A TEREX BRAND

Service Manual

Serial Number Range

GTH-4014

From GTH401414-101

GTH-4018

From GTH401814-101

Part No. 57.4400.9211
Rev B
July 2015

Introduction

Important

Read, understand and obey the safety rules and operating instructions in the *Genie GTH-4014/4018 Operator's Manual* before attempting any maintenance or repair procedure.

This manual provides detailed scheduled maintenance information for the machine owner and user. It also provides troubleshooting fault codes and repair procedures for qualified service professionals.

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

Compliance

Machine Classification
Group B/Type 3 as defined by ISO 16368

Machine Design Life
Unrestricted with proper operation, inspection and scheduled maintenance.

Technical Publications

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

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

Contact Us:

http://www.genielift.com
e-mail: awp.techpub@terex.com

Serial Number Information

Genie offers the following Service Manuals for these models:

Title	Part No.

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First Edition, First Printing

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Revision History

Revision	Date	Section	Procedure / Schematic Page / Description
A	12/2014		Initial Release
B	07/2015	7 - Schem.	7-35, 7-42

REFERENCE EXAMPLES:

Kubota Engine_Section 2_Specifications.
A-6,B-3,C-7_Section 3_Maintenance Procedure.
3-2, 6-4, 9-1_Section 4_Repair Procedure.
Fault Codes_Section 5.
6-35, 6-56, 6-104_Section 6_Schematic Page #.

Electronic Version

Click on any procedure or page number highlighted in blue to view the update.

REVISION HISTORY, CONTINUED

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A-6,B-3,C-7_Section 3_Maintenance Procedure.
3-2, 6-4, 9-1_Section 4_Repair Procedure.
Fault Codes_Section 5.
6-35, 6-56, 6-104_Section 6_Schematic Page #.

Electronic Version

Click on any procedure or page number highlighted in blue to view the update.

Serial Label

Genie
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Model:
GTH-4014
Model Year: 2014
Designation:
ROUGH TERRAIN VARIABLE REACH TRUCK
Serial Number: GTH401414B-Xxxxx
Manufacture Date: DD/MM/YY
Mass: 22542 lbs / 10225 kg
Rated Capacity: 4000 kg
Nominal Power: 75 kW
Max drawbar pull provided for all the coupling hook:
30000 N
Max vertical load provided for all the coupling hook:
10000 N
Country of Manufacture: ITALY

Manufacturer:
TEREX Global GmbH
Mühlenstrasse 26
Switzerland

CE

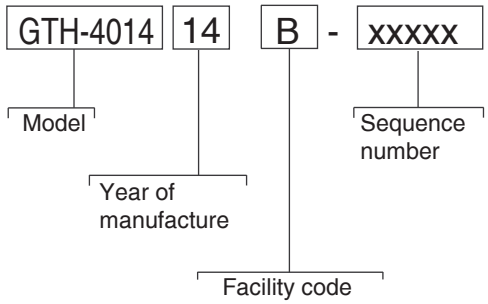
Genie
A TEREX BRAND

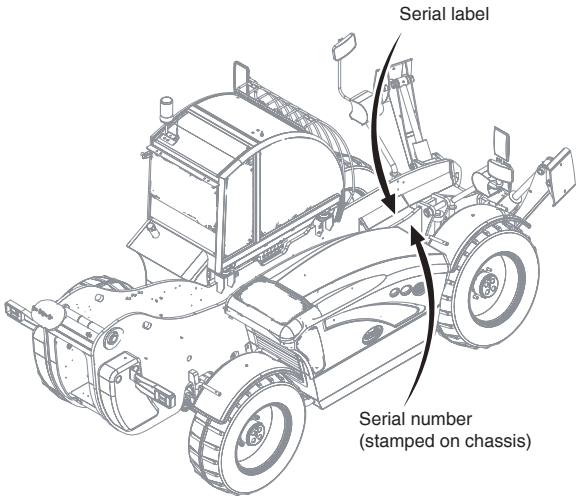
Model:
GTH-4018
Model Year: 2014
Designation:
ROUGH TERRAIN VARIABLE REACH TRUCK
Serial Number: GTH401814B-Xxxxx
Manufacture Date: DD/MM/YY
Mass: 26411 lbs / 11980 kg
Rated Capacity: 4000 kg
Nominal Power: 75 kW
Max drawbar pull provided for all the coupling hook (N):
30000
Max vertical load provided for all the coupling hook (N):
10000
Country of Manufacture: ITALY

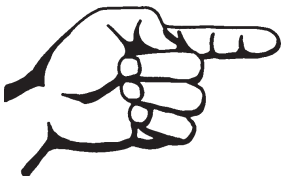
Manufacturer:
TEREX Global GmbH
Mühlenstrasse 26
Switzerland

CE

Serial Number Legend:







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Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual and the appropriate Operator's Manual on your machine will result in death or serious injury.
Many of the hazards identified in the Operator's Manual are also safety hazards when maintenance and repair procedures are performed.

Do Not Perform Maintenance Unless:

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

SAFETY RULES

Personal Safety

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



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



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

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

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

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

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



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



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

Workplace Safety



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.

Table of Contents

Introduction

Important Information ii
Revision History..... iii
Serial Number Legend..... v

Section 1 **Safety Rules**

General Safety Rules vii

Section 2 **Specifications**

Machine Specifications..... 2 - 1
Performance Specifications..... 2 - 2
Hydraulic Specifications ..... 2 - 3
Hydraulic Component Specifications..... 2 - 4
Function Manifolds Specifications ..... 2 - 5
Air Conditioner Refrigerant Specifications..... 2 - 5
Perkins 1104D-E44TA Engine..... 2 - 6
Perkins 854E-E34TA Engine..... 2 - 7
Carraro TB172/2 STOP&GO Gearbox ..... 2 - 8
Carraro 26.27M Drive Axle ..... 2 - 8
Hydraulic Hose and Fitting Torque Specifications..... 2 - 9
Torque Procedure..... 2 - 10
SAE and Metric Fasteners Torque Charts..... 2 - 11

Section 3 **Scheduled Maintenance Procedures**

Introduction..... 3 - 1
Pre-delivery Preparation Report..... 3 - 3
Maintenance Inspection Report..... 3 - 4

TABLE OF CONTENTS

Section 3 **Scheduled Maintenance Procedures**, continued

Checklist A Procedures

A-1 Inspect the Manuals and Decals ..... 3 - 5
A-2 Perform Pre-operation Inspection ..... 3 - 6
A-3 Perform Function Tests ..... 3 - 6
A-4 Lubricate the Boom ..... 3 - 7
A-5 Perform Engine Maintenance ..... 3 - 9
A-6 Safety Devices ..... 3 - 9
A-7 Perform 30 Day Service ..... 3 - 10
A-8 Emergency Pump Operations (if equipped) ..... 3 - 10
A-9 Perform Axle Maintenance ..... 3 - 11
A-10 Perform Axle Maintenance ..... 3 - 11

Checklist B Procedures

B-1 Inspect the Electrical Wiring ..... 3 - 12
B-2 Gearbox Oil Level ..... 3 - 13
B-3 Check the Exhaust System ..... 3 - 13
B-4 Inspect the Engine Air Filter ..... 3 - 14
B-5 Inspect the Tires, Wheels and Lug Nut Torque ..... 3 - 15
B-6 Perform Hydraulic Oil Analysis ..... 3 - 15
B-7 Check the Boom Wear Pads ..... 3 - 16
B-8 Perform Engine Maintenance - Perkins 1104D Models ..... 3 - 17
B-9 Perform Axle Maintenance ..... 3 - 17

TABLE OF CONTENTS

Section 3 **Scheduled Maintenance Procedures**, continued

Checklist C Procedures

C-1 Perform Engine Maintenance....3 - 18
C-2 Perform Engine Maintenance....3 - 18
C-3 Inspect and Lubricate the Sequencing Chains - GTH-4018 Models....3 - 19

Checklist D Procedures

D-1 Inspect the Forks....3 - 21
D-2 Tighten the Boom Chains - GTH-4018 Models....3 - 21
D-3 Replace the Hydraulic Tank Return Filter Element....3 - 22
D-4 Change Gearbox Oil....3 - 23
D-5 Perform Engine Maintenance....3 - 24
D-6 Perform Axle Maintenance....3 - 24
D-7 Perform Engine Maintenance - Perkins 854 Models....3 - 25

Checklist E Procedures

E-1 Test or Replace the Hydraulic Oil....3 - 26
E-2 Perform Engine Maintenance....3 - 27
E-3 Perform Engine Maintenance....3 - 27
E-4 Perform Engine Maintenance....3 - 28
E-5 Perform Engine Maintenance....3 - 28
E-6 Perform Engine Maintenance....3 - 29

TABLE OF CONTENTS

Section 4 **Repair Procedures**

Introduction....4 - 1

Boom Components

1-1 Boom....4 - 2
1-2 Boom Lift Cylinder....4 - 16
1-3 Boom Extend Cylinder....4 - 17
1-4 Fork Level Cylinder....4 - 19
1-5 Fork Tilt Cylinder....4 - 20

Operator's compartment

2-1 Operator’s Compartment....4 - 22
2-2 Machine Controls....4 - 24

Fuel and Hydraulic Tanks

3-1 Fuel Tank....4 - 28
3-2 Hydraulic Tank....4 - 29

Engines

4-1 Engines....4 - 30
4-2 Engine Fault Codes....4 - 30

Transmission

5-1 Gearbox....4 - 31
5-2 Axle....4 - 31

Hydraulic pumps

6-1 Boom Function Gear Pump....4 - 33
6-2 Auxiliary Gear Pump....4 - 36
6-3 Hydrostatic Transmission Pump....4 - 39

Manifolds

7-1 Boom Function Manifold Components....4 - 43
7-2 Outriggers / Chassis Levelling Function Manifold Components....4 - 46
7-3 Valve coils....4 - 49

TABLE OF CONTENTS

Section 4 **Repair Procedures**, continued

Outriggers

8-1 Outriggers....4 - 51

8-2 Outriggers sensors....4 - 52

LMI (Overload System)

9-1 LMI....4 - 53

Miscellaneaous

10-1 Emergency pump (if equipped)....4 - 55

10-2 Parking Brake Reducing Valve....4 - 55

TABLE OF CONTENTS

Section 5 **Settings**

Introduction....5 - 1

How to Calibrate the Load Cell....5 - 2

Section 6 **Fault Codes**

Introduction....6 - 1

Diagnostic Display....6 - 2

Engine Fault Codes - Models with Perkins 1104D Power....6 - 3

Overload Warning System Fault Codes....6 - 4

Section 7 **Schematics**

Introduction....7 - 1

Electrical and Hydraulic Symbol Legends....7 - 2

Electrical Schematic....7 - 3

Hydraulic Schematic....7 - 35

Specifications

Machine Specifications

Fluid capacities	
Fuel tank	45 gallons 170 liters
Hydraulic tank	29.6 gallons 112 liters
Hydraulic system (including tank)	42.5 gallons 161 liters

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

GTH-4014 tires and wheels	
Tire size	405/70-20
Tire ply rating	14
Weight, rough terrain tire (air filled)	253 lbs 115 kg
Weight, rough terrain tire (foam filled)	645 lbs 306 kg
Tire pressure (models with air-filled tires)	65 psi 4,5 bar
Lug nut torque	220 ft-lbs 300 Nm
Lug pattern	8 x 10.827 (275 mm)
Wheel diameter	43.6 in 111 cm
Wheel width	17.1 in 43.5 cm

GTH-4018 tires and wheels	
Tire size	405/70-24
Tire ply rating	14
Weight, rough terrain tire (air filled)	265 lbs 120 kg
Weight, rough terrain tire (foam filled)	782 lbs 355 kg
Tire pressure (models with air-filled tires)	80 psi 5,5 bar
Lug nut torque	220 ft-lbs 300 Nm
Lug pattern	8 x 10.827 (275 mm)
Wheel diameter	46.8 in 118 cm
Wheel width	16.6 in 42.1 cm

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

SPECIFICATIONS

Performance Specifications

GTH-4014 drive speed, maximum	16 mph 26 km/h
GTH-4018 drive speed, maximum	17 mph 27 km/h
Draw bar pull, GTH-4014	16,036 lbs 7,274 kg
Draw bar pull, GTH-4018	14,402 lbs 6,533 kg
Lift capacity, maximum	8,818 lbs 4,000 kg

GTH-4014 boom function speeds, maximum	
Boom up	13 seconds
Boom down	8 seconds
Boom extend	19 seconds
Boom retract	15 seconds
Fork tilt up	6 seconds
Fork tilt down	6 seconds

GTH-4018 boom function speeds, maximum	
Boom up	15 seconds
Boom down	10 seconds
Boom extend	23 seconds
Boom retract	16 seconds
Fork tilt up	5 seconds
Fork tilt down	5 seconds

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Hydraulic Specifications

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

Chevron Rando HD oil is fully compatible and mixable with Shell Donax TG (Dexron III) oils. Genie specifications require hydraulic oils which are designed to give maximum protection to hydraulic systems, have the ability to perform over a wide temperature range, and the viscosity index should exceed 140. They should provide excellent antiwear, oxidation, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Optional fluids	
Biodegradable	Petro Canada Environ MV46 Statoil Hydra Way Bio Pa 32 BP Biohyd SE-S
Fire resistant	UCON Hydroluble HP-5046 Quintolubric 822
Mineral based	Shell Tellus S2 V 32 Shell Tellus S2 V 46 Chevron Aviation A Eni Arnica 32

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

Note: Use Chevron Aviation A hydraulic fluid when ambient temperatures are consistently below 0°F / -17°C.

Note: Use Shell Tellus T46 hydraulic oil when oil temperatures consistently exceed 205°F / 96°C.

Genie specifications require additional equipment and special installation instructions for the approved optional fluids. Consult the Genie Service Department before use.

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SPECIFICATIONS

Hydraulic Components Specifications

Boom Functions Gear Pump	
Type:	fixed displacement gear pump
Displacement	2.62 cu in 43 cc
Flow rate @ 2200 rpm	25 gpm 94 l/min
Pump pressure, maximum (measured at test port TP1)	4,061 psi 280 bar
Pump compensator (measured at test port TP1)	4,061 psi 280 bar
Stand-by pressure (measured at test port TP1)	290 psi 20 bar

Auxiliary Gear Pump	
Type:	fixed displacement gear pump
Displacement	1.22 cu in 20 cc
Flow rate @ 2200 rpm	11.6 gpm 44 l/min
Pump pressure, maximum (measured at test port TP4)	3,625 psi 250 bar
Relief valve pressure, maximum (measured at test port TP4)	3,625 psi 250 bar

Hydrostatic Transmission Pump	
Type:	variable displacement piston pump
Displacement	0 to 4.33 cu in 0 to 71 cc
Flow rate @ 2200 rpm	41 gpm 156 l/min
Pump pressure, maximum (measured at test port TP2)	6,236 psi 430 bar
Pump relief valve pressure, maximum (measured at test port TP2)	6,526 psi 450 bar
Pump charge relief valve pressure, maximum (measured at test port TP3)	362 psi 25 bar

Hydrostatic Transmission Motor	
Type:	variable displacement piston motor
Displacement	0 to 4.88 cu in 0 to 80 cc
Flow rate @ 2200 rpm	41 gpm 156 l/min
Motor pressure, maximum (measured at test port TP2)	6,236 psi 430 bar
Motor relief valve pressure, maximum (measured at test port TP2)	6,526 psi 450 bar

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Function Manifolds Specifications

Boom Function Manifold	
System relief valve pressure, maximum (measured at test port TP1)	4,061 psi 280 bar
Fork tilt relief valve pressure, maximum	4,351 psi 300 bar

Outriggers/Chassis Levelling Function Manifold	
Steer relief valve pressure, maximum	2,755 psi 190 bar
Parking brake pressure reducing valve (measured at test port TP5)	362 psi 25 bar
Sway relief valve pressure, maximum (measured at test port TP4)	3,625 psi 250 bar
Auxiliary line relief valve pressure, maximum (measured at test port TP1)	4,061 psi 280 bar
Electrical driven emergency pump relief valve pressure, maximum (measured at test port TP6)	2,175 psi 150 bar
Brakes accumulator charging valve pressure gauge	1,015-1,885 psi 70-130 bar

Air Conditioner Refrigerant Specifications

System Full Charge	
R134a	2 lb 3 oz

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SPECIFICATIONS

Perkins 1104D-E44TA Engine

Displacement	269 cu in 4.4 liters
Number of cylinders	4
Bore and stroke	4.13 x 5 inches 105 x 127 mm
Horsepower	100.5 @ 2200 rpm 75 kW @ 2200 rpm
Peak Torque	410 lb-ft @ 1400 rpm 556 Nm @ 1400 rpm
Firing order	1 - 3 - 4 - 2
Compression ratio	16.2:1
Combustion	E-TVCS
Governor	Electronic
Low idle Frequency	1000 rpm 200 Hz
High idle Frequency	2500 rpm 500 Hz
Lubrication system	
Oil pressure (hot @ 2300 rpm) Minimum pressure	43-58 psi 2.96-4 bar 7.1 psi
Oil capacity (including filter)	10 quarts 9.6 liters
Oil viscosity requirements	
Units ship 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 Operation and Maintenance Manual on your machine.	

