Genie
A TEREX BRAND

Service and Repair Manual

Serial Number Range

GTH™-1044
GTH™-1244
GTH™-1544

from GTH1044T-10001
from GTH1244T-10001
from GTH1544T-10001

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

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

Original Instructions
Part No. 1400615GT
Rev B
May 2026

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 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
https://www.genielift.com/en/support/manuals

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, Second Printing

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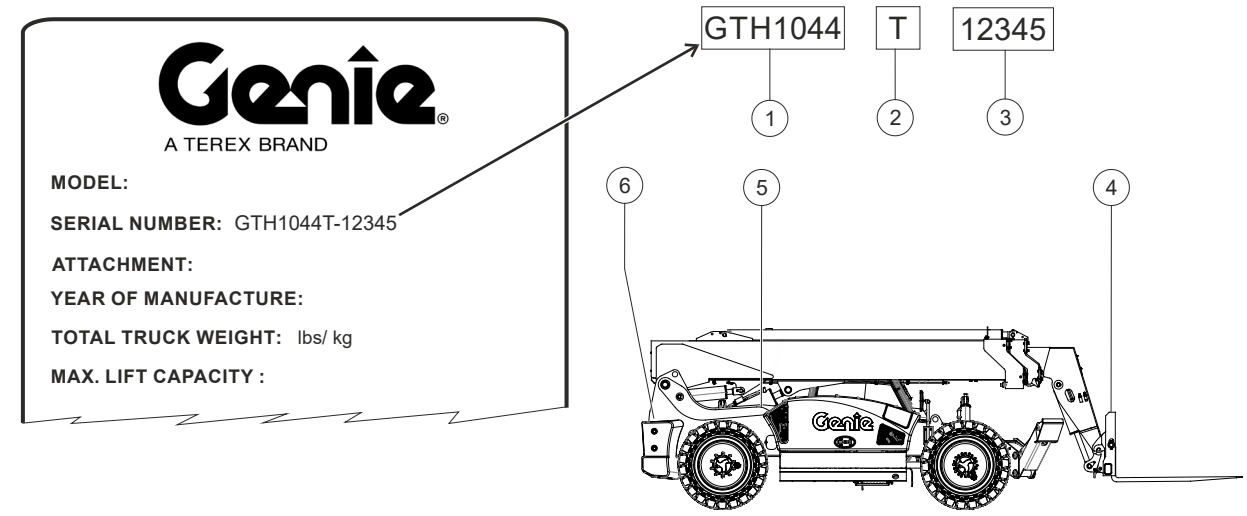
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Revision History

Revision	Date	Section	Procedure / Page / Description
A	10/2025		Initial Release
B	05/2026	Specifications	Add Specifications of GTH-1544 model - Machine Specifications - Performance Specifications - Hydraulic Component Specifications - Engine Specifications - Transmission Specifications
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



1 Model
2 Facility code
3 Sequence number
4 Serial label (located inside fork frame)
5 Serial number (stamped on chassis)
6 Serial label (located inside 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 modify or alter a Telehandler without prior written permission from the manufacturer.

Do Not Perform Maintenance Unless:

☑ You are trained and qualified to perform maintenance on this machine.

☑ You read, understand and obey:

- manufacturer's instructions and safety rules
- employer's safety rules and worksite regulations
- applicable governmental regulations

☑ You have the appropriate tools, lifting equipment and a suitable workshop.

Safety Rules

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 - GTH1044

Tires and wheels	
Tire size	14.00 x 28
Tire ply rating	16
Weight, rough terrain tire (air filled) Standard	380 lbs 172 kg
Weight, rough terrain tire (foam filled)	890 lbs 404 kg
Weight, SolidBoss	810 lbs 367 kg
Tire pressure	72 psi 5,0 bar
Lug nut torque, dry	465 ft-lbs 630 Nm
Lug pattern	10 x 13.189
Wheel diameter	28 in 71,1 cm
Wheel width	10 in 25,4 cm
Fluid capacities	
Fuel tank	30 gallons 113,6 liters
Hydraulic tank	27 gallons 102,2 liters
Hydraulic system (including tank)	52 gallons 196,8 liters
DEF tank	2.6 gallons 9,8 liters

Machine Specifications - GTH1244

Tires and wheels	
Tire size	14.00 x 28
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Specifications

Machine Specifications - GTH1544

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Hydraulic system (including tank)	52 gallons 196,8 liters
DEF tank	2.6 gallons 9,8 liters

Specifications

Performance Specifications - GTH1044

Drive speed, maximum **74 hp**	15 mph 24,1 km/h
Draw bar pull	23,000 lbs 10,433 kg
Lift capacity, maximum	10,000 lbs 4,536 kg
Boom function speeds, maximum	
Boom up	13 to 17 seconds
Boom down	11 to 15 seconds
Boom extend	25 to 27 seconds
Boom retract	19 to 21 seconds
Fork rotate	3 to 6 seconds
Fork tilt up	14 to 16 seconds
Fork tilt down	14 to 16 seconds
Chassis sway speed	Sway left, 16 seconds Sway right, 10 seconds

Performance Specifications - GTH1244

Drive speed, maximum **120 hp**	17 mph 27,4 km/h
Draw bar pull	25,000 lbs 11,340 kg
Drive speed, maximum **74 hp**	15 mph 24,1 km/h
Draw bar pull	23,000 lbs 10,433 kg
Lift capacity, maximum	12,000 lbs 5,443 kg
Boom function speeds, maximum	
Boom up	14 to 18 seconds
Boom down	13 to 17 seconds
Boom extend	21 to 23 seconds
Boom retract	25 to 27 seconds
Fork rotate	3 to 6 seconds
Fork tilt up	25 to 27 seconds
Fork tilt down	23 to 25 seconds
Chassis sway speed	Sway left, 21 seconds Sway right, 15 seconds

Performance Specifications GTH1544

Drive speed, maximum **120 hp**	15 mph 24,14 km/h
Draw bar pull	25,000 lbs 11,340 kg
Lift capacity, maximum	15,000 lbs 6,803 kg
Boom function speeds, maximum	
Boom up	15 to 18 seconds
Boom down	14 to 17 seconds
Boom extend	21 to 23 seconds
Boom retract	25 to 27 seconds
Fork rotate	3 to 6 seconds
Fork tilt up	25 to 27 seconds
Fork tilt down	25 to 27 seconds
Chassis sway speed	Sway left, 21 seconds Sway right, 20 seconds

Specifications

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
ISO Grade	32
Viscosity index, maximum	200
Optional Hydraulic Fluids	
Mineral based	Shell Tellus S2 V 32 Shell Tellus S2 V 46 Shell Tellus S4 VX 32 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.

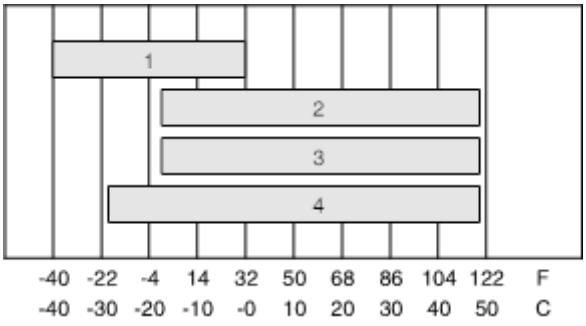
Note: Extended machine operation can cause the hydraulic fluid temperature to increase beyond its maximum allowable range. If the hydraulic fluid temperature consistently exceeds 200°F / 90°C an optional oil cooler may be required.

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, maximum	200
Kinematic Viscosity, maximum cSt @ 200°F / 100°C cSt @ 104°F / 40°C	 7.5 33.5
Brookfield Viscosity, maximum 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.

Chevron 5606A Hydraulic Oil Fluid Properties

ISO Grade	15
Viscosity index, maximum	300
Kinematic Viscosity, maximum cSt @ 200°F / 100°C cSt @ 104°F / 40°C cSt @ -40°F / -40°C	 5.5 15.0 510
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, maximum	154
Kinematic Viscosity, maximum cSt @ 200°F / 100°C cSt @ 104°F / 40°C	 8.0 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, maximum	300
Kinematic Viscosity, maximum cSt @ 200°F / 100°C cSt @ 104°F / 40°C	 9 33.8
Brookfield Viscosity, maximum cSt @ -4°F / -20°C cSt @ -13°F / -25°C cSt @ -40°F / -40°C	 481 702.4 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, maximum	192
Kinematic Viscosity, maximum 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

Specifications

Hydraulic Component Specifications - GTH1044

Function pump (DANA Transmission)	
Type: variable displacement piston pump	
Displacement	0 to 3.8 cu in 0 to 62.3 cc
Flow rate @ 2500 rpm	41.1 gpm 155.6 L/min
Pump pressure, maximum	3500 psi 240 bar
Pressure compensator	3200 psi 220 bar
Standby pressure	450 psi 31 bar
Primary Function Manifold	
System relief valve pressure, maximum (measured at test port TP)	3626 psi 350 bar
Boom extend relief valve pressure, maximum	2611 psi 180 bar
Fork tilt relief valve pressure, maximum	3481 psi 240 bar
Secondary Function Manifold	
Steer relief valve pressure, maximum (measured at test port TS)	2500 psi 172 bar
Parking brake relief valve pressure, maximum (measured at test port TPB)	400 psi 27.5 bar
Rear lock-up relief valve pressure, maximum (measured at test port TR)	50 psi 3.4 bar
Outrigger Manifold	
Flow regulator, Outrigger circuit (if equipped)	6 gpm 22.7 L/min

Hydraulic Component Specifications - GTH1244

Function pump (DANA Transmission)	
Type: variable displacement piston pump	
Displacement	0 to 3.8 cu in 0 to 62.3 cc
Flow rate @ 2500 rpm	41.1 gpm 155.6 L/min
Pump pressure, maximum	3500 psi 240 bar
Pressure compensator	3200 psi 220 bar
Standby pressure	450 psi 31 bar
Function pump (ZF Transmission)	
Type: variable displacement piston pump	
Displacement	0 to 3.96 cu in 0 to 65 cc
Flow rate @ 2500 rpm	42.9 gpm 162.4 L/min
Pump pressure, maximum	3771 psi 260 bar
Pressure compensator	3190 psi 220 bar
Standby pressure	464 psi 32 bar
Primary Function Manifold	
System relief valve pressure, maximum (measured at test port TP)	3626 psi 350 bar
Boom extend relief valve pressure, maximum	2611 psi 180 bar
Fork tilt relief valve pressure, maximum	3481 psi 240 bar
Secondary Function Manifold	
Steer relief valve pressure, maximum (measured at test port TS)	2500 psi 172 bar
Parking brake relief valve pressure, maximum (measured at test port TPB)	400 psi 27.5 bar
Rear lock-up relief valve pressure, maximum (measured at test port TR)	50 psi 3.4 bar
Outrigger Manifold	
Flow regulator, Outrigger circuit (if equipped)	6 gpm 22.7 L/min

Specifications

Hydraulic Component Specifications - GTH1544

Function pump (ZF Transmission)	
Type: variable displacement piston pump	
Displacement	0 to 3.96 cu in 0 to 65 cc
Flow rate @ 2500 rpm	42.9 gpm 162.4 L/min
Pump pressure, maximum	3771 psi 260 bar
Pressure compensator	3190 psi 220 bar
Standby pressure	464 psi 32 bar
Primary Function Manifold	
System relief valve pressure, maximum (measured at test port TP)	3626 psi 350 bar
Boom extend relief valve pressure, maximum	2611 psi 180 bar
Fork tilt relief valve pressure, maximum	3481 psi 240 bar
Secondary Function Manifold	
Steer relief valve pressure, maximum (measured at test port TS)	2500 psi 172 bar
Parking brake relief valve pressure, maximum (measured at test port TPB)	400 psi 27.5 bar
Rear lock-up relief valve pressure, maximum (measured at test port TR)	50 psi 3.4 bar
Outrigger Manifold	
Flow regulator, Outrigger circuit (if equipped)	6 gpm 22.7 L/min

Manifold Component Specifications

Plug torque	
SAE No. 2	50 in-lbs / 6 Nm
SAE No. 4	13 ft-lbs / 18 Nm
SAE No. 5	15 ft lbs / 20 Nm
SAE No. 6	18 ft-lbs / 24 Nm
SAE No. 8	50 ft-lbs / 68 Nm
SAE No. 10	55 ft-lbs / 75 Nm
SAE No. 12	75 ft-lbs / 102 Nm

Air Conditioner Refrigerant Specifications

System Full Charge	
R134a	1 lb 14 oz

DEF Storage Specifications

Diesel Exhaust Fluid decomposes when exposed to elevated temperatures for an extended period of time. Therefore precautions must be taken to avoid prolonged exposure to elevated temperatures.

Temperature	Estimated useful life
32°F / 0°C	Indefinite
50°F / 10°C	75 years
68°F / 20°C	11 years
86°F / 30°C	23 months
95°F / 35°C	10 months
104°F / 40°C	4 months
122°F / 50°C	1 month
140°F / 60°C	1 week

Specifications

Deutz TCD3.6 120HP T4F Engine (GTH-1244 and GTH-1544 Only)

Displacement	221 cu in 3.62 liters
Number of cylinders	4
Bore and Stroke	3.86 x 4.72 inches 98 x 120 mm
Horsepower	121 @ 2300 rpm 90 kw @ 2300 rpm
Peak Torque	354 lb-ft @ 1600 rpm 480 Nm @ 1600 rpm
Firing order	1 - 3 - 4 - 2
Induction System	turbocharged charge air cooled
Aftertreatment	DOC + SCR
Combustion	direct injection 252 cfm / 0.18 cmm
Exhaust	703 cfm @ 2300 rpm 894°F / 470°C @ 2300 rpm
Low idle Frequency	1000 rpm 200 Hz
High idle Frequency	2300 rpm 500 Hz
Compression ratio	17.2:1
Compression pressure (psi or bar) of the lowest cylinder must be at least 75% of the highest cylinder	
Governor	electronic
Lubrication system	
Minimum oil pressure (warm, at low idle)	23.5 psi 1.6 bar
Oil capacity (including filter) Low Emission Oil	9.5 quarts 9 liters
Oil viscosity requirements	
Unit ships with Low Emission (LE) oil. Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator Manual for your engine.	

Fuel injection system	
Injection pump pressure, maximum	23200 psi 1600 bar
Max fuel consumption	6.5 gph / 24.6 lph
Fuel requirement	
For fuel requirements, refer to the engine Operator Manual for your engine.	
Engine coolant	
Capacity	4.5 gallons 17 liters
Type	Extended Life
Starter motor	
Normal load	300-400A
Relay max	60A
Relay continuous	12A
Cranking speed	>100 rpm
Glow Plugs	
Initial load (0-6 sec)	80 amps
Continuous load (>6 sec)	<40 amps
Battery Specifications	
Type	12V DC
Group	C31
Quantity	1
Battery capacity, maximum	1000A
Reserve capacity @ 25A rate	200 Minutes
Alternator output	120A @ 12V DC

Specifications

Deutz TCD3.6 74HP T4F Engine (GTH-1044 and GTH-1244 Only)

Displacement	221 cu in 3.62 liters
Number of cylinders	4
Bore and Stroke	3.86 x 4.72 inches 98 x 120 mm
Horsepower	74 @ 2300 rpm 55 kw @ 2300 rpm
Peak Torque	288 lb-ft @ 1300 rpm 390 Nm @ 1300 rpm
Firing order	1 - 3 - 4 - 2
Induction System	turbocharged charge air cooled
Aftertreatment	DOC + SCR
Combustion	direct injection 252 cfm / 0.18 cmm
Exhaust	703 cfm @ 2300 rpm 894°F / 470°C @ 2300 rpm
Low idle Frequency	1000 rpm 200 Hz
High idle Frequency	2300 rpm 500 Hz
Compression ratio	17.2:1
Compression pressure (psi or bar) of the lowest cylinder must be at least 75% of the highest cylinder	
Governor	electronic
Lubrication system	
Minimum oil pressure (warm, at low idle)	23.5 psi 1.6 bar
Oil capacity (including filter) Low Emission Oil	9.5 quarts 9 liters
Oil viscosity requirements	
Unit ships with Low Emission (LE) oil. Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator Manual for your engine.	

Fuel injection system	
Injection pump pressure, maximum	23200 psi 1600 bar
Max fuel consumption	6.5 gph / 24.6 lph
Fuel requirement	
For fuel requirements, refer to the engine Operator Manual for your engine.	
Engine coolant	
Capacity	4.5 gallons 17 liters
Type	Extended Life
Starter motor	
Normal load	300-400A
Relay max	60A
Relay continuous	12A
Cranking speed	>100 rpm
Glow Plugs	
Initial load (0-6 sec)	80 amps
Continuous load (>6 sec)	<40 amps
Battery Specifications	
Type	12V DC
Group	C31
Quantity	1
Battery capacity, maximum	1000A
Reserve capacity @ 25A rate	200 Minutes
Alternator output	95A @ 12V DC

Specifications

Deutz TCD3.6 ROW Engine (GTH-1244 and GTH-1544 Only)

Displacement	221 cu in 3.62 liters
Number of cylinders	4
Bore and Stroke	3.86 x 4.72 inches 98 x 120 mm
Horsepower	100 @ 2300 rpm 74.6 kw @ 2300 rpm
Peak Torque	302 lb-ft @ 1600 rpm 409 Nm @ 1600 rpm
Firing order	1 - 3 - 4 - 2
Induction System	turbocharged charge air cooled
Aftertreatment	DOC + SCR
Combustion	direct injection 252 cfm / 0.18 cmm
Exhaust	703 cfm @ 2300 rpm 894°F / 470°C @ 2300 rpm
Low idle Frequency	1000 rpm 200 Hz
High idle Frequency	2400 rpm 500 Hz
Compression ratio	17.2:1
Compression pressure (psi or bar) of the lowest cylinder must be at least 75% of the highest cylinder	
Governor	electronic
Lubrication system	
Minimum oil pressure (warm, at low idle)	23.5 psi 1.6 bar
Oil capacity (including filter) Low Emission Oil	9.5 quarts 9 liters
Oil viscosity requirements	
Unit ships with 15W-40 API CJ4 low ash oil. Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator Manual for your engine.	

Fuel injection system	
Injection pump pressure, maximum	23200 psi 1600 bar
Max fuel consumption	6.5 gph / 24.6 lph
Fuel requirement	
For fuel requirements, refer to the engine Operator Manual for your engine.	
Engine coolant	
Capacity	4.5 gallons 17 liters
Type	Extended Life
Starter motor	
Normal load	300-400A
Relay max	60A
Relay continuous	12A
Cranking speed	>100 rpm
Glow Plugs	
Initial load (0-6 sec)	80 amps
Continuous load (>6 sec)	<40 amps
Battery Specifications	
Type	12V DC
Group	C31
Quantity	1
Battery capacity, maximum	1000A
Reserve capacity @ 25A rate	200 Minutes
Alternator output	95A @ 12V DC

Specifications

ZF 4 WG-98 TSC Transmission (GTH-1244 and GTH-1544 Only)

Transmission type	4 speed powershift converter
Speeds, Forward	4
Speeds, Reverse	3
Torque converter	
Maximum input	2600 rpm
Maximum torque	354 ft-lbs 480 Nm
Lubrication system	
Oil capacity	17 quarts 16,1 liters
Oil capacity, drop box	2 quarts 1,9 liters
Oil viscosity requirements	
Units ship with Chevron Ursa Hydraulic 10W. Extreme operating temperatures may require the use of alternative transmission oils. For oil requirements, refer to the ZF 4 WG-98 TSC Service Manual.	
Workshop Maual, ZF Transmission, 4 WG-98 TSC	
Genie part number	1311107GT

Dana VDT12000 Transmission (GTH-1044 and GTH-1244 Only)

Transmission Type	3 speed powershift converter
Speeds, Forward	3
Speeds, Reverse	3
Torque Converter	
Maximum input	2300 rpm
Maximum torque	300 ft-lbs 410 Nm
Lubrication	
Oil capacity, transmission	14.3 quarts 13,5 liters
Oil capacity, drop box	1.1 quarts 1 liter
Oil viscosity requirements	
Units ship with Chevron Ursa Hydraulic 10W. Extreme operating temperatures may require the use of alternative transmission oils. For oil requirements, refer to the Dana VDT12000 Service Manual.	
Dana VDT12000 Service Manual	
Genie part number	218706GT

Specifications

Dana Planetary Drive Axle

Steering	Integrated steer cylinder
Joints	Heavy duty double U-joints
Steering angle, maximum	45°
Differential Type	Limited Slip 45%
Front Axle Lubrication- Dana 223	
Front differential	12.7 quarts 12 liters
Axle planetary end (each)	2 quarts 1.9 liters
Rear Axle Lubrication- Dana 223	
Rear differential	8.0 quarts 7.6 liters
Axle planetary end (each)	0.8 quarts 0.8 liters
Oil viscosity requirements	
Differential	Fuchs 85W90 LS (GL5)
Planetary ends	Fuchs 80W90 LS (GL5)
For additional axle information, refer to the Dana Axle Maintenance and Repair Manual	
Dana 223 Axle Maintenance and Repair Manual	
Genie part number	1284290GT

Hydraulic Hose and Fitting Torque Specifications

Your machine is equipped with Ryco ORFS or 37° JIC fittings and hose ends. Manufactures 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.

JIC 37° Hose End

SAE Dash Size	Torque
-7	17 ft-lbs / 23 Nm
-8	22 ft-lbs / 30 Nm
-9	29 ft-lbs / 39 Nm
-12	57 ft-lbs / 77 Nm
-14	105 ft-lbs / 142 Nm
-17	146 ft-lbs / 198 Nm
-19	173 ft-lbs / 235 Nm
-21	194 ft-lbs / 263 Nm
-26	228 ft-lbs / 309 Nm
-30	285 ft-lbs / 386 Nm
-40	440 ft-lbs / 597 Nm

JIC 37° Port Fitting

SAE Dash Size	Torque
-5	6 - 7 ft-lbs / 8 - 9 Nm
-6	8 - 9 ft-lbs / 11 - 12 Nm
-7	11 - 12 ft-lbs / 15 - 16 Nm
-8	14 - 15 ft-lbs / 19 - 21 Nm
-9	18 - 20 ft-lbs / 24 - 28 Nm
-12	36 - 39 ft-lbs / 49 - 53 Nm
-14	57 - 63 ft-lbs / 77 - 85 Nm
-17	79 - 88 ft-lbs / 107 - 119 Nm
-19	94 - 103 ft-lbs / 127 - 140 Nm
-21	108 - 113 ft-lbs / 147 - 154 Nm
-26	127 - 133 ft-lbs / 172 - 181 Nm
-30	158 - 167 ft-lbs / 215 - 226 Nm
-40	245 - 258 ft-lbs / 332 - 350 Nm

ORFS Hose End

SAE Dash Size	Torque
-9	10 - 12 ft-lbs / 14 - 16 Nm
-11	18 - 20 ft-lbs / 24 - 27 Nm
-13	32 - 35 ft-lbs / 43 - 47 Nm
-16	46 - 50 ft-lbs / 60 - 68 Nm
-19	65 - 70 ft-lbs / 90 - 95 Nm
-23	92 - 100 ft-lbs / 125 - 135 Nm
-27	125 - 140 ft-lbs / 170 - 190 Nm
-32	150 - 165 ft-lbs / 200 - 225 Nm

SAE O-ring Boss Port Fitting

SAE Dash Size	Torque
-6	8 - 10 ft-lbs / 11 - 13 Nm
-7	14 - 16 ft lbs / 20 - 22 Nm
-8	18 - 20 ft-lbs / 24 - 27 Nm
-9	24 - 26 ft-lbs / 33 - 35 Nm
-12	50 - 60 ft-lbs / 68 - 78 Nm
-14	72 - 82 ft-lbs / 98 - 110 Nm
-17	125 - 135 ft-lbs / 170 - 183 Nm
-19	170 - 190 ft-lbs / 230 - 260 Nm
-21	200 - 220 ft-lbs / 270 - 300 Nm
-26	210 - 280 ft-lbs / 285 - 380 Nm
-30	270 - 360 ft-lbs / 370 - 490 Nm

Specifications

SAE Flange Clamp Bolts	
Code 61	
SAE Dash Size	**Torque**
-8	15 - 18 ft lbs / 20 - 25 Nm
-12	21 - 29 ft lbs / 28 - 40 Nm
-16	27 - 35 ft lbs / 37 - 48 Nm
-20	35 - 46 ft lbs / 48 - 62 Nm
-24	46 - 58 ft lbs / 62 - 79 Nm
-32	54 - 66 ft lbs / 73 - 90 Nm
-40	79 - 91 ft lbs / 107 -124 Nm
-48	138 - 150 ft lbs / 186 - 203 Nm
Code 62	
SAE Dash Size	**Torque**
-8	15 - 18 ft lbs / 20 - 25 Nm
-12	25 - 33 ft lbs / 34 - 45 Nm
-16	41 - 50 ft lbs / 56 - 68 Nm
-20	63 - 75 ft lbs / 85 - 102 Nm
-24	116 - 133 ft lbs / 158 - 181 Nm
-32	200 - 217 ft lbs / 271 - 294 Nm

Torque Procedure

ORFS 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.

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

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

Repair Procedures



Observe and Obey:

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

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

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

Before Repairs Start:

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

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

☑ Use only Genie approved replacement parts.

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

Machine Configuration:

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

- Machine parked on a firm, level surface
- Boom in the stowed position
- Key switch in the off position with the key removed
- Wheels chocked

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.

1-1
Boom Proximity Switch

The boom angle switch is a proximity switch. This switch functions by sensing a change in the electromagnetic field of the switch, due to the introduction of metal into the field. A proximity switch is, simply, a metal detector.

The switch generates an electromagnetic field at the face of the switch. This field senses when steel has been moved close to the switch as well as when the steel has been moved away, which is how the switch contacts open and close.

These switches are of a fail-safe design. Should the switch or the switch wire circuit be faulty, the machine will not function outside its designed range of use.

The boom proximity switch is a component of the rear axle floating system. When the boom is raised at 50° or above, the rear axle will restrict the floating speed to improve stability, resulting in a slower floating speed.

How to Test a Proximity Switch

1 Remove the switch from the machine. Do not disconnect the switch wire harness from the machine.

2 Start the engine.

3 Move the switch away from any ferrous or metallic object

⊙ Result: The light of the limit switch assembly is not illuminated.

4 Move the switch close to any ferrous or metallic object

⊙ Result: The light of the proximity switch assembly turns on. The switch is functioning correctly.

Boom Components

How to Adjust the Boom Angle Proximity Switch

The boom angle proximity switch is attached to a mounting bracket, located between the boom and the chassis directly beneath the boom pivot pin. The switch location is adjustable.

1 Start the engine.

2 Raise the boom to 50°. Confirm with a digital level.

3 Working at the pivot end of the boom, locate the boom angle proximity switch. Loosen the fasteners, securing the proximity switch assembly to the chassis, just enough to allow the bracket to move.

4 Move the proximity switch assembly until the light of the proximity switch turns on, then move the proximity switch assembly until the light of the proximity switch just turns off.

5 Securely tighten the fasteners. Do not over tighten.

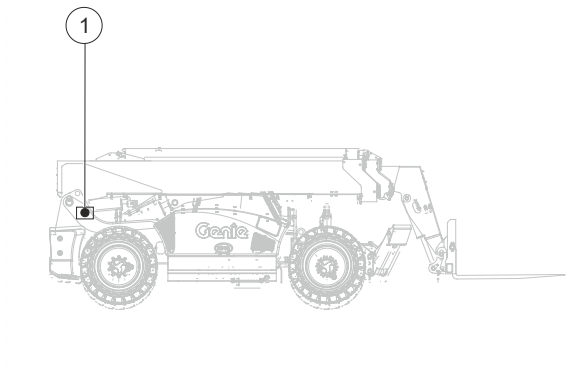
6 Lower the machine to 45°.

⊙ Result: The light of the proximity switch assembly is illuminated.

7 Raise the boom to 50°. Confirm with a digital level.

⊙ Result: The light of the proximity switch assembly is not illuminated. The proximity switch is properly calibrated.

⊠ Result: The light of the proximity switch assembly is illuminated. The proximity switch is not calibrated correctly. Repeat this procedure.



1 Boom angle proximity switch

1-2 Boom

How to Replace the Boom Wear Pads

1 **Lower wear pads**: Using a lifting strap from an overhead crane or a fork lift of sufficient capacity, lift the boom tube just enough to remove the weight from the pads.

2 Remove the wear pad mounting fasteners and remove the wear pads from the boom.

3 Lubricate the wear surface of the new pads. Refer to Maintenance Procedure in the appropriate Service or Maintenance Manual for your machine, *Lubricate the Boom*.

Note: Do not lubricate the side wear pads.

