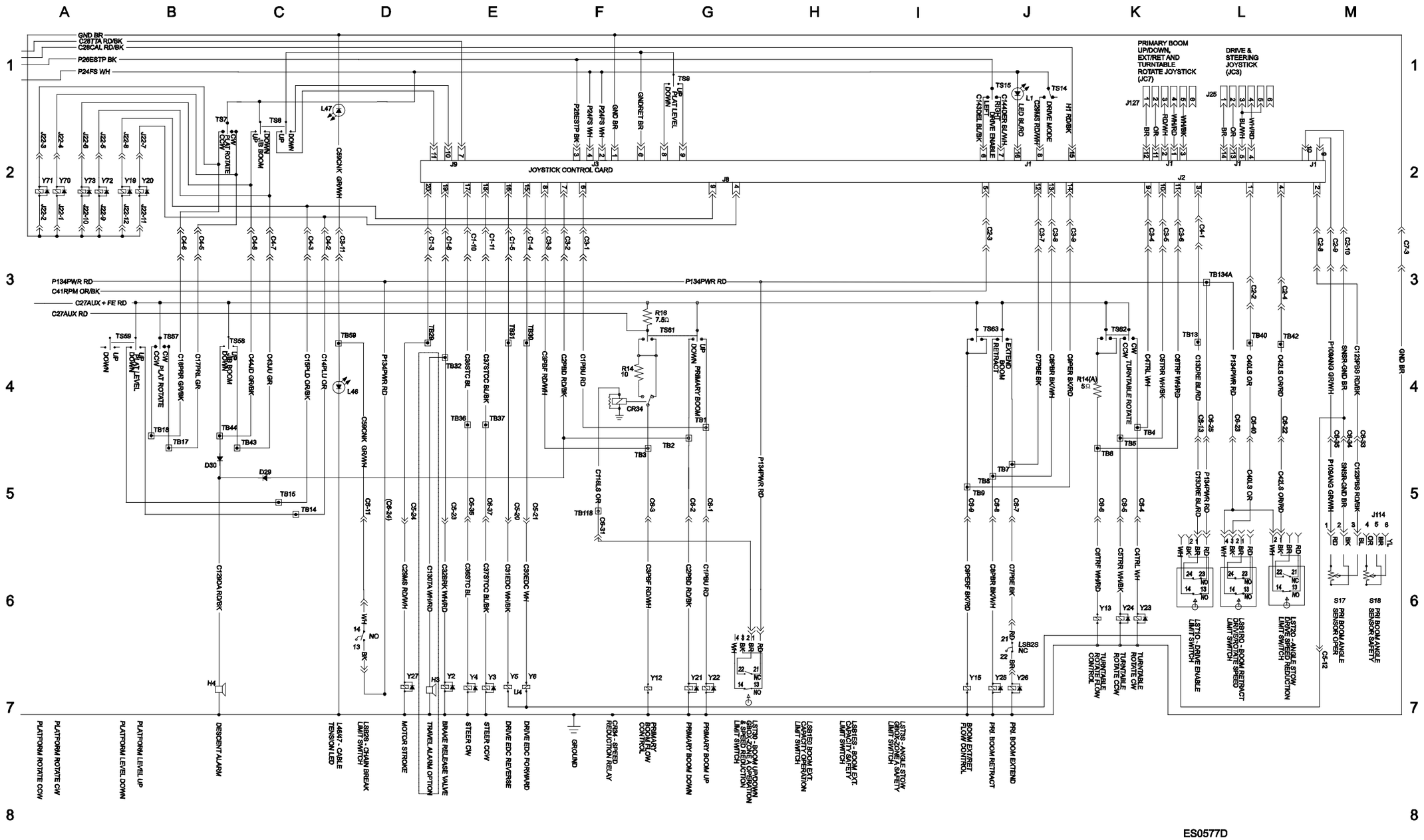
Electrical Schematic, S-80 • S-85

GM 3.0L Models (AS)



Electrical Schematic, S-80 • S-85

GM 3.0L Models (AS)

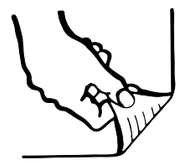


ES0577D

Electrical Schematic, S-80 • S-85 - GM 3.0L Models (AS)

