from

Genie®
A TEREX BRAND

Service and Repair Manual

Serial Number Range

GTH-844

from GTH0813-16606 to GTH0816-21572

from GTH0816E-10000 to GTH0816E-10699

from GTH08E-10700

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

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

Part No. 1272854
Rev A2
April 2017

Table of Contents

Specifications

Deutz TCD3.6 L4 Engine

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 T4i	99 @ 2300 rpm 73.8 kw @ 2300 rpm
Peak Torque T4i	288 lb-ft @ 1600 rpm 390 Nm @ 1600 rpm
Horsepower T4F	74 @ 2300 rpm 55.2 kw @ 2300 rpm
Peak Torque T4F	288 lb-ft @ 1300 rpm 390 Nm @ 1300 rpm
Firing order	1 - 3 - 4 - 2 -
Low idle **Frequency**	1000 rpm 200 Hz
High idle **Frequency**	2400 rpm 500 Hz
Compression ratio	17.2:1
Compression pressure 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
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

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 drive circuit and the chassis sway circuit. Both the drive and the chassis sway functions are disabled when the boom is raised to 60° or higher.

How to Test a Proximity Switch

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

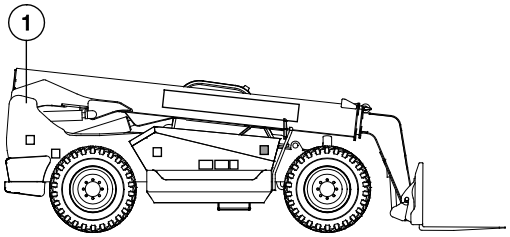
2 Start the engine.

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.



1 boom angle proximity switch (located on engine side)

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 Remove the access covers on the number 1 boom and remove the bolts holding the extend cylinder support at the fork end of the machine.

4 At the pivot end of the machine, remove the retainer plates securing the extension cylinder to the number 2 and number 3 tubes and lift the extension cylinder out of the support sockets.

5 Support the extension cylinder with a suitable lifting device and remove from the boom assembly.

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

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.

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 Open the access door to the engine.

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.