4 Install the wear pads. Install and securely tighten the fasteners. Do not over tighten.

How to Remove the Lifting Fork Frame

1 With the boom in the stowed position, attach a lifting strap from an overhead supporting device to the top of the lifting fork frame at the front of the boom. Support the frame. Do not apply any lifting pressure.

2 Working from the rear of the frame, lift the spring-assisted handle of the lock securing the lower fork frame lock pin to the fork frame mount. Use a soft metal drift to remove the pin.

3 Using the overhead supporting device, lift and remove the fork frame from the boom.

⚠ CAUTION Crushing hazard. The fork frame could fall if not properly supported when the lock pin is removed from the machine.

Boom Components

How to Replace the Retract Chains

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

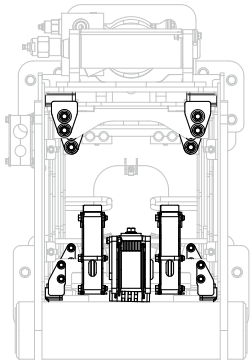
1 Start the engine and raise the boom to the horizontal position.

2 Extend the boom approximately 1 inch / 2,5 cm. Turn the machine off.

3 Working at the pivot end of the boom, remove the pins that secure the retract chain anchors to the boom lugs using a soft metal drift. Note the orientation.

4 Remove the anchors from the chains.

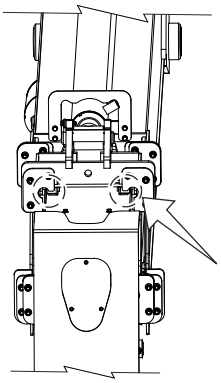
Note: Always replace the cotter pin with a new one.



5 Secure a rope to the end of the chain being replaced.

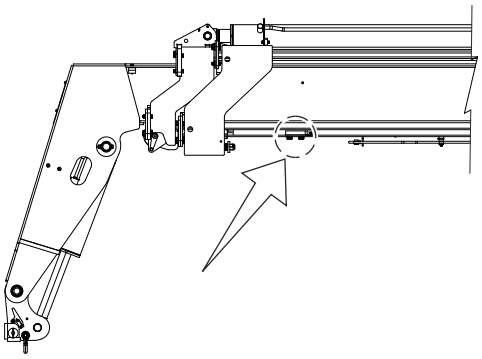
Note: Verify the rope is securely attached to the chain. If the rope becomes disconnected from the chain during the removal process, installation will be extremely difficult.

6 Remove the top, front wear pads that are between the boom tube number 1 and 2.



7 Using an overhead lifting device, slowly lift the #2 boom to remove the gap where the upper wear pads was removed from.

8 Use hook or a 3/8-16 UNC threaded rod to secure the retract anchors.



9 Remove the retaining fasteners securing the chain anchors. Pull the chain anchors out the front of the boom with the chains attached.

Note: The retaining fasteners for the front anchors were torqued and must be replaced.

⚠ CAUTION

Bodily injury hazard. The chain will begin falling out of the boom on its own after a certain amount has been removed and not properly supported by the rope when it is removed from the machine.

Boom Components

10 Remove chain anchors from chain.

11 Attach the chain anchors to the new chain.

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

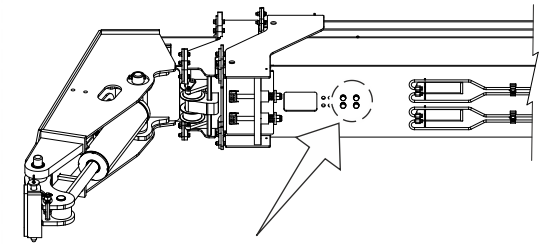
12 Attach the new chain to the rope running through the boom.

13 Attach a 3/8-16 UNC threaded rod to chain anchor.

14 Working at the fork end of the boom, use the rope to carefully pull the chain through the boom just until the end of the chain is accessible. Remove the rope from the chain.

15 Secure the chain anchors to the holes closest to the pivot end of the boom.

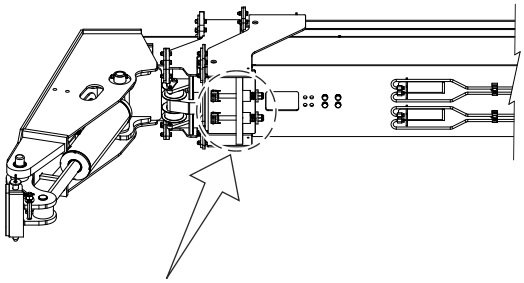
Torque= 475 ft-lbs / 644 Nm.



16 Lower the boom down onto the wear pads.

17 Install the wear pads on the top front of boom tube number 1.

18 Loosen and extend chain anchors of boom tube number 1.



19 Use a combination of a forklift pushing on the horsehead and the extend cylinder to fully stow the boom.

Note: The loosened extend chains should allow the boom to stow farther than in normal operation and allow some extra slack on the retract chains for installation.

20 Remove the rope from the chains and install the chain anchors.

21 Install the retract chain anchors to the boom. Tighten the extend chain anchors.

22 Adjust the chains. Refer to the Maintenance Procedure in the appropriate Maintenance Manual for your machine, *Adjust the Boom Sequencing Chains*.

NOTICE Component damage hazard. Chains can be damaged if the boom is operated when the chains are not properly adjusted.

Boom Components

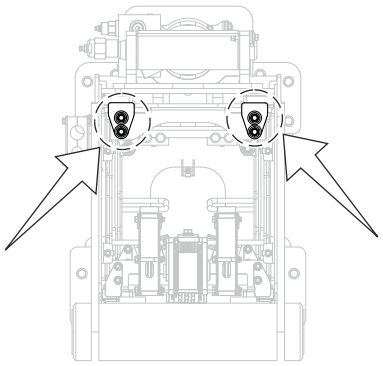
How to Replace the Extend Chains

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

1 Start the machine and raise the boom to a horizontal position.

2 Extend the boom 10 inches / 25,4 cm. Turn the machine off.

3 Remove the upper rear wear pads between the #2 boom.

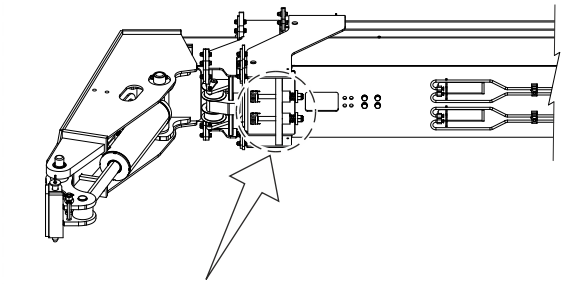


4 Start the machine and retract the boom 8 inches / 20,3 cm.

Note: Verify the retaining fasteners that hold the 0-1-2 chain anchor is accessible.

5 Working at the fork end of the boom, loosen the chain anchors and disconnect them from the chains.

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

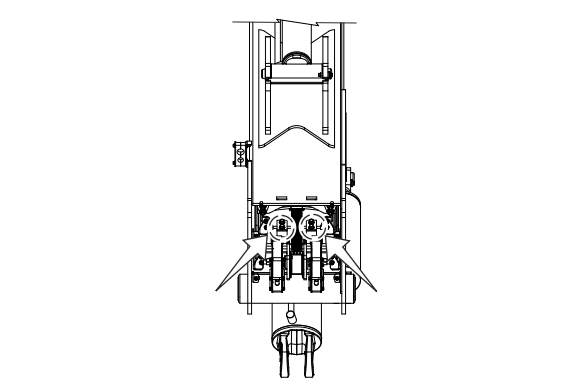


6 Secure a rope to the end of the chain being replaced.

Note: Verify the rope is securely attached to the chain. If the rope becomes disconnected from the chain during the removal process, installation will be extremely difficult.

Boom Components

7 At the pivot end of the boom, remove retaining fasteners securing the step anchors.



8 Use a pry-bar at the pivot end of the boom to lift the back edge of the number 2 boom tube up. Use blocks or shims to chock the boom tube up.

9 Remove the chain from the boom.

⚠ CAUTION Bodily injury hazard. The chain will begin falling out of the boom on its own after a certain amount has been removed and not properly supported by the rope when it is removed from the machine.

10 Remove the step anchors from the chain.

11 Attach the step anchors to the chain.

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

12 Attach the chain to the rope running through the boom.

13 Working at the fork end of the boom, use the rope to carefully pull the chain through the boom just until the end of the chain is accessible. Remove the rope from the chain.

14 Secure the step anchors to the boom.

15 Remove the blocks or shims used to chock up the number 2 boom tube.

16 Start the machine and fully retract the boom. Turn the machine off.

17 At the fork end of the boom, attach the chain anchors to the chains.

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

18 Start the machine and extend the boom 10 inches / 25,4 cm. Turn the machine off.

19 Install the upper rear wear pads between the boom tube number 1 and 2. Tighten the extend chain anchors.

20 Adjust the chains. Refer to the Maintenance Procedure in the appropriate Maintenance Manual for your machine, *Adjust the Boom Sequencing Chains*.

NOTICE Component damage hazard. Chains can be damaged if the boom is operated when the chains are not properly adjusted.

Boom Components

How to Remove the Boom

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

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or 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 lifting fork and frame. Refer to Repair Procedure, *How to Remove the Lifting Fork Frame.*

2 Attach a lifting strap from an overhead 10 ton / 10,000 kg crane to the fork end of the boom. Support the boom. Do not apply any lifting pressure.

3 Select a fork level cylinder. Remove the fasteners securing the fork level cylinder rod-end pivot pin to the boom.

4 Using a lifting strap from another overhead crane, support the rod-end of the fork level cylinder. Do not apply any lifting pressure.

5 Use a soft metal drift to remove the fork level cylinder pivot pin.

6 Lower the fork level cylinder onto the chassis.

⚠ WARNING Crushing hazard. Keep hands clear of the cylinder manifold when lowering the cylinder.

7 Repeat this procedure beginning with step 3 for the other fork level cylinder.

8 Select a lift cylinder. Tag, disconnect and plug the hydraulic hoses at the lift cylinder manifold. Cap the fittings on the cylinder manifold.

9 Remove the fasteners securing the lift cylinder barrel-end pivot pin to the chassis.

10 Support and secure the barrel end of the lift cylinder to the boom.

11 Use a soft metal drift to remove the lift cylinder pivot pin.

12 Repeat this procedure beginning with step 8 for the other lift cylinder.

13 Tag, disconnect and plug the hydraulic hoses at the hydraulic hard line connections at the pivot end of the boom. Cap the fittings.

14 Using the overhead crane, raise the boom to a horizontal position.

⚠ WARNING Crushing hazard. The lift cylinder will fall if not properly supported when the boom is raised.

15 Remove the fasteners securing the boom pivot pin to the chassis.

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

⚠ DANGER Crushing hazard. The boom will fall if not properly supported when the pivot pin is removed from the machine.

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

⚠ DANGER Crushing hazard. The boom could become unbalanced and fall if not properly supported when removed from the machine.

NOTICE Component damage hazard. The weight of the boom assembly may crush the hydraulic hard lines under the boom. Use caution when placing the boom assembly onto a structure capable of supporting it.

How to Disassemble the Boom

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

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or 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 extension cylinder. Refer to Repair Procedure, *How to Remove the Extension Cylinder*.

2 Remove the boom. Refer to Repair Procedure, *How to Remove the Boom*.

3 Select a lift cylinder. Remove the fasteners securing the lift cylinder rod-end pivot pin to the boom.

4 Using a lifting strap from an overhead crane, support the lift cylinder. Do not apply any lifting pressure.

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

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

6 Repeat this procedure beginning with step 3 for the other lift cylinder.

7 Remove the fastener securing the fork level cylinder rod-end pivot pin to the fork frame mount.

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

9 Attach a lifting strap from an overhead crane to the barrel end of the fork level cylinder. Support the cylinder. Do not apply any lifting pressure.

10 Tag, disconnect and plug the fork level cylinder hoses from the cylinder manifolds. Cap the fittings.

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

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

11 Remove the fasteners securing the fork level cylinder barrel-end pivot pin to the boom.

12 Use a soft metal drift to remove the pivot pin. Remove the cylinder from the machine.

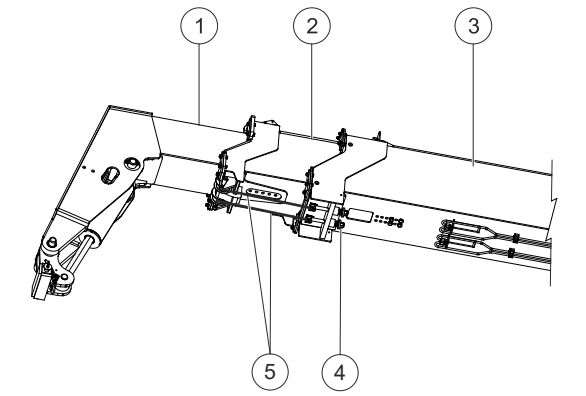
⚠WARNING Crushing hazard. The cylinder could fall if not properly supported when the pivot pin is removed from the machine.

13 Remove the inspection cover at the pivot end of the boom.

Boom Components

14 Working at the pivot end of the boom, remove the hose keepers from the hose roller assembly.

Note: The hose keepers ensure that the hoses do not jump off the hose rollers.



1 boom tube number 3
2 boom tube number 2
3 boom tube number 1
4 dual-chain tensioner
5 tube 2 extension chains

15 Working at the pivot end of the boom, remove the fasteners securing the hose roller assembly to boom tube number 2. Remove the hose roller assembly from the boom.

16 Working at the pivot end of the boom, remove the fasteners securing the cable track mount brackets to the boom assembly. Remove the cable track from boom.

17 Working at the fork end of the boom, tag, disconnect and plug the hydraulic hoses at the hard lines that run under the boom. Cap the fittings.

18 Working at the fork end of the boom, remove the fasteners securing the twin line clamps to the boom.

Note: Pay attention to how the hoses are routed before removing the slider from the boom.

Note: Remove and cap the small "whipper hoses" from the twin lines and to label everything. See the instructions on "Removing the cable track assembly".

19 Working at the pivot end of the boom, carefully remove the cable bridge from the boom.

20 Working at the fork end of the boom, remove the fasteners securing the extension chain rollers to the bottom of boom tube number 2. Remove the chain rollers from the boom.

21 Working at the pivot end of the boom, remove the fasteners securing the retraction chain block pivot pin to boom tube number 3.

22 Working at the fork end of the boom, remove the wear pads from boom tube number 2.

23 Support and slide boom tube number 3 out of boom tube number 2. Place boom tube number 3 on a structure capable of supporting it.

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

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

24 Working at the pivot end of the boom, remove the fasteners securing the chain roller to boom tube number 2. Remove the chain roller from the boom.

25 Working at the fork end of the boom, remove the wear pads from boom tube number 1.

26 Support and slide boom tube number 2 out of boom tube number 1. Place boom tube number 2 on a structure capable of supporting it.

⚠WARNING Crushing hazard. Boom tube number 1 could become unbalanced and fall when removed from the boom tube number 0 if not properly supported and attached to the overhead crane.

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

Boom Components

1-3
Boom Lift Cylinder

How to Remove the Lift 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 Attach a lifting strap from an overhead supporting device to the fork end of the boom. Support the boom. Do not apply any lifting pressure.

2 Tag, disconnect and plug the hydraulic hoses at the lift cylinder manifold. Cap the fittings.

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

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

3 Attach a lifting strap from an overhead supporting device to the rod end of the lift cylinder. Support the cylinder. Do not apply any lifting pressure.

4 Remove the fasteners securing the lift cylinder barrel-end pivot pin to the chassis.

5 Use a soft metal drift to remove the pivot pin.

6 Remove the fasteners securing the lift cylinder rod-end pivot pin to the boom.

7 Use a soft metal drift to remove the pivot pin.

⚠DANGER Crushing hazard. The boom will fall if not properly supported when the pivot pin is removed from the machine.

8 Using the overhead supporting device, raise the boom from the horizontal position. Remove the cylinder from the machine.

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

1-4
Boom Extension Cylinder

How to Remove the Extension 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 to a horizontal position.

2 Tag, disconnect and plug the hydraulic hoses at the boom extension cylinder manifold. Cap the fittings.

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

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

3 Attach a lifting strap from an overhead crane to the center point of the boom extension cylinder. Support the cylinder. Do not apply any lifting pressure.

4 Remove the extension cylinder support loop from the top side of the boom 1.

Note: The extension cylinder support loop is located at the fork end of the boom.

5 Remove the fasteners securing the extension cylinder pivot pins to the boom.

6 Use a soft metal drift to remove both pivot pins. Remove the cylinder from the machine.

⚠DANGER Crushing hazard. The boom will fall if not properly supported when the pivot pins are removed from the machine.

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

Boom Components

1-5
Fork Level Cylinder

How to Remove the Fork Level 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 Remove the lifting fork frame. Refer to Repair Procedure, *How to Remove the Lifting Fork Frame*.

2 Remove the fastener securing the fork level cylinder rod-end pivot pin to the fork frame mount.

3 Use a soft metal drift to remove the pivot pin.

4 Attach a lifting strap from an overhead crane to the barrel end of the fork level cylinder. Support the cylinder. Do not apply any lifting pressure.

5 Tag, disconnect and plug the fork level cylinder hoses from the cylinder manifolds. Cap the fittings.

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

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

6 Remove the fasteners securing the fork level cylinder barrel-end pivot pin to the boom.

7 Use a soft metal drift to remove the pivot pin. Remove the cylinder from the machine.

⚠WARNING Crushing hazard. The cylinder could fall if not properly supported when the pivot pin is removed from the machine.

1-6 Hydraulic Hoses

How to Replace the Fork Level and/or Auxiliary Cylinder Hoses

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.*

Replace the lower hoses:

1 Fully retract the boom.

2 Fully lower the tips of the lifting forks.

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

4 Attach a lifting strap from an overhead crane to the top of the lifting fork frame. Support the frame. Do not apply any lifting pressure.

5 Disconnect and plug the fork level cylinder supply hoses at the cylinder manifold or the auxiliary supply hoses at the quick connect fittings. Cap the fittings.at the pivot end of the boom, remove the fasteners securing the cable track and mounts to the boom assembly.

6 Working near the center of the boom assembly, tag, disconnect and plug the hydraulic hoses from the hydraulic hard lines under boom tube number1. Cap the hard lines.

7 Securely connect a 30 feet / 10 m length of rope to each end of the hoses disconnected in steps 5 and 6. Securely tie off the other end of each section of rope to the boom structure.

8 Remove the hose clamp at the fork end of the boom by loosening the hose clamp bolt located on the top of the boom.

9 Remove the cover from the pivot end of the boom and remove the hose sheave cover.

Note: Partial extension of the boom on some machines may be necessary to access the sheave cover fasteners.

10 Select one of the hoses. Pull the hose out of the boom.

Note: Rope coming loose from either end of the hose or the boom during hose removal may result in a difficult reassembly. Be sure each section of rope is securely attached to both the hose and the boom structure before pulling the hose out of the boom.

11 Remove the rope from the hose. Discard the hose.

12 Securely install a section of rope onto each end of the new hose assembly.

Note: Tag each hose before assembly.

13 Install the new hose assembly into the boom in the same manner the hose was removed. Using the rope, carefully pull the hose through the boom until each end is accessible.

14 Install both ends of the hose assembly onto the correct connection points. Torque to specification. Refer to Section 2, Specifications.

15 Repeat this procedure for the remaining hose to be replaced, beginning with step 8.

16 Tension the hoses using the Repair procedure, "How to Adjust the Fork Level and Auxiliary Hydraulic Hoses".

17 Repeat this procedure for the auxiliary hydraulic hoses beginning with step 5.

18 Remove the lifting strap from the fork frame.

19 Install hose sheave covers removed in step 9.

20 Install the covers onto both ends of the boom. Install and securely tighten the retaining fasteners.

Operator's Compartment

2-1
Operator's Compartment

How to Remove the Operator's Compartment

The operator's compartment is used to activate machine functions while sitting in the operator's drivers seat.

Within the operator's compartment there is a transmission column shifter, steering selector, 4-way controller, accelerator pedal, brake pedal and a differential lock switch. All of these components are replaceable.

For further information or assistance, consult the Genie Product Support.

⚠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 Disconnect the battery from the machine.

⚠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 secondary function manifold under the manifold inspection cover. Tag, disconnect and plug the hydraulic hoses at ports BP and BT of the secondary function manifold. Cap the fittings.

3 Locate the brake manifold under the manifold inspection cover. Tag, disconnect and plug the hydraulic hose at the underside of the brake manifold. Cap the fitting.

4 Working under the dashboard, locate the hydraulic hose at port L of the steering orbitral.

5 Working at the front axle, locate the hydraulic hose connected to the front axle steer cylinder at the operator's compartment side of the machine. Tag, disconnect and plug the hydraulic hose. Cap the fitting.

6 Tag, disconnect and plug the hydraulic hoses at ports SUP, SUR and SUT of the secondary function manifold. Cap the fitting.

⚠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 hose at port JP of the secondary function manifold. Cap the fitting.

⚠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 fasteners securing the joystick mount to the operator's compartment. Disconnect the joystick harness and the remove the joystick assembly.

9 Working inside the chassis, tag and disconnect the wire harnesses at the connectors next to the operator's compartment.

10 Support and secure the operator's compartment to an adjustable table capable of supporting the weight and that will allow the operator's compartment to remain in an upright and stable position.

NOTICE Component damage hazard. Wrapping a strap around the cab and lifting using an overhead crane can put excessive pressure on the glass windows of the cab, causing the windows to break. Do not lift the cab using a strap from an overhead crane if the strap contacts the windows.

Note: Placing a wedge between the operator's compartment and the adjustable table may be required to keep the operator's compartment stable.

11 Remove the lower fasteners securing the operator's compartment to the chassis.

12 Remove the upper fasteners securing the operator's compartment to the chassis.

⚠WARNING Crushing hazard. The operator's compartment will fall if not properly supported when the fasteners are removed from the machine.

13 Slowly move the operator's compartment away from the chassis while feeding all loose hoses, cables and wires through the opening of the chassis.

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

Bolt torque specification	
Operator's cab mounting bolts	750 ft-lbs 1017 Nm

2-2 Machine Controls

How to Remove the Steering Column

1 Disconnect the battery from the machine.

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

2 Remove the fasteners securing the transmission control lever and turn signal shifter, if equipped, to the column. Carefully separate the lever from the column.

3 Remove the nut securing the key switch to the dash panel. Gently push the key switch through the opening.

4 Remove the fasteners securing the dash panel to the dashboard.

5 Carefully pull the dash panel towards the seat of the operator's compartment.

6 Tag and disconnect the wire harness from the componments of the dash panel. Remove the dash panel from the machine.

7 Loosen the two lower fasteners securing the dash frame to the operator's compartment.

8 Remove the two upper fasteners securing the dash frame to the operator's compartment.

9 Rotate the dash frame towards the seat of the operator's compartment.Remove the dashboard from the machine.

10 Tag and disconnect the ground wire of the steer column.

11 Support and secure the steer orbitral to the dash frame.

12 Remove the fasteners securing the steer column and steer orbitral to the dash frame.

13 Lower the steer orbitral and remove the steer column from the machine.

Operator's Compartment

How to Remove the Steering Wheel

1 Open the access door above the hydraulic tank.

2 Disconnect the battery from the machine.

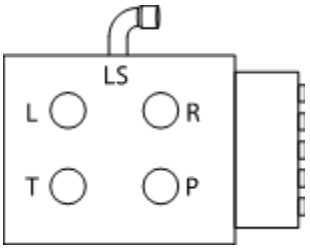
⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

3 Remove the horn button from the steering wheel. Remove the nut securing the steering wheel to the column and remove the steering wheel.

How to Remove the Steer Orbitral

1 Remove the steering column. Refer to Repair Procedure, *How to Remove the Steering Column*.

2 Working under the dashboard, locate the hydraulic hose at port L of the steering orbitral.



3 Follow the hydraulic hose from port L of the steer orbitral to its connection at the front axle of the machine. Tag, disconnect and plug the hydraulic hose at the front axle. Cap the fitting.

4 Tag, disconnect and plug the hydraulic hoses at ports SUP, SUR and SUT of the secondary function manifold. Cap the fitting.

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

5 Tag, disconnect and plug the hydraulic hose at port SULS of the primary function manifold. Cap the fitting.

6 Slowly move the steer orbitral away from the dash frame while feeding all loose hoses through the opening of the chassis.

Operator's Compartment

How to Remove the Joystick - Models with Electronic Joystick

1 Disconnect the battery from the machine.

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

2 Remove the side access panel.

3 Tag and disconnect the joystick wire harness from the machine.

4 Remove the fasteners securing the joystick mount panel to the side console.

5 Remove the fasteners securing the joystick to the mount panel. Remove the joystick.

How to Remove the Brake Pedal Assembly

1 Disconnect the battery from the machine.

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

2 Fully press and release the brake pedal a minimum of 10 times to release the hydraulic pressure in the brake system.

3 Tag, disconnect and plug the hydraulic hoses at ports BP and BT of the secondary hydraulic manifold. 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.

4 Follow the hydraulic hose from port A of the brake pedal manifold to the brake manifold. Tag, disconnect and plug this hydraulic hose at the brake manifold. Cap the fitting.

5 Remove the fasteners securing the brake pedal assembly to the dash frame.

6 Gently rotate the brake pedal in an upwards direction and slowly move the brake pedal assembly away from the dash frame while feeding all loose hoses through the opening of the chassis.

Operator's Compartment

How to Remove the Gauge Cluster Assembly

1 Disconnect the battery from the machine.

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

2 Remove the fasteners securing the transmission control lever to the column. Carefully separate the lever from the column.

3 Grasp the edge of the dash cluster and pull the cluster through the opening in the dashboard.

4 Tag and disconnect the wire harness from the dash cluster. Remove the dash cluster from the machine.

3-1
Fuel and Hydraulic Tanks

How to Remove the Fuel and Hydraulic Tank Assembly

⚠ DANGER Explosion and fire hazard. Engine fuels are combustible. Remove the fuel tank in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

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

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

1 Disconnect the battery from the machine.

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

FUEL TANK

1 Remove the filler cap from the fuel tank.

2 Place a drain pan or other suitable container under the fuel tank.

3 Using an approved hand-operated pump, drain the fuel tank into a container of suitable capacity. 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/or diesel fuel.

4 Remove fasteners on the top of the fuel tank from inside the cab.

5 Remove fasteners on the bottom of the fuel tank.

6 Remove the fuel tank from bracket.

Fuel and Hydraulic Tanks

HYDRAULIC TANK

1 Remove the access cover to the hydraulic tank.

2 Remove the filler cap from the hydraulic tank.

3 Place a drain pan or other suitable container under the hydraulic tank. Refer Specifications, *Machine Specifications*.

4 Remove the drain plug from the hydraulic tank and completely drain the tank.

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

5 Tag, disconnect and plug the supply and return hoses from the hydraulic tank. Cap the fittings.

6 Lift boom and insert the safety chock.

7 Remove the cover under lift cylinder.

8 Remove the def tank and pump.

9 Remove the fasteners securing the tank assembly to the chassis. Remove the tank from the machine.

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

4-1 Engines

How to Repair the Deutz TCD3.6 Engine

Maintenance procedures and additional engine information is available in the Deutz TCD3.6 Workshop Manual.

Deutz TCD3.6 T3/T4i Workshop Manual	
Genie part number	218704
Deutz TCD3.6 T4F Workshop Manual	
Genie part number	1270993

4-2 Engine Fault Codes

How to Retrieve Engine Fault Codes

When the engine Electronic Control Module (ECM) detects an abnormal operating condition, a fault code is immediately stored in the ECM memory. At the same time, a colored warning lamp is illuminated.

To view the fault code, push and hold the diagnostic button for 5 seconds. The fault code will be displayed on the screen, if present. If more than one code is present, quickly push the diagnostic button to cycle through the codes. Push and hold the diagnostic button for 5 seconds to return to the operation screen.

To learn the specifics of and how to use the fault codes, refer to, Fault Codes Section.

Transmission

5-1
Transmission

How to Repair the Transmission

Repair procedures and additional transmission information is available in the ZF WG-98 Transmission Repair Manuals.

Repair Manual, ZF Transmission, 4 WG-98 TSC	
Genie part number	1311107GT

6-1 Hydraulic Pump

How to Test 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 Tag, disconnect and plug the high pressure hydraulic hose from the primary function manifold. Cap the fitting on the main valve.

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

Note: The high pressure hose is the smaller of the two hoses.

2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the high pressure hose disconnected in step 1.

3 Hold the manual fuel shut-off lever on the engine in the closed position.

4 Observe the pressure gauge while cranking the engine in one second intervals.

⊙ Result: If the pressure gauge reads 3190 psi / 220 bar, immediately stop. The pump is good.

☒ Result: If the pressure fails to reach 3190 psi / 220 bar, the pump needs to be adjusted OR or the pump or pump coupling is faulty and will need to be serviced or replaced.