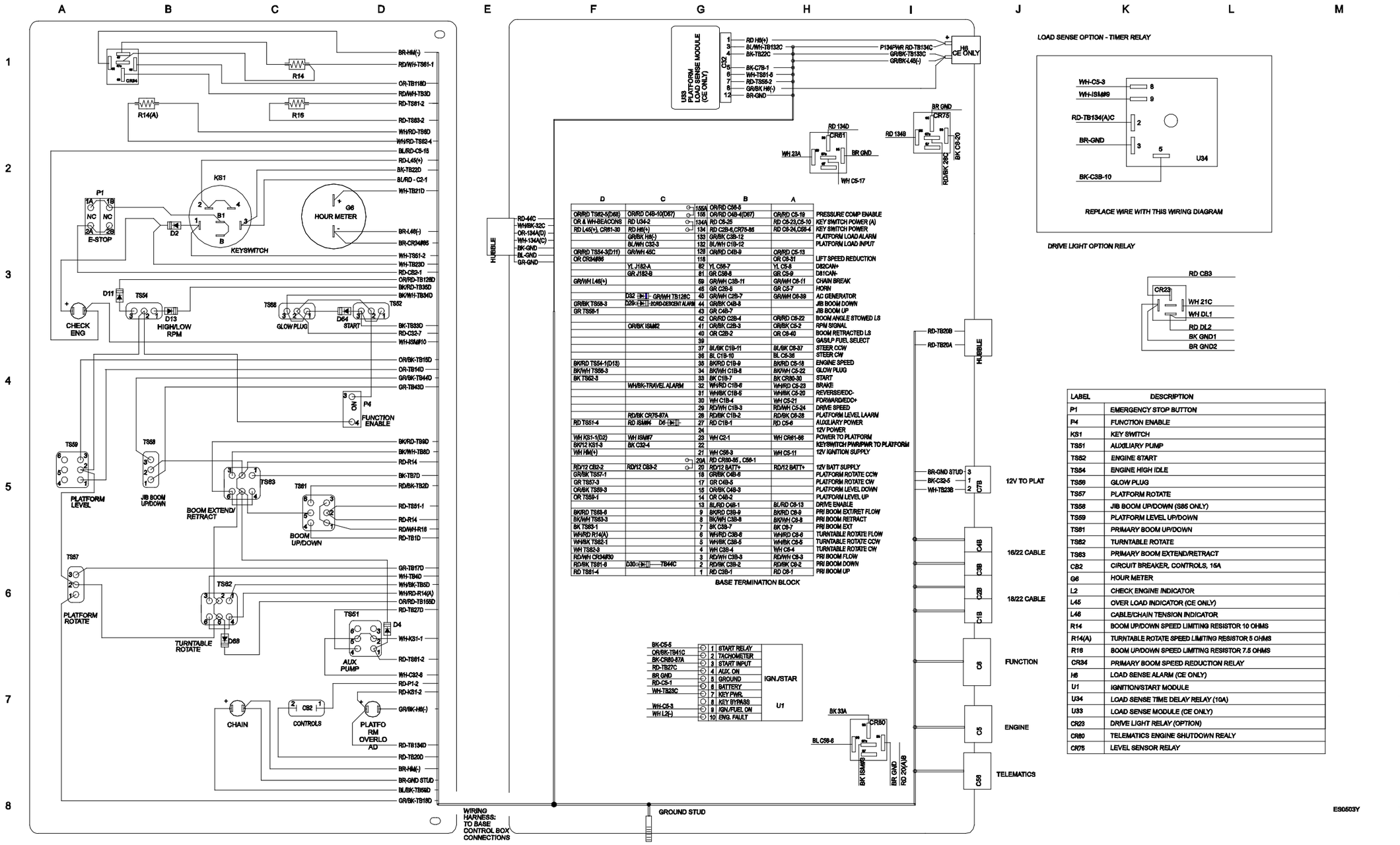


Ground Control Box, S-80 • S-85 - GM 3.0L Models (AS)



Ground Control Box, S-80 • S-85

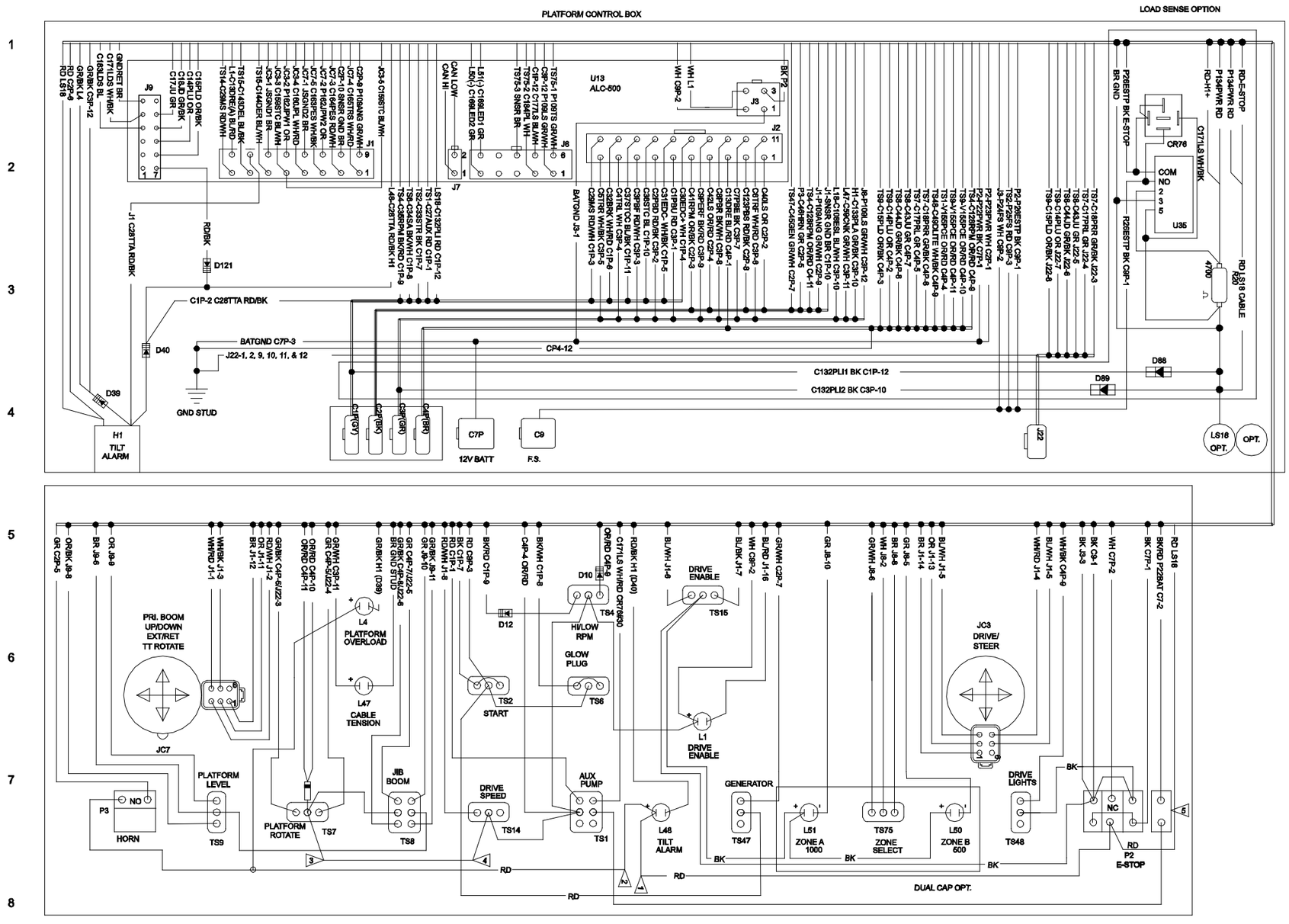
GM 3.0L Models (AS)



LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
P4	FUNCTION ENABLE
KS1	KEY SWITCH
TS51	AUXILIARY PUMP
TS52	ENGINE START
TS54	ENGINE HIGH IDLE
TS56	GLOW PLUG
TS57	PLATFORM ROTATE
TS58	JIB BOOM UP/DOWN (S85 ONLY)
TS59	PLATFORM LEVEL UP/DOWN
TS61	PRIMARY BOOM UP/DOWN
TS62	TURNTABLE ROTATE
TS63	PRIMARY BOOM EXTEND/RETRACT
CB2	CIRCUIT BREAKER, CONTROLS, 15A
G6	HOUR METER
L2	CHECK ENGINE INDICATOR
L45	OVER LOAD INDICATOR (CE ONLY)
L46	CABLE/CHAIN TENSION INDICATOR
R14	BOOM UP/DOWN SPEED LIMITING RESISTOR 10 OHMS
R14(A)	TURNTABLE ROTATE SPEED LIMITING RESISTOR 5 OHMS
R16	BOOM UP/DOWN SPEED LIMITING RESISTOR 7.5 OHMS
CR34	PRIMARY BOOM SPEED REDUCTION RELAY
H6	LOAD SENSE ALARM (CE ONLY)
U1	IGNITION/START MODULE
U34	LOAD SENSE TIME DELAY RELAY (10A)
U33	LOAD SENSE MODULE (CE ONLY)
CR23	DRIVE LIGHT RELAY (OPTION)
CR80	TELEMATICS ENGINE SHUTDOWN REALY
CR75	LEVEL SENSOR RELAY

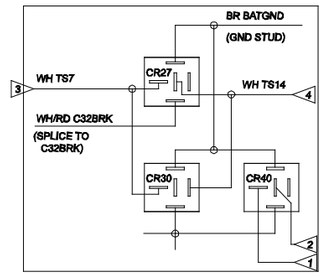
Platform Control Box, S-80 • S-85

GM 3.0L Models (AS)



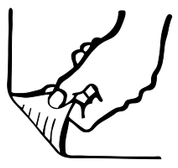
COMPONENT INDEX

P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS4	HI/LOW RPM SWITCH
TS6	GLOW PLUG OPTION (DIESEL ENGINE ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB SWITCH (OPTION)
TS9	PLATFORM LEVEL SWITCH
TS14	DRIVE SPEED LOW/HIGH SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS48	DRIVE LIGHTS (OPTION)
TS75	ZONE SELECTION
L1	DRIVE ENABLE LED
L4	PLATFORM OVERLOAD LED (CE ONLY)
L47	CABLE/CHAIN TENSION LED
L48	TILT ALARM LED (ANSI/CSA ONLY)
L50	ZONE B, 500 LB
L51	ZONE A, 1000 LB
JC3	DRIVE PROPORTIONAL JOYSTICK: PROPEL, STEER LEFT/RIGHT
	(DUAL AXIS OR SINGLE AXIS ROCKER-OPTIONAL)
JC7	BOOM JOYSTICK: PRIMARY UP/DN, EXT/RET, TT ROTATE
	(DUAL AXIS ROCKER)
U35	LOAD SENSE TIME DELAY RELAY (30A)
H1	TILT ALARM
LS18	PLATFORM OVERLOAD LIMIT SWITCH
U13	ALC500 JOYSTICK CONTROLLER CARD
CR27	LIFT/DRIVE SELECT RELAY
CR30	MACHINE STOWED BYPASS RELAY
CR40	CE TILT LED OUT OF STOWED RELAY
CR76	LOAD SENSE RECOVERY RELAY

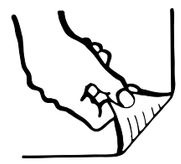


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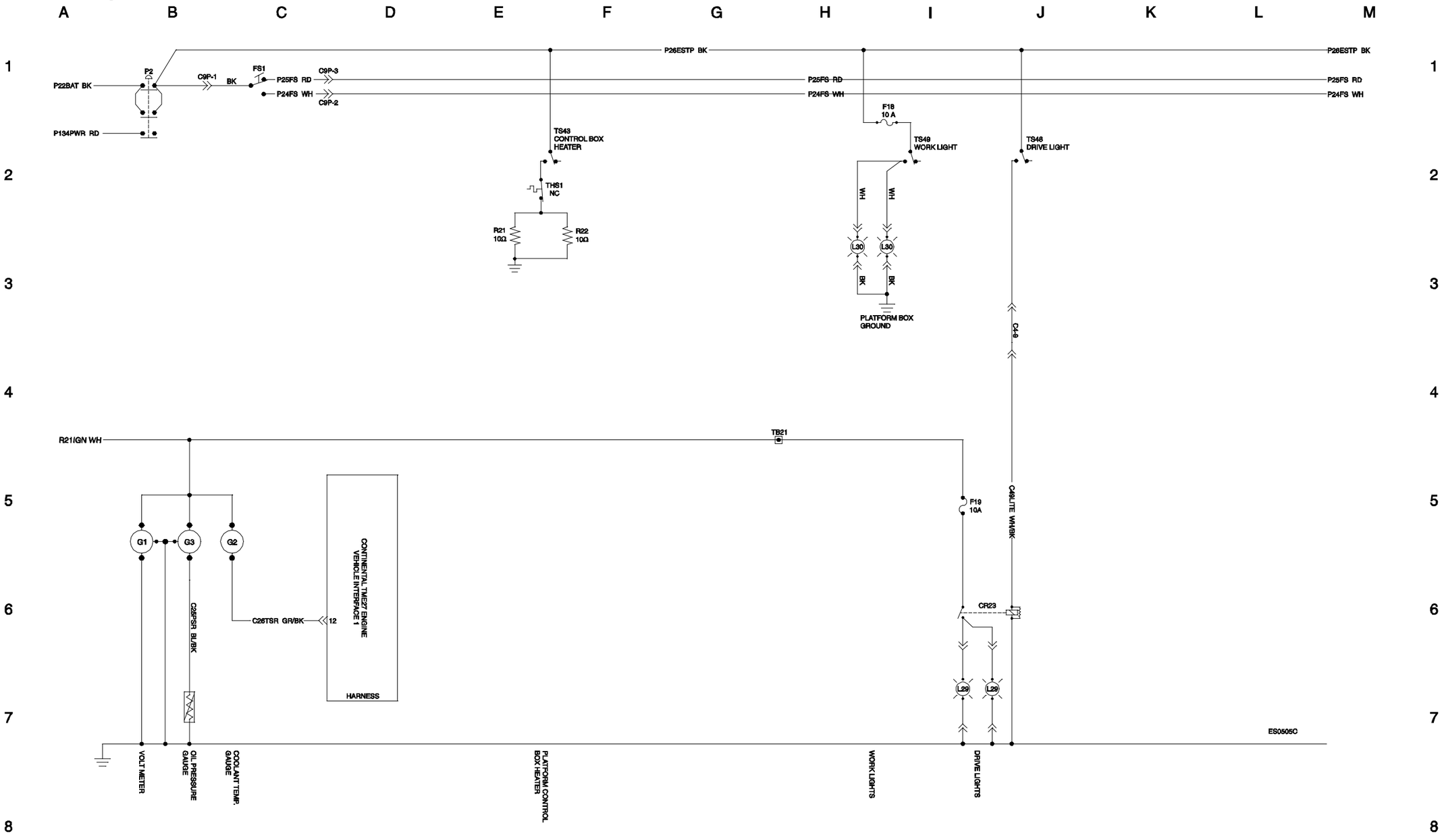
Platform Control Box, S-80 • S-85 - GM 3.0L Models (AS)