Fuel requirements	
For fuel requirements, refer to the engine Operation Manual on your machine.	
Fuel injection pressure	23700 psi 1635 bar
Engine coolant	
Capacity	4.6 gallons 17.4 liters
Type	Extended Life
Alternator	
Output	85 A, 14V DC
Starter Motor	
Normal load	68 A
Relay max	50 A
Relay continuous	20 A
Cranking speed	130 - 200 rpm
Glow Plugs	
Initial load (0-4 sec)	20 A (EA)
Continuous load (>4 sec)	15 A (EA)
Battery	
Type	12V DC
Group	C31
Quantity	1
Cold cranking ampere @ 0°F	1000A
Reserve capacity @ 25A rate	200 minutes

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SPECIFICATIONS

Perkins 854E-E34TA Engine

Displacement	207 cu in 3.4 liters
Number of cylinders	4
Bore and stroke	3.9 x 4.3 inches 99 x 110 mm
Horsepower	100.5 hp @ 2200 rpm 75 kW @ 2200 rpm
Peak Torque	303 lb-ft @ 1400 rpm 411 Nm @ 1400 rpm
Firing order	1 - 3 - 4 - 2
Compression ratio	17:1
Governor	Electronic
Low idle Frequency	1000 rpm 100 Hz
High idle Frequency	2700 rpm 270 Hz
Lubrication system	
Minimum oil pressure	12 psi 0.83 bar
Maximum oil capacity (including filter)	8.8 quarts 8.3 liters
Oil viscosity requirements	
Units ship 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 Operation and Maintenance Manual on your machine.	
Fuel requirements	
For fuel requirements, refer to the engine Operation Manual on your machine.	
Fuel injection pressure	23000 psi 1585 bar
Engine coolant	
Capacity	4.6 gallons 17.4 liters
Type	Extended Life
Alternator	
Output	120 A, 12V DC
Starter Motor	
Normal load	68 A
Relay max	50 A
Relay continuous	20 A
Cranking speed	130 - 200 rpm
Glow Plugs	
Initial load (0-10 sec)	80 amps
Continuous load (>10 sec)	40 amps
Battery	
Type	12V DC
Group	C31
Quantity	1
Cold cranking ampere @ 0°F	1000A
Reserve capacity @ 25A rate	200 minutes

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

SPECIFICATIONS

Carraro TB172/2 STOP&GO Gearbox

Transmission Type	Mechanical Gear, 2 speed
Transmission ratio - 1st speed	4.286
Transmission ratio - 2nd speed	1.359
Lubrication	
Oil capacity, transmission	4.23 quarts 4 liters
Oil viscosity requirements	
Units ship with API GL4. Refer to the (Carraro part number CA270305).	
Carraro TB172/2 speed Transmission Repair Manual	
Genie part number	57.4700.0010

Carraro 26.27M Drive Axle

Steering	Integrated steer cylinder
Joints	Heavy duty double U-joints
Steering angle, maximum	45 °
Front Axle Lubrication	
Front differential	8.45 quarts 8 liters
Axle planetary end (each)	0.85 quarts 0.8 liters
Rear Axle Lubrication	
Rear differential	8.45 quarts 8 liters
Axle planetary end (each)	0.85 quarts 0.8 liters
Oil viscosity requirements	
Differential	API GL4 (MIL L-2105)
Planetary ends	API GL4 (MIL L-2105)
For additional axle information, refer to the (Carraro part number CA270015 - Front Axle, CA270016 - Rear Axle)	
Carraro 26.27M Front Axle Maintenance and Repair Instructions	
Genie part number	57.4700.0002
Carraro 26.27M Rear Axle Maintenance and Repair Instructions	
Genie part number	57.4700.0003

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SPECIFICATIONS

Hydraulic Hose and Fitting Torque Specifications

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

Seal-Lok™ Fittings
(hose end - ORFS)

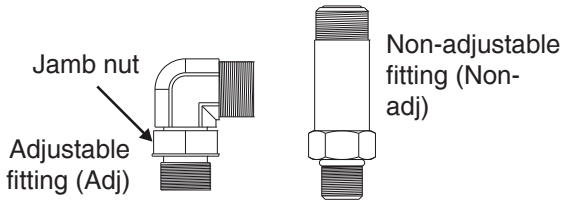
SAE Dash size	Torque
-4	10 ft-lbs / 13.6 Nm
-6	30 ft-lbs / 40.7 Nm
-8	40 ft-lbs / 54.2 Nm
-10	60 ft-lbs / 81.3 Nm
-12	85 ft-lbs / 115 Nm
-16	110 ft-lbs / 150 Nm
-20	140 ft-lbs / 190 Nm
-24	180 ft-lbs / 245 Nm

JIC 37° Fittings
(swivel nut or hose connection)

SAE Dash size	Thread Size	Flats
-4	$^{7}/_{16}$-20	2
-6	$^{9}/_{16}$-18	1 $^{1}/_{4}$
-8	$^{3}/_{4}$-16	1
-10	$^{7}/_{8}$-14	1
-12	1 $^{1}/_{16}$-12	1
-16	1 $^{5}/_{16}$-12	1
-20	1 $^{5}/_{8}$-12	1
-24	1 $^{7}/_{8}$-12	1

SAE O-ring Boss Port
(tube fitting - installed into Aluminum)
(all types)

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



SAE O-ring Boss Port
(tube fitting - installed into Steel)

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

SPECIFICATIONS

Torque Procedure

Seal-Lok™ fittings

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

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

2 Lubricate the O-ring before installation.

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

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

5 Tighten the nut or fitting to the appropriate torque per given size as shown in the table.

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

JIC 37° fittings

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

2 Make a reference mark on one of the flats of the hex nut, and continue it on to the body hex fitting with a permanent ink marker. Refer to Figure 1.

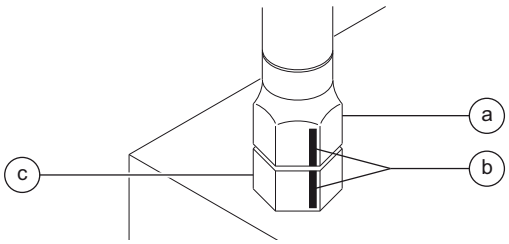


Figure 1

a hex nut
b reference mark
c body hex fitting

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

Note: Use the JIC 37° Fittings table on the previous page to determine the correct number of flats for the proper tightening position.

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

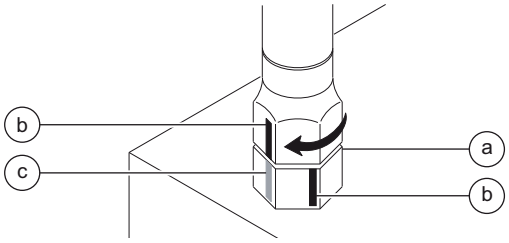


Figure 2

a body hex fitting
b reference mark
c second mark

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

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

SPECIFICATIONS

SAE FASTENER TORQUE CHART

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

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

METRIC FASTENER TORQUE CHART

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

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



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Scheduled Maintenance Procedures

Observe and Obey:

- Maintenance inspections shall be completed by a person trained and qualified on the maintenance of this machine.
- Scheduled maintenance inspections shall be completed daily, quarterly, semi-annually, annually and every 2 years as specified on the Maintenance Inspection Report. The frequency and extent of periodical examinations and tests may also depend on national regulations.

⚠WARNING Failure to perform each procedure as presented and scheduled could result in death, serious injury or substantial damage.

- Immediately tag and remove from service a damaged or malfunctioning machine.
- Repair any machine damage or malfunction before operating the machine.
- Use only Genie approved replacement parts.
- Machines that have been out of service for a period longer than 3 months must complete the quarterly inspection.
- Unless otherwise specified, perform each maintenance 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

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

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

Symbols Legend

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

⚠DANGER Indicates an 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.

SCHEDULED MAINTENANCE PROCEDURES

Maintenance Symbols Legend

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



Indicates that tools will be required to perform this procedure.



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



Indicates that a cold engine will be required to perform this procedure.



Indicates that a warm engine will be required to perform this procedure.



Indicates that dealer service will be required to perform this procedure.

Pre-delivery Preparation Report

The pre-delivery preparation report contains checklists for each type of scheduled inspection.

Make copies of the *Pre-delivery Preparation* report to use for each inspection. Store completed forms as required.

Maintenance Schedule

There are five types of maintenance inspections that must be performed according to a schedule—daily, quarterly, semi-annually, annually, and every two years. The Scheduled *Maintenance Procedures Section and the Maintenance Inspection Report* have been divided into five subsections—A, B, C, D, and E. Use the following chart to determine which group(s) of procedures are required to perform a scheduled inspection.

Inspection	***Checklist***
Daily or every 8 hours	A
Quarterly or every 250 hours	A + B
Semi-annually or every 500 hours	A + B + C
Annually or every 1000 hours	A + B + C + D
Two years or every 2000 hours	A + B + C + D + E

Maintenance Inspection Report

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

Make copies of the *Maintenance Inspection Report* to use for each inspection. Maintain completed forms for a minimum of 4 years or in compliance with your employer, job site and governmental regulations and requirements.

Pre-Delivery Preparation

Fundamentals

It is the responsibility of the dealer to perform the Pre-delivery Preparation.

The Pre-delivery Preparation is performed prior to each delivery. The inspection is designed to discover if anything is apparently wrong with a machine before it is put into service.

A damaged or modified machine must never be used. If damage or any variation from factory delivered condition is discovered, the machine must be tagged and removed from service.

Repairs to the machine may only be made by a qualified service technician, according to the manufacturer's specifications.

Scheduled maintenance inspections shall be performed by qualified service technicians, according to the manufacturer's specifications and the requirements listed in the responsibilities manual.

Instructions

Use the operator's manual on your machine.

The Pre-delivery Preparation consists of completing the Pre-operation Inspection, the Maintenance items and the Function Tests.

Use this form to record the results. Place a check in the appropriate box after each part is completed.
Follow the instructions in the operator's manual.

If any inspection receives an N, remove the machine from service, repair and reinspect it. After repair, place a check in the R box.

Legend
Y = yes, completed
N = no, unable to complete
R = repaired

Comments

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

Model

Serial number

Date

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Genie
A TEREX BRAND

Terex South Dakota, Inc USA
500 Oak Wood Road
PO Box 1150
Watertown, SD 57201-6150
(605) 882-4000

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

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Maintenance Inspection Report

Model
Serial number
Date
Hour meter
Machine owner
Inspected by (print)
Inspector signature
Inspector title
Inspector company

Instructions

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

	Daily or 8 hours
	Inspection: A
	Quarterly or 250 hours
	Inspection: A+B
	Semi-annually or 500 hours
	Inspection: A+B+C
	Annually or 1000 hours
	Inspection: A+B+C+D
	2 Years or 2000 hours
	Inspection: A+B+C+D+E

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

Checklist A		**Y**	**N**	**R**
A-1	Manuals and decals			
A-2	Pre-operation inspect			
A-3	Function tests			
A-4	Lubricate the boom			
A-5	Engine maintenance - Perkins models			
A-6	Safety devices			
Perform after 40 hours:				
A-7	30 day service			
A-8	Emergency pump (if equipped)			
Perform after 50 hours:				
A-9	Axle maintenance			
Perform after 150 hours:				
A-10	Axle maintenance			

Checklist B		**Y**	**N**	**R**
B-1	Electrical wiring			
B-2	Gearbox			
B-3	Exhaust system			
B-4	Engine air filter			
B-5	Tires and wheels			
B-6	Hydraulic oil			
B-7	Boom wear pads			
B-8	Engine maintenance - Perkins 1104D model			
Perform after 300 hours:				
B-9	Axle maintenance			

Checklist C		**Y**	**N**	**R**
C-1	Engine maintenance - Perkins models			
C-2	Engine maintenance - Perkins models			
C-3	Inspect and lubricate sequencing chains			

Checklist D		**Y**	**N**	**R**
D-1	Forks			
D-2	Boom chains (only GTH-4018)			
D-3	Hydraulic return filter			
D-4	Gearbox			
D-5	Engine maintenance - Perkins models			
Perform every 1500 hours:				
D-6	Axle maintenance			
D-7	Engine maintenance - Perkins models			

Checklist E		**Y**	**N**	**R**
E-1	Hydraulic oil			
E-2	Engine maintenance - Perkins models			
Perform after 3000 hours:				
E-3	Engine maintenance - Perkins models			
E-4	Engine maintenance - Perkins models			
Perform after 4000 hours:				
E-5	Engine maintenance - Perkins models			
Perform after 12000 hours:				
E-6	Engine maintenance - Perkins models			

Legend

Y = yes, acceptable
N = no, remove from service
R = repaired

Comments

Checklist A Procedures

A-1
Inspect the Manuals and Decals

Genie specifications require that this procedure be performed every 8 hours or daily, whichever comes first.

Maintaining the operator's and safety manuals in good condition is essential to safe machine operation. Manuals are included with each machine and should be stored in the container provided in the operator's compartment. An illegible or missing manual will not provide safety and operational information necessary for a safe operating condition.

In addition, maintaining all of the safety and instructional decals in good condition is mandatory for safe machine operation. Decals alert operators and personnel to the many possible hazards associated with using this machine. They also provide users with operation and maintenance information. An illegible decal will fail to alert personnel of a procedure or hazard and could result in unsafe operating conditions.

1 Check to make sure that the operator's and safety manuals are present and complete in the storage container in the operator's compartment.

2 Examine the pages of each manual to be sure that they are legible and in good condition.

⊙ Result: The operator's manual is appropriate for the machine and all manuals are legible and in good condition.

⊠ Result: The operator's manual is not appropriate for the machine or all manuals are not in good condition or is illegible. Remove the machine from service until the manual is replaced.

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

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

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

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

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

CHECKLIST A PROCEDURES

A-2
Perform Pre-operation Inspection

Genie specifications require that this procedure be performed every 8 hours or daily, whichever comes first.

Completing a Pre-operation Inspection is essential to safe machine operation. The Pre-operation Inspection is a visual inspection performed by the operator prior to each work shift. The inspection is designed to discover if anything is apparently wrong with a machine before the operator performs the function tests. The Pre-operation Inspection also serves to determine if routine maintenance procedures are required.

Complete information to perform this procedure is available in the appropriate operator's manual. Refer to the Operator's Manual on your machine.

A-3
Perform Function Tests

Genie specifications require that this procedure be performed every 8 hours or daily, whichever comes first.

Completing the function tests is essential to safe machine operation. Function tests are designed to discover any malfunctions before the machine is put into service. A malfunctioning machine must never be used. If malfunctions are discovered, the machine must be tagged and removed from service.

Complete information to perform this procedure is available in the appropriate operator's manual. Refer to the Operator's Manual on your machine.

A-4
Lubricate the Boom



Genie specifications require that this procedure be performed every 8 hours or daily, whichever comes first.

Greasing the specified locations is essential for good machine performance and service life. Operating the machine with little or no grease may cause the machine to perform poorly and continued use may cause component damage.

Grease Specification	
PTFE INTERFLON FIN GREASE LS 2	
Genie part number	09.4693.0000

To lubricate the boom of GTH-4014:

1 Fully extend and raise the boom, then retract the boom, checking to insure it operates smoothly. There should be a light film of lubricant on wear pad contact surfaces.

⊙ Result: Boom operates smoothly and a thin film of lubricant is visible. Proceed to step 5.