NOTICE Component damage hazard. There is no relief valve in the hydraulic pump and the pump can be damaged if the pressure is allowed to exceed specification. When testing the pump, crank the engine in one second intervals until the correct pressure is confirmed. Do not over-pressurize the pump.

5 Remove the pressure gauge and install the high pressure hose onto the pump. Torque to specification. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

⚠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.

Hydraulic Pump

How to Remove the Function Pump

⚠ 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 engine off and cool.

1 Open the access door above the hydraulic tank.

2 Disconnect the battery from the machine.

⚠ 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 wire harness from the pump.

4 Tag and disconnect the case drain hose at the top of the pump. Cap the fitting on the pump.

Note: Placing the open end of the case drain hose below the hydraulic oil level in the hydraulic tank will result in excessive hydraulic fluid leaking from the hose. Do not lower the open end of the case drain hose to below the fluid level of the hydraulic tank until the hose is plugged.

5 Tag, disconnect and plug the large hydraulic pump supply hose at the pump. Cap the fitting on the pump.

Note: Placing the open end of the pump supply hose below the fluid level in the hydraulic tank will result in excessive hydraulic fluid leaking from the hose. Do not lower the open end of the pump supply hose to below the fluid level of the hydraulic tank until the hose is plugged.

6 Tag, disconnect and plug the high pressure hose at the pump. Cap the fitting 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.

7 Tag and disconnect the transmission cooler hoses at the transmission cooler. Cap the fittings.

⚠ CAUTION Burn hazard. Contact with hot engine components may cause severe burns.

8 Remove the fasteners securing the pump to the transmission. Remove the pump from the machine.

Hydraulic Pump

How to Install the Function Pump

1 Carefully install the hydraulic pump onto the transmission. Install the fasteners and tighten to finger tight.

2 Torque the fasteners evenly to 85 ft-lbs / 115 Nm.

3 Install the smaller high pressure hose onto the pump outlet. Torque the fasteners to 27-37 ft-lbs / 37-50 Nm.

4 Install the larger low pressure hose onto the pump outlet. Install the hose retaining rings and fasteners. Torque the fasteners to 55-66 ft-lbs / 74-90 Nm.

5 Working at the case drain at the top of the pump, fill the pump with hydraulic fluid until the fluid is at the top of the case drain fitting.

6 Install the case drain hose onto the pump and torque to specification. Refer to Specifications, *Hydraulic Specifications*.

7 Securely install the wire harness onto the pump.

8 Check the level of the hydraulic fluid in the hydraulic tank. Add fluid if needed.

9 Prime the pump. Refer to Repair Procedure, *How to Prime the Function Pump*.

10 Start the engine and inspect for leaks.

11 Turn the machine off.

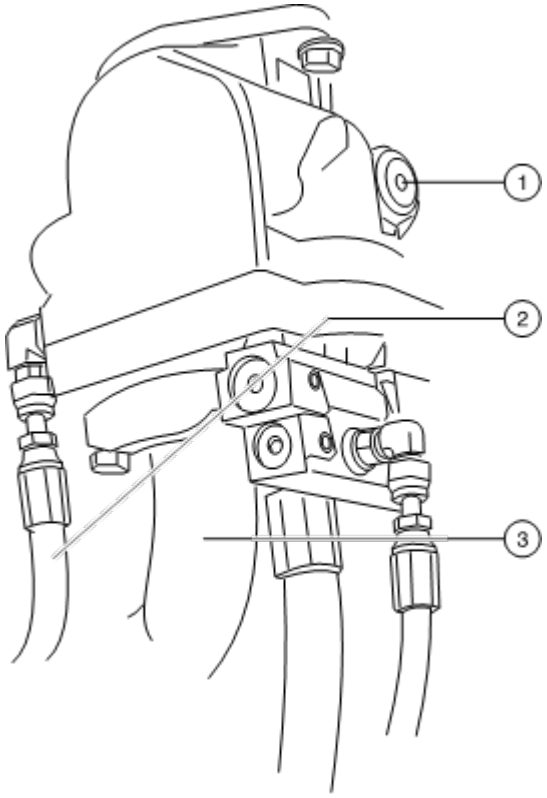
12 Adjust the pump pressure. Refer to Repair Procedures, *How to Adjust the Function Pump Standby Pressure* and *How to Adjust the Function Pump Pressure Pressure Compensator*.

How to Prime 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 Install all hoses onto the hydraulic pump. Torque to specification.Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

2 Locate the case drain filler plug at the side of the function pump.



1 case drain filler plug
2 case drain hose
3 hydraulic supply line (from tank)

Hydraulic Pump

3 Remove the plug and slowly fill the case drain port of the pump with hydraulic fluid until the oil level is even with the bottom of the hole. Install the plug and torque to 40 ft-lbs / 54 Nm.

4 Start the engine, allow the engine to run at low idle for 15 seconds then shut off the engine. Wait 15 seconds, then start the engine again. Allow the engine to run at low idle for 15 seconds and then shut off the engine.

5 Check for hydraulic leaks and clean up any oil that may have spilled.

How to Adjust the Function Pump Standby Pressure

1 Connect a 0 to 1000 psi / 0 to 100 bar pressure gauge to test port 'TP' on the primary function manifold. Refer to *Primary Function Manifold Components.*

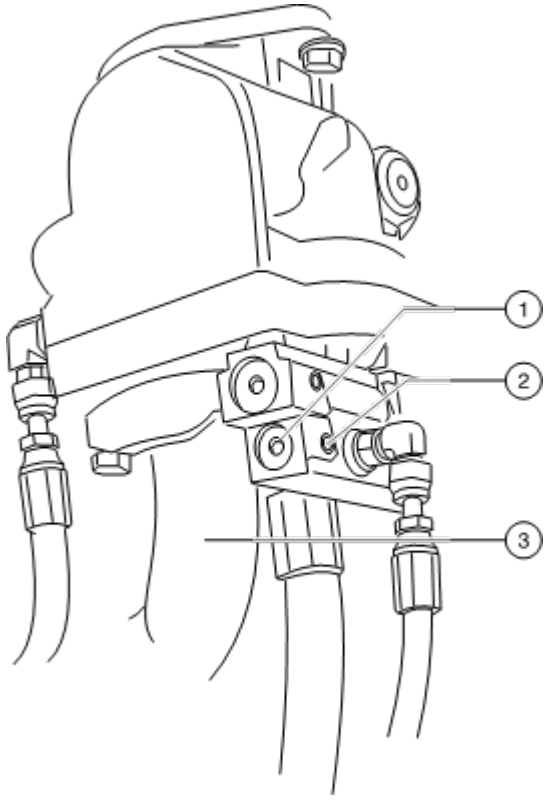
2 Start the engine and allow the engine to run at low idle.

3 Observe the pressure reading on the pressure gauge.

⊙ Result: The pressure gauge reads 450 ±25 psi / 31 ±1.7 bar. The pump is functioning correctly. Proceed to step 6.

☒ Result: The pressure gauge fails to read 450 ±25 psi / 31 ±1.7 bar. The pressure setting needs to be adjusted. Proceed to step 4.

4 Loosen the set screw for the standby pressure adjustment screw.



1 standby pressure adjustment screw
2 set screw
3 hydraulic supply line (from tank)

5 Adjust the function pump standby pressure. Turn the adjustment screw clockwise to increase the pressure or counterclockwise to decrease the pressure. Tighten the set screw.

6 Turn the engine off and remove the pressure gauge.

⚠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 Adjust the Function Pump Pressure Compensator

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

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to test port 'TP' on the primary function manifold. Refer to *Primary Function Manifold Components*.

2 Start the engine and allow the engine to run at low idle.

3 Fully retract the boom.

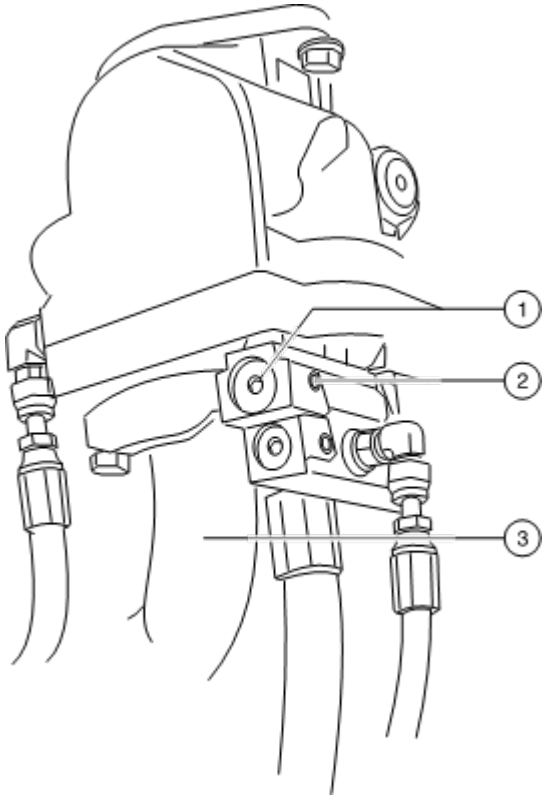
4 Continue to activate the boom retract function and observe the pressure reading on the pressure gauge.

⊙ Result: The pressure gauge reads 3190±50 psi / 220±3.4 bar. The pump is functioning correctly. Proceed to step 7.

⊠ Result: The pressure gauge fails to read 3190±50 psi / 220±3.4 bar. The pressure setting needs to be adjusted. Proceed to step 5.

Hydraulic Pump

5 Loosen the set screw for the pressure compensator adjustment screw.



1 pressure compensator adjustment screw
2 set screw
3 hydraulic supply line (from tank)

6 Adjust the pressure compensator pressure. Turn the adjustment screw clockwise to increase the pressure or counterclockwise to decrease the pressure. Tighten the set screw.

NOTICE

Component damage hazard. Do not adjust the pressure compensator higher than specified.

7 Turn the engine off and remove the pressure gauge.

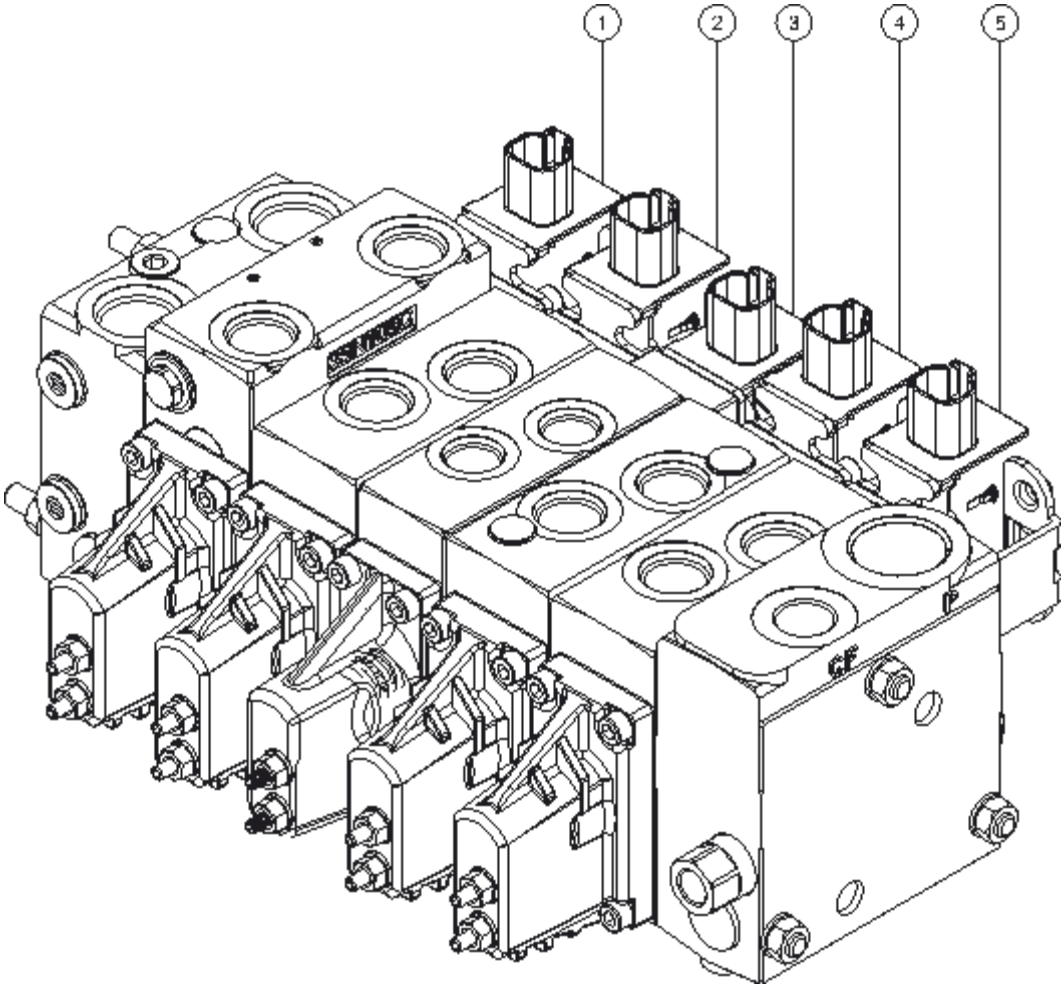
⚠WARNING

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.

7-1
PVG Manifold Components

The Proportional Valve Group manifold is located at the rear of the chassis.

Index No.	Description	Function
1	Assembly, tilt	Tilt functions
2	Assembly, lift	Lift functions
3	Assembly, auxiliary	Auxiliary functions
4	Assembly, extend/retract	Extend/retract functions
5	Assembly, sway	Sway functions



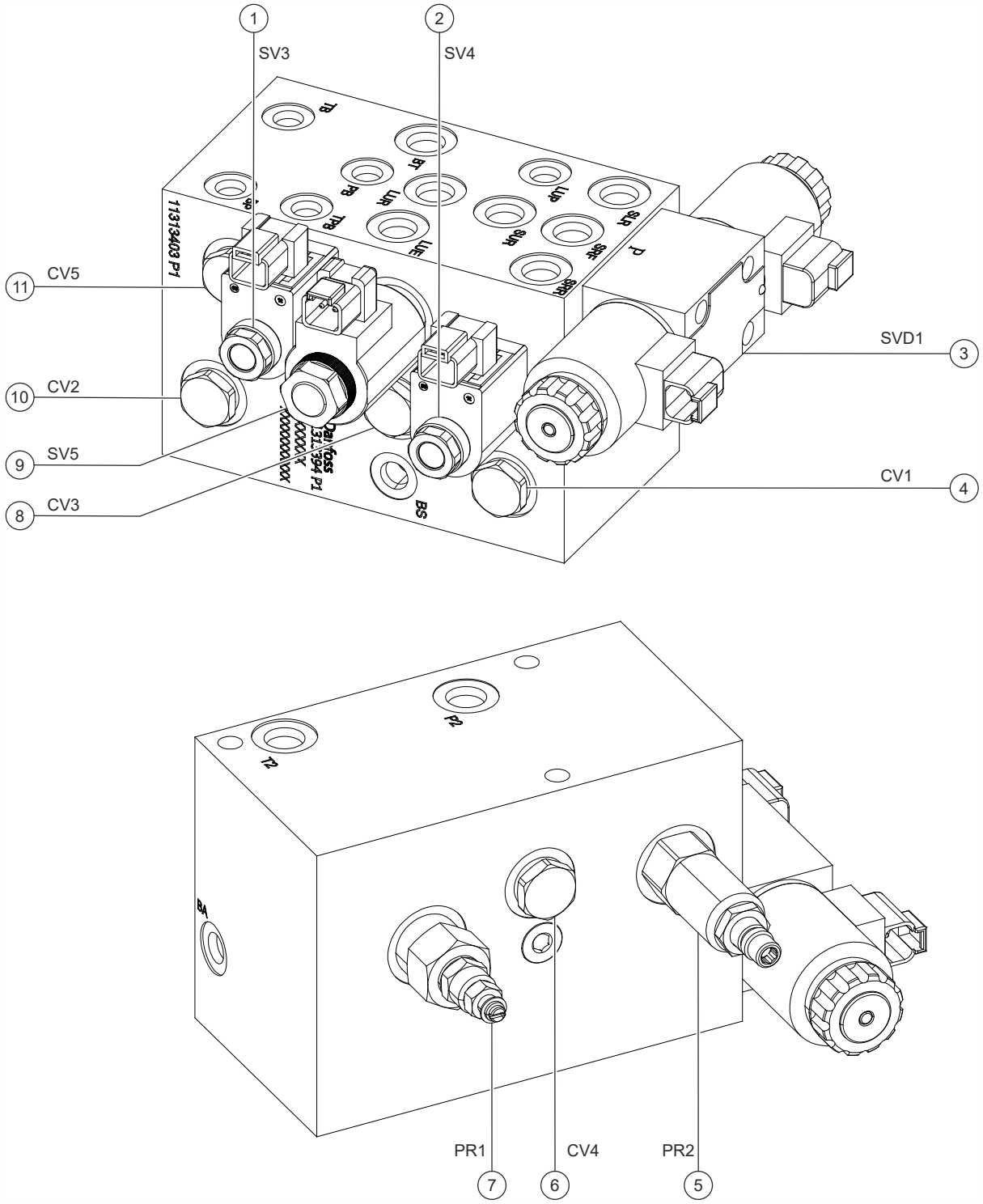
Manifolds

7-2
Secondary Function Manifold Components

The secondary function manifold is located under the manifold inspection cover.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	SV3	Parking brake	26-30 ft-lbs / 35-40 Nm
2	Solenoid valve, 2 position 3 way	SV4	Rear lock-up	26-30 ft-lbs / 35-40 Nm
3	DO3 valve, 3 position 4 way	SVD1	Steer left/right	60 in-lbs / 6.8 Nm
4	Check valve, 4 psi / 0.3 bar	CV1	Parking brake	20-25 ft-lbs / 27-34 Nm
5	Pressure reducing/relief valve, 50 psi / 3.4 bar	PR2	Rear lock-up circuit	30-35 ft-lbs / 41-47 Nm
6	Check valve, 4 psi / 0.3 bar	CV4	Rear lockup extend circuit	20-25 ft-lbs / 27-34 Nm
7	Pressure reducing/relief valve, 400 psi / 27.5 bar	PR1	Parking brake	33-37 ft-lbs / 45-50 Nm
8	Check valve, 4 psi / 0.3 bar	CV3	Rear lockup retract circuit	20-25 ft-lbs / 27-34 Nm
9	Solenoid valve, 2 position 4 way	SV5		33-37 ft-lbs / 45-50 Nm
10	Check valve, 4 psi / 0.3 bar	CV2	Tank return circuit	20-25 ft-lbs / 27-34 Nm
11	Check valve, 4 psi / 0.3 bar	CV5	Drive circuit	20-25 ft-lbs / 27-34 Nm

Manifolds

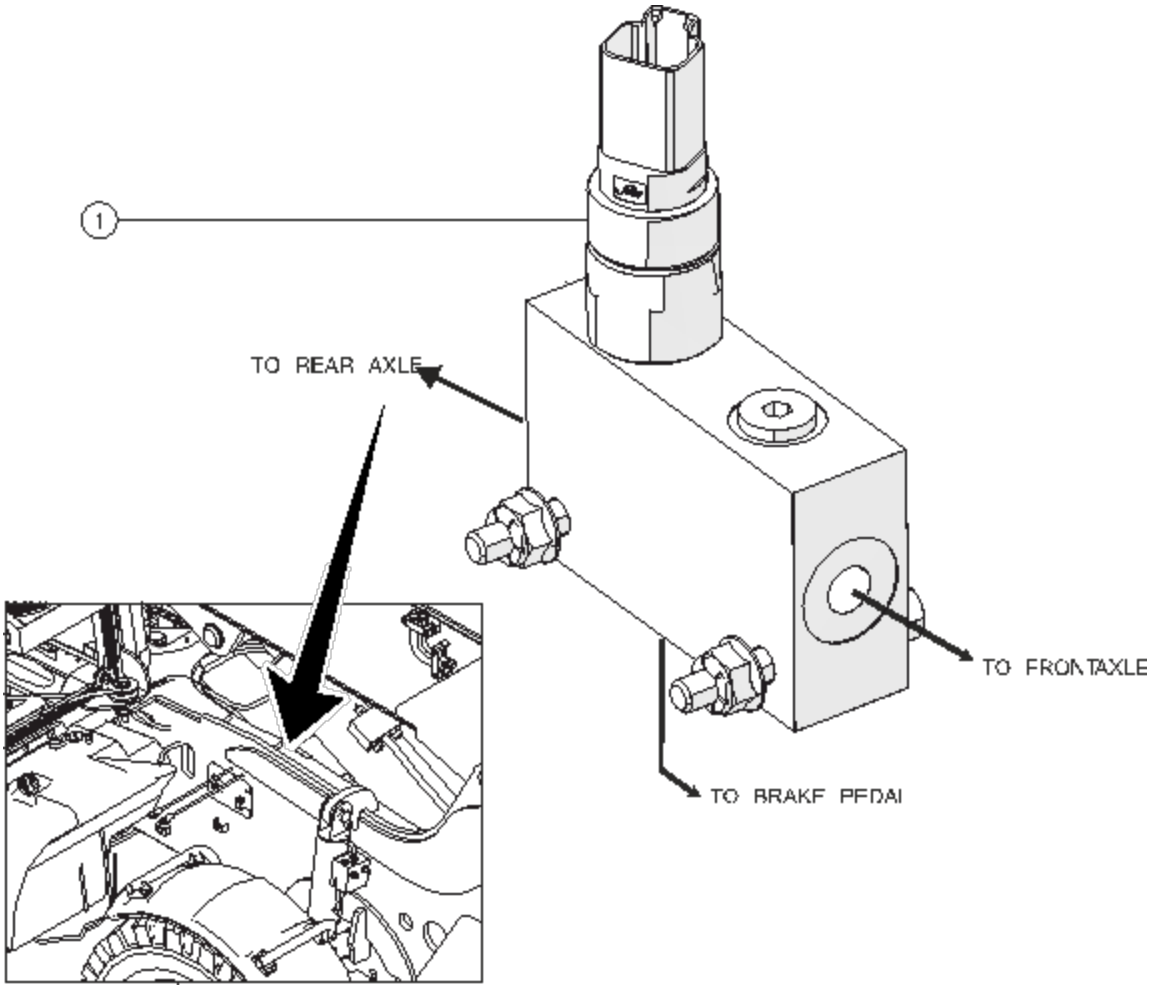


Manifolds

7-3
Brake Manifold Components

The brake manifold is mounted next to the secondary manifold located under the manifold inspection cover.

Index No.	Description	Schematic Item	Function	Torque
1	Pressure switch, 450 psi / 31 bar	-	Service brake	11 ft-lbs / 14.9 Nm



7-4
Valve Adjustments - Secondary Function Manifold

How to Set the Parking Brake System Pressure

Note: Be sure that the hydraulic oil level is visible in the inspection glass of the hydraulic tank.

1 Install a 0 to 1000 psi / 0 to 100 bar pressure gauge into test port 'TP' at the top of the primary function manifold, Refer to Primary Function Manifold Components.

2 Start the engine. Allow the engine to idle after warming the engine to operating temperature.

3 Without operating any machine controls, observe the reading on the pressure gauge.

⊙ Result: The pressure gauge reads 450 ±25 psi / 31 ±1.7 bar. The pump is functioning correctly.

⊠ Result: The pressure gauge fails to read 450 ±25 psi / 31 ±1.7 bar. The pressure setting needs to be adjusted. Refer to Repair Procedure, *How to Adjust the Function Pump Pressure*.

4 Turn the machine off. Remove the pressure gauge from the test port.

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

5 Install a 0 to 1000 psi / 0 to 100 bar pressure gauge into test port 'TPB' at the top of the secondary function manifold, Refer to Secondary Function Manifold Components.

6 Start the engine. Allow the engine to idle.

⊙ Result: The pressure gauge reads 400 psi / 27.5 bar. The pressure setting is correct. Proceed to step 11.

⊠ Result: The pressure gauge fails to read 400 psi / 27.5 bar. The pressure setting needs to be adjusted. Proceed to step 7.

7 Turn the machine off. Hold the brake pressure reducing/relief valve with a wrench and remove the cap.

8 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure.

NOTICE Component damage hazard. Do not adjust the relief valve pressures higher than specifications.

9 Install the relief valve cap.

10 Repeat this procedure beginning with step 6.

11 Turn the machine off. Remove the pressure gauge from the test port.

⚠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.

Manifolds

How to Set the Rear Lock-up System Pressure

Note: Be sure that the hydraulic oil level is visible in the inspection glass of the hydraulic tank.

1 Install a 0 to 1000 psi / 0 to 100 bar pressure gauge into test port 'TP' at the top of the primary function manifold. Refer to Primary Function Manifold Components.

2 Start the engine. Allow the engine to idle after warming the engine to operating temperature.

3 Without operating any machine controls, observe the reading on the pressure gauge.

⊙ Result: The pressure gauge reads 450 ±25 psi / 31 ±1.7 bar. The pump is functioning correctly.

⊠ Result: The pressure gauge fails to read 450 ±25 psi / 31 ±1.7 bar. The pressure setting needs to be adjusted. Refer to Repair Procedure, *How to Adjust the Function Pump Pressure*.

4 Turn the machine off. Remove the pressure gauge from the test port.

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

5 Install a 0 to 500 psi / 0 to 50 bar pressure gauge into test port 'TR' at the top of the secondary function manifold, Refer to Secondary Function Manifold Components.

6 Start the engine. Allow the engine to idle.

⊙ Result: The pressure gauge reads 50 psi / 3.4 bar. The pressure setting is correct. Proceed to step 11.

⊠ Result: The pressure gauge fails to read 50 psi / 3.4 bar. The pressure setting needs to be adjusted. Proceed to step 7.

7 Turn the machine off. Hold the rear lockup pressure reducing/relief valve with a wrench and remove the cap.

8 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure.

NOTICE Component damage hazard. Do not adjust the relief valve pressures higher than specifications.

9 Install the relief valve cap.

10 Repeat this procedure beginning with step 6.

11 Turn the machine off. Remove the pressure gauge from the test port.

⚠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.

7-5 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

Description	Specification
Solenoid valve, 2 position 4 way 12V DC with diode (schematic items AA, AD, AY, AAB and BAA)	8.9Ω
Solenoid valve, 2 position 2 way 12V DC with diode (schematic items AAC and EA)	8.9Ω
DO3 valve, 3 position 4 way 12V DC with diode (schematic items CA and EB)	5.6Ω
Solenoid valve, 2 position 2 way 12V DC with diode (schematic items FA)	8.8Ω
Solenoid valve, 2 position 3 way 12V DC with diode (schematic items CF, CO and CP)	8.9Ω
Solenoid valve, 2 position 4 way 12V DC with diode (schematic items CG)	7.3Ω
Solenoid valve, 3 position 4 way 12V DC with diode (schematic items DA and DB)	7.3Ω

Manifolds

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.

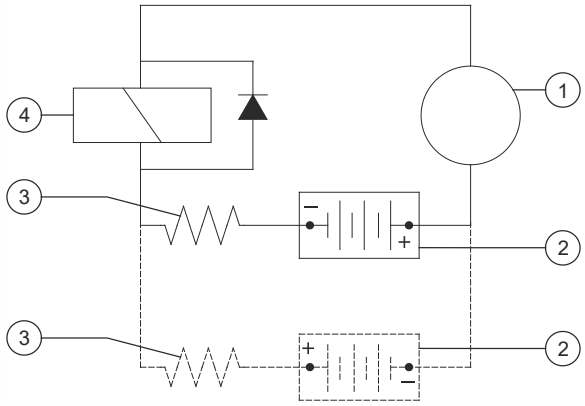
1 Test the coil for resistance. Refer to Repair Procedure, *How to Test a Coil*.

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.

8-1
Axles

How to Repair the Axle

Repair procedures and additional axle information is available in the Dana 223 Axle Maintenance and Repair Manual.

Dana 223 Axle Maintenance and Repair Manual	
Genie part number	115026

Stabilizers

9-1
Stabilizers (if equipped)

How to Remove the Stabilizer

1 Extend the stabilizer until the pad just touches the ground. Do not rest the weight of the machine on the stabilizer.

2 Tag, disconnect and plug the hydraulic supply hoses at the stabilizer cylinder. Cap the fittings.

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

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

3 Attach a lifting strap from an overhead crane to the barrel end of the fork level cylinder. Support the cylinder. Do not apply any lifting pressure.

4 Remove the fasteners securing the stabilizer cylinder barrel-end pivot pin to the machine.

5 Use a soft metal drift to remove the stabilizer cylinder barrel-end pivot pin. Lower the cylinder onto the stabilizer.

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

6 Attach a lifting strap from an overhead crane to the stabilizer assembly. Support the stabilizer. Do not apply any lifting pressure.

7 Remove the fasteners securing the stabilizer pivot pin to the machine.

8 Use a soft metal drift to remove the pivot pin. Remove the stabilizer assembly from the machine.

⚠WARNING Crushing hazard. The stabilizer will fall if not properly supported when the pivot pin is removed from the machine.