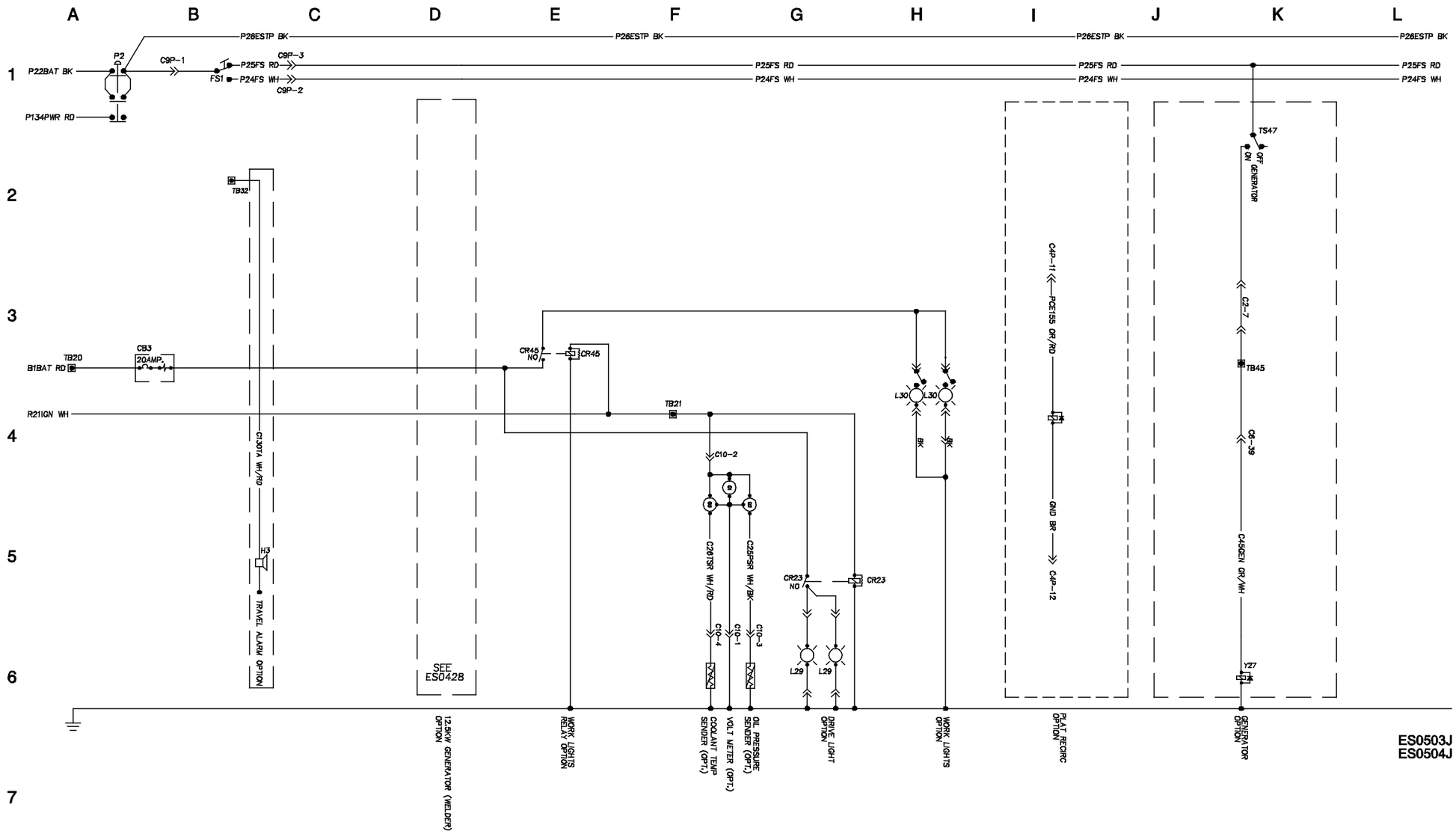
GM 3.0L Options Schematic



GM 3.0L Options Schematic



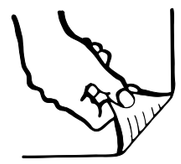
Deutz and Perkins Options Schematic



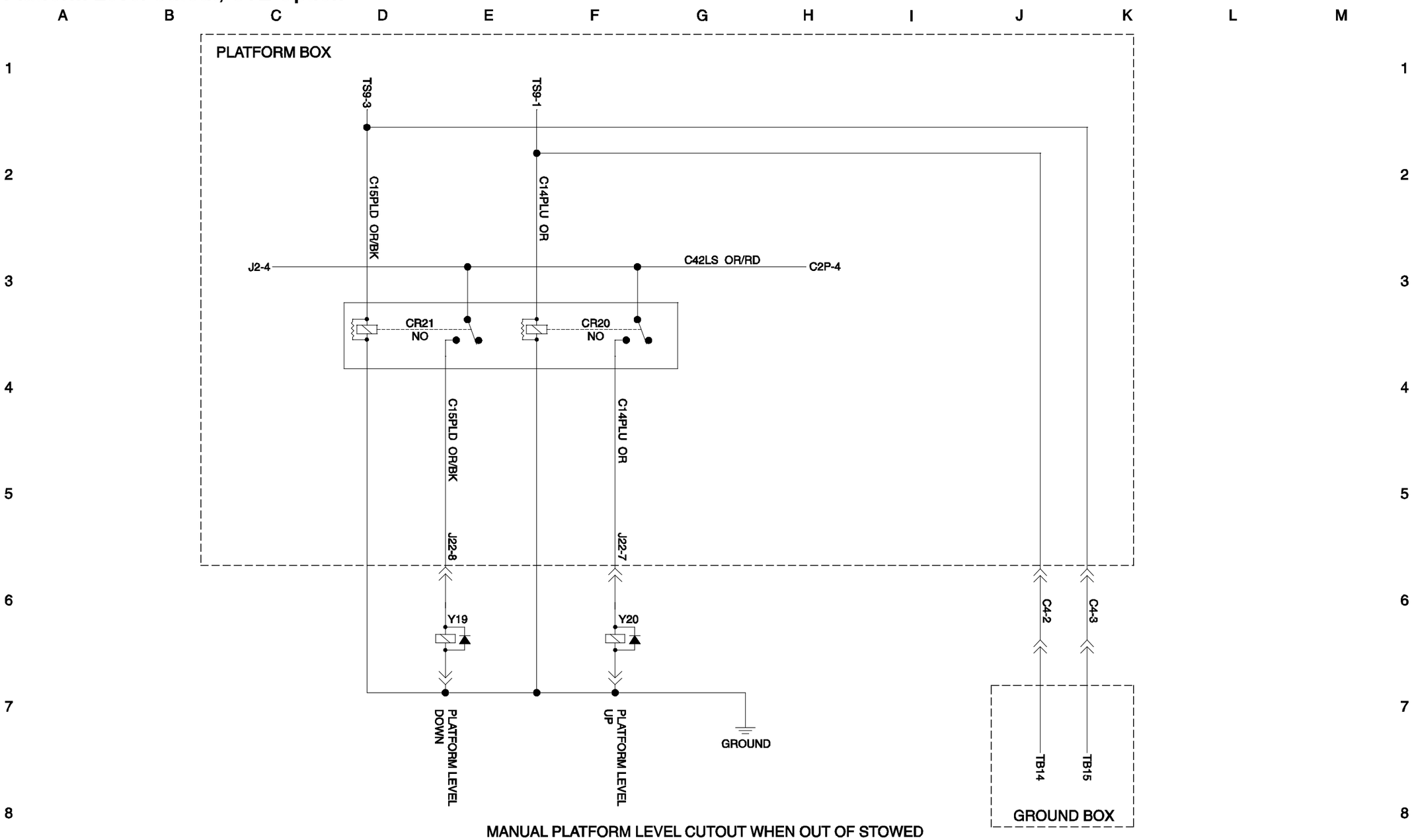