HYDRAULIC TANK

3 Remove the access cover to the hydraulic tank.

4 Remove the filler cap from the hydraulic tank.

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

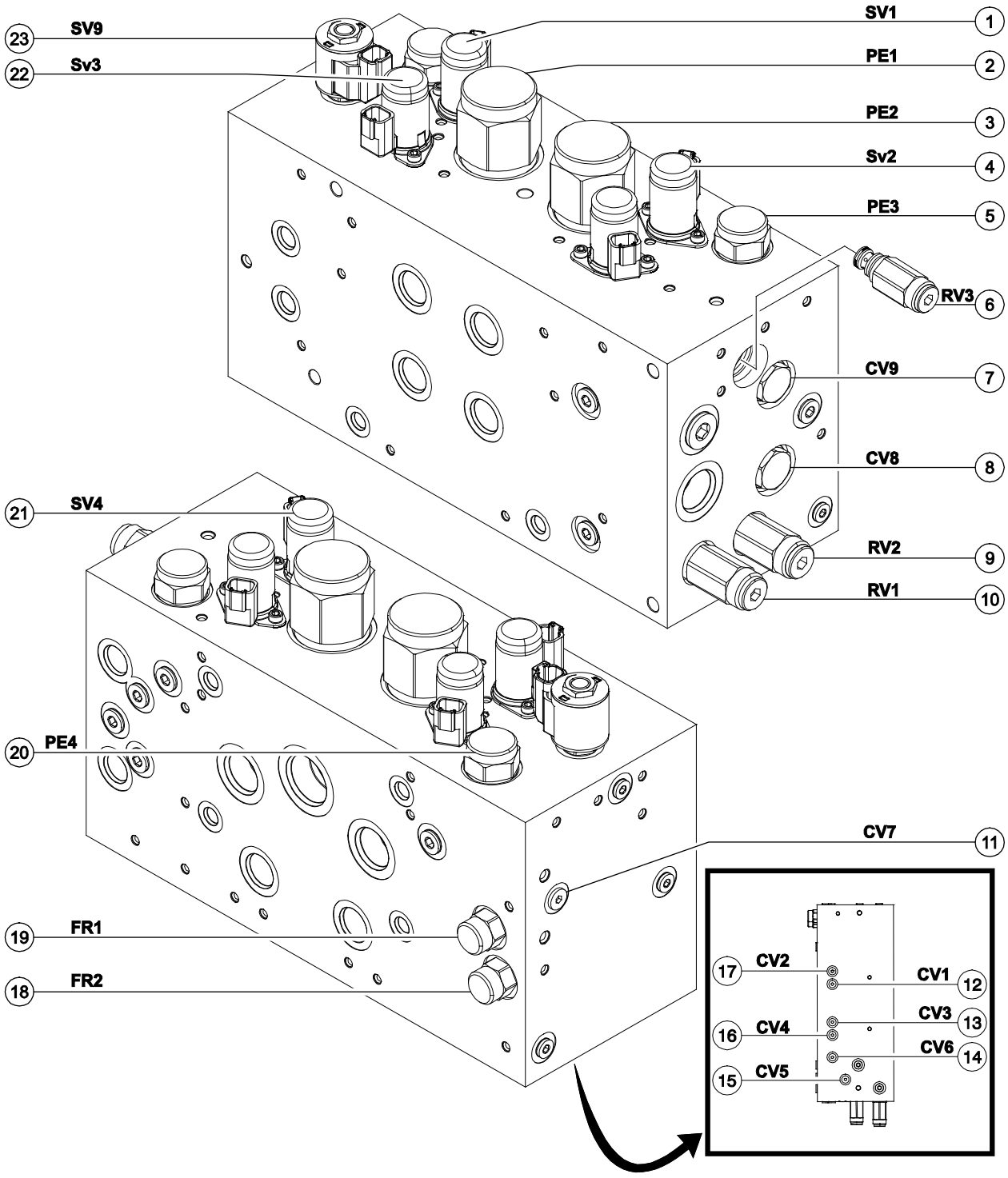
6 Remove the drain plug from the hydraulic tank and completely drain the tank.

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

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

8 Proceed to step 14.

Manifolds


SV1
1
PE1
2
PE2
3
Sv2
4
PE3
5
RV3
6
CV9
7
CV8
8
RV2
9
RV1
10
CV7
11
23
SV9
22
Sv3
21
SV4
20
PE4
19
FR1
18
FR2
17
CV2
12
CV1
16
CV4
13
CV3
15
CV5
14
CV6

How to Set the Differential Lock/Joystick 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 'TJ' 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±20 psi / 27.5 ±1.4 bar. The pressure setting is correct. Proceed to step 11.

⊠ Result: The pressure gauge fails to read 400±20 psi / 27.5 ±1.4 bar. The pressure setting needs to be adjusted. Proceed to step 7.

7 Turn the machine off. Hold the differential lock/joystick pressure reducing/relief valve with a wrench and remove the cap (schematic item PR1).

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.

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
ASPN = Alternate Suspect Parameter Number
FMI = Failure Mode Identifier

SPN	ASPN	FMI	Description
651		3	Injector 1 (in firing order); short circuit
		4	High side to low side short circuit in the injector 1 (in firing order)