How to Remove an Stabilizer 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 Extend the stabilizer until the pad just touches the ground. Do not rest the weight of the machine on the stabilizer.

2 Tag, disconnect and plug the two hydraulic supply hoses at the stabilizer cylinder. Cap the fittings.

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

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

3 Attach a lifting strap from an overhead crane to the barrel end of the stabilizer cylinder. Support the cylinder. Do not apply any lifting pressure.

4 Remove the fasteners securing the stabilizer cylinder barrel-end pivot pin to the chassis.

5 Use a soft metal drift to remove the pivot pin.

⚠WARNING Crushing hazard. The cylinder will fall if not properly supported when the pivot pin is removed from the machine.

6 Raise the cylinder to a vertical position.

7 Remove the fasteners securing the stabilizer cylinder rod-end pivot pin to the machine.

8 Use a soft metal drift to remove the pivot pin. Remove the cylinder from the machine.

⚠WARNING Crushing hazard. The cylinder will fall if not properly supported when the pivot pin is removed from the machine.

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Fault Codes



Observe and Obey:

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

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropriate fault code thoroughly. Attempting short cuts may produce hazardous conditions.
- ☑ 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.

Diagnostic Display

When the engine Electronic Control Module (ECM) detects an abnormal operating condition, a fault code is immediately stored in the ECM memory.

The fault code is displayed on the LCD display which is located on the gauge cluster in the operator's compartment.

The gauge cluster also includes two warning lights.

They are an amber colored light which signals an abnormal engine condition which should be corrected as soon as possible and a red colored light which signals an engine condition which requires the operator to shut down the engine as soon as possible.

The ECM will, in some cases, automatically shut down the engine when the red light is displayed.

Active Fault Codes

Active Fault Codes will be displayed on the gauge cluster when the diagnostic button is pressed for 5 seconds, if present. If multiple fault codes are detected, scroll through them using the diagnostic button.

Active Codes vs Stored Codes

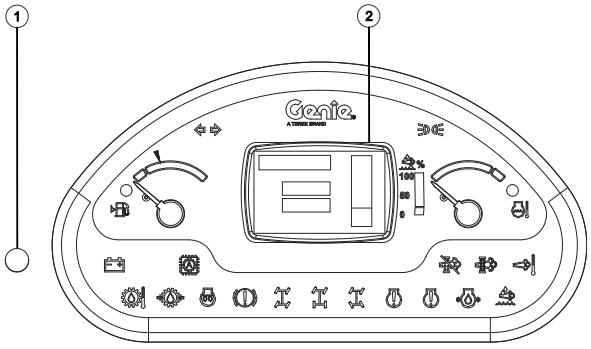
Active fault codes, indicating an engine condition or conditions which have not been corrected, are displayed at the moment the fault is detected.

Stored fault codes are the cumulative history of fault codes which the ECM has detected. These fault codes may be recalled by service personnel at a later time even if the condition which caused the engine fault has ceased to exist.

Note: Additional hardware will be necessary to access stored codes.

Decoding Fault Codes

The Suspect Parameter Number (SPN) and the Failure Mode Identifier (FMI), when combined, are the basis for an engine fault code. The SPN number indicates the affected component; the FMI number reveals the type of failure that has occurred. Comparing the combination of numbers to the fault code chart on the following pages will help to determine the exact engine fault and a corrective course of action. For additional information, refer to the engine operator's manual which came with your machine.



1 Diagnostic button
2 LCD screen

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P000F	5571	15	Engine - Pressure relief valve (PRV) - Data above normal operational range (Least severe level)
		16	Engine - Pressure relief valve (PRV) - Data above normal operational range (Moderately severe level)
P006D	1209	2	Engine - Exhaust back pressure before TC - Data erratic intermittent or incorrect
P0072	171	4	Engine - Ambient air temperature sensor - Voltage below normal or shorted to low source
P0073	171	3	Engine - Ambient air temperature sensor - Voltage above normal or shorted to high source
P007A	105	0	Engine - Charge air temperature sensor - Data above normal operational range (Most severe level)
		0	Engine - Charge air temperature sensor - Data above normal operational range (Most severe level)
P0087	7103	1	Engine - Fuel metering unit - Data below normal operational range (Most severe level)
P0088	7103	0	Engine - Fuel metering unit - Data above normal operational range (Most severe level)
P008A	94	1	Engine - Fuel low pressure sensor - Data below normal operational range (Most severe level)
		1	Engine - Fuel low pressure sensor - Data below normal operational range (Most severe level)
P008B	94	15	Engine - Fuel low pressure sensor - Data above normal operational range (Least severe level)
P00C6	94	1	Engine - Fuel low pressure sensor - Data below normal operational range (Most severe level)
P00E8	105	1	Engine - Charge air temperature sensor - Data below normal operational range (Most severe level)
		0	Engine - Charge air temperature sensor - Data above normal operational range (Most severe level)
P00FA	1209	4	Engine - Exhaust back pressure before TC - Voltage below normal or shorted to low source
P00FB	1209	3	Engine - Exhaust back pressure before TC - Voltage above normal or shorted to high source
P0106	102	2	Engine - Charge air pressure sensor - Data erratic intermittent or incorrect
P0107	102	4	Engine - Charge air pressure sensor - Voltage below normal or shorted to low source
P0108	102	3	Engine - Charge air pressure sensor - Voltage above normal or shorted to high source

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P0111	105	2	Engine - Charge air temperature sensor - Data erratic intermittent or incorrect
P0112	105	4	Engine - Charge air temperature sensor - Voltage below normal or shorted to low source
P0113	105	3	Engine - Charge air temperature sensor - Voltage above normal or shorted to high source
P0116	110	2	Engine - Coolant temperature sensor - Data erratic intermittent or incorrect
P0117	110	4	Engine - Coolant temperature sensor - Voltage below normal or shorted to low source
P0118	110	3	Engine - Coolant temperature sensor - Voltage above normal or shorted to high source
P012B	1209	1	Engine - Exhaust back pressure before TC - Data below normal operational range (Most severe level)
		15	Engine - Exhaust back pressure before TC - Data above normal operational range (Least severe level)
		2	Engine - Exhaust back pressure before TC - Data erratic intermittent or incorrect
P018F	5571	16	Engine - Pressure relief valve (PRV) - Data above normal operational range (Moderately severe level)
P0190	157	4	Engine - Rail pressure sensor - Voltage below normal or shorted to low source
		3	Engine - Rail pressure sensor - Voltage above normal or shorted to high source
P0196	175	16	Engine - Oil temperature - Data above normal operational range (Moderately severe level)
		0	Engine - Oil temperature - Data above normal operational range (Most severe level)
P0197	175	4	Engine - Oil temperature - Voltage below normal or shorted to low source
P0198	175	3	Engine - Oil temperature - Voltage above normal or shorted to high source
P0201	5358	6	Engine - Fuel injection quantity injector 1 - Current above normal or grounded circuit above normal or grounded circuit
		6	Engine - Fuel injection quantity injector 1 - Current above normal or grounded circuit
		5	Engine - Fuel injection quantity injector 1 - Current below normal or open circuit
P0202	5359	6	Engine - Fuel injection quantity injector 2 - Current above normal or grounded circuit
		6	Engine - Fuel injection quantity injector 2 - Current above normal or grounded circuit
		5	Engine - Fuel injection quantity injector 2 - Current below normal or open circuit
P0203	5360	6	Engine - Fuel injection quantity injector 3 - Current above normal or grounded circuit
		6	Engine - Fuel injection quantity injector 3 - Current above normal or grounded circuit
		5	Engine - Fuel injection quantity injector 3 - Current below normal or open circuit

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P0204	5361	6	Engine - Fuel injection quantity injector 4 - Current above normal or grounded circuit
		6	Engine - Fuel injection quantity injector 4 - Current above normal or grounded circuit
		5	Engine - Fuel injection quantity injector 4 - Current below normal or open circuit
P0205	5362	6	Engine - Fuel injection quantity injector 5 - Current above normal or grounded circuit
		6	Engine - Fuel injection quantity injector 5 - Current above normal or grounded circuit
		5	Engine - Fuel injection quantity injector 5 - Current below normal or open circuit
P0206	5363	6	Engine - Fuel injection quantity injector 6 - Current above normal or grounded circuit
		6	Engine - Fuel injection quantity injector 6 - Current above normal or grounded circuit
		5	Engine - Fuel injection quantity injector 6 - Current below normal or open circuit
P0207	5364	6	Engine - Fuel injection quantity injector 7 - Current above normal or grounded circuit
		6	Engine - Fuel injection quantity injector 7 - Current above normal or grounded circuit
		5	Engine - Fuel injection quantity injector 7 - Current below normal or open circuit
P0208	5365	6	Engine - Fuel injection quantity injector 8 - Current above normal or grounded circuit
		6	Engine - Fuel injection quantity injector 8 - Current above normal or grounded circuit
		5	Engine - Fuel injection quantity injector 8 - Current below normal or open circuit
P0217	110	0	Engine - Coolant temperature sensor - Data above normal operational range (Most severe level)
		0	Engine - Coolant temperature sensor - Data above normal operational range (Most severe level)
P0219	190	0	Engine - Rotation speed - Data above normal operational range (Most severe level)
P0251	7103	6	Engine - Fuel metering unit - Current above normal or grounded circuit
		4	Engine - Fuel metering unit - Voltage below normal or shorted to low source
		3	Engine - Fuel metering unit - Voltage above normal or shorted to high source
		5	Engine - Fuel metering unit - Current below normal or open circuit
P02E7	132	2	Engine - Air mass - Data erratic intermittent or incorrect Engine - Crankshaft rotation speed sensor - Abnormal
P0336	4201	8	Engine - Crankshaft rotation speed sensor - Abnormal frequency or pulse width or period
		14	Engine - Crankshaft rotation speed sensor - Special instructions

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P033F	723	13	Engine - Camshaft rotation speed sensor - Out of calibration
P0341	723	8	Engine - Camshaft rotation speed sensor - Abnormal frequency or pulse width or period
		14	Engine - Camshaft rotation speed sensor - Special instructions
P0405	411	4	Engine - EGR differential pressure - Voltage below normal or shorted to low source
P0406		3	Engine - EGR differential pressure - Voltage above normal or shorted to high source
P040A	412	4	Engine - EGR temperature sensor - Voltage below normal or shorted to low source
		3	Engine - EGR temperature sensor - Voltage above normal or shorted to high source
		17	Engine - EGR temperature sensor - Data below normal operational range (Least severe level)
		15	Engine - EGR temperature sensor - Data above normal operational range (Least severe level)
		2	Engine - EGR temperature sensor - Data erratic intermittent or incorrect
P0425	4765	4	Exhaust aftertreatment - Temperature upstream DOC -Voltage below normal or shorted to low source
		3	Exhaust aftertreatment - Temperature upstream DOC -Voltage above normal or shorted to high source
		2	Exhaust aftertreatment - Temperature upstream DOC -Data erratic intermittent or incorrect
		2	Exhaust aftertreatment - Temperature upstream DOC -Data erratic intermittent or incorrect
		15	Exhaust aftertreatment - Temperature upstream DOC -Data above normal operational range (Least severe level)
P042A	4766	4	Exhaust aftertreatment - Temperature downstream DOC - Voltage below normal or shorted to low source
		3	Exhaust aftertreatment - Temperature downstream DOC - Voltage above normal or shorted to high source
		2	Exhaust aftertreatment - Temperature downstream DOC - Data erratic intermittent or incorrect
		15	Exhaust aftertreatment - Temperature downstream DOC - Data above normal operational range (Least severe level)
P042E	27	7	Engine - Position EGR valve - Mechanical system not responding or out of adjustment
P042F	27	7	Engine - Position EGR valve - Mechanical system not responding or out of adjustment
P046C	411	2	Engine - EGR differential pressure - Data erratic intermittent or incorrect
		2	Engine - EGR differential pressure - Data erratic intermittent or incorrect
P046D	411	2	Engine - EGR differential pressure - Data erratic intermittent or incorrect

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P0471	520300	18	Exhaust aftertreatment - Pressure after DPF - Data below normal operational range (Moderately severe level)
		16	Exhaust aftertreatment - Pressure after DPF - Data above normal operational range (Moderately severe level)
P0480	1071	5	Engine - Fan drive output - Current below normal or open circuit
P0489	27	4	Engine - Position EGR valve - Voltage below normal or shorted to low source
P0490	27	3	Engine - Position EGR valve - Voltage above normal or shorted to high source
P0522	100	4	Engine - Oil pressure sensor - Voltage below normal or shorted to low source
P0523	100	3	Engine - Oil pressure sensor - Voltage above normal or shorted to high source
P0524	100	18	Engine - Oil pressure sensor - Data below normal operational range (Moderately severe level)
		1	Engine - Oil pressure sensor - Data below normal operational range (Most severe level)
P0541	729	4	Engine - Preheating relay - Voltage below normal or shorted to low source
P0542	729	3	Engine - Preheating relay - Voltage above normal or shorted to high source
P0543	729	5	Engine - Preheating relay - Current below normal or open circuit
P0616	677	4	Engine - Starter relay - Voltage below normal or shorted to low source
P0617	677	3	Engine - Starter relay - Voltage above normal or shorted to high source
P0627	1347	4	Engine - Fuel supply pump - Voltage below normal or shorted to low source
		3	Engine - Fuel supply pump - Voltage above normal or shorted to high source
		5	Engine - Fuel supply pump - Current below normal or open circuit
P062A	1347	11	Engine - Throttle valve position - Current above normal or grounded circuit
P062B	3055	14	Engine - Throttle valve position - Voltage below normal or shorted to low source
P0638	51	6	Engine - Throttle valve position - Voltage above normal or shorted to high source
		4	Engine - Throttle valve position - Current below normal or open circuit
		3	Engine - ECU temperature - Data below normal operational range (Least severe level)
		5	Engine - Fuel supply pump - Root cause not known

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P0667	1136	17	Engine - Fuel system monitoring - Special instructions
		15	Engine - ECU temperature - Data above normal operational range (Least severe level)
		1	Engine - ECU temperature - Data below normal operational range (Most severe level)
		0	Engine - ECU temperature - Data above normal operational range (Most severe level)
		2	Engine - ECU temperature - Data erratic intermittent or incorrect
P0686	1485	4	Engine - ECU main relay - Voltage below normal or shorted to low source
P0687	1485	3	Engine - ECU main relay - Voltage above normal or shorted to high source
P0691	1071	4	Engine - Fan drive output - Voltage below normal or shorted to low source
P0692	1071	3	Engine - Fan drive output - Voltage above normal or shorted to high source
P06B0	3509	14	Engine - ECU sensor supply voltage - Special instructions
P06B1	3509	6	Engine - ECU sensor supply voltage - Current above normal or grounded circuit
		1	Engine - ECU sensor supply voltage - Data below normal operational range (Most severe level)
P06B2	3509	0	Engine - ECU sensor supply voltage - Data above normal operational range (Most severe level)
P06B3	3510	14	Engine - ECU sensor supply voltage 2 - Special instructions
P06B4	3510	6	Engine - ECU sensor supply voltage 2 - Current above normal or grounded circuit
		1	Engine - ECU sensor supply voltage 2 - Data below normal operational range (Most severe level)
P06B5	3510	0	Engine - ECU sensor supply voltage 2 - Data above normal operational range (Most severe level)
P06E6	3511	14	Engine - ECU sensor supply voltage 3 - Special instructions
		11	Engine - ECU sensor supply voltage 3 - Root cause not known
P06E7	3511	6	Engine - ECU sensor supply voltage 3 - Current above normal or grounded circuit
		1	Engine - ECU sensor supply voltage 3 - Data below normal operational range (Most severe level)
P06E8	3511	0	Engine - ECU sensor supply voltage 3 - Data above normal operational range (Most severe level)

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P1001	2797	14	Engine - Injector group - Special instructions
P1002	164	2	Engine - Rail pressure - Data erratic intermittent or incorrect
P1003	2797	6	Engine - Injector group - Current above normal or grounded circuit
P1004	2798	6	Engine - Injector group 2 - Current above normal or grounded circuit
P1005	520280	11	Engine - Injection driver metering unit - Root cause not known
P1006	7103	3	Engine - Fuel metering unit - Voltage above normal or shorted to high source
P1007	7103	4	Engine - Fuel metering unit - Voltage below normal or shorted to low source
P1008	5571	2	Engine - Pressure relief valve (PRV) - Data erratic intermittent or incorrect
P1009	5571	2	Engine - Pressure relief valve (PRV) - Data erratic intermittent or incorrect
P100A	5571	0	Engine - Pressure relief valve (PRV) - Data above normal operational range (Most severe level)
P100B	5571	2	Engine - Pressure relief valve (PRV) - Data erratic intermittent or incorrect
P100C	5571	2	Engine - Pressure relief valve (PRV) - Data erratic intermittent or incorrect
P100D	5571	13	Engine - Pressure relief valve (PRV) - Out of calibration
P100E	5571	16	Engine - Pressure relief valve (PRV) - Data above normal operational range (Moderately severe level)
P1010	652	13	Engine - Injector 2 - Out of calibration
P1011	653	13	Engine - Injector 3 - Out of calibration
P1012	654	13	Engine - Injector 4 - Out of calibration
P1013	655	13	Engine - Injector 5 - Out of calibration
P1014	656	13	Engine - Injector 6 - Out of calibration
P1015	7103	13	Engine - Fuel metering unit - Out of calibration
P1016	7103	13	Engine - Fuel metering unit - Out of calibration
P1017	7103	13	Engine - Fuel metering unit - Out of calibration
P1018	7103	2	Engine - Fuel metering unit - Data erratic intermittent or incorrect
P1019	5357	14	Engine - Fuel injection quantity multiple cylinder -Special instructions

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P101A	157	0	Engine - Rail pressure sensor - Data above normal operational range (Most severe level)
P101D	2797	4	Engine - Injector group - Voltage below normal or shorted to low source
P101E	520426	6	Engine - power stage (injector group 1, secondary ECU) Current above normal or grounded circuit
P101F	520427	6	Engine - power stage (injector group 2, secondary ECU) Current above normal or grounded circuit
P1020	3509	3	Engine - ECU sensor supply voltage - Voltage above normal or shorted to high source
P1021	3509	4	Engine - ECU sensor supply voltage - Voltage below normal or shorted to low source
P1022	520279	7	Machine - HMI return button - Mechanical system not responding or out of adjustment
P1023	91	3	Machine - Position accelerator pedal (sensor 1) -Voltage above normal or shorted to high source
P1024	2623	3	Machine - Position accelerator pedal (sensor 2) -Voltage above normal or shorted to high source
P1025	29	3	Machine - Position accelerator pedal 2 (remote accelerator pedal 1) - Voltage above normal or shorted to high source
P1026	2625	3	Machine - Position accelerator pedal 2 (remote accelerator pedal 2) - Voltage above normal or shorted to high source
P1027	91	4	Machine - Position accelerator pedal (sensor 1) - Voltage below normal or shorted to low source
P1028	2623	4	Machine - Position accelerator pedal (sensor 2) - Voltage below normal or shorted to low source
P1029	29	4	Machine - Position accelerator pedal 2 (remote accelerator pedal 1) - Voltage below normal or shorted
P102A	2625	4	Machine - Position accelerator pedal 2 (remote accelerator pedal 2) - Voltage below normal or shorted to low source
P102B	677	5	Engine - Starter relay - Current below normal or open circuit
P102C	677	3	Engine - Starter relay - Voltage above normal or shorted to high source
P102D	677	4	Engine - Starter relay - Voltage below normal or shorted to low source
P102E	91	11	Machine - Position accelerator pedal (sensor 1) - Root cause not known
P102F	29	11	Machine - Position accelerator pedal 2 (remote accelerator pedal 1) - Root cause not known

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P1030	1041	14	Engine - Starter signal KL. 50 - Special instructions
P1031	3510	3	Engine - ECU sensor supply voltage 2 - Voltage above normal or shorted to high source
P1032	3510	4	Engine - ECU sensor supply voltage 2 - Voltage below normal or shorted to low source
P1036	520417	31	Engine - Dummy element - Condition exists
P103D	520424	31	Engine - Controller access failed - Condition exists
P103E	5099	11	Machine - Oil pressure lamp (engine cold lamp) - Root
P103F	5099	3	Machine - Oil pressure lamp (engine cold lamp) - Root cause not known
P1040	5099	4	Machine - Oil pressure lamp (engine cold lamp) - Voltage above normal or shorted to high source
P1041	3697	11	Machine - Oil pressure lamp (engine cold lamp) - Voltage below normal or shorted to low source
P1042	624	11	Machine - Particle filter lamp - Root cause not known
P1043	624	3	Machine - Amber warning lamp - Root cause not known Machine - Amber warning lamp - Voltage above normal or shorted to high source
P1044	624	4	Machine - Amber warning lamp - Voltage below normal or shorted to low source
P1045	520458	11	Machine - Engine running lamp - Root cause not known
P1046	520458	3	Machine - Engine running lamp - Voltage above normal or shorted to high source
P1047	520458	4	Machine - Engine running lamp - Voltage below normal or shorted to low source
P1048	520459	11	Machine - water in fuel / fuel pressure / air filter clogged lamp - Root cause not known
P1049	520459	3	Machine - water in fuel / fuel pressure / air filter clogged lamp - Voltage above normal or shorted to high source
P104A	520459	4	Machine - water in fuel / fuel pressure / air filter clogged lamp - Voltage below normal or shorted to low source
P104B	520520	11	Engine - Electric wastegate internal fault - Root cause not known
P104C	520523	11	Engine - Electric wastegate external fault - Root cause not known
P104D	520522	13	Engine - Electric wastegate learning fault - Out of calibration
P104F	51	4	Engine - Throttle valve position - Voltage below normal or shorted to low source

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P1050	27	3	Engine - Position EGR valve - Voltage above normal or shorted to high source
P1051	27	4	Engine - Position EGR valve - Voltage below normal or shorted to low source
P1052	27	3	Engine - Position EGR valve - Voltage above normal or shorted to high source
P1053	27	4	Engine - Position EGR valve - Voltage below normal or shorted to low source
P1054	27	6	Engine - Position EGR valve - Current above normal or grounded circuit
P1055	27	5	Engine - Position EGR valve - Current below normal or open circuit
P1056	27	5	Engine - Position EGR valve - Current below normal or open circuit
P1057	27	11	Engine - Position EGR valve - Root cause not known
P1058	27	3	Engine - Position EGR valve - Root cause not known Engine - Position EGR valve - Voltage above normal or
P1059	27	4	Engine - Position EGR valve - Voltage below normal or shorted to low source
P105A	27	11	Engine - Position EGR valve - Root cause not known
P105B	27	2	Engine - Position EGR valve - Data erratic intermittent or incorrect
P105C	27	2	Engine - Position EGR valve - Data erratic intermittent or incorrect
P105D	51	6	Engine - Throttle valve position - Current above normal or grounded circuit
P105E	51	11	Engine - Throttle valve position - Root cause not known
P105F	51	6	Engine - Throttle valve position - Current above normal or grounded circuit
P1060	190	0	Engine - Rotation speed - Data above normal operational range (Most severe level)
P1061	190	0	Engine - Rotation speed - Data above normal operational range (Most severe level)
P1062	190	0	Engine - Rotation speed - Data above normal operational range (Most severe level)
P1063	520435	11	Engine - Output torque - Root cause not known
P1064	1237	2	Engine - Shutdown override switch - Data erratic intermittent or incorrect
P1067	520491	2	Exhaust aftertreatment - DPF differential pressure (up to software version V741 X11 (DFC_PPFltDiffStckChk)) - Data erratic intermittent or incorrect
P1069	520433	11	Engine - DEF line heater - Root cause not known

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P106C	5100	11	Engine - coolant temperature / level / charge air temperature lamp - Root cause not known
P106D	5100	3	Engine - coolant temperature / level / charge air temperature lamp - Voltage above normal or shorted to high source
P106E	5100	4	Engine - coolant temperature / level / charge air temperature lamp - Voltage below normal or shorted to low source
P1070	598	10	Machine - Clutch signal - Abnormal rate of change
P1071	1109	2	Engine - Protection system requested shutdown - Data erratic intermittent or incorrect
P1072	1109	14	Engine - Protection system requested shutdown - Special instructions
P1075	171	2	Engine - Ambient air temperature sensor - Data erratic intermittent or incorrect
P1076	110	2	Engine - Coolant temperature sensor - Data erratic intermittent or incorrect
P1077	4766	2	Exhaust aftertreatment - Temperature downstream
P1078	4765	2	Exhaust aftertreatment - Temperature upstream DOC - Data erratic intermittent or incorrect
P1079	4765	2	Exhaust aftertreatment - Temperature upstream DOC - Data erratic intermittent or incorrect
P107A	1081	11	Machine - Cold start lamp - Root cause not known
P107B	1081	3	Machine - Cold start lamp - Voltage above normal or shorted to high source
P107C	1081	4	Machine - Cold start lamp - Voltage below normal or shorted to low source
P107D	520444	11	Machine - Vehicle speed control lamp - Root cause not known
P107E	520416	5	Engine - Disc separator - Current below normal or open circuit
P107F	520416	11	Engine - Disc separator - Root cause not known
P1080	520416	3	Engine - Disc separator - Voltage above normal or shorted to high source
P1081	520416	4	Engine - Disc separator - Voltage below normal or shorted to low source
P1082	520429	2	Engine - Main and Secondary ECU identification - Data erratic intermittent or incorrect
P1083	520430	11	Engine - Exhaust flap failure - Root cause not known
P1085	677	11	Engine - Starter relay - Root cause not known

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P1086	6655	11	Engine - engine running lamp / general error lamp(water in fuel & fuel pressure & air filter clogged) / engine cold lamp - Root cause not known
P1087	6655	3	Engine - engine running lamp / general error lamp(water in fuel & fuel pressure & air filter clogged) / engine cold lamp - Voltage above normal or shorted to high source
P1088	6655	4	Engine - engine running lamp / general error lamp(water in fuel & fuel pressure & air filter clogged) /engine cold lamp - Voltage below normal or shorted to low source
P1089	520259	15	Engine - Temperature before engine inlet valve - Data above normal operational range (Least severe level)
P108A	520259	16	Engine - Temperature before engine inlet valve - Data above normal operational range (Moderately severe level)
P108B	520259	1	Engine - Temperature before engine inlet valve - Data below normal operational range (Most severe level)
P108C	107	0	Engine - Air filter differential pressure sensor - Data above normal operational range (Most severe level)
P108F	102	2	Engine - Charge air pressure sensor - Data erratic intermittent or incorrect
P1090	102	2	Engine - Charge air pressure sensor - Data erratic intermittent or incorrect
P1091	102	1	Engine - Charge air pressure sensor - Data below normal operational range (Most severe level)
P1092	51	3	Engine - Throttle valve position - Voltage above normal or shorted to high source
P1093	51	4	Engine - Throttle valve position - Voltage below normal or shorted to low source
P1094	51	11	Engine - Throttle valve position - Root cause not known
P1095	520304	2	Engine - Status throttle valve - Data erratic intermittent or incorrect
P1096	520305	2	Engine - Signal error throttle valve - Data erratic intermittent or incorrect
P1097	520296	31	Engine - Torque reduction TC protection active - Condition exists
P1099	171	16	Engine - Ambient air temperature sensor - Data above normal operational range (Moderately severe level)

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P109A	171	18	Engine - Ambient air temperature sensor - Data below normal operational range (Moderately severe level)
P109B	520442	31	Engine - Intake air temperature sensor - Condition exists
P109C	520443	31	Engine - Intake air temperature sensor not available - Condition exists
P109D	520492	18	Engine - Boost pressure regulation - Data below normal operational range (Moderately severe level)
P109E	520492	16	Engine - Boost pressure regulation - Data above normal operational range (Moderately severe level)
P10E0	657	13	Engine - Injector 7 - Out of calibration
P10E1	658	13	Engine - Injector 8 - Out of calibration
P1100	1485	3	Engine - ECU main relay - Voltage above normal or shorted to high source
P1101	1485	3	Engine - ECU main relay - Voltage above normal or shorted to high source
P1102	1485	4	Engine - ECU main relay - Voltage below normal or shorted to low source
P1103	1485	4	Engine - ECU main relay - Voltage below normal or shorted to low source
P1104	1485	3	Engine - ECU main relay - Voltage above normal or shorted to high source
P1105	1485	4	Engine - ECU main relay - Voltage below normal or shorted to low source
P1106	629	12	Engine - ECU - Bad intelligent device or component
P1107	629	12	Engine - ECU - Bad intelligent device or component
P1108	629	12	Engine - ECU - Bad intelligent device or component
P1109	629	12	Engine - ECU - Bad intelligent device or component
P110A	629	12	Engine - ECU - Bad intelligent device or component
P110B	629	12	Engine - ECU - Bad intelligent device or component
P110C	629	12	Engine - ECU - Bad intelligent device or component
P110D	629	12	Engine - ECU - Bad intelligent device or component
P110E	629	12	Engine - ECU - Bad intelligent device or component
P110F	629	12	Engine - ECU - Bad intelligent device or component