Deutz and Perkins Options Schematic



Platform Level Cutout, CTE Option

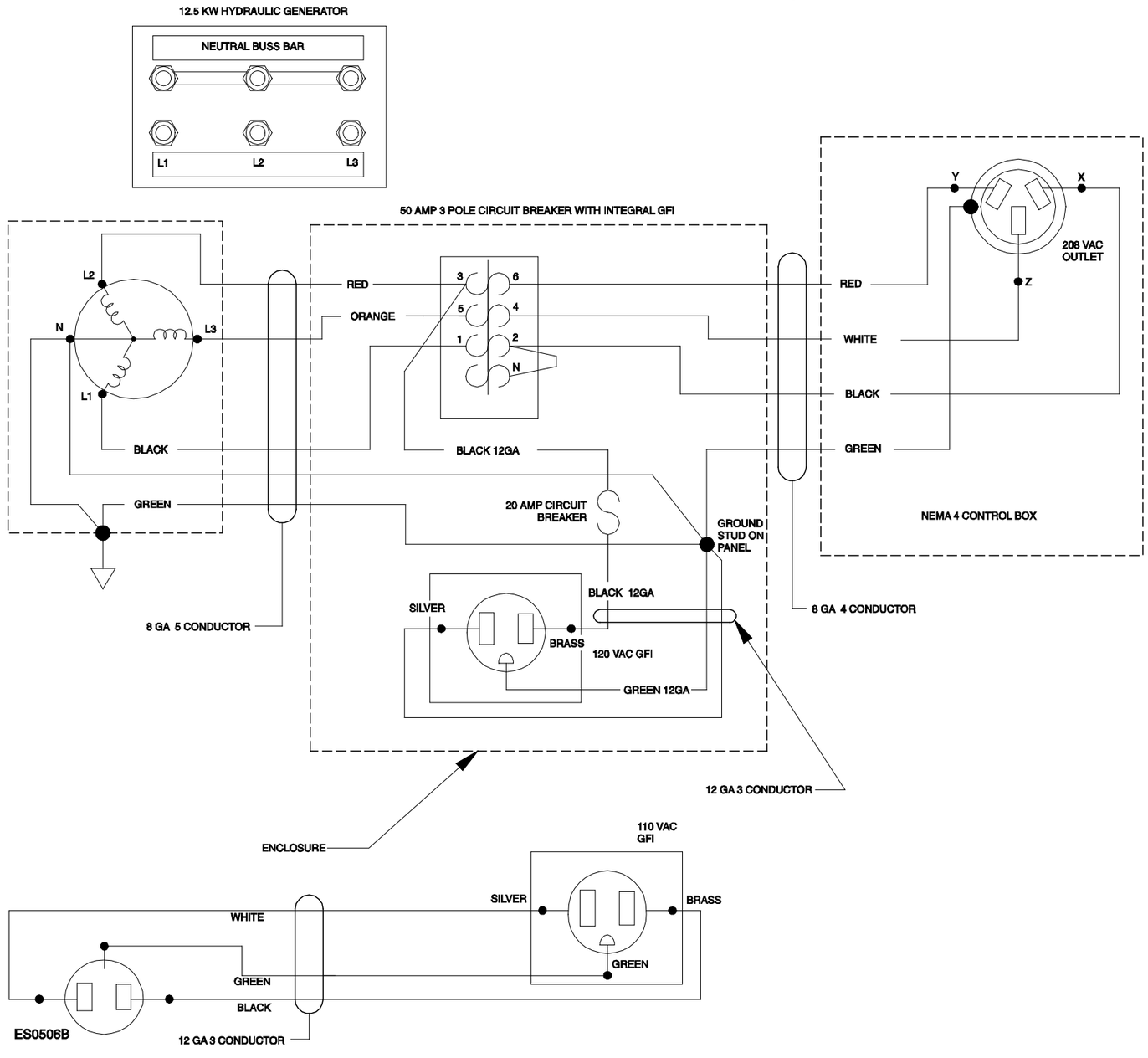


Platform Level Cutout, CTE Option

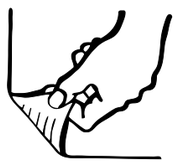