⊠ Result: Boom does not extend or retract smoothly and no lubricant is visible on wear pad contact surfaces. Proceed to step 2.

2 Apply a thin layer of grease to the underside of the number 3 boom tube where it makes contact with the number 2 boom tube lower wear pads.

3 Apply a thin layer of grease to the underside of the number 2 boom tube where it makes contact with the number 1 boom tube lower wear pads.

4 Lubricate the top and side boom tube wear pads.

5 Return the boom to the stowed position.

CHECKLIST A PROCEDURES

To lubricate the boom of GTH-4018:

1 Fully extend and raise the boom, then retract the boom, checking to insure it operates smoothly. There should be a light film of lubricant on wear pad contact surfaces.

⊙ Result: Boom operates smoothly and a thin film of lubricant is visible. Proceed to step 6.

⊠ Result: Boom does not extend or retract smoothly and no lubricant is visible on wear pad contact surfaces. Proceed to step 2.

2 Apply a thin layer of grease to the underside of the number 4 boom tube where it makes contact with the number 3 boom tube lower wear pads.

3 Apply a thin layer of grease to the underside of the number 3 boom tube where it makes contact with the number 2 boom tube lower wear pads.

4 Apply a thin layer of grease to the underside of the number 2 boom tube where it makes contact with the number 1 boom tube lower wear pads.

5 Lubricate the top and side boom tube wear pads.

6 Return the boom to the stowed position.

Grease Specification	
PTFE INTERFLON FIN GREASE LS 2	
Genie part number	09.4693.0000

CHECKLIST A PROCEDURES

A-5
Perform Engine Maintenance



Engine specifications require that this procedure be performed every 8 hours or daily, whichever comes first.

Engine oil level - check
Coolant level - check/add
Fuel system filter/water separator - drain
Engine tightness - check for leaks
Exhaust system - check for leaks

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8172-02), *Perkins 854 Operation and Maintenance Manual* (Perkins part number SEBU8726-01).

Perkins 1104D-E Operation and Maintenance Manual	
Genie part number	57.4700.0000
Perkins 854 Operation and Maintenance Manual	
Genie part number	57.4700.0001

A-6
Safety Devices

1 Moment Limiting System
- Load a weight of 2205 lbs / 1000 kg.
- Raise the boom about 11.8 in / 30 cm above the ground.
- Extend the telescope and check if the system enters the alarm mode once reached the distance indicated in the load charts for the attachment fitted to the machine.

2 Joystick Enabling Function Switch
- Attempt to operate the joystick without pressing this button: in this condition, the joystick shall not activate any movement.

3 Emergency Stop button
- To check the efficiency of this pushbutton, simply press it down during a movement. The pressure of the pushbutton shall cause the movement to stop and the engine to shut down.

4 Seat Switch
- Attempt to make the machine to move without sitting on the drive seat. In this condition, the machine shall not move.

5 Outriggers Sensors
- Lower or raise all the outriggers.
- The display of the moment limiter will change the scale of the admissible payloads accordingly.

6 Pressure Switch On The Parking Brake
- Engage the parking brake and start the engine.
- The parking brake warning light should come on.
- Attempt to move with the machine. The machine must not move.

CHECKLIST A PROCEDURES

A-7
Perform 30 Day Service



The 30 day maintenance procedure is a one-time sequence of procedures to be performed after the first 30 days or 40 hours of usage. After this interval, refer to the maintenance checklists for continued scheduled maintenance.

1 Perform the following maintenance procedures:
- ☐ B-5 Inspect the Tires, Wheels and Lug Nut Torque
- ☐ D-3 Replace the Hydraulic Tank Return Filter Element
- ☐ Check Belt Tension
- ☐ Check The Engine Mounts
- ☐ Check Hose Clamps

A-8
Emergency Pump Operation (if equipped)

1 Stop the engine.

2 Press the red emergency stop button.

3 Press the emergency pump on-off button and hold it pressed down.

⊙ Result: Operate the joystick to move the boom and verify that movement is performed.

A-9
Perform Axle Maintenance



Axle specifications require that this procedure be performed after 50 hours.

Oil level - check/add

Required maintenance procedures and additional axle information is available in the *Carraro 26.27M Axle Maintenance and Repair Manual*

For additional axle information, refer to the (Carraro part number CA270015 - Front Axle, CA270016 - Rear Axle)	
Carraro 26.27M Front Axle Maintenance and Repair Instructions	
Genie part number	57.4700.0002
Carraro 26.27M Rear Axle Maintenance and Repair Instructions	
Genie part number	57.4700.0003

A-10
Perform Axle Maintenance



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

Change axle oil
Clean magnetic oil plugs
Oil breather - clean
Grease axle (if required)

Required maintenance procedures and additional axle information is available in the

For additional axle information, refer to the (Carraro part number CA270015 - Front Axle, CA270016 - Rear Axle)	
Carraro 26.27M Front Axle Maintenance and Repair Instructions	
Genie part number	57.4700.0002
Carraro 26.27M Rear Axle Maintenance and Repair Instructions	
Genie part number	57.4700.0003

Checklist B Procedures

B-1
Inspect the Electrical Wiring



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

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

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

1 SInspect the following areas for burnt, chafed, corroded and loose wires:
- Inside of the operator's compartment
- Underside of the chassis
- Boom assembly.

2 Inspect for a liberal coating of dielectric grease in the following locations:
- All harness connectors.

3 Start the engine and raise the boom so there is enough room to access and remove all the covers attached to the chassis.

4 Attach a lifting strap from an overhead crane to the boom. Support the boom. Do not apply any lifting pressure.

5 Remove all engine covers, hydraulic tank covers and chassis covers.

⚠DANGER Crushing hazard. Death or serious injury could result if the boom should unexpectedly fall while working underneath the boom. Do not stand or work beneath a boom that is not properly supported.

6 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:
- Engine
- Transmission
- Manifolds
- Chassis

7 Inspect for a liberal coating of dielectric grease in all connections between the engine, transmission and the operator's compartment

8 Install all covers removed in step 5.

9 Remove the lifting strap from the overhead crane.

10 Start the engine and lower the boom to the stowed position. Turn the machine off.

CHECKLIST B PROCEDURES

B-2
Gearbox Oil Level

Genie requires that this procedure be performed every 300-400 hours or quarterly, whichever comes first.

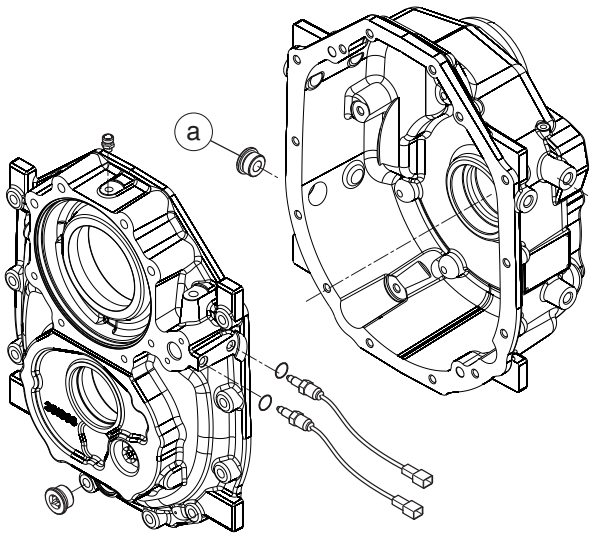
1 Stop the machine on a level ground and engage the parking brake.

2 Clean level plug "a" all around.

3 Remove the plug "a" and check if oil is level with the hole.

4 When necessary, add new oil through plug "a" until it is level with the hole.

5 Refit and tighten the plug "a".



B-3
Check the Exhaust System

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

Maintaining the exhaust system is essential to good engine performance and service life. Running the engine with a damaged or leaking exhaust system can cause component damage and unsafe operating conditions.

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

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

1 Open the engine access cover.

2 Be sure that all fasteners are tight.

3 Inspect all welds for cracks.

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

5 Close the engine access cover.

CHECKLIST B PROCEDURES

B-4
Inspect the Engine Air Filter

Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first. Perform this procedure more often if dusty conditions exist.

Maintaining the engine air filter in good condition is essential to good engine performance and service life. Failure to perform this procedure can lead to poor engine performance and component damage.

Perform this procedure with the engine off and the parking brake engaged.

1 Open the engine access cover.

2 Open the four latches.

3 Remove the protection cap.

4 Extract the cartridge.

5 Clean the filter bowl.

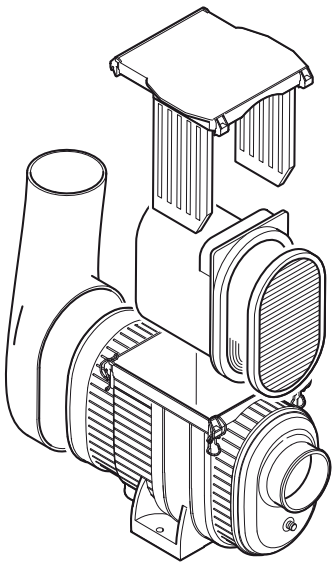
6 Dry clean the cartridge (max. pressure: 87 psi / 6 bar).

7 Check for cracks in the filtering element.

8 Before refitting the cleaned cartridge smear its seal with a thin coat of grease; fit the cartridge and make sure it is properly positioned.

9 Refit cap.

NOTICE As soon as the warning lamp on the cab dashboard switches on, replace the outer element. Never wash the cartridge with water or solvents.



B-5
Inspect the Tires, Wheels and Lug Nut Torque



Genie requires that the first inspection be performed after the first 50 hours of operation.

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

Maintaining the tires and wheels in good condition, including proper wheel fastener torque, is essential to safe operation and good performance. Tire and/or wheel failure could result in a machine tip-over. Component damage may also result if problems are not discovered and repaired in a timely fashion.

⚠WARNING Bodily injury hazard. An overinflated tire can explode and could result in death or serious injury.

⚠WARNING Tip over hazard. Do not use temporary flat tire repair products.

The tires on some machines are foam filled and do not need air added to them.

1 Check all tire treads and sidewalls for cuts, cracks, punctures and unusual wear.

2 Check each wheel for damage, bends and cracks.

3 Check each lug nut for proper torque. Refer to Section 2, *Specifications*.

4 Check the air pressure in each tire. Refer to Section 2, *Specifications*.

B-6
Perform Hydraulic Oil Analysis



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

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more often. Refer to Section 2, *Specifications*.

Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test**. See E-1, *Test or Replace the Hydraulic Oil*.

CHECKLIST B PROCEDURES

B-7
Check the Boom Wear Pads

Genie specifications require that this procedure be performed every 250 hours of operation.

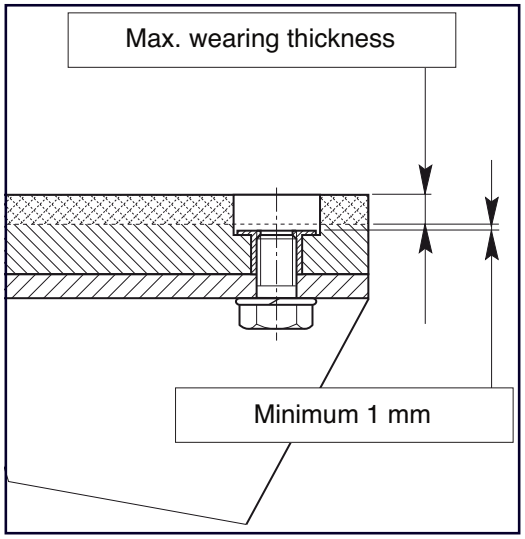
Any boom section is fitted with adjustable pads located on the four sides of the profile. These pads are secured to both fixed and mobile part of every section.

1 Extend the boom until the wear pads are accessible.

2 Inspect each pad and ensure that the pad thickness is more than 0.04 inches / 1 mm (see figure).

⊙ Result: If thickness is above 0.04 inches / 1 mm, the pad can be re-used.

⊠ Result: if thickness is less than 0.04 inches / 1 mm, replace the worn pad. Refer to Repair Procedure 1-1, *How to Replace the Boom Wear Pads*.



Boom Wear Pad Screws Tightening Specifications	
Screws M10	22 ft-lbs 30 Nm
Screws M14	37 ft-lbs 50 Nm

CHECKLIST B PROCEDURES

B-8
Perform Engine Maintenance - Perkins 1104D Models



Engine specifications require that this procedure be performed every 250 hours of operation.

Engine oil and filter - change

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8172-02),

Perkins 1104D-E Operation and Maintenance Manual	
Genie part number	57.4700.0000

B-9
Perform Axle Maintenance



Axle specifications requires that this procedure be performed every 300 hours of operation or monthly, whichever comes first.

Oil level - check/add
Oil breather - clean

Required maintenance procedures and additional axle information is available in the *Carraro 26.27M Axle Maintenance and Repair Manual*

For additional axle information, refer to the (Carraro part number CA270015 - Front Axle, CA270016 - Rear Axle)	
Carraro 26.27M Front Axle Maintenance and Repair Instructions	
Genie part number	57.4700.0002
Carraro 26.27M Rear Axle Maintenance and Repair Instructions	
Genie part number	57.4700.0003

Checklist C Procedures

C-1
Perform Engine Maintenance



Engine specifications require that this procedure be performed every 500 hours.

1104 Engine
Fan clearance - check
V-belts - inspect/adjust/replace

854 Engine
Engine oil and filter - change
(must use API CJ-4 Low Ash oil)
Fuel system primary filter (water separator) element - replace
Fuel system secondary filter - replace
Fan clearance - check

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8172-02), *Perkins 854 Operation and Maintenance Manual* (Perkins part number SEBU8726-01).

Perkins 1104D-E Operation and Maintenance Manual	
Genie part number	57.4700.0000
Perkins 854 Operation and Maintenance Manual	
Genie part number	57.4700.0001

C-2
Perform Engine Maintenance



Engine specifications require that this procedure be performed every 500 hours or annually, whichever comes first.

1104 Engine
Crankcase breather (canister) - replace
Engine oil and filter - change
Fuel system primary filter (water separator) element - replace
Fuel system secondary filter - replace
Hoses and clamps - inspect/replace
Radiator - clean

854 Engine
Radiator - clean

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8172-02), *Perkins 854 Operation and Maintenance Manual* (Perkins part number SEBU8726-01).

Perkins 1104D-E Operation and Maintenance Manual	
Genie part number	57.4700.0000
Perkins 854 Operation and Maintenance Manual	
Genie part number	57.4700.0001

C-3
Inspect and Lubricate the Sequencing Chains - GTH-4018 Models



Genie specifications require that this procedure be performed every 500 hours or semi-annually, whichever comes first. In extremely dusty or hostile environments, it may be necessary to lubricate the chains more often.

Maintaining the sequencing chains in good condition is essential to safe operation and good machine performance. Failure to detect damage to the chains could result in a hazardous operating condition.

Environments in which Genie Telehandlers operate can vary widely from outdoor moisture and temperature extremes, to mildly corrosive or highly corrosive industrial atmospheres, in addition to abrasive exposures such as sand and grit.

In addition, dynamic shock loading can impose abnormal loads above the endurance limit of the chains. Examples of dynamic shock loading are:

- High velocity movement of load, followed by sudden abrupt stops.
- Carrying loads in suspension over irregular surfaces and rough terrain.
- Attempting to "inch" loads which are beyond the rated capacity of the vehicle.

The load cycles and environmental conditions make it impossible to predict chain life. It is therefore necessary to conduct regular inspections.

1 Park the machine on a firm, level surface, level the boom and engage the parking brake.

2 Fully extend the boom.

3 Inspect the chains for the following conditions:
   - Elongation

The pitch of the boom extend chains (boom lower section) shall be 1 inch / 25.4 mm.

The pitch of the boom retract chains (boom upper section) shall be 0.75 inches / 19.05 mm.

Both the extend and retract chains should be measured.

Measurement should be taken in the area where the chain articulates most frequently over the sheaves.

⊙ Result: The distance measures 1 inch / 25.4 mm (lower chain) or 0.75 inches / 19.05 mm (upper chain). The chain is within specification. Continue with inspection.

⊗ Result: The distance is greater than 1 inch / 25.4 mm (lower chain) or 0.75 inches / 19.05 mm. The machine shall be removed from service until the chain is replaced.

The boom chain's normal life expectancy can be expressed as a maximum percent of elongation of 2%.