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P1110	629	12	Engine - ECU - Bad intelligent device or component
P1111	629	12	Engine - ECU - Bad intelligent device or component
P1112	629	12	Engine - ECU - Bad intelligent device or component
P1113	629	12	Engine - ECU - Bad intelligent device or component
P1114	629	12	Engine - ECU - Bad intelligent device or component
P1115	629	12	Engine - ECU - Bad intelligent device or component
P1116	629	12	Engine - ECU - Bad intelligent device or component
P1117	629	12	Engine - ECU - Bad intelligent device or component
P1118	629	12	Engine - ECU - Bad intelligent device or component
P1119	629	12	Engine - ECU - Bad intelligent device or component
P111A	629	12	Engine - ECU - Bad intelligent device or component
P111B	629	12	Engine - ECU - Bad intelligent device or component
P111C	629	12	Engine - ECU - Bad intelligent device or component
P111D	629	12	Engine - ECU - Bad intelligent device or component
P111E	629	12	Engine - ECU - Bad intelligent device or component
P111F	629	12	Engine - ECU - Bad intelligent device or component
P1120	629	12	Engine - ECU - Bad intelligent device or component
P1121	629	12	Engine - ECU - Bad intelligent device or component
P1122	629	12	Engine - ECU - Bad intelligent device or component
P1123	629	12	Engine - ECU - Bad intelligent device or component
P1124	629	12	Engine - ECU - Bad intelligent device or component
P1125	629	12	Engine - ECU - Bad intelligent device or component
P1126	629	12	Engine - ECU - Bad intelligent device or component
P1127	629	12	Engine - ECU - Bad intelligent device or component
P1128	629	12	Engine - ECU - Bad intelligent device or component
P1129	629	12	Engine - ECU - Bad intelligent device or component

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P112A	629	12	Engine - ECU - Bad intelligent device or component
P112B	629	12	Engine - ECU - Bad intelligent device or component
P112C	629	12	Engine - ECU - Bad intelligent device or component
P112D	629	12	Engine - ECU - Bad intelligent device or component
P112E	629	12	Engine - ECU - Bad intelligent device or component
P112F	629	12	Engine - ECU - Bad intelligent device or component
P1130	629	12	Engine - ECU - Bad intelligent device or component
P1131	629	12	Engine - ECU - Bad intelligent device or component
P1132	629	12	Engine - ECU - Bad intelligent device or component
P1133	629	12	Engine - ECU - Bad intelligent device or component
P1134	629	12	Engine - ECU - Bad intelligent device or component
P1135	629	12	Engine - ECU - Bad intelligent device or component
P1136	629	12	Engine - ECU - Bad intelligent device or component
P1137	629	12	Engine - ECU - Bad intelligent device or component
P1138	629	12	Engine - ECU - Bad intelligent device or component
P1139	629	12	Engine - ECU - Bad intelligent device or component
P113A	629	12	Engine - ECU - Bad intelligent device or component
P113B	629	12	Engine - ECU - Bad intelligent device or component
P113C	629	12	Engine - ECU - Bad intelligent device or component
P113D	629	12	Engine - ECU - Bad intelligent device or component
P113E	520370	2	Engine - ECU afterun not waited - Data erratic intermittent or incorrect
P113F	520371	2	Engine - ECU afterun too often not waited - Data erratic intermittent or incorrect

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P1140	520372	2	Engine - ECU afterun too often consecutive not waited - Data erratic intermittent or incorrect
P1141	1485	3	Engine - ECU main relay - Voltage above normal or shorted to high source
P1142	1485	4	Engine - ECU main relay - Voltage below normal or shorted to low source
P1143	1485	3	Engine - ECU main relay - Voltage above normal or shorted to high source
P1144	1485	4	Engine - ECU main relay - Voltage below normal or shorted to low source
P1145	1485	3	Engine - ECU main relay - Voltage above normal or shorted to high source
P1146	1485	4	Engine - ECU main relay - Voltage below normal or shorted to low source
P1147	1485	3	Engine - ECU main relay - Voltage above normal or shorted to high source
P1148	1485	4	Engine - ECU main relay - Voltage below normal or shorted to low source
P1149	1485	3	Engine - ECU main relay - Voltage above normal or shorted to high source
P114A	1485	4	Engine - ECU main relay - Voltage below normal or shorted to low source
P114B	1485	3	Engine - ECU main relay - Voltage above normal or shorted to high source
P114C	1485	4	Engine - ECU main relay - Voltage below normal or shorted to low source
P114E	1485	4	Engine - ECU main relay - Voltage below normal or shorted to low source
P115A	3513	14	Engine - ECU sensor supply voltage 5 - Special instructions
P115A	3513	11	Engine - ECU sensor supply voltage 5 - Root cause not known
P115B	3513	0	Engine - ECU sensor supply voltage 5 - Data above normal operational range (Most severe level)
P115C	3513	6	Engine - ECU sensor supply voltage 5 - Current above normal or grounded circuit
		1	Engine - ECU sensor supply voltage 5 - Data below normal operational range (Most severe level)
P115D	3514	14	Engine - ECU sensor supply voltage 6 - Special instructions
		11	Engine - ECU sensor supply voltage 6 - Root cause not known
P115E	3514	0	Engine - ECU sensor supply voltage 6 - Data above normal operational range (Most severe level)
P115F	3514	6	Engine - ECU sensor supply voltage 6 - Current above normal or grounded circuit
		1	Engine - ECU sensor supply voltage 6 - Data below normal operational range (Most severe level)

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P1168	520378	11	Machine - MCAN not enough memory - Root cause not known
P1169	520379	11	Machine - MCANR not enough memory - Root cause not known
P116A	520425	4	Engine - Cold start device - Voltage below normal or shorted to low source
		3	Engine - Cold start device - Voltage above normal or shorted to high source
		5	Engine - Cold start device - Current below normal or open circuit
		12	Engine - Cold start device - Bad intelligent device or component
P1173	520437	31	Engine - Replacement fault code triggered by FIDUVMDSM04/V-engine: Main-secondary ECU swapped - Condition exists
P1174	520438	31	Engine - Replacement fault code triggered by FIDUVMDSM04 - Condition exists
P1175	520439	31	Engine - Replacement fault code triggered by FIDUVMDSM10 - Condition exists
P1176	520440	31	Engine - Replacement fault code triggered by FIDUVMDSM12 - Condition exists
P1177	520441	31	Engine - Replacement fault code triggered by FIDUVMDSM13 - Condition exists
P1178	520496	11	Engine - Exhaust flap internal fault - Root cause not known
P1179	520497	11	Engine - Exhaust flap external fault - Root cause not known
P117A	520498	13	Engine - Exhaust flap learning fault - Out of calibration
P117B	520315	11	Exhaust aftertreatment - ETV actuator light error - Root cause not known
P119A	629	12	Engine - ECU - Bad intelligent device or component
P119B	629	12	Engine - ECU - Bad intelligent device or component
P119C	629	12	Engine - ECU - Bad intelligent device or component
P119D	91	14	Machine - Position accelerator pedal (sensor 1) - Special instructions
P119E	190	2	Engine - Rotation speed - Data erratic intermittent or incorrect
P119F	5357	2	Engine - Fuel injection quantity multiple cylinder - Data erratic intermittent or incorrect

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P11A0	5441	2	Engine - Fuel injection timing error multiple cylinders - Data erratic intermittent or incorrect
P11A1	520281	2	Engine - Injection temperature compensation - Data erratic intermittent or incorrect
P11A2	5357	2	Engine - Fuel injection quantity multiple cylinder - Data erratic intermittent or incorrect
P11A3	523612	12	Engine - ECU - Bad intelligent device or component
P11A4	523612	12	Engine - ECU - Bad intelligent device or component
P11A5	523612	12	Engine - ECU - Bad intelligent device or component
P11A6	5357	2	Engine - Fuel injection quantity multiple cylinder - Data erratic intermittent or incorrect
P11A7	5357	2	Engine - Fuel injection quantity multiple cylinder - Data erratic intermittent or incorrect
P11A8	5442	2	Engine - Fuel injection pressure error multiple cylinders Data erratic intermittent or incorrect
P11A9	29	2	Machine - Position accelerator pedal 2 (remote accelerator pedal 1) - Data erratic intermittent or incorrect
P11AA	677	2	Engine - Starter relay - Data erratic intermittent or incorrect
P11AB	513	2	Engine - Actual percent toque - Data erratic intermittent or incorrect
P11AC	513	2	Engine - Actual percent toque - Data erratic intermittent or incorrect
P11AD	520250	2	Engine - Function monitoring - Data erratic intermittent or incorrect
P11AE	629	12	Engine - ECU - Bad intelligent device or component
P11AF	629	12	Engine - ECU - Bad intelligent device or component
P11B0	629	12	Engine - ECU - Bad intelligent device or component
P11B1	629	12	Engine - ECU - Bad intelligent device or component
P11B2	629	12	Engine - ECU - Bad intelligent device or component
P11B3	629	12	Engine - ECU - Bad intelligent device or component
P11B4	629	12	Engine - ECU - Bad intelligent device or component
P11B5	629	12	Engine - ECU - Bad intelligent device or component
P11B6	629	12	Engine - ECU - Bad intelligent device or component

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P11B7	629	12	Engine - ECU - Bad intelligent device or component
P11B8	629	12	Engine - ECU - Bad intelligent device or component
P11B9	629	12	Engine - ECU - Bad intelligent device or component
P11BA	629	12	Engine - ECU - Bad intelligent device or component
P11BB	629	12	Engine - ECU - Bad intelligent device or component
P11BC	629	12	Engine - ECU - Bad intelligent device or component
P11BD	629	12	Engine - ECU - Bad intelligent device or component
P11BE	629	12	Engine - ECU - Bad intelligent device or component
P11BF	629	12	Engine - ECU - Bad intelligent device or component
P11C0	629	12	Engine - ECU - Bad intelligent device or component
P11C1	629	12	Engine - ECU - Bad intelligent device or component
P11C2	629	12	Engine - ECU - Bad intelligent device or component
P11C3	629	12	Engine - ECU - Bad intelligent device or component
P11C4	629	12	Engine - ECU - Bad intelligent device or component
P11C5	629	12	Engine - ECU - Bad intelligent device or component
P11C6	629	12	Engine - ECU - Bad intelligent device or component
P11C7	629	12	Engine - ECU - Bad intelligent device or component
P11C8	629	12	Engine - ECU - Bad intelligent device or component
P11C9	629	12	Engine - ECU - Bad intelligent device or component
P11CA	629	12	Engine - ECU - Bad intelligent device or component
P11CB	629	12	Engine - ECU - Bad intelligent device or component
P11CC	629	12	Engine - ECU - Bad intelligent device or component
P11CD	629	12	Engine - ECU - Bad intelligent device or component
P11CE	629	12	Engine - ECU - Bad intelligent device or component
P11CF	629	12	Engine - ECU - Bad intelligent device or component

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P11D0	629	12	Engine - ECU - Bad intelligent device or component
P11D1	629	12	Engine - ECU - Bad intelligent device or component
P11D2	629	12	Engine - ECU - Bad intelligent device or component
P11D3	629	12	Engine - ECU - Bad intelligent device or component
P11D4	629	12	Engine - ECU - Bad intelligent device or component
P11D5	629	12	Engine - ECU - Bad intelligent device or component
P11D6	629	12	Engine - ECU - Bad intelligent device or component
P11D7	629	12	Engine - ECU - Bad intelligent device or component
P11D8	629	12	Engine - ECU - Bad intelligent device or component
P11D9	629	12	Engine - ECU - Bad intelligent device or component
P11DA	629	12	Engine - ECU - Bad intelligent device or component
P11DB	629	12	Engine - ECU - Bad intelligent device or component
P11DC	629	12	Engine - ECU - Bad intelligent device or component
P11DD	629	12	Engine - ECU - Bad intelligent device or component
P11DE	629	12	Engine - ECU - Bad intelligent device or component
P11DF	629	12	Engine - ECU - Bad intelligent device or component
P11E0	629	12	Engine - ECU - Bad intelligent device or component
P11E1	629	12	Engine - ECU - Bad intelligent device or component
P11E2	629	12	Engine - ECU - Bad intelligent device or component
P11E3	629	12	Engine - ECU - Bad intelligent device or component
P11E4	629	12	Engine - ECU - Bad intelligent device or component
P11E5	629	12	Engine - ECU - Bad intelligent device or component
P11E6	629	12	Engine - ECU - Bad intelligent device or component
P11E7	629	12	Engine - ECU - Bad intelligent device or component
P11E8	629	12	Engine - ECU - Bad intelligent device or component
P11E9	629	12	Engine - ECU - Bad intelligent device or component

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P11EA	629	12	Engine - ECU - Bad intelligent device or component
P11EB	629	12	Engine - ECU - Bad intelligent device or component
P11EC	629	12	Engine - ECU - Bad intelligent device or component
P11ED	629	12	Engine - ECU - Bad intelligent device or component
P11EE	629	12	Engine - ECU - Bad intelligent device or component
P11EF	629	12	Engine - ECU - Bad intelligent device or component
P11F0	629	12	Engine - ECU - Bad intelligent device or component
P11F1	629	12	Engine - ECU - Bad intelligent device or component
P11F2	629	12	Engine - ECU - Bad intelligent device or component
P11F3	629	12	Engine - ECU - Bad intelligent device or component
P11F4	629	12	Engine - ECU - Bad intelligent device or component
P11F5	629	12	Engine - ECU - Bad intelligent device or component
P11F6	629	12	Engine - ECU - Bad intelligent device or component
P11F7	629	12	Engine - ECU - Bad intelligent device or component
P11F8	520473	31	Engine - Wrong engine ECU - Condition exists
P1251	520282	7	Exhaust aftertreatment - Lines DPF sensor inverted -Mechanical system not responding or out of adjustment
P1252	520283	14	Exhaust aftertreatment - Time in active Stand Still (Short-term interval) - Special instructions
P1253	520300	2	Exhaust aftertreatment - Pressure after DPF - Data erratic intermittent or incorrect
P1254	4781	14	Exhaust aftertreatment - DPF soot load - Special instructions
P1255	10156	0	Exhaust aftertreatment - Time in Active Stand Still (Long-term interval) - Data above normal operational range (Most severe level)
P1256	3735	16	Exhaust aftertreatment - Time Stand Still - Data above normal operational range (Moderately severe level)
P1257	3735	0	Exhaust aftertreatment - Time Stand Still - Data above normal operational range (Most severe level)
P1258	4766	1	Exhaust aftertreatment - Temperature downstream DOC - Data below normal operational range (Most severe level)

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P1259	3251	14	Exhaust aftertreatment - DPF differential pressure -Special instructions
P125A	3251	14	Exhaust aftertreatment - DPF differential pressure -Special instructions
P125B	3251	14	Exhaust aftertreatment - DPF differential pressure -Special instructions
P125C	3251	14	Exhaust aftertreatment - DPF differential pressure -Special instructions
P125F	4766	2	Exhaust aftertreatment - Temperature downstream DOC - Data erratic intermittent or incorrect
P1260	4766	2	Exhaust aftertreatment - Temperature downstream DOC - Data erratic intermittent or incorrect
P1261	3734	0	Exhaust aftertreatment - Time Stand Still - Data above normal operational range (Most severe level)
P1262	520254	8	Exhaust aftertreatment - NOx emissions after SCR Cat (up to software version V741 X11) - Abnormal frequency or pulse width or period
P1263	520255	2	Exhaust aftertreatment - Lines DPF sensor wrong connected - Data erratic intermittent or incorrect
P1264	520434	14	Exhaust aftertreatment - Condition Stand Still - Special instructions
P1265	520472	11	Exhaust aftertreatment - ETV actuator light error - Root cause not known
P1266	520493	15	Engine - PCD power reduction step 1 active - Data above normal operational range (Least severe level)
P1267	520494	0	Engine - PCD power reduction step 2 active - Data above normal operational range (Most severe level)
P1268	520495	14	Engine - Pre trigger for PCD inducement level 2 active - Special instructions
P1351	3226	0	Exhaust aftertreatment - NOx sensor behind SCR - Data above normal operational range (Most severe level)
P1352	3226	2	Exhaust aftertreatment - NOx sensor behind SCR - Data erratic intermittent or incorrect
P1353	3216	2	Exhaust aftertreatment - NOx sensor infront of SCR -Data erratic intermittent or incorrect
P1354	520286	2	Exhaust aftertreatment - Calculated lambda value - Data erratic intermittent or incorrect
P1355	7351	0	Exhaust aftertreatment - NOx emissions after SCR Cat - Data above normal operational range (Most severe level)
P1356	520287	2	Exhaust aftertreatment - NOx conversion SCR Cat - Data erratic intermittent or incorrect
P1358	520289	14	Exhaust aftertreatment - Emptying DEF supply system - Special instructions
P1359	6875	31	Aftertreatment - DEF pump pressure Condition exists

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P135A	520290	14	Aftertreatment - DEF pump pressure - Special instructions
P135B	6875	0	Aftertreatment - DEF pump pressure Data above normal operational range (Most severe level)
P135C	520291	11	Exhaust aftertreatment - DEF warm up - Root cause not known
P135D	520292	11	Exhaust aftertreatment - DEF metering valve blocked - Root cause not known
P135E	3226	0	Exhaust aftertreatment - NOx sensor behind SCR - Data above normal operational range (Most severe level)
P135F	3226	9	Exhaust aftertreatment - NOx sensor behind SCR - Abnormal update rate timeout
P1360	3226	13	Exhaust aftertreatment - NOx sensor behind SCR - Out of calibration
P1361	3226	31	Exhaust aftertreatment - NOx sensor behind SCR - Condition exists
P1362	3216	0	Exhaust aftertreatment - NOx sensor in front of SCR - Data above normal operational range (Most severe level)
P1363	3216	9	Exhaust aftertreatment - NOx sensor in front of SCR - Abnormal update rate timeout
P1364	3216	13	Exhaust aftertreatment - NOx sensor in front of SCR - Out of calibration
P1365	3216	31	Exhaust aftertreatment - NOx sensor in front of SCR - Condition exists
P1366	4360	2	Exhaust aftertreatment - Temperature before SCR Cat - Data erratic intermittent or incorrect
P1367	4360	3	Exhaust aftertreatment - Temperature before SCR Cat - Voltage above normal or shorted to high source
P1368	4360	4	Exhaust aftertreatment - Temperature before SCR Cat - Voltage below normal or shorted to low source
P136A	3516	1	Exhaust aftertreatment - DEF concentration - Data below normal operational range (Most severe level)
P136B	524087	11	Engine - EAT/SCR inducement or DEF level lamp /collective error lamp (water in fuel & fuel pressure & air filter clogged) - Root cause not known
P136C	524087	3	Engine - EAT/SCR inducement or DEF level lamp /collective error lamp (water in fuel & fuel pressure & air filter clogged) - Voltage above normal or shorted to high source
P136D	524087	4	Engine - EAT/SCR inducement or DEF level lamp /collective error lamp (water in fuel & fuel pressure & air filter clogged) - Voltage below normal or shorted to low source
P136E	520375	15	Exhaust aftertreatment - SCR crystallization monitoring(software <V725) / Serious error exhaust flap (software V725 to <V740) - Data above normal operational range(Least severe level)
P136F	520375	0	Exhaust aftertreatment - SCR crystallization monitoring(software <V725) / Serious error exhaust flap (software V725 to <V740) - Data above normal operational range(Most severe level)

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P1372	5746	5	Exhaust aftertreatment - DEF metering unit heater relay Current below normal or open circuit
P1373	5746	3	Exhaust aftertreatment - DEF metering unit heater relay Voltage above normal or shorted to high source
P1374	5746	4	Exhaust aftertreatment - DEF metering unit heater relay Voltage below normal or shorted to low source
P1375	4334	2	Exhaust aftertreatment - DEF pump pressure - Data erratic intermittent or incorrect
P1376	520311	11	Exhaust aftertreatment - DEF metering unit heater relay Over temperature - Root cause not known
P1378	4376	5	Exhaust aftertreatment - DEF reverse valve - Current below normal or open circuit
P1379	4376	3	Exhaust aftertreatment - DEF reverse valve - Voltage above normal or shorted to high source
P137A	4376	4	Exhaust aftertreatment - DEF reverse valve - Voltage below normal or shorted to low source
P137E	520284	15	Engine - Power reduction step 1 active - Data above normal operational range (Least severe level)
P1380	5826	14	Exhaust aftertreatment - Power reduction - Special instructions
P1381	520285	0	Engine - Power reduction step 2 active - Data above normal operational range (Most severe level)
P1383	520293	15	Exhaust aftertreatment - Particle diagnostic power reduction step 1 active - Data above normal operational range (Least severe level)
P1384	520294	14	Exhaust aftertreatment - Particle diagnostic pretrigger power reduction step 2 active - Special instructions
P1385	520295	0	Exhaust aftertreatment - Particle diagnostic power reduction step 2 active - Data above normal operational range (Most severe level)
P1386	520301	2	Exhaust aftertreatment - NOx conversion efficiency - Data erratic intermittent or incorrect
P1387	520302	2	Exhaust aftertreatment - Voltage for power supply DEF heater - Data erratic intermittent or incorrect
P1388	520303	11	Exhaust aftertreatment - Relay DEF dosing unit - Root cause not known
P1389	3226	12	Exhaust aftertreatment - NOx sensor behind SCR - Bad intelligent device or component

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P138A	3226	31	Exhaust aftertreatment - NOx sensor behind SCR - Condition exists
P138B	3216	12	Exhaust aftertreatment - NOx sensor infront of SCR - Bad intelligent device or component
P138C	3216	31	Exhaust aftertreatment - NOx sensor in front of SCR - Condition exists
P138D	4360	11	Exhaust aftertreatment - Temperature before SCR Cat - Root cause not known
P138F	520375	15	Exhaust aftertreatment - SCR crystallization monitoring(software <V725) / Serious error exhaust flap (software V725 to <V740) - Data above normal operational range(Least severe level)
		0	Exhaust aftertreatment - SCR crystallization monitoring(software <V725) / Serious error exhaust flap (software V725 to <V740) - Data above normal operational range(Most severe level)
P1390	520373	9	Exhaust aftertreatment - CAN DEF quality sensor - Abnormal update rate timeout
P1391	520374	9	Exhaust aftertreatment - CAN DEF tank temperature/level sensor - Abnormal update rate timeout
P1392	3532	3	Exhaust aftertreatment - DEF tank level sensor - Voltage above normal or shorted to high source
P1393	3532	4	Exhaust aftertreatment - DEF tank level sensor - Voltage below normal or shorted to low source
P1394	3031	3	Exhaust aftertreatment - DEF tank temperature - Voltage above normal or shorted to high source
P1395	3031	4	Exhaust aftertreatment - DEF tank temperature - Voltage below normal or shorted to low source
P1396	7540	11	Exhaust aftertreatment - DEF back flow line heater relay Root cause not known
P1397	5746	11	Exhaust aftertreatment - DEF metering unit heater relay Root cause not known
P1398	7069	11	Exhaust aftertreatment - DEF pressure line heater relay Root cause not known
P1399	5491	11	Exhaust aftertreatment - DEF suction line - Root cause not known
P139A	5746	8	Exhaust aftertreatment - DEF metering unit heater relay Abnormal frequency or pulse width or period
P139B	520317	8	Exhaust aftertreatment - DEF supply module overtemperature - Abnormal frequency or pulse width or period
P139C	520445	2	Machine - DEF pump motor communication - Data erratic intermittent or incorrect
P139D	520307	11	Exhaust aftertreatment - DEF heater relay overtemperature - Root cause not known
P139E	3520	2	Exhaust aftertreatment - DEF quality sensor - Data erratic intermittent or incorrect
P139F	3520	2	Exhaust aftertreatment - DEF quality sensor - Data erratic intermittent or incorrect

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P13A0	3520	2	Exhaust aftertreatment - DEF quality sensor - Data erratic intermittent or incorrect
P13A1	3520	2	Exhaust aftertreatment - DEF quality sensor - Data erratic intermittent or incorrect
P13A2	3520	13	Exhaust aftertreatment - DEF quality sensor - Out of calibration
P13A3	3520	2	Exhaust aftertreatment - DEF quality sensor - Data erratic intermittent or incorrect
P13A4	520436	11	Exhaust aftertreatment - DEF quality sensor - Root cause not known
P13A5	520436	3	Exhaust aftertreatment - DEF quality sensor - Voltage above normal or shorted to high source
P13A6	520436	4	Exhaust aftertreatment - DEF quality sensor - Voltage below normal or shorted to low source
P13A7	3532	2	Exhaust aftertreatment - DEF tank level sensor - Data erratic intermittent or incorrect
P13A8	3532	2	Exhaust aftertreatment - DEF tank level sensor - Data erratic intermittent or incorrect
P13A9	3532	2	Exhaust aftertreatment - DEF tank level sensor - Data erratic intermittent or incorrect
P13AA	3532	2	Exhaust aftertreatment - DEF tank level sensor - Data erratic intermittent or incorrect
P13AB	3031	2	Exhaust aftertreatment - DEF tank temperature - Data erratic intermittent or incorrect
P13AC	3031	2	Exhaust aftertreatment - DEF tank temperature - Data erratic intermittent or incorrect
P13AD	3031	2	Exhaust aftertreatment - DEF tank temperature - Data erratic intermittent or incorrect
P13AE	4360	2	Exhaust aftertreatment - Temperature before SCR Cat - Data erratic intermittent or incorrect
P13AF	520489	2	Exhaust aftertreatment - DEF pump temperature - Data erratic intermittent or incorrect
P13B0	5707	2	Exhaust aftertreatment - DEF pump heater temperature Data erratic intermittent or incorrect
P13B1	520490	2	Exhaust aftertreatment - DEF pump pressure - Data erratic intermittent or incorrect
P1452	520321	12	Engine - CAN Main Secondary no communication - Bad intelligent device or component
P1453	520322	9	Engine - CAN Main Secondary - Abnormal update rate timeout
P1454	520323	11	Engine - CAN Main Secondary fault trigger on Secondary ECU - Root cause not known
P1457	520326	11	Engine - CAN Main Secondary fault trigger on Secondary ECU - Root cause not known
P1458	520327	11	Engine - CAN Main Secondary fault trigger on Secondary ECU - Root cause not known
P1459	520328	11	Engine - CAN Main Secondary fault trigger on Secondary ECU - Root cause not known

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P145A	520329	11	Exhaust aftertreatment - Standstill forbidden on Main ECU - Root cause not known
P145B	520330	11	Engine - Power reduction request by 25% on Main ECU triggered by failure Secondary - Root cause not known
P145C	520331	11	Engine - Power reduction request by 50% on Main ECU triggered by failure Secondary - Root cause not known
P145D	520332	11	Engine - Collective fault on Main ECU triggered by Software-reset failure Secondary - Root cause not known
P145E	520333	11	Engine - Collective fault on Main ECU triggered by no engine speed signal Secondary - Root cause not known
P145F	520334	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by light failure of ETV Secondary - Root cause not known
P1460	520335	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by severe failure of ETV Secondary - Root cause not known
P1461	520336	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by DEF CAN sensor failure Secondary - Root cause not known
P1462	520337	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by NOx sensor downstream failure Secondary Root cause not known
P1463	520338	11	Exhaust aftertreatment - ETV safe position - Root cause not known Exhaust aftertreatment - Collective fault on Main ECU
P1464	520339	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by dosing valve failure Secondary - Root cause not known
P1465	520340	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by Stand Still temperature not reached failure Secondary - Root cause not known
P1466	520341	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by DEF pressure problems Secondary - Root cause not known
P1467	520342	11	Exhaust aftertreatment - Collective fault on main ECU triggered by DEF pump reversing valve fault secondary - Root cause not known
P1468	520343	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by DEF back flow line heater failure Secondary - Root cause not known
P1469	520344	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by SCR-system failure Secondary - Root cause not known
P146A	520345	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by DEF suction/backflow line heater failure Secondary - Root cause not known
P146B	520346	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by DEF supply module failure Secondary - Root cause not known