MANUAL PLATFORM LEVEL CUTOUT WHEN OUT OF STOWED

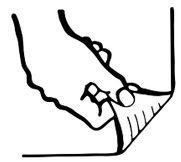
12 kW Hydraulic Generator Wiring Diagram



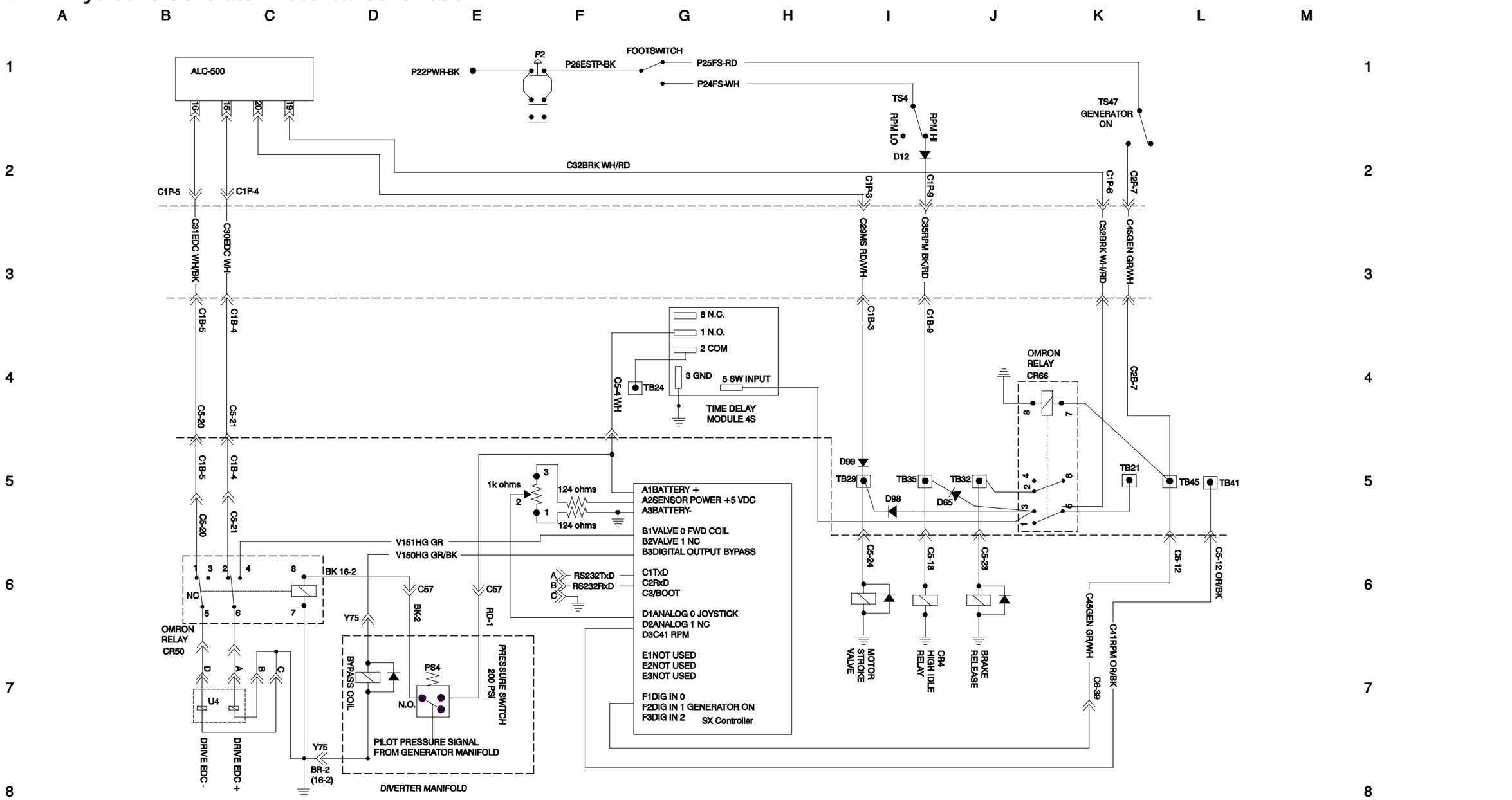
12 kW Hydraulic Generator Wiring Diagram