Please contact the Genie service department for the correct procedure to determine the maximum percent of chain elongation.

CHECKLIST C PROCEDURES

- **Edge wear**
  Check the chain for wear on the link plate edges caused by running back and forth over the sheave. The maximum reduction of material should not exceed 5%.
- **Cracked plates**
  Check link side plates for any cracks. These are generally a sign of chain fatigue.
- **Turning pins**
  Check the pins. The position of the riveting must be parallel with the top and bottom of the side plate.

If any of these conditions are discovered during inspection, the chain must be replaced.

After inspection and before being returned to service, chains must be lubricated with a quality chain lubricant.

Do not use grease to lubricate chains.

The chain plates should be brushed with a wire brush prior to lubrication to clear the space between the plates.

The lubricant must penetrate the chain joint to prevent wear. Applying lubricant to the external surfaces will prevent rust, but the chains should be articulated to make sure the lubricant penetrates to the working surfaces between the pins and links.

Lubricant may be applied with a brush, sprayed or poured on, but the chain should be well flooded with lubricant and the boom should be extended and retracted to insure that the lubricant penetrates to the working surfaces. All excess lubricant should be wiped away from the external surfaces.

Do not use solvents to remove excess lubricant.

Checklist D Procedures

D-1
Inspect the Forks

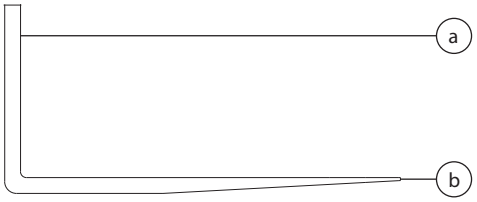
Genie specifications require that this procedure be performed every 1000 hours or annually, whichever comes first OR whenever permanent deformation of the forks is suspected.

Maintaining the lifting forks in good condition is essential to safe operation and good machine performance. Failure to detect damage to the forks could result in a hazardous operating condition.

1 Thoroughly clean the lifting forks.

2 Inspect the forks for the following:
- Surface cracks
- Straightness of the blade and shank
- Fork angle at 90 ± 3 degrees
- Relative height of fork tips shall not differ more than 3% of blade length
- Excessive wear to the forks, fork mount or legible markings

Result: If any of the above criteria are not met, forks shall be removed from service until they are repaired or replaced.



a - shank
b - blade

D-2
Tighten the Boom Chains - GTH-4018 Models

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

To tighten the boom chains, follow the instructions below:

Extend chains (boom bottom side)

1 Raise the boom to horizontal position.

2 Fully extend the boom.

3 Retract it about 3.9 inches / 100 mm.

4 Tighten the chain up to a maximum tension value of 37 ft-lbs / 50 Nm.

5 Check that all chains have been equally tensioned. If not, repeat the operation described above.

6 Lock the chain tensioners by means of a counternut and locknut.

CHECKLIST D PROCEDURES

Retract chains (boom upper side)

1 Fully retract the boom.

2 Extend the boom by 11.8 inches / 300 mm.

3 Loosen the locker nut.

4 Tighten the tensioning nut to 37 ft-lbs / 50 Nm.

5 Tighten the locker nut.

6 Check that all chains have been equally tensioned. If not, repeat the operation described above.

If during chain tensioning, problems are detected, please contact service.

D-3
Replace Hydraulic Tank Return Filter Element



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

Replacing the hydraulic return filter element is essential to good machine performance and service life. A dirty or clogged filter element may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter element be replaced more often.

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

Perform this procedure with the engine off.

1 Start the engine.

2 Release the pressure in the oil reservoir by loosening the filler/breather cap.

3 Unscrew the return filter.

4 Install the new filter element.

5 Tighten the filler/breather cap.

6 Record the hours the filter element was replaced and keep with your maintenance records.

7 Start the engine.

8 Inspect the filter assembly to be sure that there are no leaks.

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

D-4
Change Gearbox Oil

Transmission specifications require that this procedure be performed every 1500 hours.

1 Place a container of suitable size under drain plug "a".

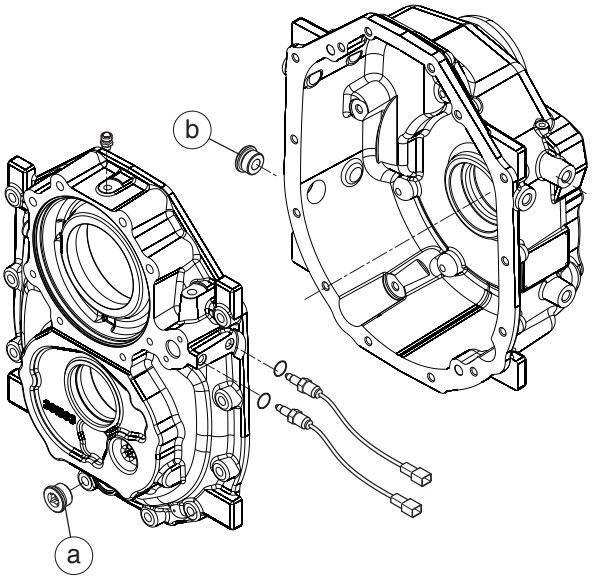
2 Remove plug "b".

3 Remove drain plug "a" and empty the gearbox

4 Refit and tighten drain plug "a".

5 Pour in new oil through filler (b) placed at the top of the reduction gear of the power divider. Stop when oil is level with hole "b".

6 Refit and tighten plug "b".



CHECKLIST D PROCEDURES

D-5
Perform Engine Maintenance



Engine specifications require that this procedure be performed every 500 hours or annually, whichever comes first.

1104 Engine
Engine valve lash - inspect/adjust

854 Engine
Water pump - Inspect

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8172-02), *Perkins 854 Operation and Maintenance Manual* (Perkins part number SEBU8726-01).

Perkins 1104D-E Operation and Maintenance Manual	
Genie part number	57.4700.0000
Perkins 854 Operation and Maintenance Manual	
Genie part number	57.4700.0001

D-6
Perform Axle Maintenance



Axle specifications require that this procedure be performed every 1500 hours of operation or seasonally, whichever comes first.

Change axle oil
clean magnetic oil plugs

Required maintenance procedures and additional axle information is available in the *Carraro 26.27M Axle Maintenance and Repair Manual*

For additional axle information, refer to the (Carraro part number CA270015 - Front Axle, CA270016 - Rear Axle)

Carraro 26.27M Front Axle Maintenance and Repair Instructions	
Genie part number	57.4700.0002
Carraro 26.27M Rear Axle Maintenance and Repair Instructions	
Genie part number	57.4700.0003

D-7
Perform Engine Maintenance - Perkins 854 Models



Engine specifications require that this procedure be performed every 1500 hours.

854 Engines
Engine crankcase breather element - replace

Required maintenance procedures and additional engine information is available in the *Perkins 854 Operation and Maintenance Manual* (Perkins part number SEBU8726-01).

Perkins 854 Operation and Maintenance Manual	
Genie part number	57.4700.0001

Checklist E Procedures

E-1
Test or Replace the Hydraulic Oil



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

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more frequently. Refer to Section 2, Specifications.

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

Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.

1 Lower the boom to the stowed position.

2 Raise the outriggers (machine resting on wheels).

3 Remove oil cap from top of hydraulic tank.

4 Using an approved hand-operated pump, drain the hydraulic tank into a suitable container. Refer to Section 2, *Specifications*.

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

5 Remove the drain plug from the rear of the tank.

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

7 Install the drain plug and securely tighten. Do not over tighten.

8 Fill the tank with hydraulic oil until the fluid level is in the center of the sight glass at the rear of the tank.

9 Clean up any oil that may have spilled.

CHECKLIST E PROCEDURES

E-2
Perform Engine Maintenance



Engine specifications require that this procedure be performed every 2000 hours.

1104 Engine
Aftercooler core - inspect
Alternator - inspect
Belt tensioner - inspect
Engine mounts - inspect
Exhaust manifold - inspect
Starting motor - inspect
Turbocharger - inspect
Water pump - inspect

854 Engine
Aftercooler core - inspect
Engine mounts - inspect
Starting motor - inspect
Turbocharger - inspect

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8172-02), *Perkins 854 Operation and Maintenance Manual* (Perkins part number SEBU8726-01).

Perkins 1104D-E Operation and Maintenance Manual	
Genie part number	57.4700.0000
Perkins 854 Operation and Maintenance Manual	
Genie part number	57.4700.0001

E-3
Perform Engine Maintenance



Engine specifications require that this procedure be performed every 3000 hours.

1104 Engine
Alternator Belt - Inspect/Adjust/Replace

854 Engine
Alternator - inspect
Alternator and Fan Belts - replace
Diesel Particulate Filter - clean
Radiator Pressure Cap - clean/replace

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8172-02), *Perkins 854 Operation and Maintenance Manual* (Perkins part number SEBU8726-01).

Perkins 1104D-E Operation and Maintenance Manual	
Genie part number	57.4700.0000
Perkins 854 Operation and Maintenance Manual	
Genie part number	57.4700.0001

CHECKLIST E PROCEDURES

E-4
Perform Engine Maintenance



Engine specifications require that this procedure be performed every 3000 hours or every two years, whichever comes first.

1104 and 854 Engine
Cooling System Coolant
(Commercial Heavy-Duty) - Change

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual*
(Perkins part number SEBU8172-02),
Perkins 854 Operation and Maintenance Manual
(Perkins part number SEBU8726-01).

Perkins 1104D-E Operation and Maintenance Manual	
Genie part number	57.4700.0000
Perkins 854 Operation and Maintenance Manual	
Genie part number	57.4700.0001

E-5
Perform Engine Maintenance



Engine specifications require that this procedure be performed every 4000 hours.

1104 and 854 Engine
Aftercooler Core - Clean/Test

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual*
(Perkins part number SEBU8172-02),
Perkins 854 Operation and Maintenance Manual
(Perkins part number SEBU8726-01).

Perkins 1104D-E Operation and Maintenance Manual	
Genie part number	57.4700.0000
Perkins 854 Operation and Maintenance Manual	
Genie part number	57.4700.0001

E-6
Perform Engine Maintenance

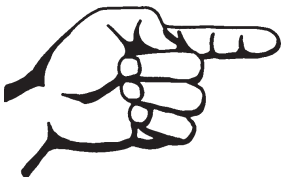


Engine specifications require that this procedure be performed every 12,000 hours or every six years, whichever comes first.

1104 and 854 Engine
Cooling System Coolant
(Extended life coolant) - change

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8172-02), *Perkins 854 Operation and Maintenance Manual* (Perkins part number SEBU8726-01).

Perkins 1104D-E Operation and Maintenance Manual	
Genie part number	57.4700.0000
Perkins 854 Operation and Maintenance Manual	
Genie part number	57.4700.0001



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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.
- ☑ 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

About This Section

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

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

Symbols Legend

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

⚠DANGER Indicates an 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.

Note: Used to indicate additional operation or procedure information.

⊙ 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.

Boom Components

1-1 Boom

How to Replace the Boom Wear Pads

1 Extend the boom until the wear pads are accessible.

2 **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.

3 Remove the wear pad retainer plates and remove the wear pads from the boom.

4 Lubricate the wear surface of the new pads. Refer to Maintenance Procedure A-4, *Lubricate the Boom*.

Note: Do not lubricate the side wear pads.

5 Install the wear pads. Install and securely tighten the retainer plates. Do not over tighten.

6 The pads located at the front and upper sides can be removed and replaced without taking any special measure.

How to Remove the Lifting Fork Frame

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

2 If the machine is equipped with the lifting fork frame locking cylinder, disconnect the locking cylinder hoses from the boom.

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

3 Remove the screw securing the fork level cylinder pivot pin to the lifting fork.

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

5 Remove the screw securing the fork frame pivot pin to the boom.

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

7 Using the overhead crane, 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.

How to Replace the Boom Retract Chains - GTH-4018 Models

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

1 Start the engine and allow the engine to idle.

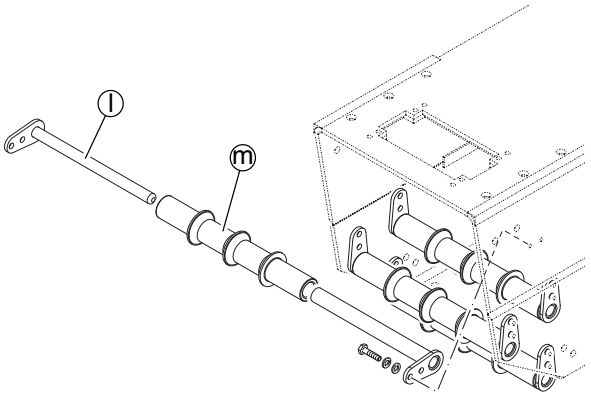
2 Raise the boom to a horizontal position.

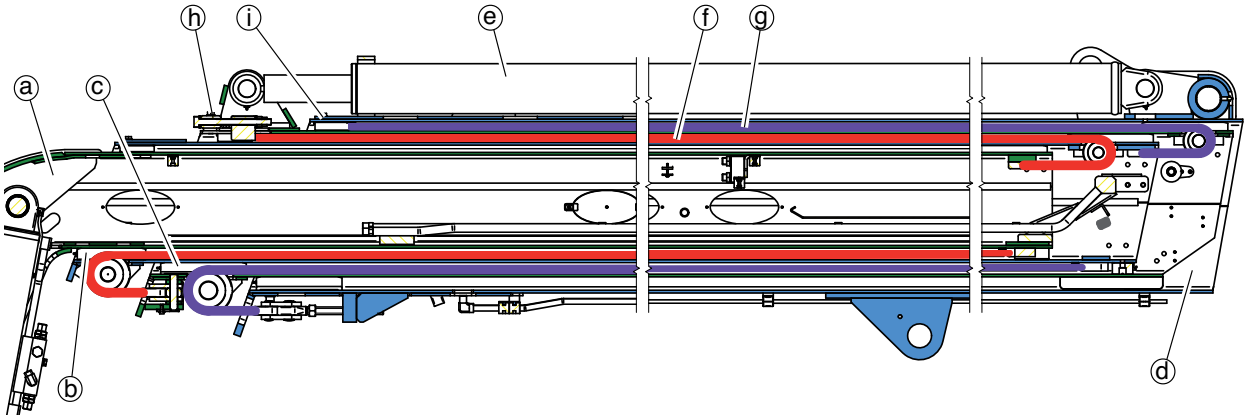
3 Fully retract the boom.

4 Turn the machine off and remove the key from the key switch.

5 At the pivot end of the boom, remove pins "l" and pulleys "m".

6 Remove the upper screws securing the upper chains "f" - "g".





a boom tube number 1
b boom tube number 2
c boom tube number 3
d boom tube number 4
e extend cylinder
f retract chain tube number 1
g retract chain tube number 2
h tube number 1 retract chain tensioner
i tube number 2 retract chain tensioner

BOOM COMPONENTS

7 At the fork end of the boom, remove the tensioning screw "n" and relevant nuts and counternuts.

8 Remove plate "o".

9 Loosen both screws "p".

10 Pull out block "q" to reach and remove the retaining fasteners "r" of chain anchor plate.

11 Securely attach a guide rope to the chain. This will be used to install the new chain.

Note: The guide rope must be securely attached to the chain before removal. If the rope becomes disconnect from the chain during removal, the installation of the new chain will be difficult.

12 At the pivot end of the boom, remove the chain by pulling it out of the boom assembly.

13 Remove the rope from the old chain and attach it to the new chain.

14 Using the assistance of a second operator, install the chain by pulling the guide rope from the fork end of the boom while the other operator guides the chain from the pivot end of the boom.

15 Remove the guide rope.

16 Connect the chain to the chain anchor plate by means of the retaining fasteners "r".

17 Install block "q" back into the slot on the boom.

18 At the pivot end of the boom, install the upper screws securing the upper chains "f" - "g".

19 Install the pulleys and pins previously removed from the pivot end of the boom.

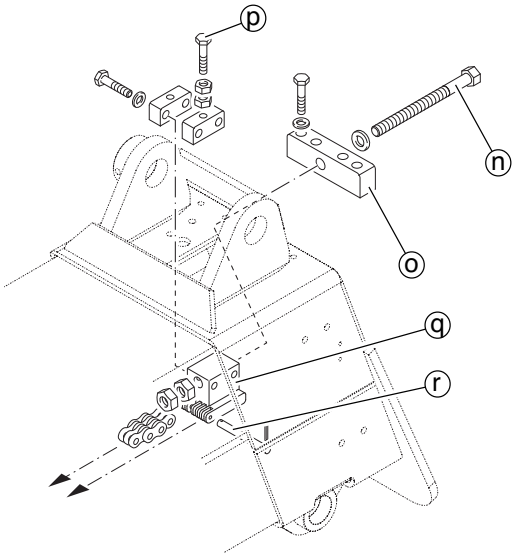
20 Install plate "o".