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P146C	520347	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by exhaust pressure upstream SCR failure Secondary - Root cause not known
P146D	520348	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by exhaust temperature upstream SCR failure Secondary - Root cause not known
P146E	520349	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by SCR-system failure Secondary - Root cause not known
P146F	520350	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by DEF pressure line heater failure Secondary - Root cause not known
P1470	520351	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by DEF supply module temperature failure Secondary - Root cause not known
P1471	520352	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by DEF heater relays failure Secondary - Root cause not known
P1472	520353	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by DOC DPF-system failure Secondary - Root cause not known
P1473	520354	11	Engine - Collective fault on Main ECU triggered by ECU Input (Microcontroller monitoring) failure Secondary - Root cause not known
P1474	520355	11	Engine - Collective fault on Main ECU triggered by sensor supply voltage failure Secondary - Root cause not known
P1475	520356	11	Engine - Collective fault on Main ECU triggered by dataset ID failure Secondary - Root cause not known
P1476	520357	11	Engine - Power reduction request by 25% on Main ECU triggered by failure Secondary - Root cause not known
P1477	520358	11	Engine - Power reduction request by 50% on Main ECU triggered by failure Secondary - Root cause not known
P1479	520360	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by SCR (NOx emissions) - system failure Secondary - Root cause not known
P147A	520361	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by Stand still abort Secondary - Root cause not known
P147B	520362	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by temperature upstream of DOC failure Secondary - Root cause not known
P147C	520363	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by Stand still prevention Secondary - Root cause not known
P147D	520364	11	Engine - Collective fault on Main ECU triggered by internal ECU (EEprom) failure Secondary - Root cause not known
P147E	520365	11	Engine - Collective fault on Main ECU triggered by battery voltage failure Secondary - Root cause not known
P147F	520366	11	Engine - Collective fault on Main ECU triggered by CAN failure Secondary - Root cause not known

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P1480	520367	11	Engine - Collective fault on Main ECU triggered by function monitoring failure (exhaust flap / injectors /starter / accelerator pedal control / rail pressure or torque monitoring) Secondary - Root cause not known
P1481	520368	11	Engine - Collective fault on Main ECU triggered by ECU hardware failure Secondary - Root cause not known
P1482	520369	11	Engine - Collective fault on Main ECU triggered by ECU temperature failure Secondary - Root cause not known
P1483	520320	13	Engine - Main and Secondary ECU software version mismatch - Out of calibration
P1484	520460	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by differential pressure sensor failure Secondary - Root cause not known
P1485	520461	11	Engine - Collective fault on Main ECU triggered by environment pressure sensor failure Secondary - Root cause not known
P1486	520462	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by SCR system failure Secondary - Root cause not known
P1487	520463	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by NH3 sensor failure Secondary - Root cause not known
P1488	520464	11	Engine - Collective fault on Main ECU triggered by camshaft speed signal failure Secondary - Root cause not known
P148A	520466	11	Engine - Power reduction request by 50% on Main ECU triggered by failure Secondary - Root cause not known
P148B	520467	11	Engine - Power reduction request by 25% on Main ECU triggered by failure Secondary - Root cause not known
P148C	520468	11	Engine - Power reduction request by 50% on Main ECU triggered by failure Secondary - Root cause not known
P148D	520469	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by SCR crystallization failure Secondary - Root cause not known
P148E	520470	11	Exhaust aftertreatment - Standstill request from Secondary ECU to Main ECU - Root cause not known
P148F	520475	11	Engine - Power reduction request by 25% on Main ECU triggered by failure Secondary - Root cause not known
P1490	520476	11	Engine - CAN Main Secondary fault trigger on Secondary ECU - Root cause not known
P1491	520477	11	Engine - CAN Main Secondary fault trigger on Secondary ECU - Root cause not known
P1492	520478	11	Engine - CAN Main Secondary fault trigger on Secondary ECU - Root cause not known

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P1493	520479	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by injection system failure (Standstill is prevented) Secondary - Root cause not known
P1494	520480	11	Exhaust aftertreatment - Standstill forbidden on Main ECU, execution only possible with service tool - Root cause not known
P1495	520481	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by Stand still abort Secondary - Root cause not known
P1496	520482	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by altitude-dependent performance intervention Secondary - Root cause not known
P1497	520483	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by SCR system failure Secondary - Root cause not known
P1498	520484	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by DEF pump motor failure Secondary - Root cause not known
P1499	520485	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by SCR system failure Secondary - Root cause not known
P149A	520486	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by SCR system failure Secondary - Root cause not known
P149B	520487	13	Engine - Inconsistent dataset on Main and Secondary ECU - Out of calibration
P149C	520488	0	Exhaust aftertreatment - SCR Crystallization - Data above normal operational range (Most severe level)
P202A	4366	5	Exhaust aftertreatment - DEF tank heating valve - Current below normal or open circuit
P202B	4366	4	Exhaust aftertreatment - DEF tank heating valve - Voltage below normal or shorted to low source
P202C	4366	3	Exhaust aftertreatment - DEF tank heating valve - Voltage above normal or shorted to high source
P203B	1761	0	Exhaust aftertreatment - DEF tank level sensor - Data above normal operational range (Most severe level)
P203B	1761	2	Exhaust aftertreatment - DEF tank level sensor - Data erratic intermittent or incorrect
P203C	3532	4	Exhaust aftertreatment - DEF tank level sensor - Voltage below normal or shorted to low source
P203D	3532	3	Exhaust aftertreatment - DEF tank level sensor - Voltage above normal or shorted to high source
P203F	3532	1	Exhaust aftertreatment - DEF tank level sensor - Data below normal operational range (Most severe level)

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P2047	3361	6	Exhaust aftertreatment - DEF metering unit - Current above normal or grounded circuit
		5	Exhaust aftertreatment - DEF metering unit - Current below normal or open circuit
P2048	3361	4	Exhaust aftertreatment - DEF metering unit - Voltage below normal or shorted to low source
P2049	3361	3	Exhaust aftertreatment - DEF metering unit - Voltage above normal or shorted to high source
P204C	4334	4	Exhaust aftertreatment - DEF pump pressure - Voltage below normal or shorted to low source
P204D	4334	3	Exhaust aftertreatment - DEF pump pressure - Voltage above normal or shorted to high source
P205B	3031	1	Exhaust aftertreatment - DEF tank temperature - Data below normal operational range (Most severe level)
	3031	0	Exhaust aftertreatment - DEF tank temperature - Data above normal operational range (Most severe level)
	520319	11	Exhaust aftertreatment - DEF tank temperature error -Root cause not known
	3031	2	Exhaust aftertreatment - DEF tank temperature - Data erratic intermittent or incorrect
P205C	3031	4	Exhaust aftertreatment - DEF tank temperature -Voltage below normal or shorted to low source
P205D	3031	3	Exhaust aftertreatment - DEF tank temperature -Voltage above normal or shorted to high source
P206A	3520	2	Exhaust aftertreatment - DEF quality sensor - Data erratic intermittent or incorrect
P207F	3520	1	Exhaust aftertreatment - DEF quality sensor - Data below normal operational range (Most severe level)
P208A	7107	5	Exhaust aftertreatment - DEF pump - Current below normal or open circuit
P208B	520306	11	Exhaust aftertreatment - ECU internal power stage DEF pump motor overtemperature - Root cause not known
P208C	7107	4	Exhaust aftertreatment - DEF pump - Voltage below normal or shorted to low source
P208D	7107	3	Exhaust aftertreatment - DEF pump - Voltage above normal or shorted to high source
P209F	520312	11	Exhaust aftertreatment - DEF tank heater - Over temperature - Root cause not known
P20B9	4341	5	Exhaust aftertreatment - DEF suction line heater relay - Current below normal or open circuit

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P20BA	520310	11	Exhaust aftertreatment - DEF suction line heater relay - Over temperature - Root cause not known
P20BB	4341	4	Exhaust aftertreatment - DEF suction line heater relay - Voltage below normal or shorted to low source
P20BC	4341	3	Exhaust aftertreatment - DEF suction line heater relay - Voltage above normal or shorted to high source
P20BD	4343	5	Exhaust aftertreatment - Heater DEF pressure line - Current below normal or open circuit
P20BE	520309	11	Exhaust aftertreatment - DEF pressure line heater over temperature - Root cause not known
P20BF	4343	4	Exhaust aftertreatment - Heater DEF pressure line - Voltage below normal or shorted to low source
P20C0	4343	3	Exhaust aftertreatment - Heater DEF pressure line - Voltage above normal or shorted to high source
P20C1	4345	5	Exhaust aftertreatment - Heater DEF return line - Current below normal or open circuit
P20C2	520308	11	Exhaust aftertreatment - DEF backflow line heater over temperature - Root cause not known
P20C3	4345	4	Exhaust aftertreatment - Heater DEF return line - Voltage below normal or shorted to low source
P20C4	4345	3	Exhaust aftertreatment - Heater DEF return line - Voltage above normal or shorted to high source
P20C5	520471	5	Exhaust aftertreatment - DEF downstream line heater - Current below normal or open circuit
P20C6	520471	11	Exhaust aftertreatment - DEF downstream line heater - Root cause not known
P20C7	520471	4	Exhaust aftertreatment - DEF downstream line heater - Voltage below normal or shorted to low source
P20C8	520471	3	Exhaust aftertreatment - DEF downstream line heater - Voltage above normal or shorted to high source
P20E8	4334	1	Exhaust aftertreatment - DEF pump pressure - Data below normal operational range (Most severe level)
P20E9	4334	0	Exhaust aftertreatment - DEF pump pressure - Data above normal operational range (Most severe level)
P20EE	5304	2	Exhaust aftertreatment - NOx Cat efficiency - Data erratic intermittent or incorrect

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P2100	51	5	Engine - Throttle valve position - Current below normal or open circuit
P2101	51	11	Engine - Throttle valve position - Root cause not known
P2102	51	4	Engine - Throttle valve position - Voltage below normal or shorted to low source
		4	Engine - Throttle valve position - Voltage below normal or shorted to low source
P2103	51	3	Engine - Throttle valve position - Voltage above normal or shorted to high source
		3	Engine - Throttle valve position - Voltage above normal or shorted to high source
P2111	51	7	Engine - Throttle valve position - Mechanical system not responding or out of adjustment
P2112	51	7	Engine - Throttle valve position - Mechanical system not responding or out of adjustment
P214A	4360	0	Exhaust aftertreatment - Temperature before SCR Cat - Data above normal operational range (Most severe level)
P21C2	5491	5	Exhaust aftertreatment - DEF suction line - Current below normal or open circuit
P21C3	5491	4	Exhaust aftertreatment - DEF suction line - Voltage below normal or shorted to low source
P21C4	5491	3	Exhaust aftertreatment - DEF suction line - Voltage above normal or shorted to high source
P2227	108	1	Engine - Ambient pressure sensor - Data below normal operational range (Most severe level)
		0	Engine - Ambient pressure sensor - Data above normal operational range (Most severe level)
		2	Engine - Ambient pressure sensor - Data erratic intermittent or incorrect
P2228	108	4	Engine - Ambient pressure sensor - Voltage below normal or shorted to low source
P2229	108	3	Engine - Ambient pressure sensor - Voltage above normal or shorted to high source
P2264	97	0	Engine - Water in fuel sensor - Data above normal operational range (Most severe level)
P2266	97	4	Engine - Water in fuel sensor - Voltage below normal or shorted to low source
P2267	97	3	Engine - Water in fuel sensor - Voltage above normal or shorted to high source
P226B	102	16	Engine - Charge air pressure sensor - Data above normal operational range (Moderately severe level)
		0	Engine - Charge air pressure sensor - Data above normal operational range (Most severe level)

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P229F	3226	2	Exhaust aftertreatment - NOx sensor behind SCR - Data erratic intermittent or incorrect
P22FF	4360	1	Exhaust aftertreatment - Temperature before SCR Cat -Data below normal operational range (Most severe level)
P242F	3720	16	Exhaust aftertreatment - DPF ash load - Data above normal operational range (Moderately severe level)
P244A	3251	18	Exhaust aftertreatment - DPF differential pressure - Data below normal operational range (Moderately severe level)
		1	Exhaust aftertreatment - DPF differential pressure - Data below normal operational range (Most severe level)
P244B	3251	16	Exhaust aftertreatment - DPF differential pressure - Data below normal operational range (Most severe level)
		0	Exhaust aftertreatment - DPF differential pressure - Data above normal operational range (Most severe level)
P2454	3251	4	Exhaust aftertreatment - DPF differential pressure - Voltage below normal or shorted to low source
P2455	3251	3	Exhaust aftertreatment - DPF differential pressure - Voltage above normal or shorted to high source
P2456	3251	2	Exhaust aftertreatment - DPF differential pressure - Data erratic intermittent or incorrect
P245F	520300	18	Exhaust aftertreatment - Pressure after DPF - Data below normal operational range (Moderately severe level)
		16	Exhaust aftertreatment - Pressure after DPF - Data above normal operational range (Moderately severe level)
P2463	4781	16	Exhaust aftertreatment - DPF soot load - Data above normal operational range (Moderately severe level)
		0	Exhaust aftertreatment - DPF soot load - Data above normal operational range (Most severe level)
P24E1	4377	2	Exhaust aftertreatment - NH3 sensor - Data erratic intermittent or incorrect
P24E9	4382	2	Exhaust aftertreatment - NH3 sensor heater - Data erratic intermittent or incorrect
P250A	98	2	Engine - Oil level - Data erratic intermittent or incorrect
		31	Engine - Oil level - Condition exists
		2	Engine - Oil level - Data erratic intermittent or incorrect
P250B	98	31	Engine - Oil level - Condition exists
P250E	98	14	Engine - Oil level - Special instructions

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
P2541	94	4	Engine - Fuel low pressure sensor - Voltage below normal or shorted to low source
P2542	94	3	Engine - Fuel low pressure sensor - Voltage above normal or shorted to high source
P2560	111	1	Engine - Coolant level sensor - Data below normal operational range (Most severe level)
P2604	729	12	Engine - Preheating relay - Bad intelligent device or component
		5	Engine - Preheating relay - Current below normal or open circuit
		12	Engine - Preheating relay - Bad intelligent device or component
P260E	3697	4	Machine - Particle filter lamp - Voltage below normal or shorted to low source
		3	Machine - Particle filter lamp - Voltage above normal or shorted to high source
P268A	651	13	Engine - Injector 1 - Out of calibration
P26DF	3512	14	Engine - ECU sensor supply voltage 4 - Special instructions
		11	Engine - ECU sensor supply voltage 4 - Root cause not known
P26E0	3512	6	Engine - ECU sensor supply voltage 4 - Current above normal or grounded circuit
		1	Engine - ECU sensor supply voltage 4 - Data below normal operational range (Most severe level)
P26E1	3512	0	Engine - ECU sensor supply voltage 4 - Data above normal operational range (Most severe level)
P2D87	1071	11	Engine - Fan drive output - Root cause not known Machine - CAN - Special instructions

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
U0010	1231	14	Machine - CAN - Special instructions
U0028	639	14	Machine - CAN - Special instructions
U1700	520261	9	Exhaust aftertreatment - CAN communication to NOx sensor before Cat - Abnormal update rate timeout
U1704	520265	9	Exhaust aftertreatment - CAN communication to NOx sensor after Cat - Abnormal update rate timeout
U170C	1669	14	Machine - CAN - Special instructions
U170D	520252	2	Exhaust aftertreatment - CAN control message - Data erratic intermittent or incorrect
U170E	520269	2	Machine - CAN Engine start (Gearbox) checksum -Data erratic intermittent or incorrect
U170F	520270	2	Machine - CAN Engine start (Vehicle controller) checksum - Data erratic intermittent or incorrect
U1710	4207	2	Machine - CAN torque rotation speed control - Data erratic intermittent or incorrect
U1711	4207	2	Machine - CAN torque rotation speed control - Data erratic intermittent or incorrect
U1712	4207	2	Machine - CAN torque rotation speed control - Data erratic intermittent or incorrect
U1713	4207	2	Machine - CAN torque rotation speed control - Data erratic intermittent or incorrect
U1715	523212	9	Engine - CAN engine protection - Abnormal update rate timeout
U1716	523741	14	Machine - CAN shut down request from engine shutdown - Special instructions
U1717	523240	9	Engine - CAN Functional mode control - Abnormal update rate timeout
U1718	520253	2	Exhaust aftertreatment - CAN control message - Data erratic intermittent or incorrect
U1719	520271	2	Machine - CAN Engine start (Gearbox) rolling counter - Data erratic intermittent or incorrect
U171A	520272	2	Machine - CAN Engine start (Vehicle controller) rolling counter - Data erratic intermittent or incorrect
U171B	4206	2	Machine - CAN torque rotation speed control - Data erratic intermittent or incorrect
U171C	4206	2	Machine - CAN torque rotation speed control - Data erratic intermittent or incorrect
U171D	4206	2	Machine - CAN torque rotation speed control - Data erratic intermittent or incorrect
U171E	4206	2	Machine - CAN torque rotation speed control - Data erratic intermittent or incorrect

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
U1720	520273	2	Machine - CAN Engine start (Gearbox) - Data erratic intermittent or incorrect
U1721	520274	9	Machine - CAN Engine start (Gearbox) - Abnormal update rate timeout
U1722	520275	2	Machine - CAN Engine start (Vehicle controller) - Data erratic intermittent or incorrect
U1723	520276	9	Machine - CAN Engine start (Vehicle controller) - Abnormal update rate timeout
U1725	520278	9	Machine - CAN ETV actuator - Abnormal update rate timeout
U1726	3349	0	Machine - CAN torque rotation speed control - Data above normal operational range (Most severe level)
U1727	3349	0	Machine - CAN torque rotation speed control - Data above normal operational range (Most severe level)
U1728	3349	0	Machine - CAN torque rotation speed control - Data above normal operational range (Most severe level)
U1729	3349	0	Machine - CAN torque rotation speed control - Data above normal operational range (Most severe level)
U172A	3349	0	Machine - CAN torque rotation speed control - Data above normal operational range (Most severe level)
U172B	3349	0	Machine - CAN torque rotation speed control - Data above normal operational range (Most severe level)
U172C	3349	0	Machine - CAN torque rotation speed control - Data above normal operational range (Most severe level)
U172D	3349	0	Machine - CAN torque rotation speed control - Data above normal operational range (Most severe level)
U172E	3349	0	Machine - CAN torque rotation speed control - Data above normal operational range (Most severe level)
U172F	3349	0	Machine - CAN torque rotation speed control - Data above normal operational range (Most severe level)
U1730	3349	0	Machine - CAN torque rotation speed control - Data above normal operational range (Most severe level)
U1731	3349	0	Machine - CAN torque rotation speed control - Data above normal operational range (Most severe level)
U1732	523982	0	Engine - Power stage diagnostic - Data above normal operational range (Most severe level)
U1733	523982	1	Engine - Power stage diagnostic - Data below normal operational range (Most severe level)

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
U1734	520256	9	Exhaust aftertreatment - CAN control message -Abnormal update rate timeout
U1737	520380	14	Machine - Exhaust aftertreatment CAN shortcut - Special instructions
U1738	520381	14	Machine - Main and Secondary CAN shortcut - Special instructions
U1739	520382	14	Machine - Engine CAN shortcut - Special instructions
U173A	520383	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U173B	520384	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U173C	520385	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U173D	520386	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U173E	520387	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U173F	520388	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1740	520389	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1741	520390	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1742	520391	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1743	520392	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1744	520393	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1745	520394	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1746	520395	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1747	520396	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1748	520397	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1749	520398	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U174A	520399	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U174B	520400	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U174C	520401	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U174D	520402	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U174E	520403	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U174F	520404	9	Engine - CAN Main Secondary - Abnormal update rate timeout

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
U1750	520405	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1751	520406	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1752	520407	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1753	520408	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1754	520409	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1755	520410	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1756	520411	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1757	520412	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U1758	520413	2	Engine - CAN Main Secondary, ECU checksum - Data erratic intermittent or incorrect
U1759	520414	2	Engine - CAN Main Secondary, Time synchronization(copy fault) - Data erratic intermittent or incorrect
U175A	520415	2	Engine - CAN Main Secondary, Rolling counter of the CAN receive message - Data erratic intermittent or incorrect
U175C	520431	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U175D	520432	9	Engine - CAN Main Secondary - Abnormal update rate timeout
U175E	3349	2	Machine - CAN torque rotation speed control - Data erratic intermittent or incorrect
U175F	3349	2	Machine - CAN torque rotation speed control - Data erratic intermittent or incorrect
U1760	3349	2	Machine - CAN torque rotation speed control - Data erratic intermittent or incorrect
U1761	3349	2	Machine - CAN torque rotation speed control - Data erratic intermittent or incorrect
U1762	520446	9	Machine - CAN-Receive-Frame ComMS_SWS10_MRcv Abnormal update rate timeout
U1763	520447	9	Machine - CAN-Receive-Frame ComMS_SWS13_SRcv Abnormal update rate timeout
U1764	520448	9	Machine - CAN-Receive-Frame ComMS_SWS14_SRcv Abnormal update rate timeout

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

DTC Number	SPN	FMI	Description
U1765	520449	9	Machine - CAN-Receive-Frame ComMS_SWS15_SRcv Abnormal update rate timeout
U1766	520450	9	Machine - CAN-Receive-Frame ComMS_SWS16_SRcv Abnormal update rate timeout
U1767	520451	9	Machine - CAN-Receive-Frame ComMS_SWS17_SRcv Abnormal update rate timeout
U1768	520452	9	Machine - CAN-Receive-Frame ComMS_SWS18_SRcv Abnormal update rate timeout
U1769	520453	9	Machine - CAN-Receive-Frame ComMS_SWS19_SRcv Abnormal update rate timeout
U176A	520454	9	Machine - CAN-Receive-Frame ComMS_SWS20_SRcv Abnormal update rate timeout
U176B	520455	9	Machine - CAN-Receive-Frame ComMS_SWS7_MRcv Abnormal update rate timeout
U176C	520456	9	Machine - CAN-Receive-Frame ComMS_SWS8_MRcv Abnormal update rate timeout
U176D	520457	9	Machine - CAN-Receive-Frame ComMS_SWS9_MRcv Abnormal update rate timeout
U1770	520314	9	Machine - CAN ETV actuator Secondary - Abnormal update rate timeout
U1771	1638	2	Machine - Hydraulic oil temperature - Data erratic intermittent or incorrect
U1772	1638	9	Machine - Hydraulic oil temperature - Abnormal update rate timeout
U1773	520313	9	Machine - CAN ETV actuator - Abnormal update rate timeout
U1774	520499	9	Engine - CAN actuator electric waste gate - Abnormal update rate timeout
U3003	168	4	Machine - Battery voltage - Voltage below normal or shorted to low source
		3	Machine - Battery voltage - Voltage above normal or shorted to high source
		1	Machine - Battery voltage - Data below normal operational range (Most severe level)
		0	Machine - Battery voltage - Data above normal operational range (Most severe level)
		0	Machine - Battery voltage - Data above normal operational range (Most severe level)
		1	Machine - Battery voltage - Data below normal operational range (Most severe level)

ECGenius 150 Transmission Fault Codes

SPN = Suspect Parameter Number
FMI = Failure Mode Identifier

SPN	Description	FMI	FMI Signification	Transmission Behavior
31	Synchro Position	3	High position error	High range disabled
		4	Reverse position error	Engage if no forward motion
91	Accelerator Pedal Position	3	Out of range	Torque as if 0% pedal
		4	Disconnected or out of range	Torque as if 0% pedal
191	Clutch Speed / Ground Speed	0	Overspeed Alarm	-
		8	Lost Signal while in motion	Ratio underdrive
441	Clutch Temperature	0	High temperature Alarm	0% of max torque, neutral direction control lever to reset
611	Unknown Engine ID	14	Calibration sequence could not identify engine	Clutches can not be calibrated
734	Clutch Forward	3	Valve disconnected	Torque as if 0% pedal
		13	Clutch not calibrated	Limited performance
735	Clutch Reverse/High	3	Valve disconnected	Torque as if 0% pedal
		13	Clutch not calibrated	Limited performance
-	CAN bus Loss	-	No data received from engine	Consider engine torque is 99%
Note: If one temperature sensor is lost the value from the other sensor is used, if both are lost the temperature is predetermined to a default value of 85°C				

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Schematics



Observe and Obey:

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

Before Troubleshooting:

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

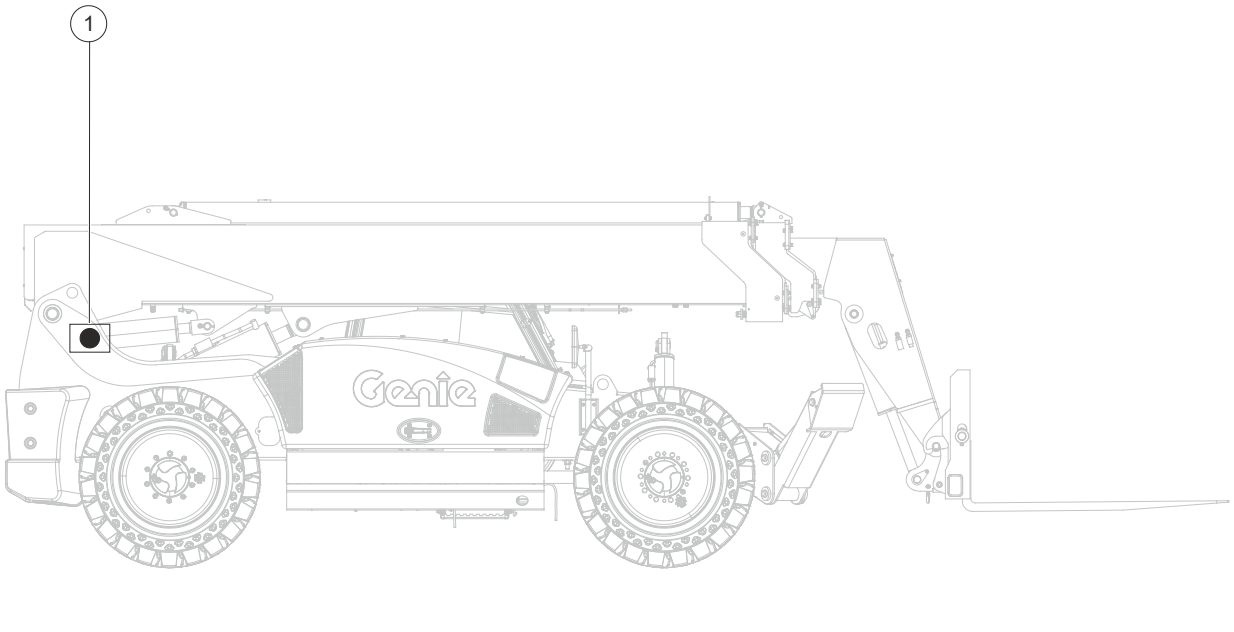
Electrical Schematics

⚠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

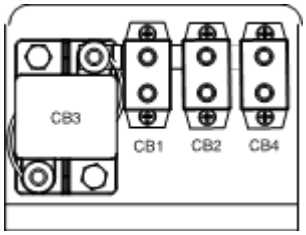
⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

Proximity Switch Legend



1 Boom Angle Proximity Switch PX2 (under boom pivot pin)

Fuse Panel Layout (120HP & ROW Engine)



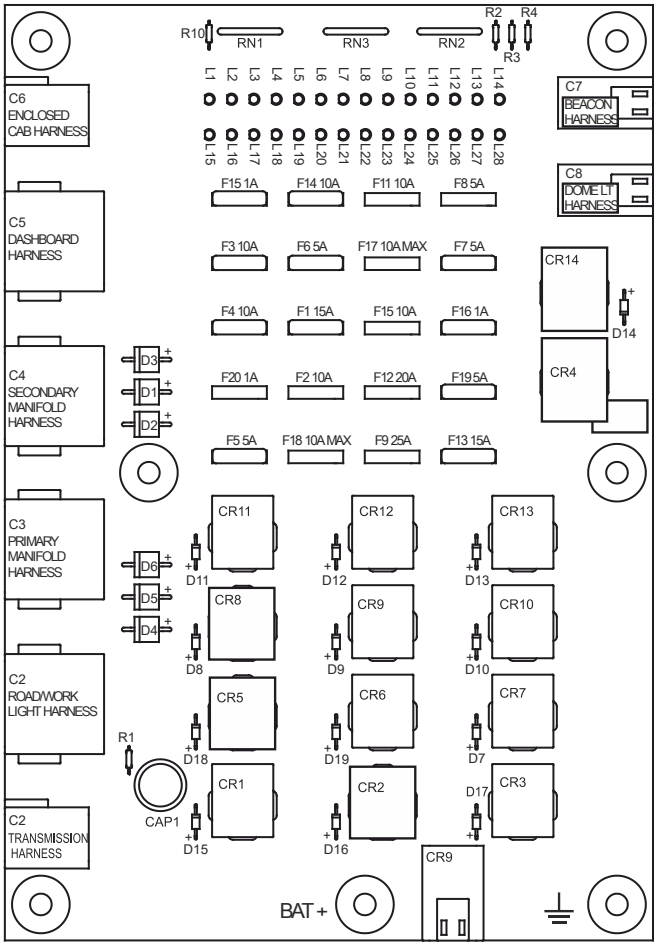
Deutz 74HP T4F

CB4 20A-EAT Power
CB2 30A- ECM Power
CB1 50A-Control System Power
CB3 60A-Glow Plugs