		5	Injector 1 (in firing order); interruption of electric connection
652		3	Injector 2 (in firing order); short circuit
		4	High side to low side short circuit in the injector 2 (in firing order)
		5	Injector 2 (in firing order); interruption of electric connection
653		3	Injector 3 (in firing order); short circuit
		4	High side to low side short circuit in the injector 3 (in firing order)
		5	Injector 3 (in firing order); interruption of electric connection
654		3	Injector 4 (in firing order); short circuit
		4	High side to low side short circuit in the injector 4 (in firing order)
		5	Injector 4 (in firing order); interruption of electric connection
655		3	Injector 5 (in firing order); short circuit
		4	High side to low side short circuit in the injector 5 (in firing order)
		5	Injector 5 (in firing order); interruption of electric connection
656		3	Injector 6 (in firing order); short circuit
		4	High side to low side short circuit in the injector 6 (in firing order)
		5	Injector 6 (in firing order); interruption of electric connection
676		11	Cold start aid relay; open load, relay error.
677		3	Starter relay; short circuit
		4	Starter relay; short circuit
		5	Starter relay; no load error
		12	Starter relay; powerstage over temperature
703		3	Engine running lamp; short circuit to battery
		4	Engine running lamp; short circuit to ground
		5	Engine running lamp; open load
		12	Engine running lamp; powerstage over temperature

Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
ASPN = Alternate Suspect Parameter Number
FMI = Failure Mode Identifier

SPN	ASPN	FMI	Description
23723	64971	11	Detection of AdBlue filled SCR system in Init-State
23766	65014	9	Timeout Error of CAN-Receive-Frame Active TSC1AE
23767	65015	9	Timeout Error of CAN-Receive-Frame Passive TSC1AE
23768	65016	9	Timeout Error of CAN-Receive-Frame Active TSC1AR
23769	65017	9	Timeout Error of CAN-Receive-Frame Passive TSC1AR
23770	65018	9	Timeout Error of CAN-Receive-Frame Passive TSC1DE
23776	65024	9	Timeout Error of CAN-Receive-Frame TSC1TE - active
23777	65025	9	Passive Timeout Error of CAN-Receive-Frame TSC1TE; Setpoint
23778	65026	9	Active Timeout Errorof CAN-Receive-Frame TSC1TR
23779	65027	9	Passive Timeout Error of CAN-Receive-Frame TSC1TR
23788	65036	0	Turbo charger wastegate; CAN Fehler
		12	Timeout Error of CAN-Transmit-Frame TrbCH; Status Wastegate
23793	65041	9	Timeout Error of CAN-Receive-Frame UAA10; AGS sensor service message
23794	65042	9	Timeout Error of CAN-Receive-Frame UAA11; AGS sensor data
23803	65051	9	Timeout Error of CAN-Receive-Frame RxEngPres; Status burner airpump
23867	65115	12	Timeout Error of CAN-Transmit-Frame UAA1 on CAN 2; Burner Air Pump Control
23895	65143	13	Check of missing injector adjustment value programming (IMA) injector 1 (in firing order)
23896	65144	13	check of missing injector adjustment value programming (IMA) injector 2 (in firing order)
23897	65145	13	check of missing injector adjustment value programming (IMA) injector 3 (in firing order)
23898	65146	13	check of missing injector adjustment value programming (IMA) injector 4 (in firing order)
23899	65147	13	check of missing injector adjustment value programming (IMA) injector 5 (in firing order)
23900	65148	13	check of missing injector adjustment value programming (IMA) injector 6 (in firing order)
23910	65158	0	Air Pump; internal error
		6	Air Pump; over current
		7	Air pump; CAN communication interrupted no purge function available
		9	Air Pump; CAN communication lost
		12	Air Pump; internal error
		14	Air pump doesn´t achieve air mass flow setpoint

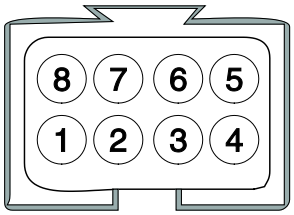
Deutz TCD3.6 Engine Fault Codes

SPN = Suspect Parameter Number
ASPN = Alternate Suspect Parameter Number
FMI = Failure Mode Identifier