21 Install screw "n" and proceed with chain tensioning.

22 Tighten screws "p".

23 Extend and retract the boom to insure it operates smoothly.

NOTICE Component damage hazard. Chains can be damaged if the boom is used while the chains are out of adjustment. Do not return the machine to use until the chains have been correctly adjusted.



How to Replace the Boom Extend Chains - GTH-4018 Models

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

1 Start the engine and allow the engine to idle.

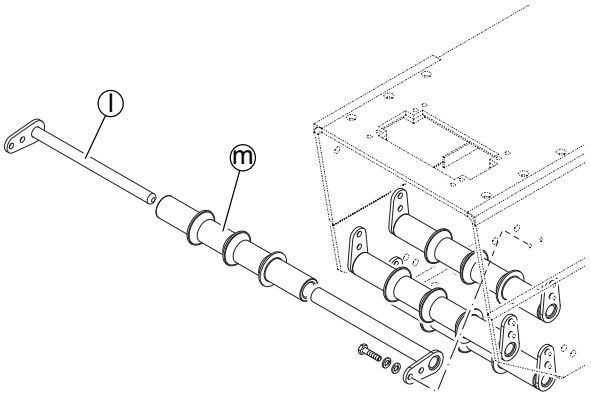
2 Raise the boom to a horizontal position.

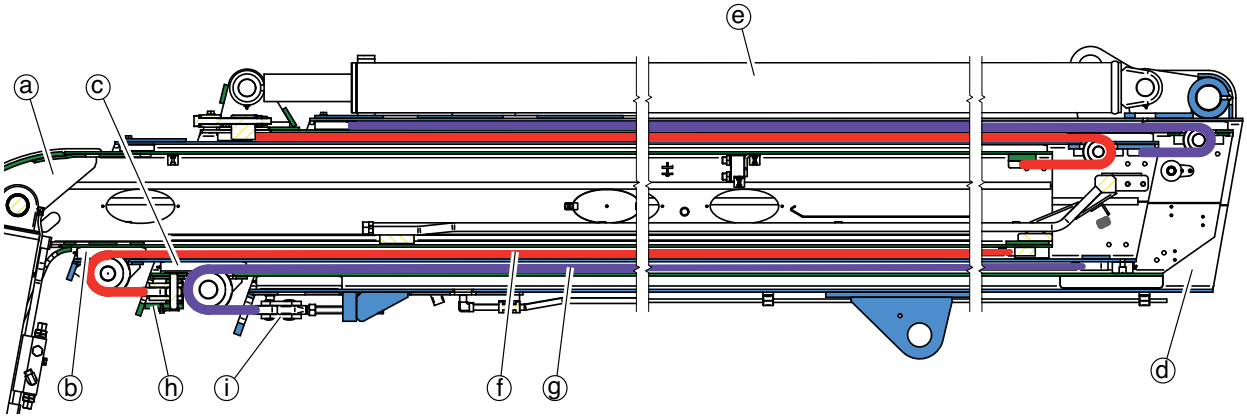
3 Fully retract the boom.

4 Turn the machine off and remove the key from the key switch.

5 At the pivot end of the boom, remove pins "l" and pulleys "m".

6 Remove the lower screws securing the lower chains "f" - "g".





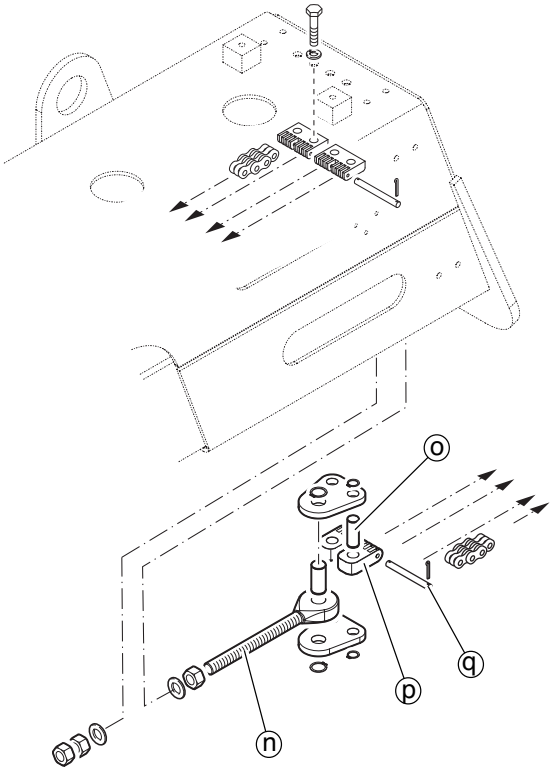
a boom tube number 1
b boom tube number 2
c boom tube number 3
d boom tube number 4
e extend cylinder
f extend chain tube number 1
g extend chain tube number 2
h tube number 1 extend chain locking device
i tube number 2 extend chain locking device

BOOM COMPONENTS

7 At the fork end of the boom, remove nuts and counternuts to free the tensioners "n" placed under the boom.

8 Remove pins "o" to separate the chain anchor plates "p" from tensioners "n".

9 Remove the retaining fasteners "q" to free the chain.



10 Securely attach a guide rope to the chain. This will be used to install the new chain.

Note: Rope coming loose from the chain during removal may result in a difficult reassembly. Be sure the rope is securely attached to the chain and boom structure before pulling the chain out of the boom.

11 At the pivot end of the boom, remove the chain by pulling it out of the boom assembly.

12 Remove the rope from the old chain and attach it to the new chain.

13 Using the assistance of a second operator, install the chain by pulling the guide rope from the fork end of the boom while the other operator guides the chain from the pivot end of the boom.

14 Install the lower screws securing the lower chains "f" - "g".

15 Remove the guide rope.

16 Connect the chain to the anchor plates "p" by means of the retaining fasteners "q".

17 Install the anchor plates "p" on tensioners "n" and lock in place by means of pins "o".

18 Install tensioners "n" on the boom and lock in place with the relevant nuts and counternuts.

19 Tension the chain.

20 Install the pulleys and pins previously removed from the pivot end of the boom.

21 Extend and retract the boom to insure it operates smoothly.

How to Remove the Boom

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

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

1 Remove the forks from the boom.

2 Disconnect the electric cables from the boom (if equipped).

3 Lift the boom until the lift cylinder pivot pin is in a position above the cab roof.

4 Place a stand under the lift cylinder to properly support it once the pin connecting the cylinder to the boom will be removed.

5 Attach a lifting strap from an overhead crane to the fork support and slightly lift the boom and put some tension on it.

6 Attach another lifting strap from a second overhead crane to the rod end of the lift cylinder. Support the cylinder. Do not apply any lifting pressure.

7 Using a soft metal drift, remove the slave cylinder locking pin from the boom support.

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

8 Using a soft metal drift, remove the lift cylinder locking pin, boom side.

9 Operate the 2 overhead cranes at the same time to lower the boom being careful to rest the lift cylinder onto the support previously placed underneath, and the boom tip onto another stand positioned to support the front part of the boom.

10 Hook the 4 lifting points and then slowly lift the boom.

11 Tag, disconnect and plug the hydraulic hoses that go to the extend, retract, fork tilt and fork leveling cylinders, and the quick coupling cylinder (if equipped).

⚠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.

12 Using a soft metal drift, remove the pin securing the boom to the machine.

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

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

BOOM COMPONENTS

How to Disassemble the Boom - GTH-4018 Models

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

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

Place the machine in an area sufficient enough to fully lower the outriggers and fully extend the boom.

1 Using a soft metal drift and a hammer, remove the rod end pivot pin from the tilt cylinder. Keep attention to choose a drift smaller than the pivot pin!

2 Remove the bottom end carter of the boom.

3 Tag, disconnect and plug the four hydraulic hoses "a" from bracket "c".

4 Remove the two brackets "b" with the relative pulleys.

5 Extend the boom until the inspection holes are accessible on the inner boom section.

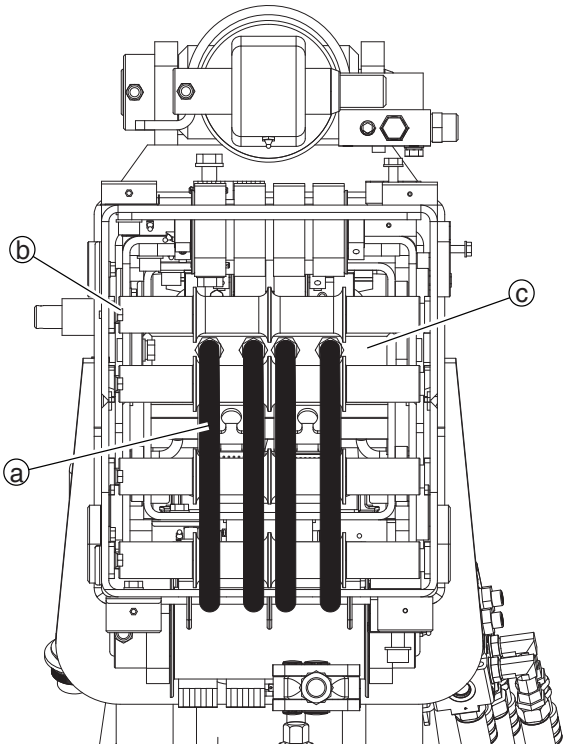
6 Inserting a spanner through the inspection holes, remove the screws which fix the hoses holder block and disconnect the hydraulic hoses on the upper boom side.

7 Completely retract the boom.

8 Pull out the internal steel hoses assembly.

9 Using a soft metal drift and a hammer, remove the rod end pivot pin from the extend cylinder. Keep attention to choose a drift smaller than the pivot pin!

10 Pull out the electrical harness.



11 In the lower section of the boom, tag and disconnect the chains from the chain tensioner.

12 Repeat step 11 for the upper section of the boom.

13 Tag and disconnect the chains placed in the pivot end of the boom.

14 Remove all the pads inside the boom but the ones in the lower side.

15 With a lifting strap connected to the overhead crane, sling the first, second and third boom tubes out of the fourth one.

16 Set the boom assembly on a structure capable of supporting it.

17 Let the first and second boom section slide out of the third one.

18 Set the first and second boom section on a structure capable of supporting it.

19 Let the first boom section slide out of the second one.

20 Set the first boom section on a structure capable of supporting it.

BOOM COMPONENTS

How to Disassemble the Boom - GTH-4014 Models

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

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

Place the machine in an area sufficient enough to fully lower the outriggers.

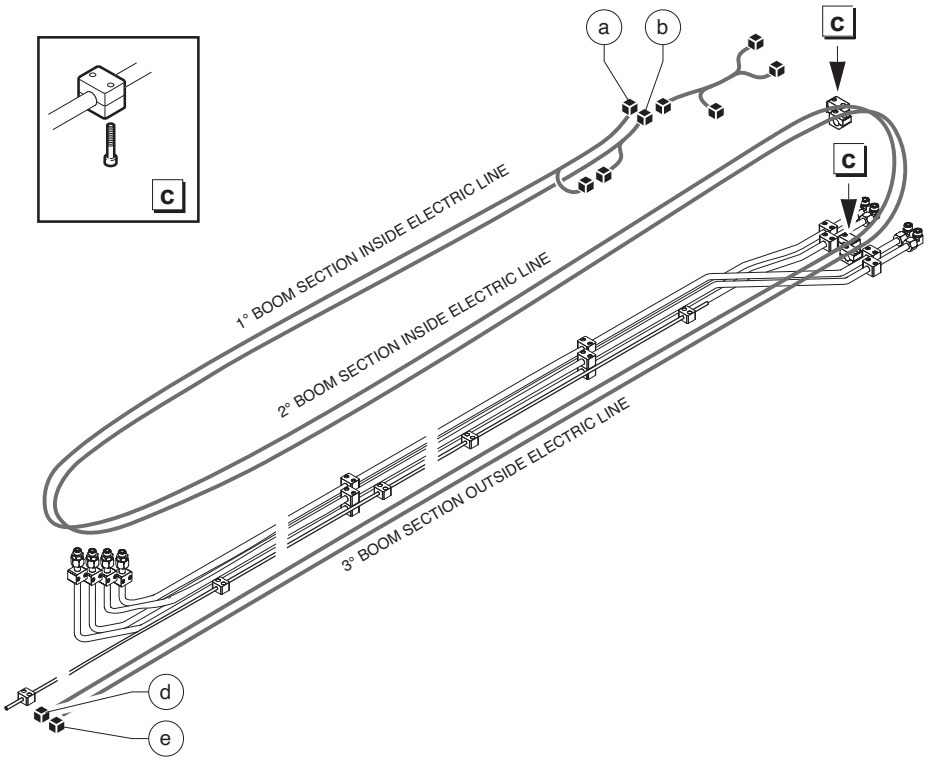
1 Raise the fully retracted boom to a horizontal position.

2 If there are electric cables inside the boom (optional), proceed with point 3. If there are no electric cables inside the boom, skip to point 7.

3 Open the cover located at the front of the first boom section.

4 Disconnect connectors "a" and "b" from the line inside the boom (if equipped).

5 At the front of the first boom section, locate and open clamps "c" securing the electric cables.



6 Remove connectors "a" and "b" from their cables.

7 At the pivot end of the boom, disconnect connectors "d" and "e".

8 Pull the electric cables out of the first boom section.

9 At the fork end of the boom, tag, disconnect and plug the double hoses that go to the fork tilt cylinder and the attachment lock/unlock cylinder. Plug the hoses to avoid that debris can get inside the hydraulic circuit.

⚠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.

10 At the pivot end of the boom, pull the double hoses out of the boom assembly.

11 Remove the bracket "f" from the underside of the second boom section.

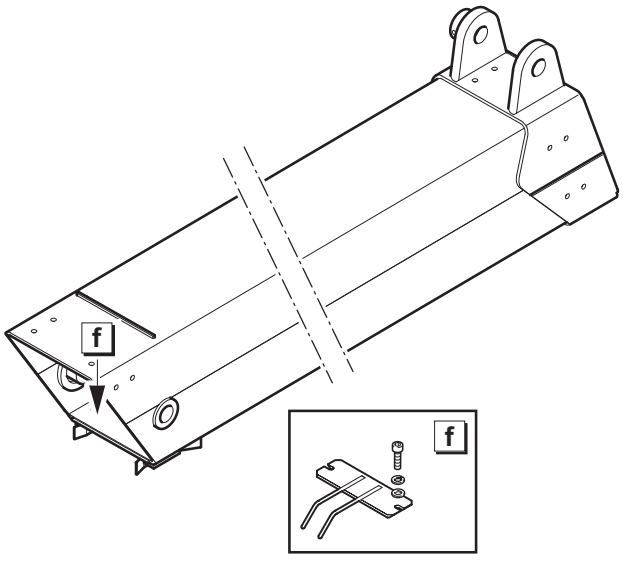
12 Tag and disconnect the hoses that go to the extend cylinder inside the boom from the blocking valve. Plug the hoses.

13 Remove the extend cylinder that is located on the boom. Refer to Repair Procedure 1-3, *How to Remove the or Internal extend Cylinder*.

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

14 Attach a lifting strap from an overhead crane and pull the first and second tubes out of the third tube. When the tubes are out of some 19.7 in / 50 cm, remove the front pads from third boom section.

15 Remove both first and second tubes and place them onto a structure previously prepared and capable of supporting them.



BOOM COMPONENTS

16 The third boom section remains installed on the machine with the double hoses of the fork tilt cylinder and the attachment lock/unlock cylinder inside it.

17 Reach the front underside of the third boom section. Tag and disconnect the hoses from the iron pipes. Plug the pipes.

18 At the front underside of the third boom section, remove the clamp that secures the electric cable. Pull the electric cable out of the boom.

19 Reach the boom tubes previously placed onto the support structure and remove the rod end pivot pin from the internal extend cylinder.