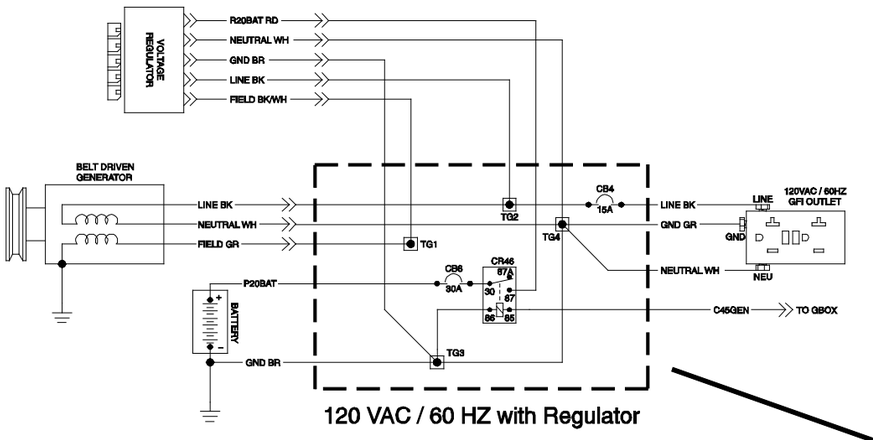
12 kW Hydraulic Generator Electrical Schematic



12 kW Hydraulic Generator Electrical Schematic

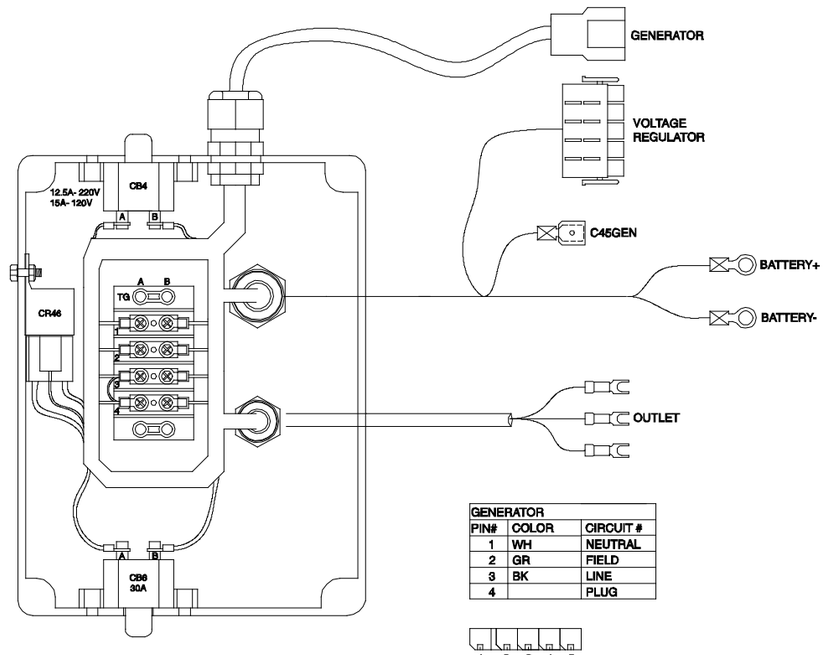


Belt Driven Generator Option



120 VAC / 60 HZ with Regulator

220 VAC / 50 HZ with Regulator

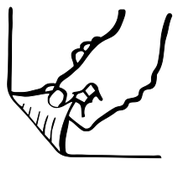


GENERATOR		
PIN#	COLOR	CIRCUIT #
1	WH	NEUTRAL
2	GR	FIELD
3	BK	LINE
4		PLUG

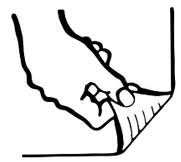
1 2 3 4 5

VOLTAGE REGULATOR		
PIN#	COLOR	CIRCUIT#
1	RD 12GA	R20BAT
2	WH 12GA	NEUTRAL
3	BR 12GA	GND
4	BK 12GA	LINE
5	BK/WH 14GA	FIELD