SPN	ASPN	FMI	Description
24116	65364	9	Timeout error of CAN-Transmit-Frame SCR2
24117	65365	9	Timeout error of CAN-Transmit-Frame SCR3
24118	65366	9	Timeout error of CAN-Receive-Frame ComRxCM0
24119	65367	9	Timeout error of CAN-Receive-Frame ComRxCustSCR2
24120	65368	9	Timeout error of CAN-Receive-Frame ComRxSCRHtDiag
24121	65369	9	Timeout error of CAN-Receive-Frame ComRxTrbChActr
24122	65370	9	Timeout error of CAN-Receive-Frame ComRxUQSens
24123	65371	9	Timeout error of CAN-Receive-Frame ComSCRHtCtl
24124	65372	9	Timeout error of CAN-Receive-Frame ComTxAT1IMG
24125	65373	9	Timeout error of CAN-Receive-Frame ComTxTrbChActr
24141		7	DEF dosing valve, dosing valve blocked
24147		7	SCR System, reverting valve blocked
		13	SCR System, pressure build up not possible
24152		2	Urea Quality Sensor, Timout CAN message
24153		2	Urea tank level & urea tank temperature via CAN bus, timeout of CAN message
24156		9	Timeout error of CAN-Receive-Frame ComRxEBC2
24175		0	SCR-CAT, Nox emissions above minimum threshold
24177		7	SCR System, DEF suction line blocked
24178		7	SCR System, DEF pressure ot of range
24190		14	Not enough urea in tank or low urea quality or hardware tampering failure is detected or hardware failure is detected
24191		14	A low DEF tank level or a low DEF quality is detected or hardware tampering or hardware failures
24193		8	The standstill-regeneration mode time exceeds the long limit threshold; Vehicle was too long or too often in standstill mode; Change oil and reset counter
24194		8	The standstill-regeneration mode time exceeds the short limit threshold; Vehicle was too long or too often within a short time in standstill mode; Change oil and reset counter
24195		14	Standstill request due to crystalization ignored too long

Telematics Connector Pin Legend

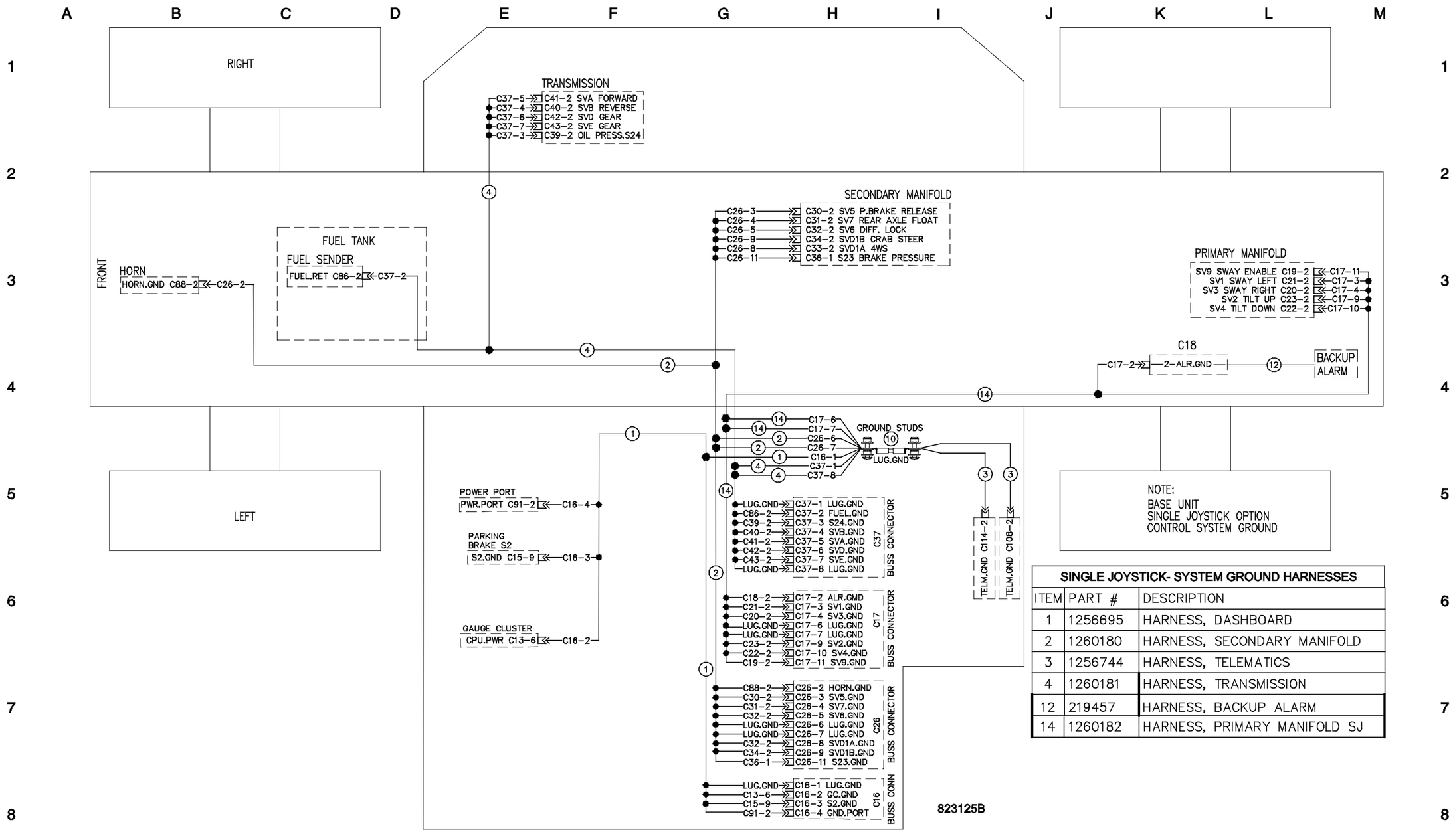
Genie installed Telematics connector is wired with an Active High digital input.