20 Attach a lifting strap from an overhead crane and pull the first tube out of the second tube. When the first tube has come out of some 19.7 in / 50 cm, remove the front pads from the second tube.

21 Remove the first tube from the second tube and place it onto a structure previously prepared and capable of supporting it.

⚠ DANGER Crushing hazard. The first tube could fall if not properly supported when removed from the second tube.

22 Remove the pivot pin from the internal extend cylinder barrel side.

23 Pull the internal extend cylinder off the rear side of the first tube.

24 Remove the fork tilt cylinder. Refer to Repair Procedure 1-5, *How to Remove the Fork Tilt Cylinder*.

25 Remove the lifting fork frame. Refer to Repair Procedure 1-1, *How to Remove the Lifting Fork Frame*.

How to Disassemble and Reassemble the Boom Electrical Harness - GTH-4018 Models

Note: Electrical harnesses pass inside the boom and are divided into 3 subassemblies; moreover there are two connection points inside the boom.

Harness subassembly "**a**" removal

1 Raise the boom to a horizontal position and fully extend it.

2 At the fork end of the boom, disconnect connectors "**c**".

3 Disconnect the harness connectors “**c**” from the wires of the harness subassembly "**a**" and then remove all wire terminals.

4 Replace the harness connectors with a cord of at least 395 inches / 10000 mm.

5 Remove cover “**h**”.

6 Disconnect connectors “**b**” that connect the harness subassembly “**a**” to subassembly “**g**”.

7 Remove all connectors “**b**” and wire terminals from the harness subassembly “**a**”.

8 Cut and remove the cable ties securing the electrical harness near connectors “**b**”.

9 Pull the cord to remove the harness subassembly “**a**” from the hole of cover “**h**” previously removed.

10 Disconnect the cord from the harness subassembly “**a**” and attach it to one end of the new harness subassembly.

Note: For this procedure, two operators are needed: one standing near connectors “**c**” and the other near cover “**h**”.

11 Pull the cord towards the fork end of the boom until the replacement harness subassembly comes out of the hole near connectors “**c**”.

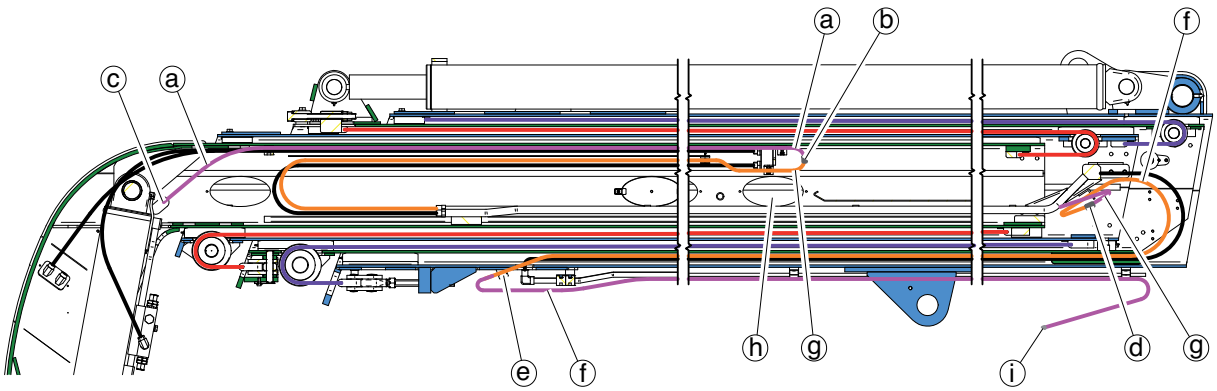
12 Refit all wire terminals and connect the wires to connectors “**b**”.

13 Reconnect the new harness subassembly “**a**” to subassembly “**g**”.

14 Secure the new harness subassembly with new cable ties.

15 Install cover “**h**” back in place on the boom.

16 Refit all wire terminals and connect the wires to connectors “**c**”.



BOOM COMPONENTS

17 Reconnect connectors “**c**” to the inlets on the fork end of the boom.

Harness subassembly "**g**" removal

18 Raise the boom to a horizontal position and fully extend it.

19 Remove cover “**h**”.

20 Disconnect connectors “**b**” from the electrical harness.

21 Remove connectors “**b**” and the wire terminals from the harness subassembly “**g**”.

22 Cut and remove the cable ties securing the harness near connectors “**b**”.

23 Fully retract the boom.

24 At the pivot end of the boom remove the internal pulleys on which conduits slide inside the boom.

25 Disconnect connectors “**d**” that connect the harness subassembly “**g**” to subassembly “**f**”.

26 Remove connectors “**d**” and the wire terminals from the harness subassembly “**g**”.

27 Cut and remove the cable ties securing the harness near connectors “**d**”.

28 Remove the harness subassembly “**g**” from the pivot end of the boom.

29 Install a new harness subassembly. Before installation, spray some lubricant so the assembly will slide inside the tubes and the conduits smoothly.

30 Refit all wire terminals and connect the wires to connectors “**d**”.

31 Reconnect the new harness subassembly “**g**” to subassembly “**f**”.

32 Install new cable ties to replace the ones removed during disassembly.

33 Fully extend the boom.

34 Refit all wire terminals and then connect the wires to connectors “**b**”.

35 Reconnect the new harness subassembly “**g**” to subassembly “**a**”.

36 Install new cable ties to replace the ones removed during disassembly.

37 Install cover “**h**” back in place on the boom.

Harness subassembly "**f**" removal

38 Raise the boom to a horizontal position and fully retract it.

39 At the pivot end of the boom remove the internal pulleys on which conduits slide inside the boom.

40 Disconnect connectors “**d**” that connect the harness subassembly “**f**” to subassembly “**g**”.

41 Remove connectors “**d**” and the wire terminals from the harness subassembly “**f**”.

42 Cut and remove the cable ties securing the harness near connectors “**d**”.

43 Replace the harness with a cord of at least 395 inches / 10000 mm.

44 Remove the retaining brackets “**e**”.

45 Cut and remove the cable ties securing the harness “**f**” to the hoses located under the boom.

46 Disconnect connectors “**i**”.

47 Remove connectors “**i**” and the wire terminals from the harness subassembly “**f**”.

48 Pull the cord to remove the harness subassembly “**f**” from the side where brackets “**e**” are located.

49 Disconnect the cord from the harness subassembly “**f**” and attach it to one end of the new harness subassembly.

Note: For this procedure, two operators are needed: one standing near connectors “**d**” and the other near brackets “**e**”.

50 Pull the cord until connectors “**d**” are accessible.

51 Refit all wire terminals and reconnect the wires to connectors “**d**”.

52 Connect the new harness subassembly “**f**” to subassembly “**g**”.

53 Install new cable ties to replace the ones removed during disassembly.

54 Refit all wire terminals and reconnect the wires to connectors “**i**” located at the bottom of the pivot end of the boom.

BOOM COMPONENTS

1-2
Boom Lift Cylinder

How to Remove the Lift Cylinder

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

1 Attach a lifting strap from an overhead 22045 lbs / 10,000 kg crane 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 crane 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 Remove the cylinder from the machine then raise the boom to a horizontal position.

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

1-3
Boom Extend Cylinder

How to Remove the External Extend Cylinder

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

1 Raise the boom to a horizontal position.

2 Using a lifting strap and an overhead crane, support the cylinder.

3 Remove the retaining fasteners securing the extend cylinder rod end pivot pin.

4 Using a soft metal drift and a hammer, remove the pivot pin.

5 Remove the retaining fasteners that secure the cylinder retainer.

6 Place a container of suitable size under the hydraulic hoses before disconnecting.

7 Tag, disconnect and plug the hydraulic hoses from the extend cylinder. Cap the cylinder 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.

8 Remove the retaining fasteners securing the extend cylinder barrel end pivot pin.

9 Using a soft metal drift and a hammer, remove the pivot pin.

10 Carefully lift and remove the cylinder from the machine.

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

BOOM COMPONENTS

How to Remove the Internal Extend Cylinder - GTH-4014 Models

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

1 Disconnect the electric connector and remove the rear lights assembly.

2 Lower the boom until the cylinder barrel end pivot pin matches the holes on the machine frame.

3 Being careful NOT to modify the boom angle, extend the boom to reach the cylinder rod end pivot pin, located on the first boom section.

4 Remove the retaining fasteners securing the extend cylinder rod end pivot pin.

5 Using a soft metal drift and a hammer, remove the pivot pin.

6 Retract the boom by ensuring that no tension is applied to the hoses inside the boom. If necessary, help boom retraction using the forks of a forklift.

7 Remove the retaining fasteners securing the extend cylinder barrel end pivot pin.

8 Using a soft metal drift and a hammer, remove the pivot pin.

9 Place a container of suitable size under the hydraulic hoses before disconnecting.

10 Tag, disconnect and plug the hydraulic hoses from the internal extend cylinder. Cap the cylinder 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 Attach a lifting strap from an overhead crane to the cylinder. Support the cylinder.

12 Carefully lift and remove the cylinder from the machine.

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

1-4
Fork Level Cylinder

How to Remove the Fork Level Cylinder

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

1 Remove the retaining fasteners securing the level cylinder rod end pivot pin.

2 Using a soft metal drift and a hammer, remove the pivot pin.

3 Using a lifting strap and an overhead crane, support the cylinder.

4 Place a container of suitable size under the hydraulic hoses before disconnecting.

5 Tag, disconnect and plug the hydraulic hoses from the level cylinder. Cap the cylinder 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 retaining fasteners securing the level cylinder barrel end pivot pin.

7 Using a soft metal drift and a hammer, remove the pivot pin.

8 Carefully lift and remove the cylinder from the machine.

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

BOOM COMPONENTS

1-5
Fork Tilt Cylinder

How to Remove the Fork Tilt Cylinder

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

1 Remove the forks from the frame.

2 Remove the retaining fasteners securing the fork tilt cylinder rod end pivot pin.

3 Using a soft metal drift and a hammer, remove the pivot pin.

4 Using a lifting strap and an overhead crane, support the cylinder.

5 Place a container of suitable size under the hydraulic hoses before disconnecting.

6 Tag, disconnect and plug the hydraulic hoses from the level cylinder. Cap the cylinder 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.

7 Remove the retaining fasteners securing the fork tilt cylinder barrel end pivot pin.

8 Using a soft metal drift and a hammer, remove the pivot pin.

9 Carefully lift and remove the cylinder from the machine.

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

How to Replace the Fork Tilt Cylinder Hoses - GTH-4014 Models

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

⚠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 Before replacing a hydraulic hose, thoroughly clean the machine, including the inside of the boom assembly.

2 Tag, disconnect and plug both ends of the hydraulic hose to be replaced. 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.

3 Securely attach a guide rope to the end of the double hose.

4 At the pivot end of the boom, remove the double hose by pulling it out of the boom assembly.

5 Go to the front underside of the third boom section and remove the double hose from the iron pipes.

6 Pull the double hose out of the boom assembly and remove the guide rope.

7 Attach the guide rope to the new double hose.

8 Install the new double hose by pulling the guide rope from the pivot end of the boom.

9 Connect the double hose fittings to the iron pipes located under the boom.

10 Go to the front underside of the first boom section and pull the guide rope until the end of the double hose comes out of the boom assembly.

11 Connect both ends of the hydraulic hose. Clean up any oil that may have spilled.

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

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 Service Department.

⚠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 required.

1 Get behind the front right wheel and 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 guard placed under the cabin.

3 Remove the small cover located on the left side of the cabin.

4 Remove the guard located on the left side of the cabin.

5 Cut and remove any cable ties securing the electrical harnesses. Disconnect the harness connectors.

6 Disconnect the hydraulic hoses of the power steering unit and of the heater.

⚠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 Disconnect the electrical and hydraulic connections from the brake 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.

8 Disconnect the electrical connections from the throttle pedal.

9 Disconnect the power cables from the horn. Disconnect the ground wire.

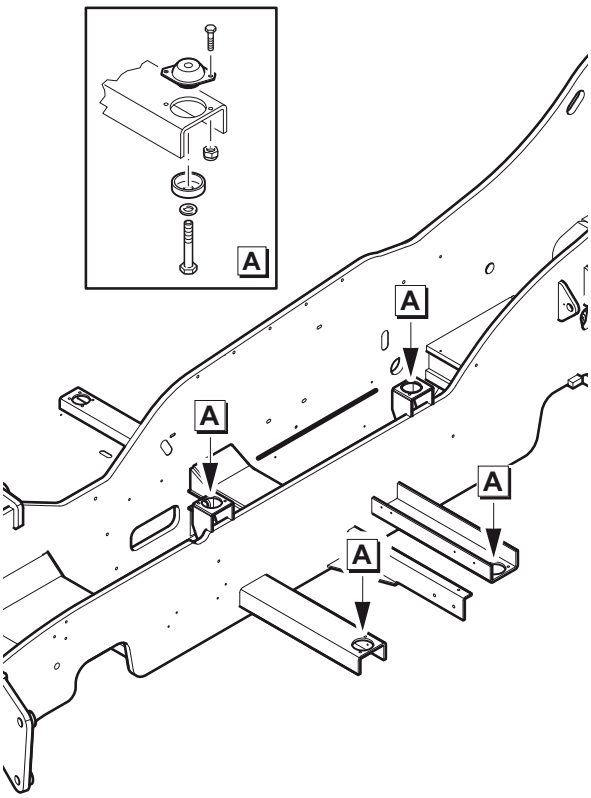
10 Remove the 4 retaining fasteners "a" of the cabin.

11 Install and secure two eyebolts to the top the cabin in the special seats.

12 Using a sling chain and an overhead crane, slowly raise the cabin away from the machine and set it on a supporting device.

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.

Bolt torque specification	
Operator's cab mounting bolts	155 ft-lbs 210 Nm (plus Locktite compound)



OPERATOR'S COMPARTMENT

2-2
Machine Controls

How to Remove the Steering Column

1 Get behind the front right wheel and 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 lower part of the dashboard.

3 Remove the upper part of the dashboard.

4 Remove the transmission control lever.

5 Remove the light control lever.

6 Remove the screws which secure the steering column to the frame.

7 Remove the steering column.

How to Remove the Steering Wheel

1 Get behind the front right wheel and 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 cap from the steering wheel. Remove the nut securing the steering wheel to the column and remove the steering wheel.

How to Remove the Steer Rotation Actuator

1 Remove the steering column. Refer to Repair Procedure 2-2, *How to Remove the Steering Column*.

2 Working under the dashboard, locate the hydraulic hoses of the steer rotation actuator.

3 Tag, disconnect and cap the hydraulic hoses and steer rotation actuator holes.

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

4 Remove the retaining fasteners that secure the steer rotation actuator to the frame.

5 Remove the steer rotation actuator.

How to Remove the Joystick

1 Get behind the front right wheel and 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 retaining fasteners that secure the joystick to the right armrest.

3 Remove the joystick.

4 Disconnect the joystick harness connector.

OPERATOR'S COMPARTMENT

How to Remove the Brake Pedal Assembly

1 Set the ignition switch to position "1".

2 Fully engage the brake pedal. Slowly release the brake pedal until the low brake pressure warning light comes on.

3 Set the ignition switch to position "0".

4 Get behind the front right wheel and 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.

5 Remove the guard placed under the cabin.

6 Tag and disconnect the brake harness.

7 Tag, disconnect and plug the hydraulic hoses of the brake pedal 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.

8 Remove the retaining fasteners securing the brake pedal. Remove the brake pedal.

How to Remove the Accelerator Pedal Assembly

1 Get behind the front right wheel and 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 guard placed under the cabin.

3 Tag and disconnect the accelerator harness.

4 Remove the retaining fasteners securing the accelerator pedal. Remove the accelerator pedal.

How to Remove the Gauge Cluster Assembly

1 Get behind the front right wheel and 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 retaining fasteners securing the gauge cluster support panel. Remove the panel.

3 Act on the lock device to remove the gauge cluster from the panel.

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

Fuel and Hydraulic Tanks

3-1
Fuel Tank

How to Remove the Fuel Tank

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Remove the fuel tank in an open, wellventilated 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.

⚠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 Get behind the front right wheel and 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 filler cap from the fuel tank.

3 Using an approved hand-operated pump, drain the fuel tank into a container of suitable capacity. Refer to Section 2, Specifications.

⚠WARNING 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 the small cover located on the left side of the cabin.