Deutz 120HP T4F

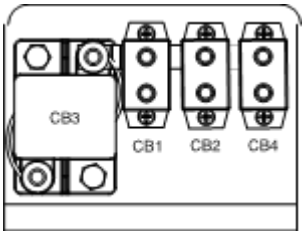
CB4 50A-EAT Power
CB2 50A- ECM Power
CB1 50A-Control System Power
CB3 60A-Glow Plugs

Circuit Breakers located
in the Engine Tray Assembly



Fuse Board located in the Cab

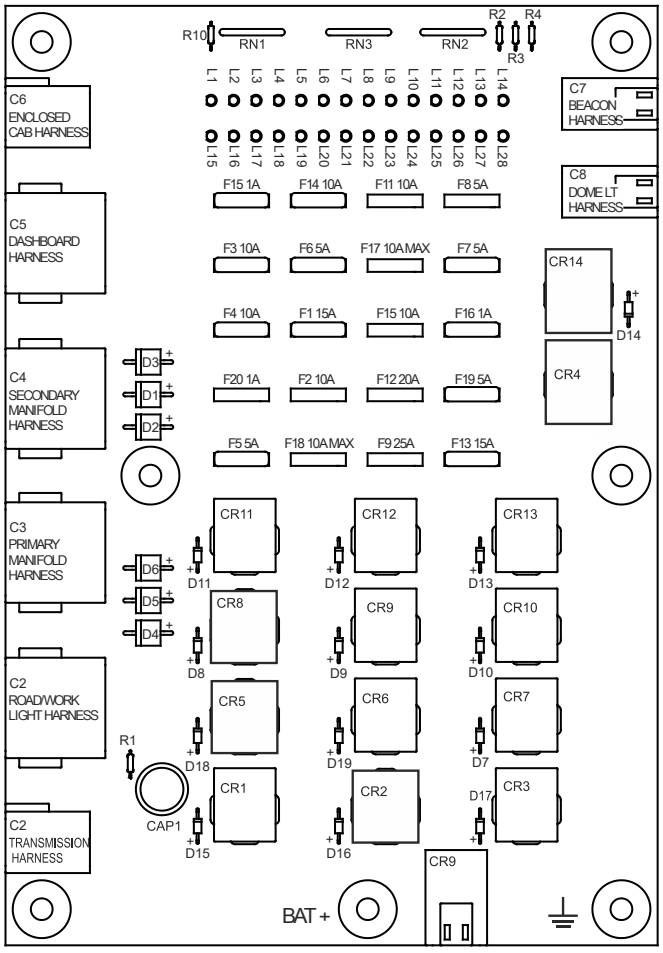
Fuse Panel Layout (74HP Engine)



Deutz 74HP T4F

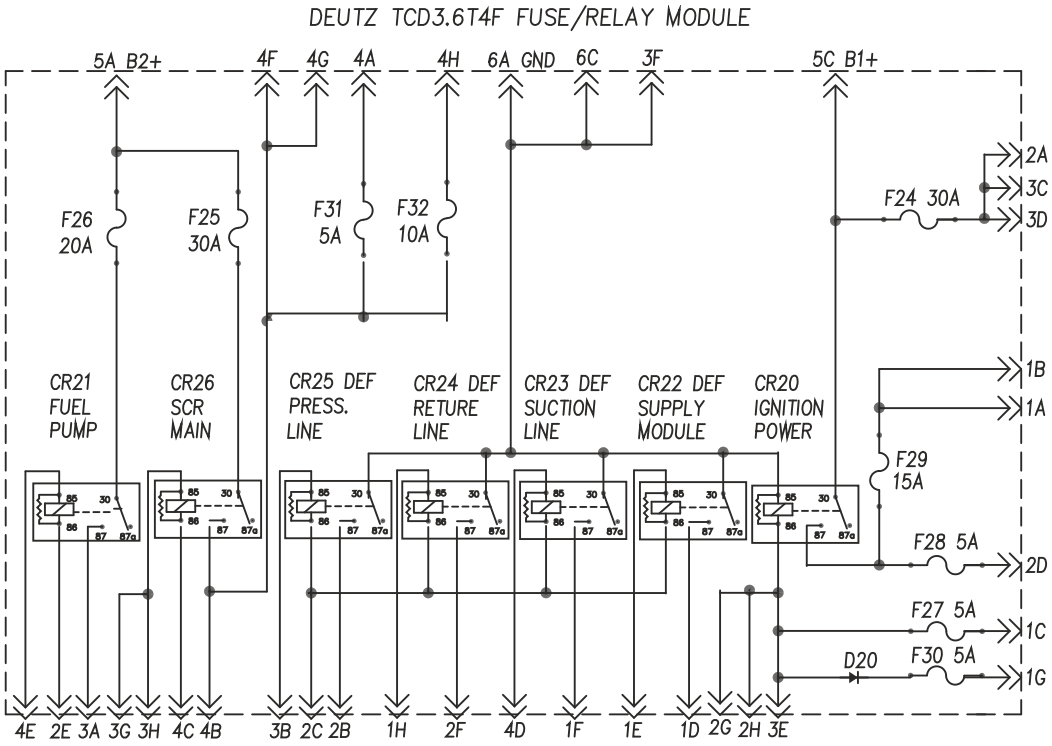
CB4 20A-EAT Power
CB2 30A- ECM Power
CB1 50A-Control System Power
CB3 60A-Glow Plugs

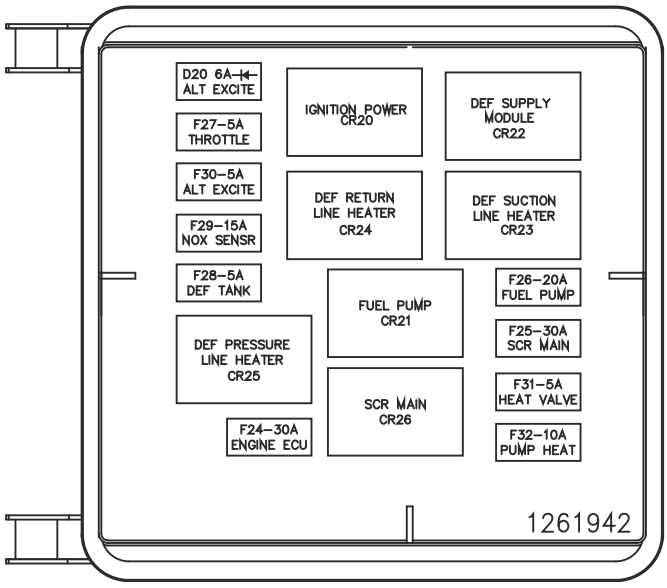
Circuit Breakers located
in the Engine Tray Assembly



Fuse Board located in the Cab

Deutz TCD3.6 T4F Module





Deutz TCD3.6 T4F Engine only
Located inside of chassis by the ECU

Electrical Component & Wire Color Abbreviation Legend

Item	Description
ALT	**Alternator**
B	**Battery**
B1	Main Battery
CB	**Circuit Breaker**
CB1	50 Amp Circuit Breaker
CB2	30 Amp or 50 Amp Circuit Breaker
CB3	60 Amp Circuit Breaker
CB4	20 Amp or 50 Amp Circuit Breaker
C	**Capacitor**
C1	4700 uf
CR	**Control Relay**
CR1	Main Power
CR2	Options Power
CR3	Service Horn
CR4	Flasher
CR5	Lights Option
CR6	Sway Enable
CR7	Boom Angle
CR8	Boom Extend
CR9	Forward Enable (ZF/DANA)
CR10	Reverse Enable (ZF/DANA)
CR11	Parking Brake Latch
CR13	Joystick Power
CR14	Boom Angle Sensor Monitor

Item	Description
D	**Diode**
EMS	**Engine Management System**
F	**Fuse**
F1	15 Amp - Break/Shift
F2	10 Amp - Aux Hydraulics
F3	10 Amp – Rear Axle Oscillate
F4	10 Amp – Sway/Tilt
F5	5 Amp - Horn
F6	5 Amp - Steer/Differential Switch
F7	1 Amp - Gauge Cluster Power/Backlight
F8	5 Amp - Dome/Beacon Light
F9	25 Amp – HVAC
F10	15 Amp - Windshield Wiper/Washer
F11	10 Amp – Defrost Fan
F12	20 Amp – Lights
F13	15 Amp – Ignition
F14	10 Amp – Power Port
F15	1 Amp - Switch Power
F16	1 Amp – Gauge Cluster ECU
F17	10 Amp Max – Spare
F18	10 Amp Max – Spare
F19	5 Amp - Telematics
F20	1 Amp - Boom Angle Monitor

Electrical Component & Wire Color Abbreviation Legend

Item	Description
L	**LED Light**
L1	Ignition Power ON
L2	Accessories Power ON
L3	Horn Switch ON
L4	Blinkers ON
L5	Light Switch ON
L6	Sway Enable Coil Power ON
L7	Boom Angle Switch ON
L9	Brake Pressure Switch ON
L10	Reverse ON
L11	Parking Brake Latch ON
L12	Sway Enable Switch ON
L13	Joystick Relay Power ON
L14	Horn Power ON
L15	Lights Power ON
L16	Rear Axle Float Coil Power ON
L17	Rear Axle Fast Coil Power ON
L18	Brake Pressure Switch Power ON
L19	Forward Coil Power ON
L20	Reverse Coil Power ON
L21	PB Release Coil Power ON
L23	Joystick Power
L24	Forward Shift ON
L25	Parking Brake Release OFF
L26	Brake Light Pressure Switch ON
L27	Hazard Switch ON
L28	Boom Angle Switch ON
M	**Motor**
R	**Resistor**

Item	Description
S	**Switch**
S1	Key Start Switch
S5	Parking Brake Pressure Switch
S6	Service Brake Pressure Switch
S7	Sway Enable Pressure Switch
S8	Sway Enable Switch
S9	Tilt Enable Switch
S10	Steer Select Switch
S11	Left Stabilizer Switch
S12	Right Stabilizer Switch
S13	Differential Lock Switch
S14	Auxiliary Cont. Switch
S15	Horn Switch
S16	Brake Light Pressure Switch
S17	Windshield Wiper Motor Switch
S17	Windshield Washer Switch
S18	Windshield Wiper Motor Switch
S18	Windshield Washer Switch
S19	Dome Light Switch
S21	Enclosed Cab Fan Switch
S22	Road / Work Light Switch
S23	Brake Pressure Warning Switch
S24	Transmission Oil Pressure Switch
S25	Transmission Oil Temp. Switch
S26	EAT Standstill switch
TP	**Throttle Pedal**
TSS	**Turn Signal Shifter**

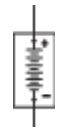
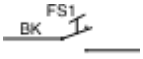
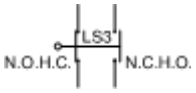
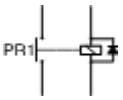
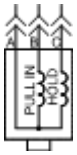
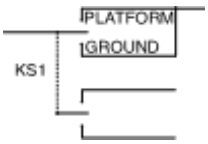
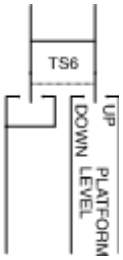
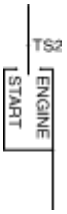
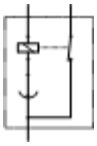
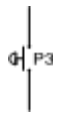
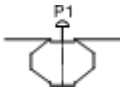
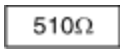
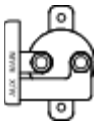
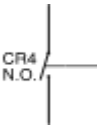
Electrical Component & Wire Color Abbreviation Legend

Item	Description
Y	**Valve Coil**
Y1	Sway Left Enable SV1
Y2	Tilt Up Enable SV2
Y3	Sway Right Enable SV3
Y4	Tilt Down Enable SV4
Y5	Parking Brake Release SV5
Y6	Differential Lock SV6
Y7	Rear Axle Float SV7
Y8	Rear Axle Fast SV8
Y9	Sway Enable SV9
YA	Auxiliary A
YB	Auxiliary B
YD	D Transmission
YE	E Transmission
YF	Transmission Forward
YR	Transmission Reverse
YD1A	4Wheel Steer SVD1A
YD1B	Crab Steer SVD1B
YLD (if equipped)	Left Stabilizer Down
YLU (if equipped)	Left Stabilizer Up
YRD (if equipped)	Right Stabilizer Down
YRU (if equipped)	Right Stabilizer Up

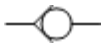
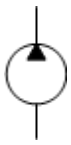
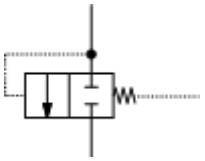
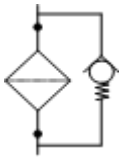
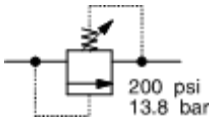
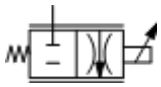
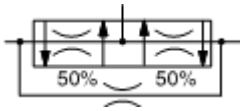
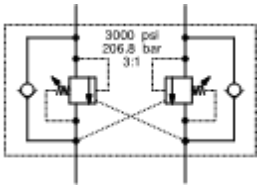
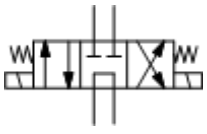
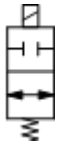
Wire Color Legend	
BL	Blue
BL/BK	Blue/Black
BL/RD	Blue/Red
BL/WH	Blue/White
BK	Black
BK/RD	Black/Red
BK/WH	Black/White
BK/YL	Black/Yellow
BR	Brown
GR	Green
GR/BK	Green/Black
GR/RD	Green/Red
GR/WH	Green/White
RD	Red
RD/BK	Red/Black
RD/WH	Red/White
OR	Orange
OR/BK	Orange/Black
OR/RD	Orange/Red
OR/WH	Orange/White
WH	White
WH/BK	White/Black
WH/RD	White/Red
YL	Yellow

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Electrical Symbol Legend

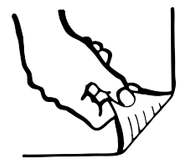
 Battery	 Coil, solenoid or relay	 Horn or alarm	 Flashing beacon	 Gauge
 Diode	 Hour meter	 LED	 Fuse with amperage	 Foot switch
 T-circuits connect	 Limit switch	 Power relay	 Coil with suppression	 Fuel or RPM solenoid
 Connection - no terminal	 T-circuits connect at terminal	 Circuits crossing no 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

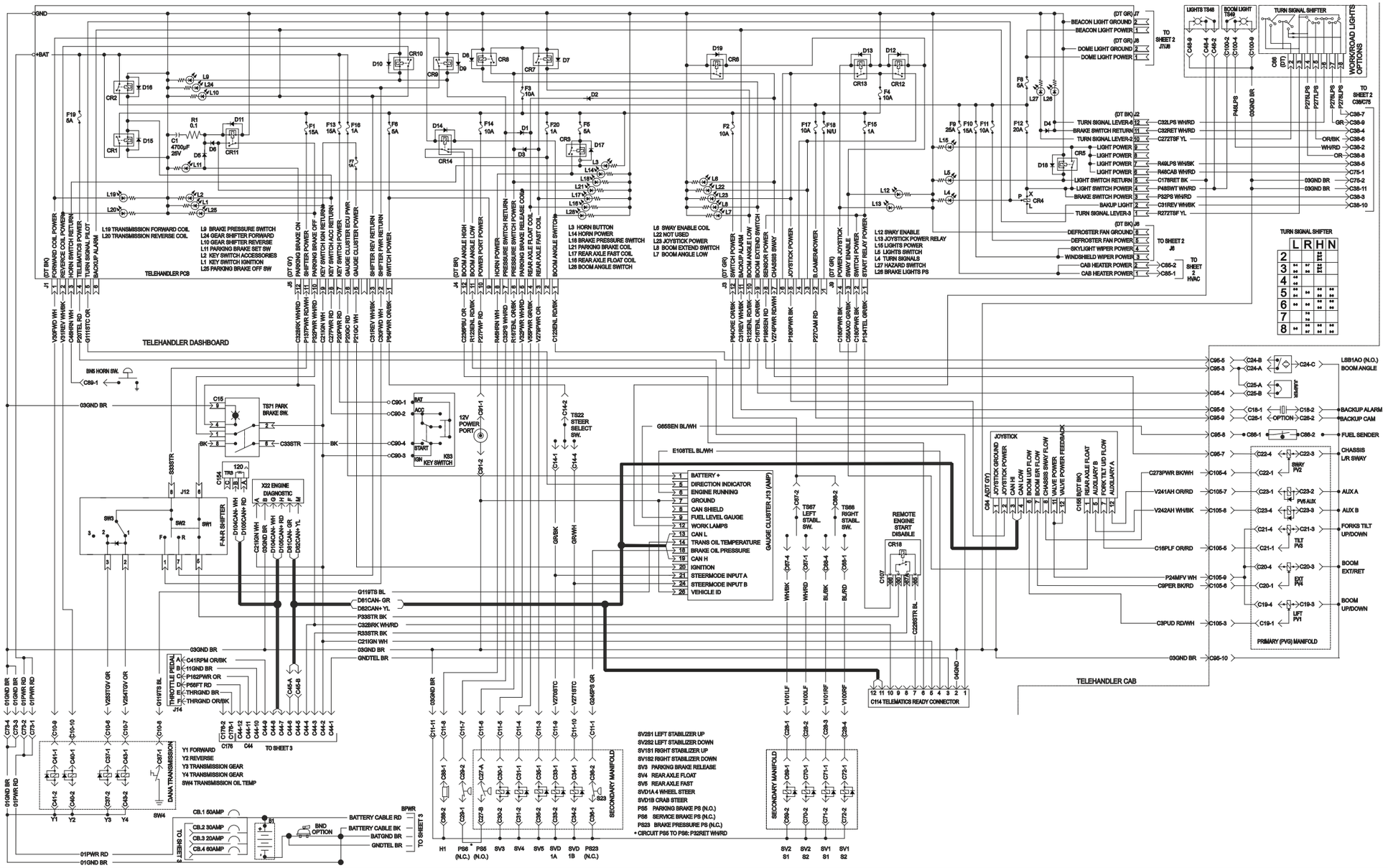
 Orifice with size	 Check valve	 Shut off valve	 Brake
 Pump, fixed displacement	 Pump, bi-directional variable displacement	 Motor, bi-directional	 Motor, 2 speed bi-directional
 Cylinder, double acting	 Pump, prime mover (engine or motor)	 Shuttle valve. 2 position, 3 way	 Differential sensing valve
 Filter with bypass relief valve	 Relief valve with pressure setting	 Priority flow regulator valve	 Solenoid operated proportional valve
 Directional valve (mechanically activated)	 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	 Solenoid operated 3 position, 4 way proportional directional valve	 Solenoid valve, 2 position 2 way

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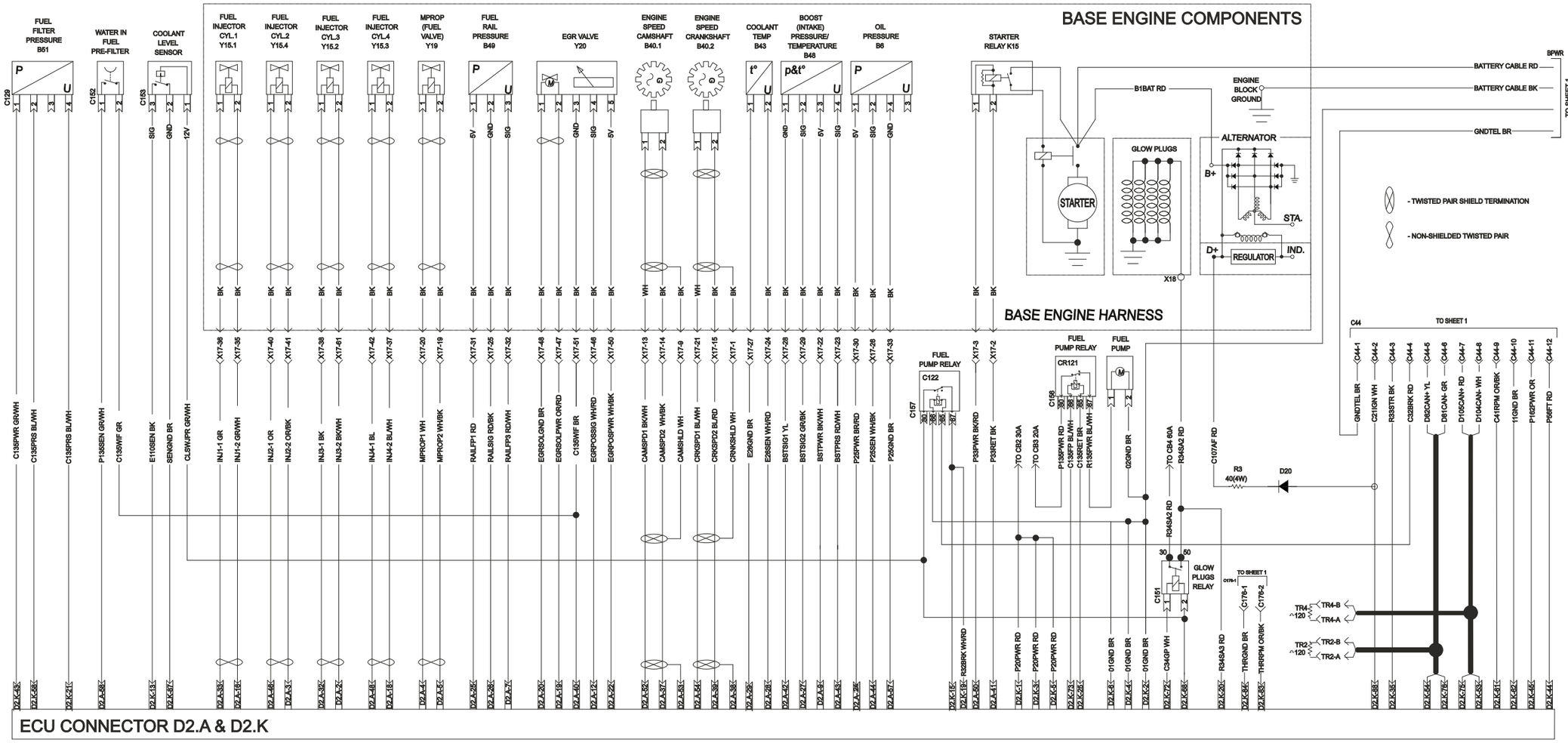
Electrical Schematic - Deutz T4F 74HP



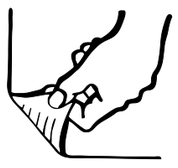
Electrical Schematic - Deutz T4F 74HP



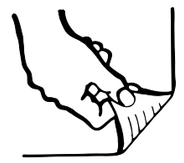
Electrical Schematic- Deutz T4F 74HP Engine Harness



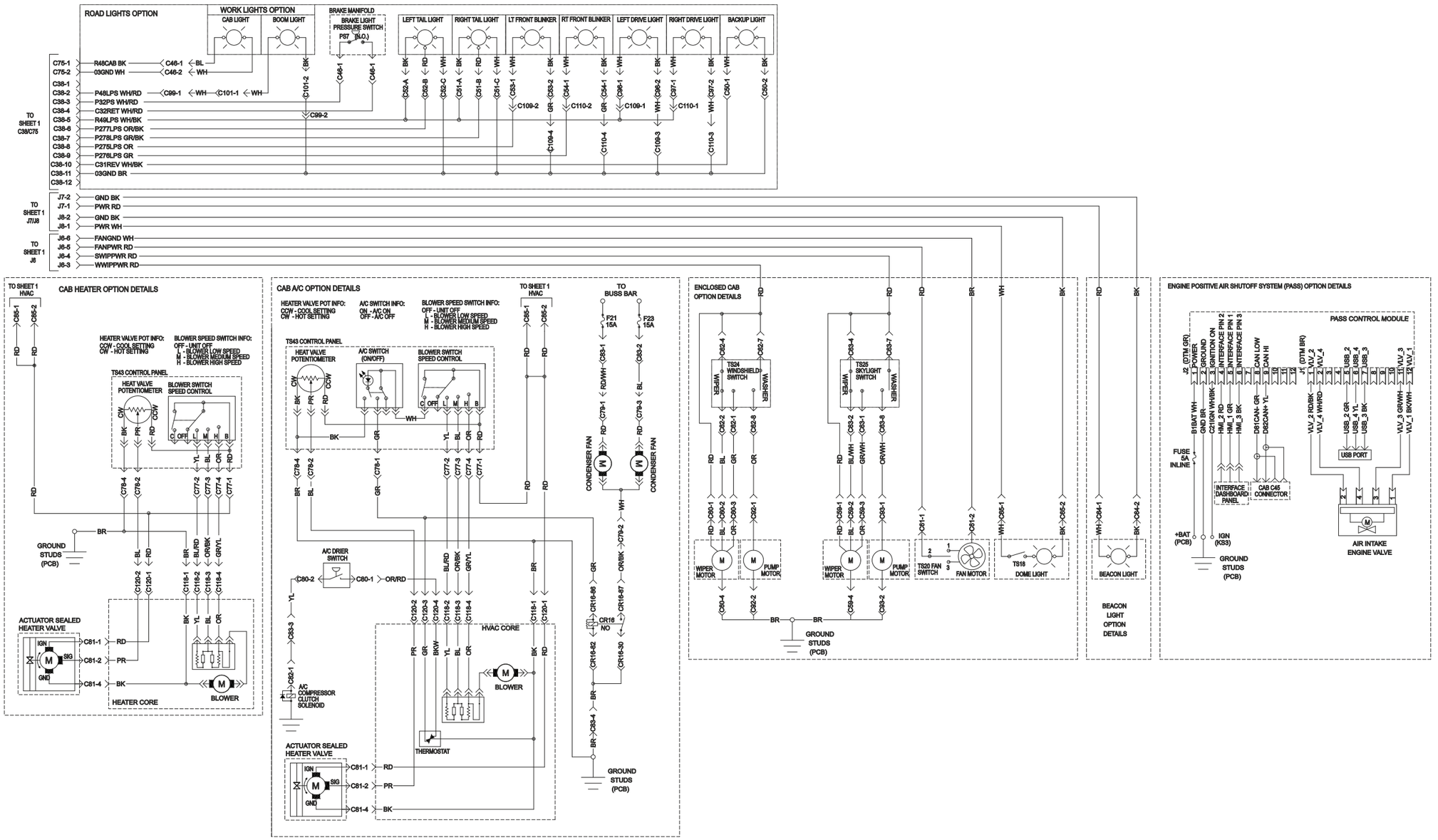
Electrical Schematic- Deutz T4F 74HP Engine Harness



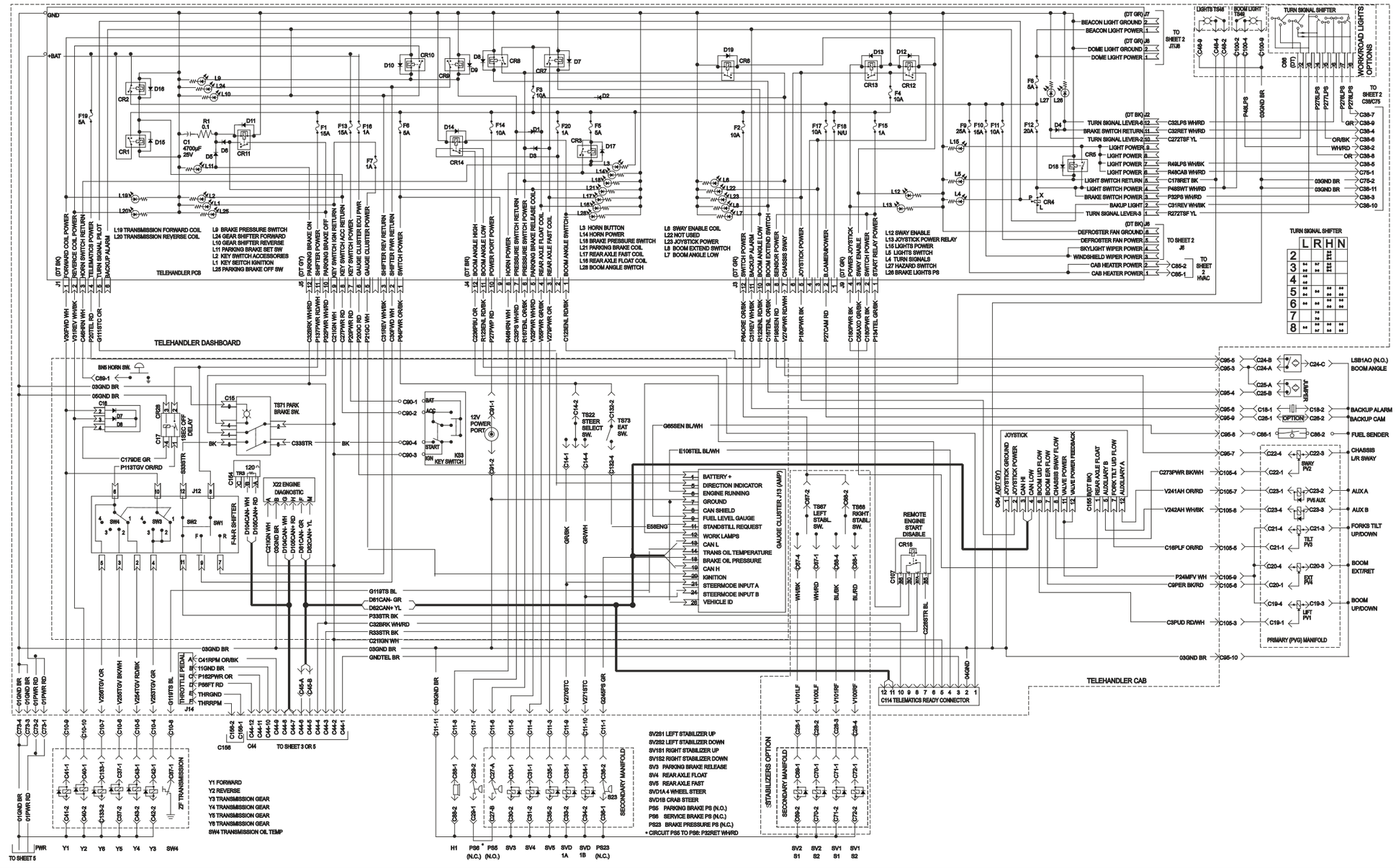
Electrical Schematic- Deutz T4F 74HP Options