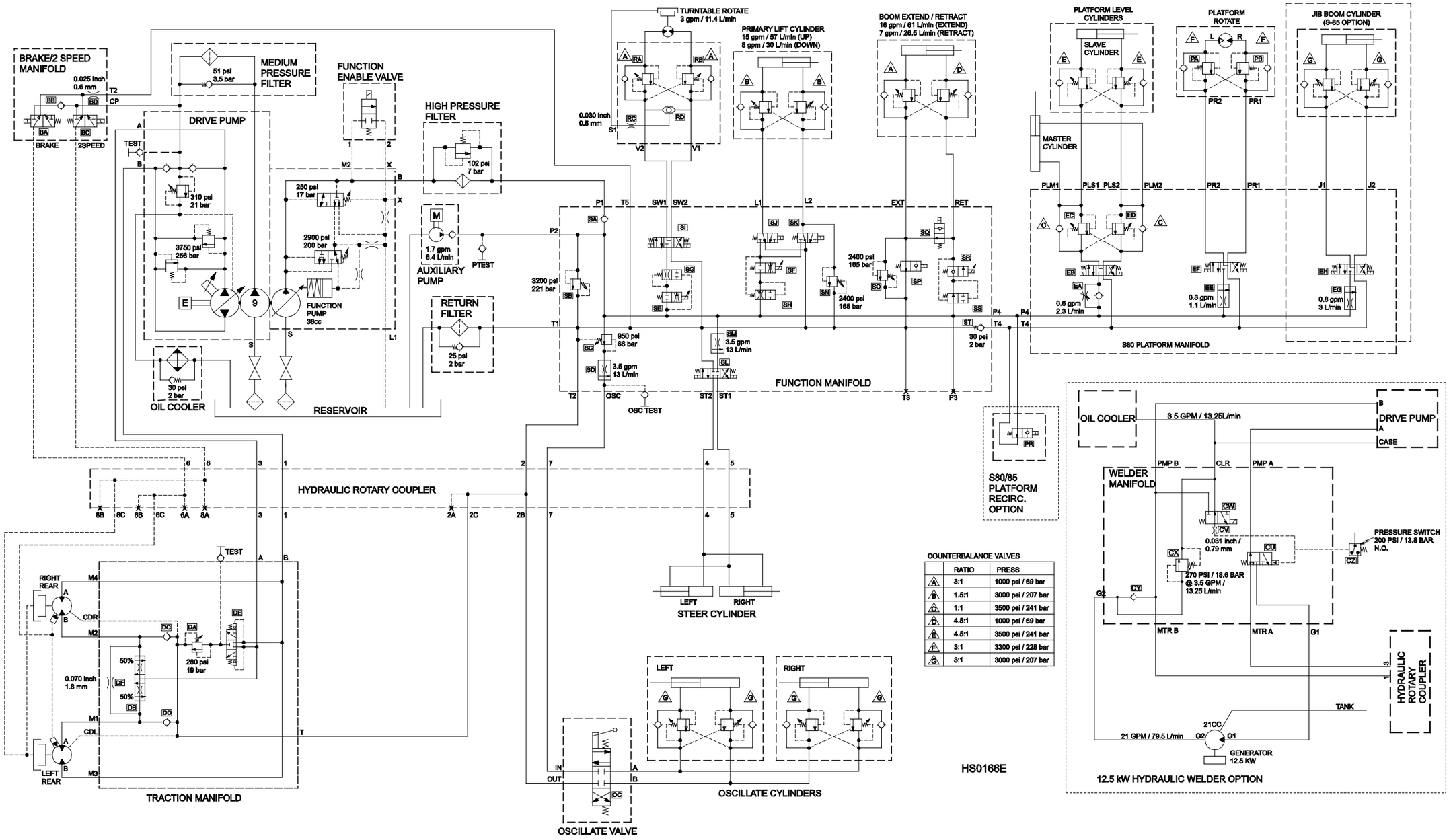
Belt Driven Generator Option



Hydraulic Schematic, 2WD Models



Hydraulic Schematic, 2WD Models

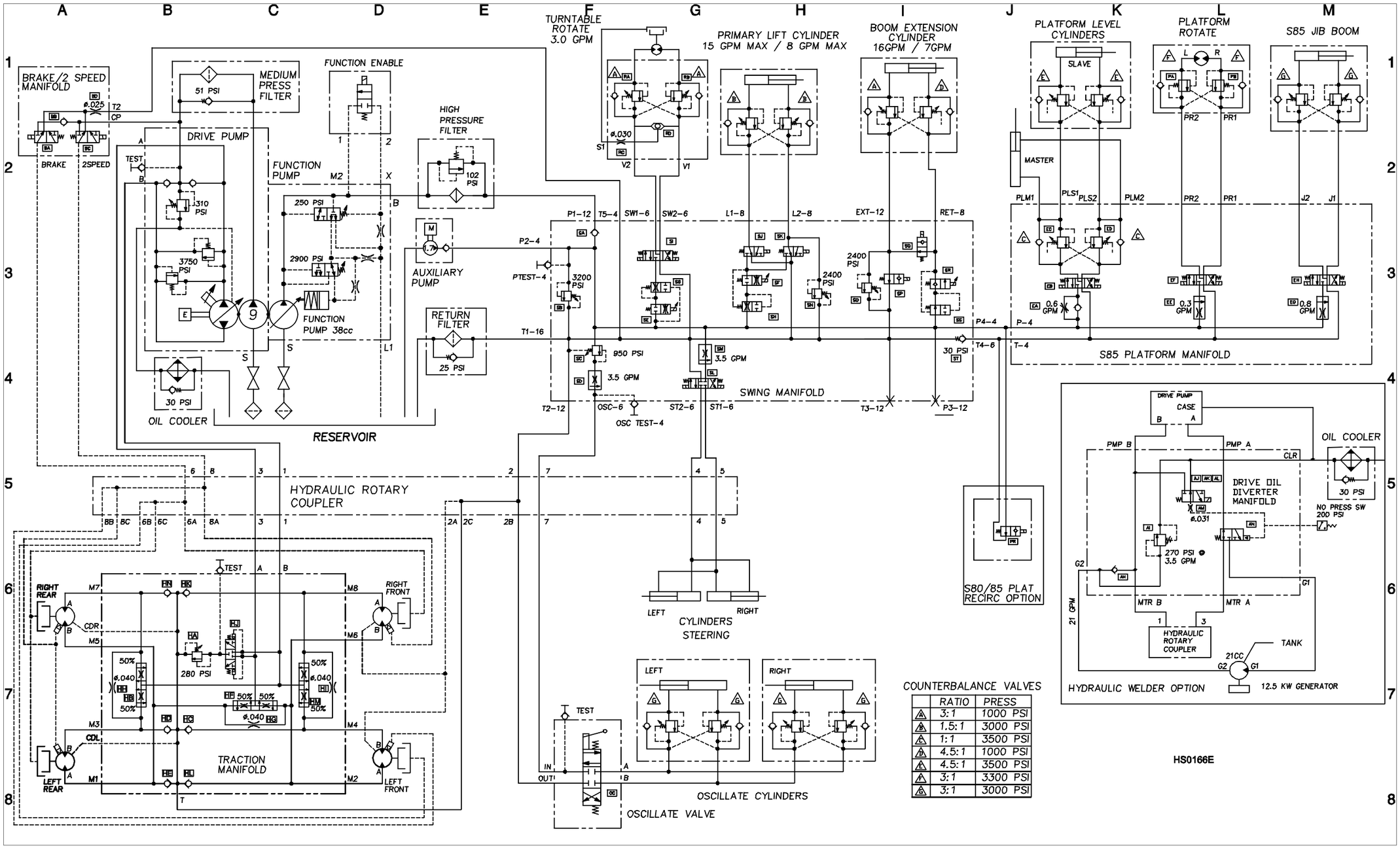


COUNTERBALANCE VALVES

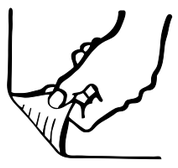
	RATIO	PRESS
A	3:1	1000 psi / 69 bar
B	1.5:1	3000 psi / 207 bar
C	1:1	3500 psi / 241 bar
D	4.5:1	1000 psi / 69 bar
E	4.5:1	3500 psi / 241 bar
F	3:1	3300 psi / 228 bar
G	3:1	3000 psi / 207 bar

HS0166E

Hydraulic Schematic, 4WD Models



Hydraulic Schematic, 4WD Models



California Proposition 65

WARNING

Operating, servicing and maintaining this equipment can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. These chemicals can be emitted from or contained in other various parts and systems, fluids and some component wear by-products. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your equipment and vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your equipment or vehicle and after operation. For more information go to www.P65Warnings.ca.gov/passenger-vehicle.

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