5 Tag and disconnect the wire harness from the fuel level terminals.

6 Loosen all the clamps and pull out the hoses.

7 Insert the forks of a forklift under the tank to support it. Ensure the forks are properly spaced to maintain the tank in a balanced position.

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

8 Remove the retaining fasteners securing the tanks to the machine.

9 Remove the tank from the machine.

3-2
Hydraulic Tank

How to Remove the Hydraulic Tank

⚠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 Lift the boom.

2 Get behind the front right wheel and 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 Close the oil intake valve.

4 Remove the small cover located behind the cabin.

5 Remove the filler cap from the hydraulic tank.

6 Place a drain pan or other suitable container under the hydraulic tank. Refer to Section 2, Specifications.

7 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.

8 Remove the wire harness from the bulb on the hydraulic filter and from the low oil level indicator.

9 Place a container of suitable size under the hydraulic hoses before disconnecting.

NOTICE Used oils must be handled and disposed of according to local regulations.

10 Tag and disconnect all the hydraulic hoses from the tank.

11 Loosen the retaining collar on the tank side and disconnect the oil fill hose.

12 Remove the hose from the oil return manifold located at the top of the tank.

13 Attach a lifting strap to the hooking points on the tank to support it.

14 Remove the retaining fasteners securing the tank to the machine.

15 Using a lifting strap and an overhead crane, remove the tank from the machine.

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

Engines

4-1
Engines

How to Repair the Perkins 1104D-E44TA Engine

Repair procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8172-02) and the *Perkins 1104 Service Manual* (Perkins part number RENR9401) and the *Perkins 1100 Troubleshooting Manual* (Perkins part number SENR9982-01).

Perkins 1104D Operation and Maintenance Manual	
Genie part number	57.4700.0000
Perkins 1104D Service Manual	
Genie part number	117764
Perkins 1100 Troubleshooting Manual	
Genie part number	123583

How to Service the Perkins 854 Engine

Repair procedures and additional engine information is available in the Perkins 854 *Operation and Maintenance Manual* (Perkins part number SEBU8726-01).

Perkins 854 Operation and Maintenance Manual	
Genie part number	57.4700.0001

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 and the fault code is shown on the engine diagnostic display, located on the dashboard in the operator's compartment.

To learn the specifications of and how to use the fault codes, refer to Section 6, *Fault Codes*.

Transmission

5-1 Gearbox

How to Repair the Gearbox

Repair procedures and additional transmission information is available in the Carraro TB172/2 speed Transmission Repair Manual (Carraro part number CA270305).

Carraro TB172/2 speed Transmission Repair Manual	
Genie part number	57.4700.0010

5-2 Axle

How to Remove the Axle

⚠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 required.

1 Chock the wheels.

2 Remove the fasteners securing the driveshaft to the transmission. Lower the end of the driveshaft to the ground.

3 Remove the fasteners securing the driveshaft to the axle. Remove the driveshaft from the machine.

4 Tag and remove the hydraulic hoses from the axle.

⚠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 Loosen the lug nuts of both wheels on the axle to be removed. Do not remove the lug nuts.

TRANSMISSION

6 Raise the end of the machine until the tires are off the ground. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis will fall if not properly supported.

7 Remove the lug nuts. Remove the tire and wheel assembly from both ends of the axle.

8 Support and secure the axle to an appropriate lifting device.

9 Remove the fasteners securing the sway cylinder rod-end pivot pin to the chassis.

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

11 Remove the fasteners securing the axle to the chassis. Remove the axle from the machine.

⚠WARNING Crushing hazard. The axle will fall if not properly supported when the fasteners are removed from the machine.

Bolt torque specification	
Axle mounting bolts	515 ft-lbs 700 Nm

Hydraulic Pumps

6-1
Boom Function Gear Pump

How to Test the Boom Function Gear Pump

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to port TP1 on the function manifold.

2 Start the engine.

3 Increase the engine speed to 2000 rpm.

4 Activate and hold boom retract.

5 Without releasing the joystick, keep pushing the throttle pedal.

⊙ Result: the pressure gauge reads 4050 psi / 280 bar. The pump is good.

⊠ Pressure is not within specification. Adjust the main system relief valve on the function manifold.

How to Remove the Boom Function Gear 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 fitting and/or hose end must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

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

1 Close the hydraulic tank ball valve.

2 Open the engine compartment.

3 Remove the louver located behind the front wheel on the right side.

4 Tag, disconnect and plug the hydraulic hoses. 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.

5 Cap the boom function gear pump holes and the hoses holes.

6 Remove the boom function gear pump.

HYDRAULIC PUMPS

How to Install the Boom Function Gear 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 fitting and/or hose end must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

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

1 Open the engine compartment.

2 Install the boom function pump on the transmission pump.

3 Remove the louver located behind the front wheel on the right side.

4 Connect the hydraulic hoses to 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.

5 Open the hydraulic tank ball valve located behind the cabin steps.

6 Start the engine and prime the pump. Refer to Repair Procedure 6-1, *How to Prime the Boom Function Gear Pump*.

7 Inspect for leaks.

8 Adjust the pump pressure. Refer to Repair Procedure 6-1, *How to test the Boom Function Gear Pump*.

How to Prime the Boom Function Gear Pump

1 Start the engine, allow the engine to run at low idle for 15 seconds then shut off the engine.

2 Wait 15 seconds, then start the engine again.

3 Allow the engine to run at low idle for 15 seconds and then shut off the engine.

HYDRAULIC PUMPS

6-2
Auxiliary Gear Pump

How to Test the Auxiliary Gear Pump

1 Open the engine compartment.

2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to port TP4 (auxiliary circuit pressure test port).

3 Start the engine.

4 Increase the engine speed to 2000 rpm.

5 Lift one outrigger by holding the control button pressed down.

⊙ Result: the pressure gauge reads 3625 psi / 250 bar. The pump is good.

⊠ Pressure is not within specification. Adjust the auxiliary system relief valve located on the 3-element function manifold installed behind the central cover on the right side of the cabin.

How to Remove the Auxiliary Gear 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 fitting and/or hose end must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

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

1 Close the hydraulic tank ball valve.

2 Open the engine compartment.

3 Tag, disconnect and plug the hydraulic hoses. 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 Cap the auxiliary gear pump holes and the hoses ones.

5 Remove the auxiliary gear pump.

How to Install the Auxiliary Gear 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 fitting and/or hose end must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

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

1 Open the engine compartment.

2 Install the auxiliary gear pump to the engine.

3 Connect the hydraulic hoses to 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.

4 Open the hydraulic tank ball valve located behind the cabin steps.

5 Start the engine and prime the pump. Refer to Repair Procedure 6-2, *How to Prime the Auxiliary Gear Pump.*

6 Inspect for leaks.

7 Adjust the pump pressure. Refer to Repair Procedure 6-2, *How to test the Auxiliary Gear Pump.*

HYDRAULIC PUMPS

How to Prime the Auxiliary Gear Pump

1 Start the engine, allow the engine to run at low idle for 15 seconds then shut off the engine.

2 Wait 15 seconds, then start the engine again.

3 Allow the engine to run at low idle for 15 seconds and then shut off the engine.

6-3 Hydrostatic Transmission Pump

How to Test the Hydrostatic Transmission Pump

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

1 Open the engine compartment.

2 Connect a 0 to 8700 psi / 0 to 600 bar pressure gauge to port TP2 (hydrostatic transmission high pressure test port).

3 Connect a 0 to 870 psi / 0 to 60 bar pressure gauge to port TP3 (hydrostatic transmission boost pressure test port).

4 Start the engine. Fully engage the brake pedal and shift the transmission into second gear.

⊙ Result: the pressure gauge connected to test port TP3 reads 360 psi / 25 bar.

⊠ Pressure is not within specification. Contact Genie Service Department.

5 Increase the engine speed to 1100 rpm.

6 Engage forward or reverse gear.

⊙ Result: the pressure gauge connected to test port TP2 reads 725 psi / 50 bar.

⊠ Pressure is not within specification. Adjust valve "a" located under the pump.

7 Increase the engine speed to maximum rpm.

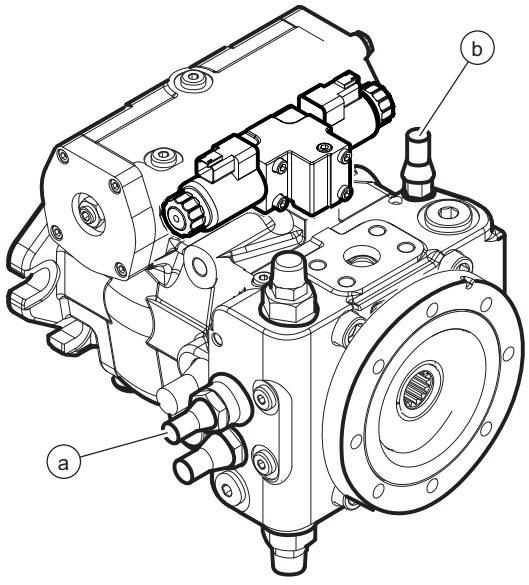
⊙ Result: the pressure gauge on test port TP2 reads 6235 psi / 430 bar.

⊠ Pressure is not within specification. Adjust the high pressure relief valve "b".

8 While observing the pressure gauge connected to test port TP3, operate the engine between 1100 rpm and maximum rpm.

⊙ Result: the pressure gauge on test port TP3 does not go below 360 psi / 25 bar.

⊠ Pressure is not within specification. Contact Genie Service Department.



HYDRAULIC PUMPS

How to Remove the Hydrostatic Transmission 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 fitting and/or hose end must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

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

1 Open the engine compartment.

2 Remove the cover that is under engine.

3 Get behind the front right wheel and 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.

4 Remove the boom function gear pump from the hydrostatic transmission pump.

5 Tag and disconnect the harness from the transmission.

6 Tag, disconnect and plug the hoses that are connected to the hydrostatic transmission pump. 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.

7 Support and secure the transmission pump to a suitable lifting device. Do not apply lighting pressure.

8 Remove the hydrostatic transmission pump.

⚠WARNING Crushing hazard. The hydrostatic transmission pump will fall if not properly supported when the fasteners are removed from the machine.

How to Install the Hydrostatic Transmission 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 fitting and/or hose end must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

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

1 Open the engine compartment.

2 Remove the cover that is under engine.

3 Move the pump near the installation site by letting it pass under the engine.

4 Install the hydrostatic transmission pump on the engine.

5 Remove the fitting caps from the hydrostatic transmission pump.

6 Remove the hoses caps.

7 Connect the hoses to 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.

8 Connect the harness to the transmission pump.

9 Install the boom function gear pump on the hydrostatic transmission pump.

10 Start the engine and prime the pump. Refer to Repair Procedure 6-3, *How to Prime the Hydrostatic Transmission Pump.*

11 Inspect for leaks.

12 Adjust the pump pressure. Refer to Repair Procedure 6-3, *How to test the Hydrostatic Transmission Pump.*

HYDRAULIC PUMPS

How to Prime the Hydrostatic Transmission 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.

1 Open the engine compartment.

2 Connect a 0 to 870 psi / 0 to 60 bar pressure gauge to port TP3 (hydrostatic transmission boost pressure test port).

3 Start the engine. Run at low idle for 5 seconds. Shut the engine off and wait for 15 seconds.

4 Start the engine. Run at low idle for 10 seconds. Shut the engine off and wait for 15 seconds.

Note: Repeat step 4 until the pressure gauge connected to TP3 reads 290 psi / 20 bar or greater.

5 Apply the brake pedal and start the engine. Shift the transmission into forward and disengage the emergency brake.

6 Release the brake pedal and slowly increase the engine rpm until the machine starts to move. Apply the brake.

7 Shift the transmission into reverse. Release the brake pedal and slowly increase the engine rpm until the machine starts to move. Apply the brake.

8 Engage the emergency brake and turn the engine off. Check for hydraulic leaks.

Manifolds

7-1
Boom Function Manifold Components

How to Adjust the System Relief valve

1 Open the engine compartment.

2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to port TP1 on the function manifold (telescopic boom functions hydraulic circuit test port).

3 Start the engine.

4 Increase the engine speed to 2000 rpm.

5 Activate and hold boom retract.

⊙ Result: the pressure gauge reads 4050 psi / 280 bar.

⊠ Pressure is not within specification.
Adjust the main system relief valve on the function manifold.

MANIFOLDS

How to Remove the Boom Function Manifold

⚠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 fitting and/or hose end must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

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

1 Close the hydraulic tank ball valve.

2 Tag and disconnect the harness from the function manifold.

3 Tag, disconnect and plug the hoses from the function manifold.

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

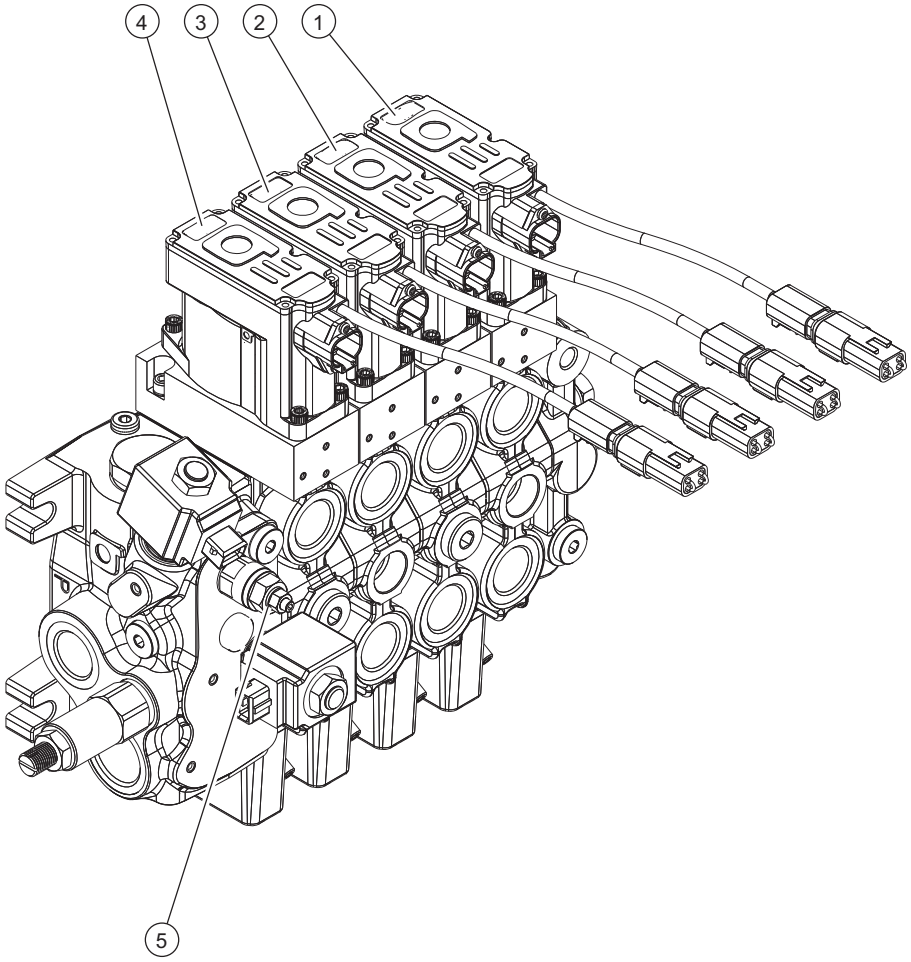
4 Support and secure the function manifold.

5 Remove the retaining fasteners securing the function manifold.

6 Remove the function manifold.

⚠WARNING Crushing hazard. The function manifold will fall if not properly supported when the fasteners are removed from the machine.

Boom Function Manifold Components



Index No.	Description	Schematic Item	Function	Torque
1	Proportional directional solenoid valve	X404	Boom up/down	
2	Proportional directional solenoid valve	X405	Forks tilt	
3	Proportional directional solenoid valve	X406	Boom in/out	
4	Proportional directional solenoid valve	X407	Attachment lock/unlock	
5	Relief valve, 4050 psi / 280 bar	-	System relief	

MANIFOLDS

7-2
Outriggers / Chassis Levelling Function Manifold Components

How to Adjust the System Relief valve

1 Open the engine compartment.

2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to port TP4 (auxiliary circuit pressure test port).

3 Start the engine.

4 Increase the engine speed to 2000 rpm.

5 Lift one outrigger by holding the control button pressed down.

⊙ Result: the pressure gauge reads 3625 psi / 250 bar. The pump is good.