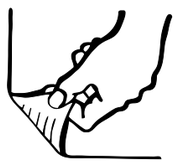
Electrical Schematic- Deutz T4F 74HP Options



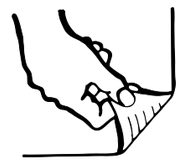
Electrical Schematic - Deutz T3/T4F 120HP



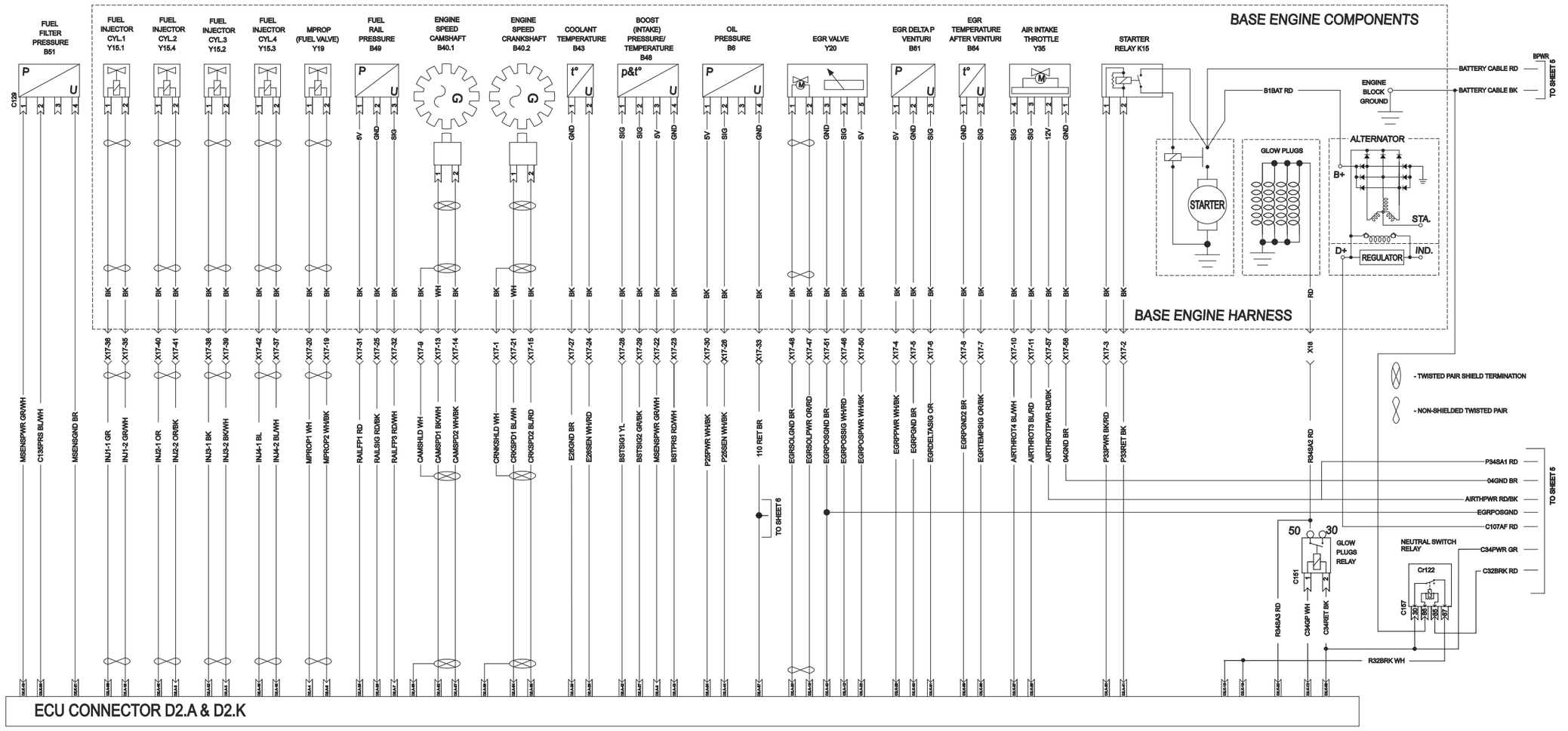
Electrical Schematic - Deutz T3/T4F 120HP



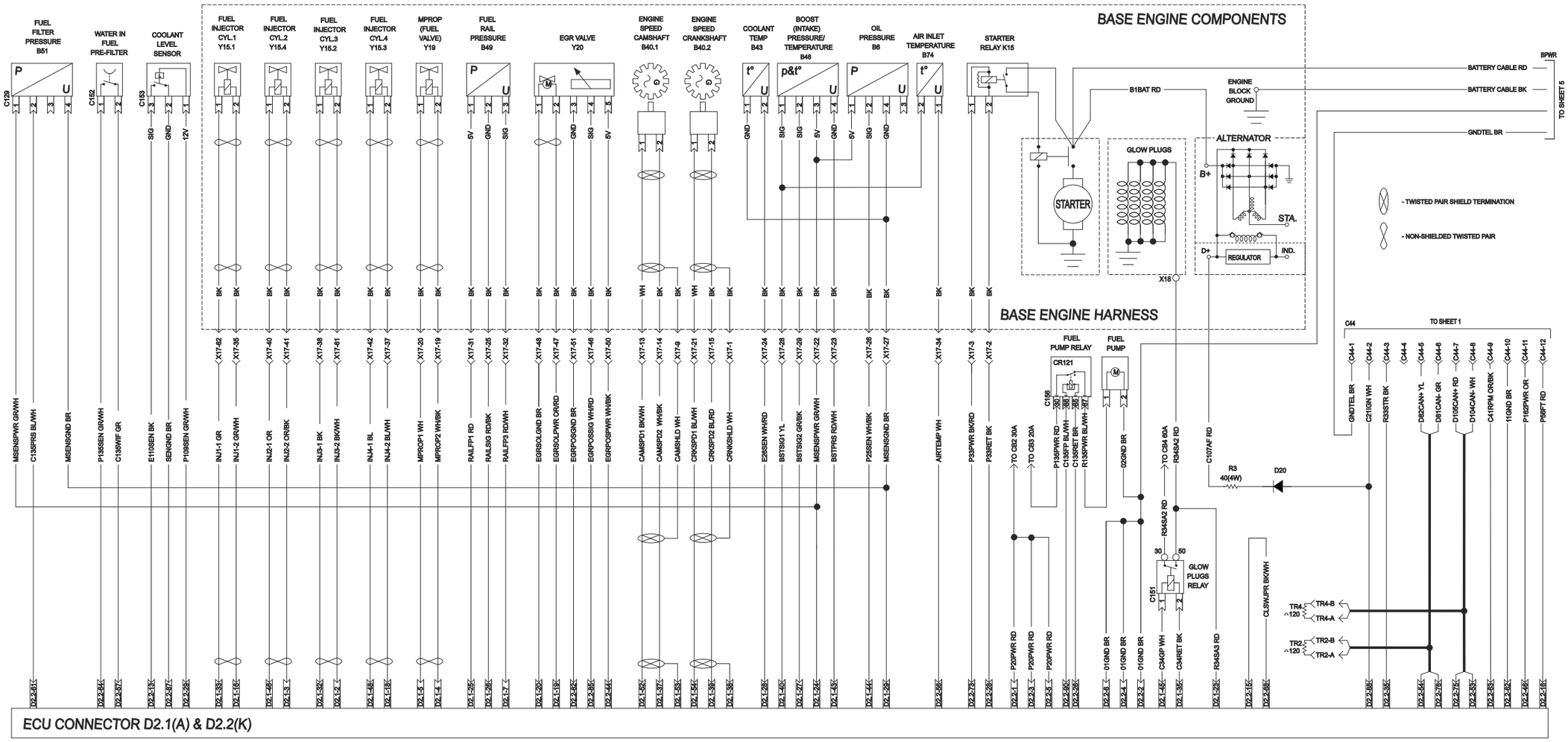
Base Engine ECM Schematic - Deutz T4F 120HP ZF



Base Engine ECM Schematic - Deutz T4F 120HP



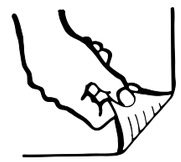
Engine ECM Schematic - Deutz T3 120HP



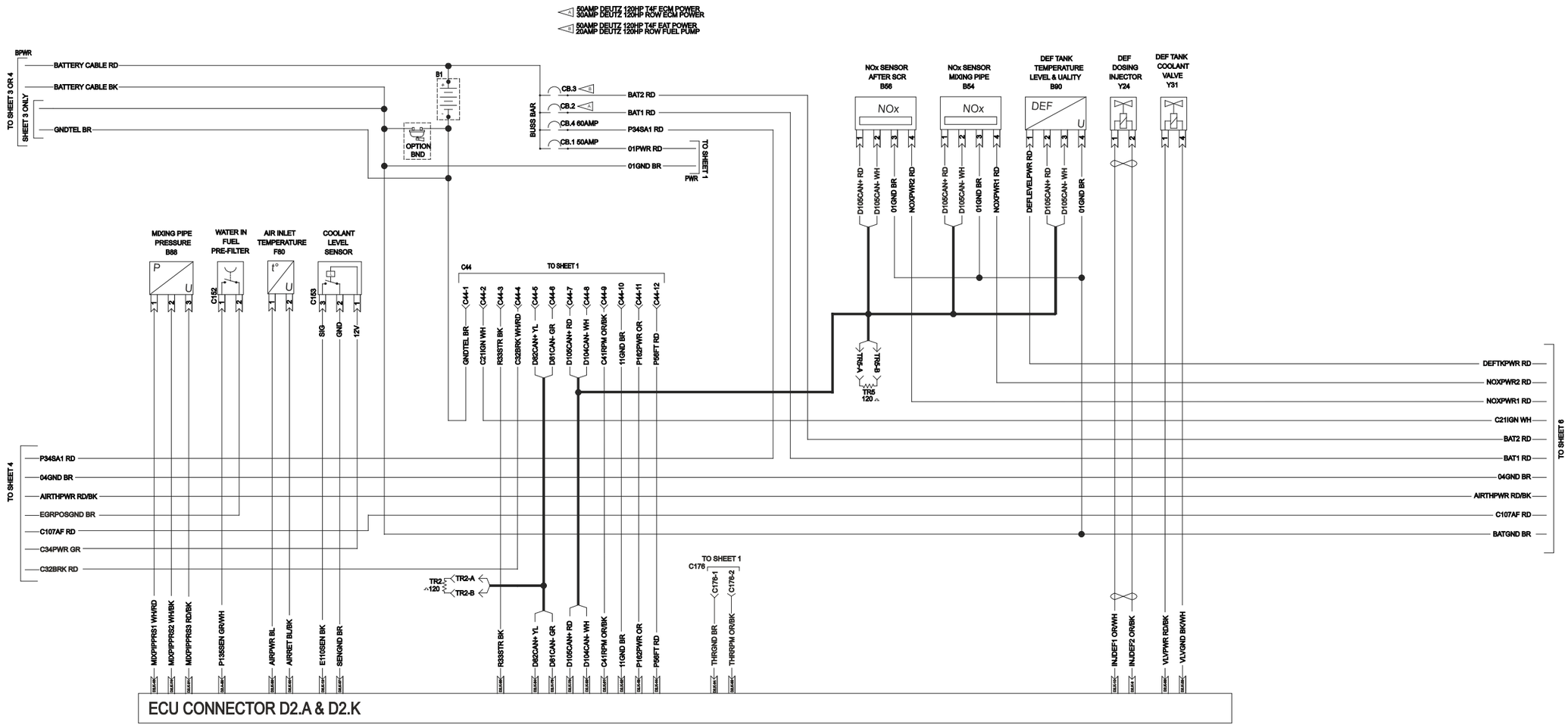
Engine ECM Schematic - Deutz T3 120HP ZF



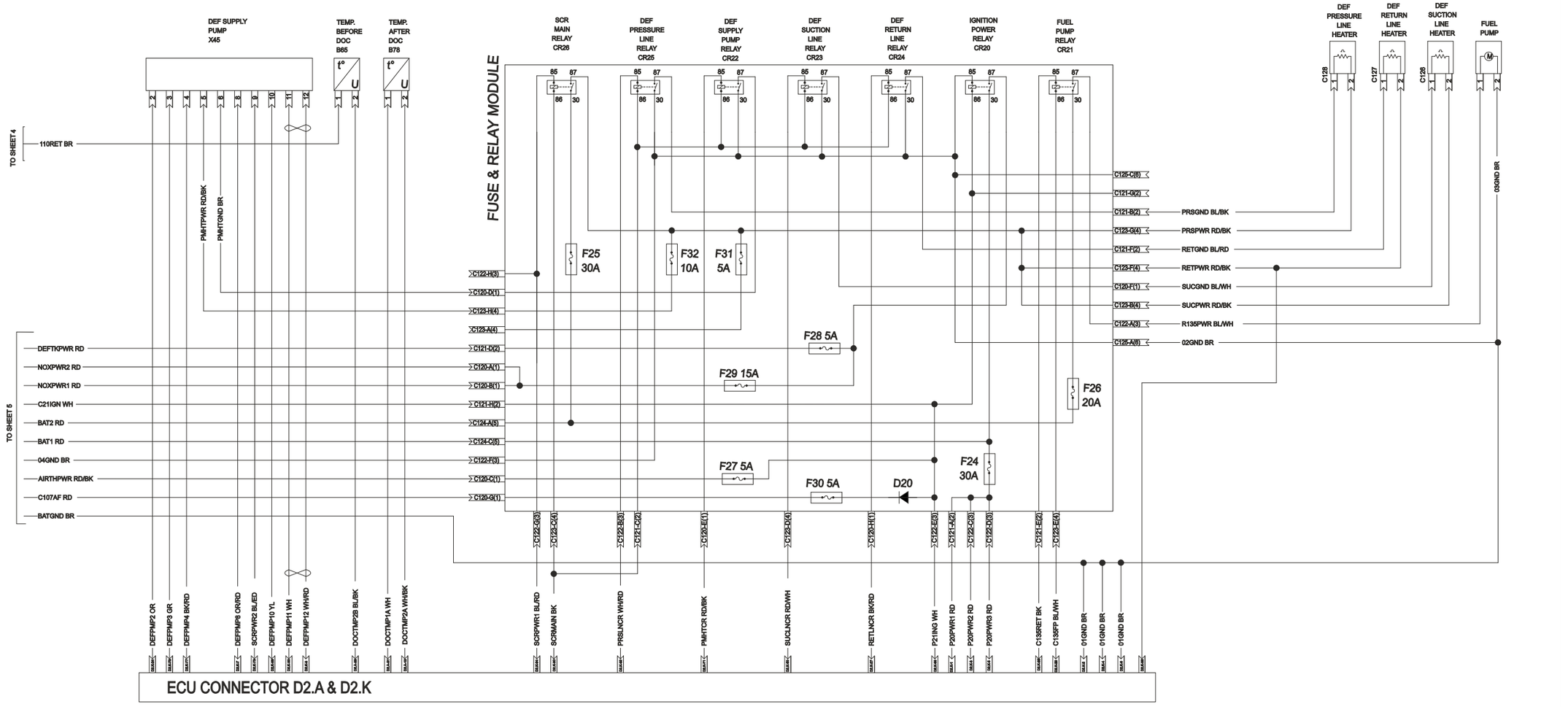
EAT ECM Schematic - Deutz T4F 120HP ZF



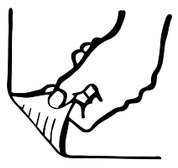
EAT ECM Schematic - Deutz T4F 120HP



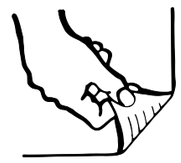
EAT ECM VEC Schematic - Deutz T4F 120HP



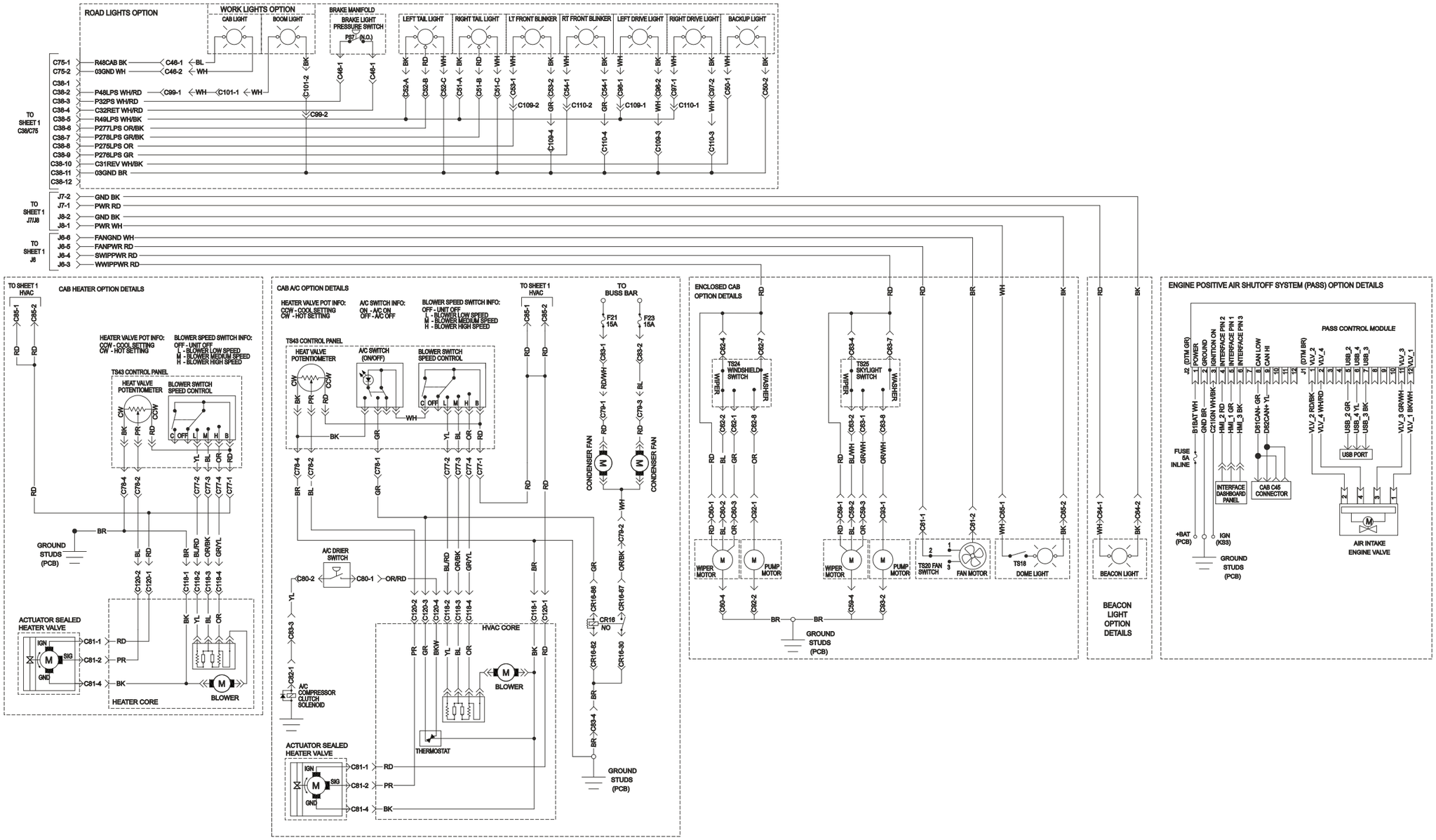
EAT ECM VEC Schematic - Deutz T4F 120HP ZF



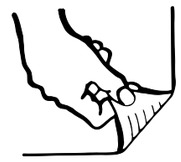
Schematic - Deutz T3/T4F 120HP ZF Options



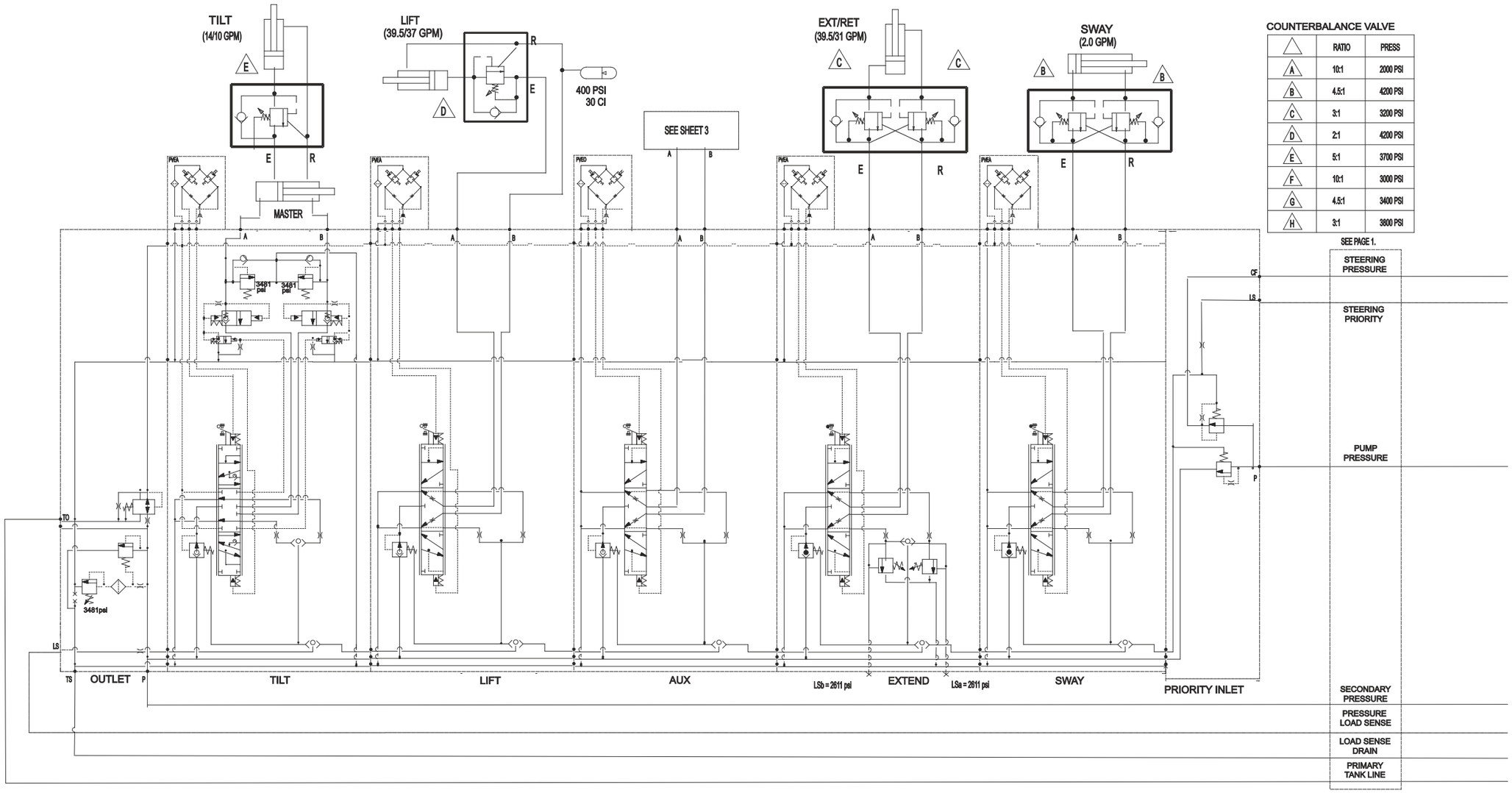
Schematic - Deutz T3/T4F 120HP Options



Hydraulic Schematic

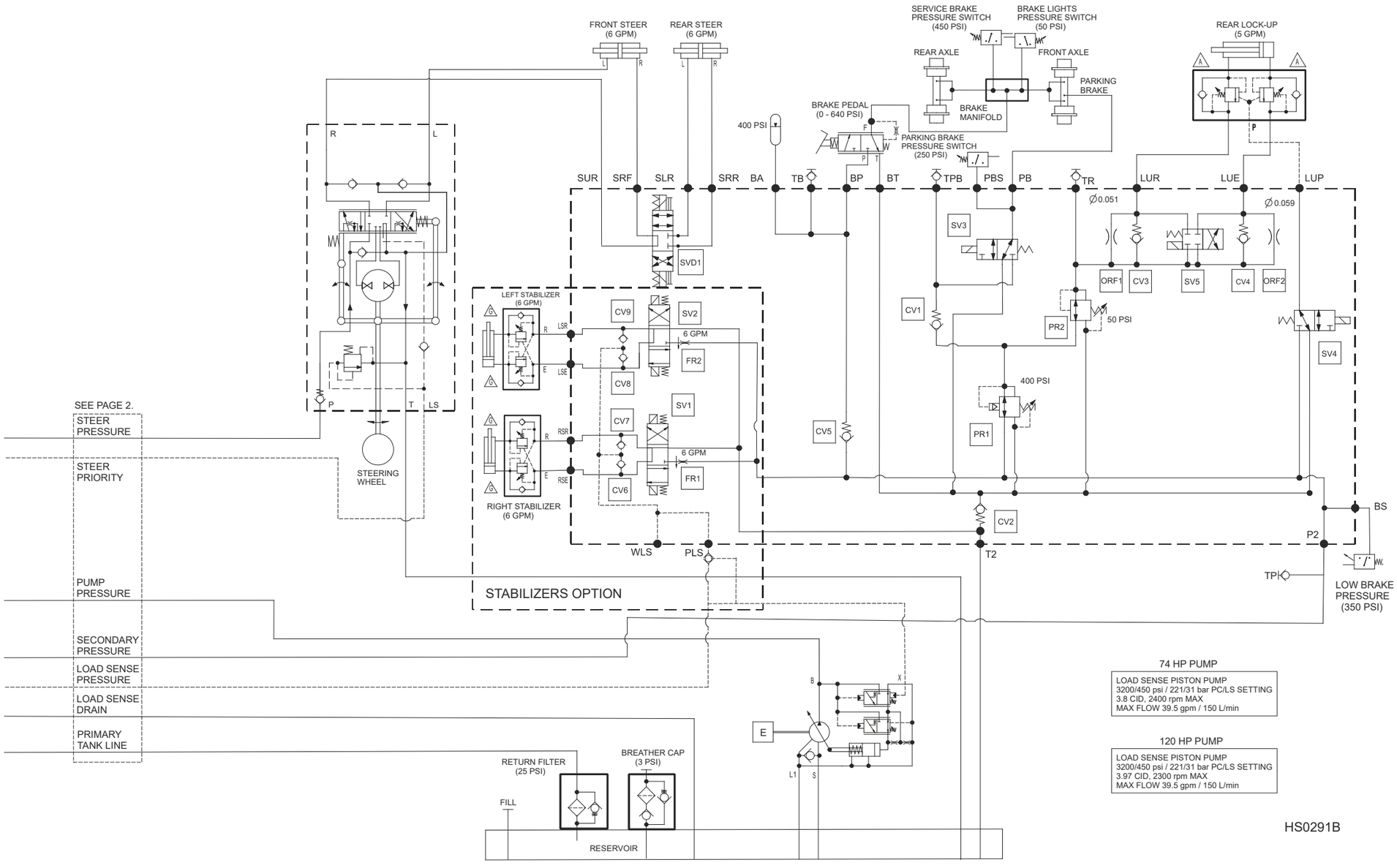


Hydraulic Schematic



HS0291B

Hydraulic Schematic



Hydraulic Schematic



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.

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65warnings.ca.gov/diesel.

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