Pin	Circuit Type	Circuit Properties	Genie Machine Function(s)	Telematics Use Case
1	System Power	12 VDC 5 Amp Max. allowed draw	Battery Positive – constant power	Supply power to device
2	System Ground	0 VDC	Battery Negative	Device Ground
3	Digital Output 1	12 VDC	Engine Run Hour Meter 12V = engine run, 0V = engine off	Monitor Engine Hours
4*	Digital Output 2	12 VDC	Boom Angle Status 12V = boom >55°, 0V <55°	Monitor Machine Utilization
5	Digital Output 3	12 VDC	Parking Brake 12V = active, 0V = inactive	Monitor Machine Utilization
6	Digital Input 1	12 VDC (standard) or Ground (optional)	Remote Disable Engine Start	Remotely Prevent Engine Start
7	CAN HIGH	J1939	Databus HIGH J1939	Receive J1939 Engine Data
8	CAN LOW	J1939	Databus LOW J1939	Receive J1939 Engine Data

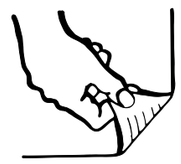
* Not available on GTH-636

Harness Map - Control System Ground Single Joystick (from 15-20662 to 21535)

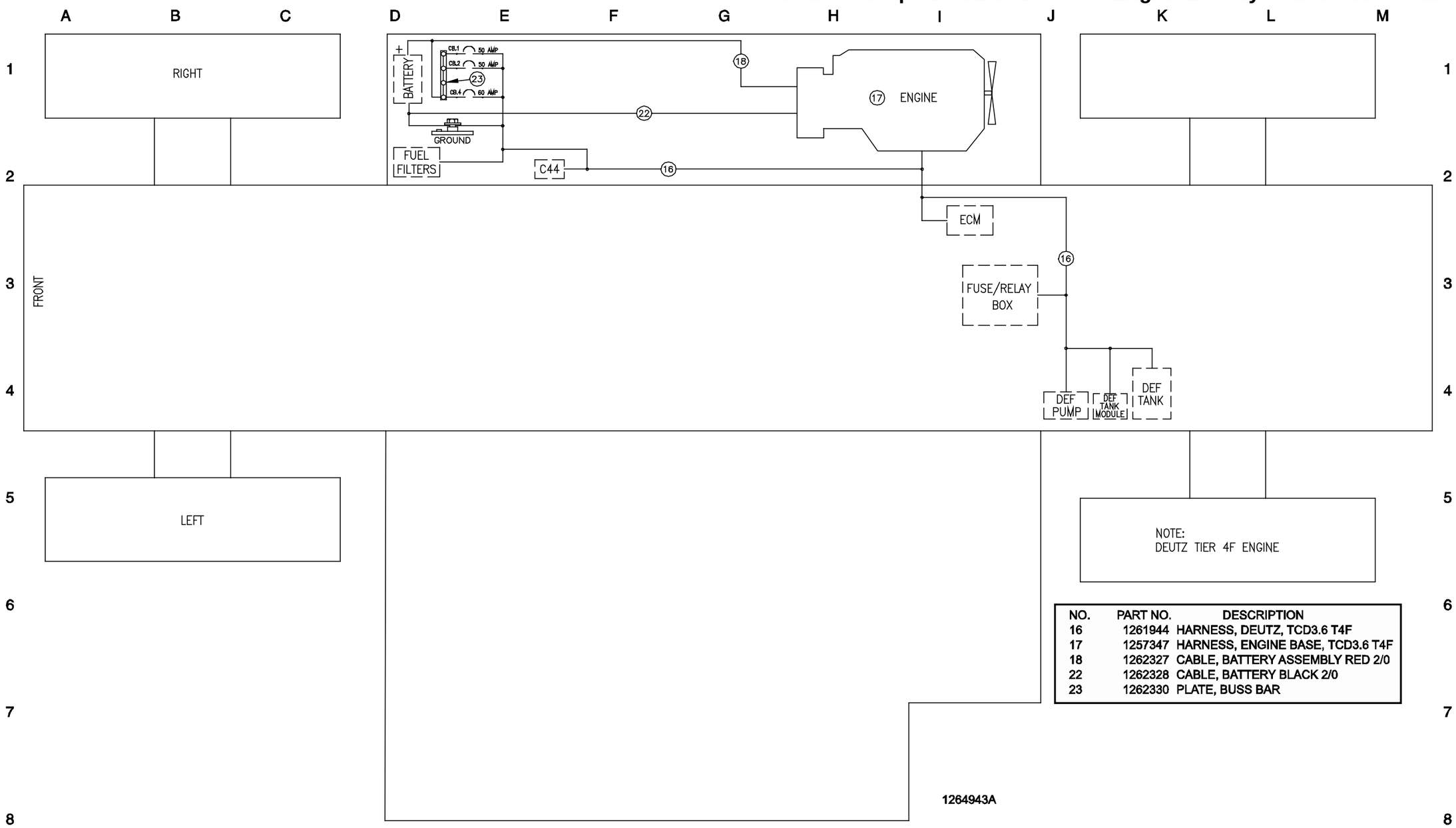


SINGLE JOYSTICK- SYSTEM GROUND HARNESSES		
ITEM	PART #	DESCRIPTION
1	1256695	HARNESS, DASHBOARD
2	1260180	HARNESS, SECONDARY MANIFOLD
3	1256744	HARNESS, TELEMATICS
4	1260181	HARNESS, TRANSMISSION
12	219457	HARNESS, BACKUP ALARM
14	1260182	HARNESS, PRIMARY MANIFOLD SJ

Harness Map - Control System Power Dual Joystick (from 15-20662 to 21535)

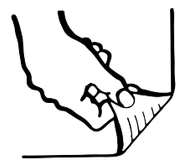


Harness Map - Deutz TCD3.6 T4F Engine Battery Power and Ground

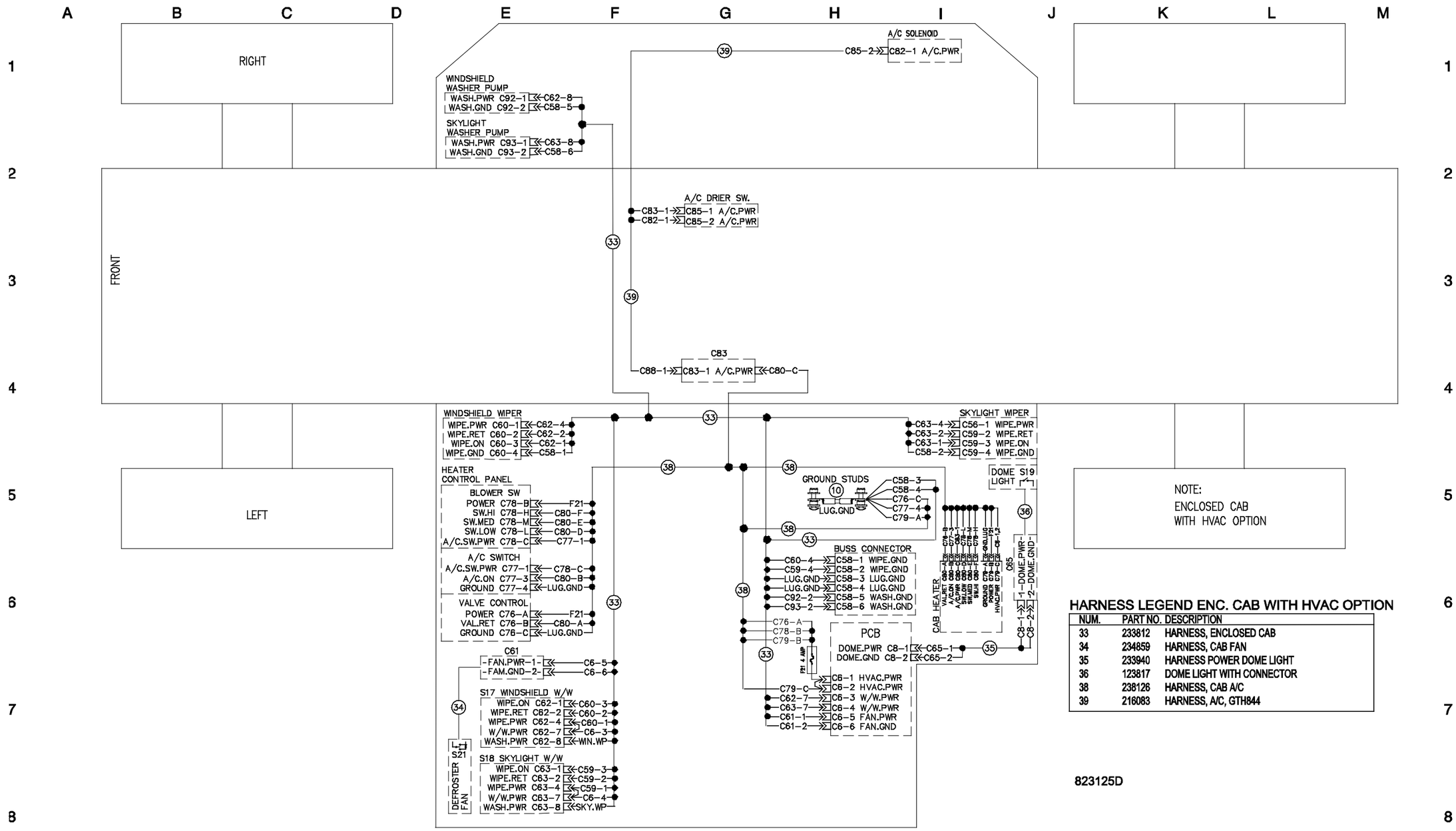


NO.	PART NO.	DESCRIPTION
16	1261944	HARNESS, DEUTZ, TCD3.6 T4F
17	1257347	HARNESS, ENGINE BASE, TCD3.6 T4F
18	1262327	CABLE, BATTERY ASSEMBLY RED 2/0
22	1262328	CABLE, BATTERY BLACK 2/0
23	1262330	PLATE, BUSS BAR

Harness Map - Options Work Lights (to 15-21456)



Harness Map - Options Enclosed Cab with HVAC



HARNESS LEGEND ENC. CAB WITH HVAC OPTION

NUM.	PART NO.	DESCRIPTION
33	233812	HARNESS, ENCLOSED CAB
34	234859	HARNESS, CAB FAN
35	233940	HARNESS POWER DOME LIGHT
36	123817	DOME LIGHT WITH CONNECTOR
38	238126	HARNESS, CAB A/C
39	216083	HARNESS, A/C, GTH844

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Electrical Schematic - View 1 (from 15-21457 to 21535)