⊠ Pressure is not within specification.
Adjust the auxiliary system relief valve located on the 3-element function manifold installed behind the central cover on the right side of the cabin.

How to Remove the Outriggers / Chassis Levelling Function Manifold

⚠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 fitting and/or hose end must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

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

1 Close the hydraulic tank ball valve.

2 Remove the central cover located under the boom.

3 Tag and disconnect the harness from the function manifold.

4 Tag, disconnect and plug the hoses from the function manifold.

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

5 Support and secure the function manifold.

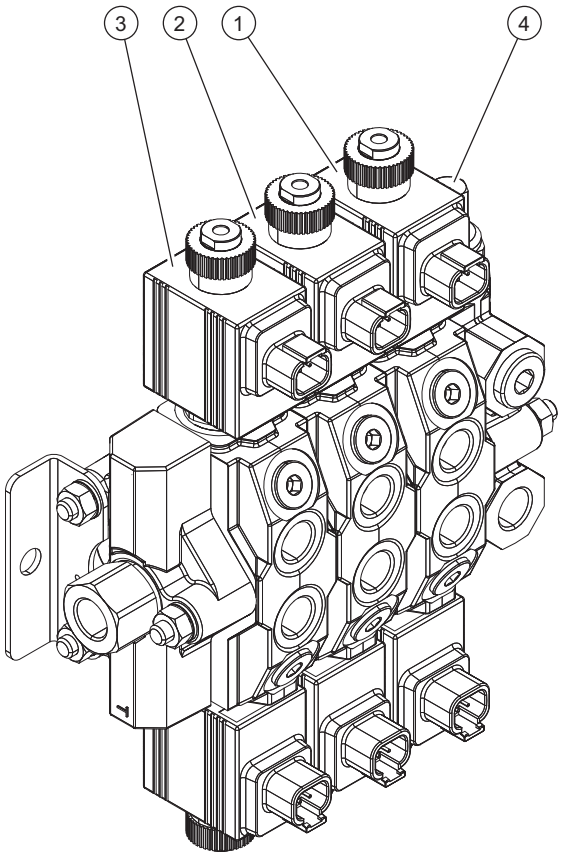
6 Remove the retaining fasteners securing the function manifold.

7 Remove the function manifold.

⚠WARNING Crushing hazard. The function manifold will fall if not properly supported when the fasteners are removed from the machine.

MANIFOLDS

Outriggers / Chassis Levelling Function Manifold Components



Index No.	Description	Schematic Item	Function	Torque
1	Proportional directional solenoid valve	X23-X24	Chassis levelling	
2	Proportional directional solenoid valve	X21-X22	Right outrigger up/down	
3	Proportional directional solenoid valve	X19-X20	Left outrigger up/down	
4	Relief valve, 3625 psi / 250 bar	-	System relief	

7-3
Valve Coils

How to Test a Coil

A properly functioning coil provides an electromagnetic force which operates the solenoid valve. Critical to normal operation is continuity within the coil. Zero resistance or infinite resistance indicates the coil has failed.

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

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

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

Note: If the machine has been in operation, allow the coil to cool at least 3 hours before performing this test.

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

2 Test the coil resistance using a multimeter set to resistance (Ω). Refer to the Valve Coil Resistance Specification table.

⊙ Result: If the resistance is not within the adjusted specification, plus or minus 10%, replace the coil.

Valve Coil Resistance Specification

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

Description	*Specification*
Steering modes selector valve, 3 position 4 way 12V DC with diode	5.6Ω
Mechanical gear speed Selector valve, 3 position 4 way 12V DC with diode	8.8Ω
Forward/Reverse Selector valve, 3 position 4 way 12V DC with diode	8.8Ω
Outrigger Selector valve, 2 position 4 way 12V DC with diode	8.8Ω

MANIFOLDS

How to Test a Coil Diode

Genie incorporates spike suppressing diodes in all of its coils. 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. See 7-2, *How to Test a Coil*.

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

Resistor. 10Ω	
Genie part number	27287

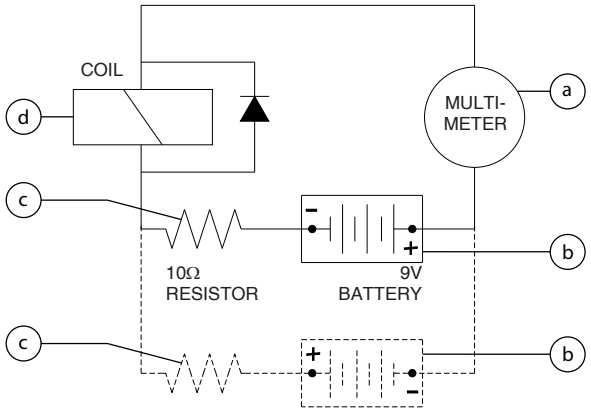
Note: The battery should read 9V DC or more when measured across the terminals.

3 Set a multimeter to read DC current.

Note: The multimeter, when set to read DC current, should be capable of reading up to 800 mA.

4 Connect the negative lead to the other terminal on the coil.

Note: If testing a single-terminal coil, connect the negative lead to the internal metallic ring at either end of the coil.



a multimeter
b 9V DC battery
c 10Ω resistor
d coil

Note: Dotted lines in illustration indicate a reversed connection as specified in step 6

5 Momentarily connect the positive lead from the multimeter to the positive terminal on the 9V 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.

Outriggers

8-1 Outriggers

How to Remove the Outriggers Cylinders

Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

1 Lower the outrigger to the ground.

2 Using a lifting strap and an overhead crane, support the cylinder.

3 Remove the retaining fasteners securing the level cylinder rod end pivot pin.

4 Using a soft metal drift and a hammer, remove the pivot pin.

5 Place a container of suitable size under the hydraulic hoses before disconnecting.

6 Tag, disconnect and plug the hydraulic hoses from the level cylinder. Cap the cylinder 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.

7 Remove the retaining fasteners securing the level cylinder barrel end pivot pin.

8 Using a soft metal drift and a hammer, remove the pivot pin.

9 Carefully lift and remove the cylinder from the machine.

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

OUTRIGGERS

8-2 Outriggers Sensors

How to Test the Outriggers Proximity Switches

Every group of outriggers is equipped with two proximity switches that check their position. Test the operation of the proximity switches as follows:

1 Start the Diesel engine.

2 Lower the outriggers to the ground.

⊙ Result: Ensure that the green light on the gauge cluster illuminates.

3 Lift the outriggers and bring them to horizontal position.

4 Put the forward or reverse gear and attempt to move the machine.

⊙ Result: The machine shall not move as the switch shall block transmission operation.

How to Remove the Outriggers Proximity Switches

1 Start the Diesel engine.

2 Lower the outriggers to the ground.

3 Using a gauge, measure the distance between proximity switch and support bracket.

4 Disconnect the wire harness.

5 Install the new switch in the position previously written down.

6 Check switches for proper operation. See 8-2, *How to Test the Outriggers Proximity Switches*.

LMI (Overload System)

9-1 LMI

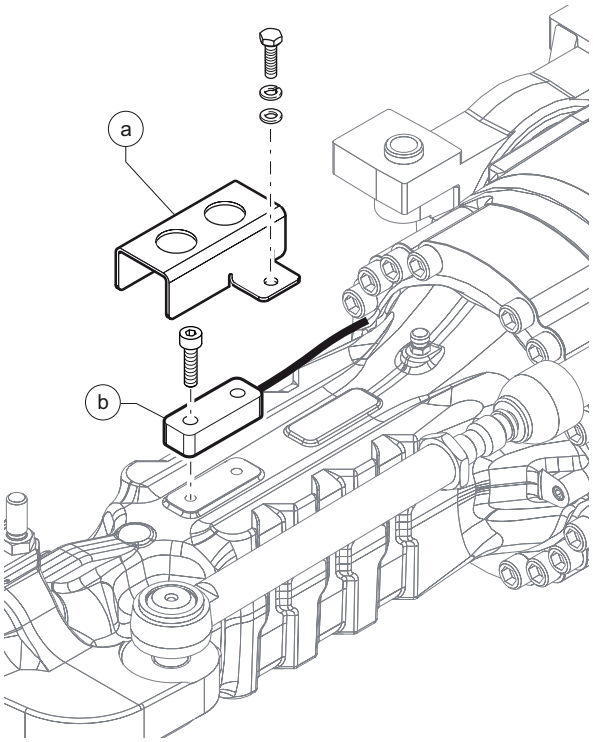
How to Remove a Load Cell

1 Go to the back of the machine. The load cell "b" is installed on the axle near the right wheel.

2 Remove the retaining fasteners that secure guard "a". Remove the guard.

3 Disconnect the harness from the load cell.

4 Remove the retaining fasteners that secure the load cell. Remove the load cell.



How to Install the Load Cell

NOTICE The extensometer and the axle must be stored at a similar temperature before the mounting operation. The time is linked to the thermal inertia of both pieces (extensometer: 1 hour for ΔT=20°C).

1 The extensometer must be mounted without any strain on the axle.

2 Place the extensometer with the 2 screws M10 (should be easy to tight the screws by hands): to improve the tightening force applied by the screws and to prevent any loosening, we recommend to use Loctite 242.

3 The tightening operation of the 2 M10 screws should be done progressively:
- Tightening of screw n.1 at torque T1=40 Nm
- Tightening of screw n.2 at torque T1=40 Nm
- Tightening of screw n.1 then screw n.2 at torque T2=70 Nm.

4 Nominal torque : T= 70N.m ± 5% for M10 screws quality 12.9 with lubrication due to the LOCTITE glue before polymerisation (μ=0,15 and F ~ 3500 daN).
Time of polymerization of the glue: 1 hour at ambient temperature before using.

Instructions before calibration procedure

1 Make a mechanical running in (preloading the axle) before calibration of the extensometer with the display.

2 This mechanical running in consists in making the axle work to a level of strain equivalent to 3 times the nominal level of strain in the axle for the full range in static.

LMI

3 It means that the axle must see high shocks before calibration.

4 We suggest driving fast 10 times on a beam fixed to the ground.

5 After this operation, it is recommended to let the machine set unused for 12 hours before calibration.

Miscellaneaous

10-1 Emergency Pump (if equipped)

How to Test the Emergency Pump

1 Set the ignition switch to position 1.

2 Push in the red Emergency Stop button.

3 Connect a 0 to 5000 psi / 350 bar pressure gauge to test port TP6 located in the engine compartment.

4 From the operator's compartment, activate the emergency pump on-off button.

5 Activate and hold boom retract.

⊙ Result: the pressure gauge on test port TP6 reads 2200 psi / 150 bar.

⊠ Pressure is not within specification.
Adjust the auxiliary pump relief valve located above the pump.

10-2 Parking Brake Reducing Valve

How to Test the Parking Brake Reducing Valve

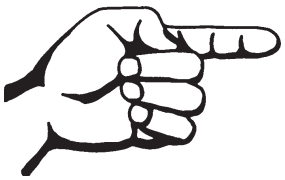
1 Connect a 0 to 870 psi / 0 to 60 bar pressure gauge to test port TP5.

2 Start the engine and let it run at low idle.

3 Engage the parking brake.

⊙ Result: the pressure gauge on test port TP5 reads 360 psi / 25 bar.

⊠ Pressure is not within specification.
Adjust the parking brake reducing valve located under the cabin.



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Settings



Observe and Obey:

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

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.

SETTINGS

How to Calibrate the Load Cell

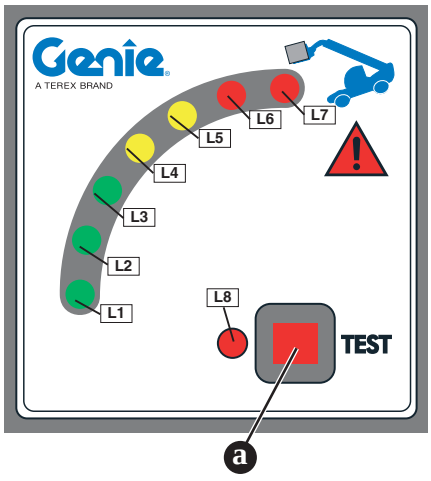
1 Turn the mode selector switch to the "jobsite" position.

2 Release the parking brake.

3 For machine on wheels: To enter the calibration mode, press the function key "a" on the display while holding the bypass key in the "activation" position for 5 seconds (ensure that the yellow LEDs blink).

4 For machine on outriggers: To enter the calibration mode, press the function key "a" on the display while holding the white button on the joystick pressed down for 5 seconds (ensure that the yellow LEDs blink).

5 Press the function key "a" on the display to start acquiring data (ensure that the green LEDs blink).



6 Bring the machine with no accessory fitted to a stable position (boom raised and retracted).

7 Press the function key "a" to acquire the first datum (ensure that the red LEDs blink).

8 Install the forks, load a weight of 5500 lbs / 2500 kg, bring the forks as close as possible to the ground and start extending the boom slowly to remove the weight from the rear axle (the rear wheels will slightly lift off the ground).

9 Press the function key "a" to acquire the second datum (ensure that the yellow LEDs blink).

10 Press the function key to store the acquired data in the EEPROM memory. If during data acquisition at least one datum is out of the valid range, the 2 red LEDs will illuminate with a solid light. If the operator chooses to store the data acquired during last calibration, the out-of-range values will not replace the values currently used by the system.

NOTICE After the first calibration, the machine must be turned off. This procedure is not needed for any subsequent calibrations.

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 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

Before Troubleshooting:

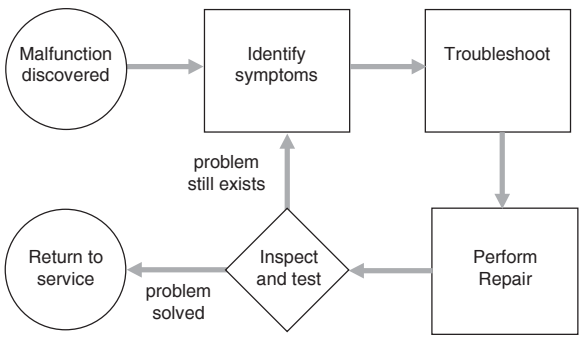
- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

⚠DANGER Crushing hazard. When testing or replacing any hydraulic component, always support the structure and secure it from movement.

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

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

General Repair Process



FAULT CODES

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 presence of faults is indicated by the word “SERVICE” (replacing GENIE) 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.

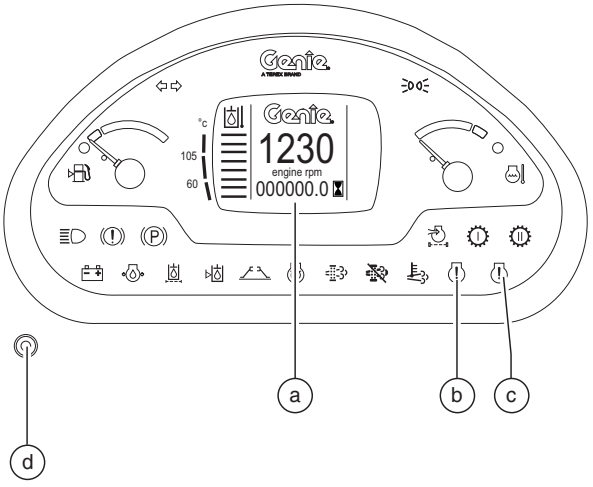
Active Fault Codes
To make the active fault codes visible, start the engine, press the diagnostic button “d” and hold it pressed for at least 5 seconds.
To quit the active fault codes page, press the diagnostic button “d” and hold it pressed for at least 5 seconds.

Active Codes vs Stored Codes
Active fault codes, indicating an engine condition or conditions which have not been corrected, are signaled on the LCD display by the word "SERVICE" replacing “GENIE”.

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.



Gauge Cluster

a LCD screen
b amber warning light
c stop engine light
d diagnostic button

Engine Fault Codes - Models with Perkins 1104D Power

SPN	*FMI*	*Description of Fault*
651	2	Cylinder #1 injector data incorrect
	5	Cylinder #1 injector open circuit
	6	Cylinder #1 injector short
	7	Cylinder #1 injector not responding
652	2	Cylinder #2 injector data incorrect
	5	Cylinder #2 injector open circuit
	6	Cylinder #2 injector short
	7	Cylinder #2 injector not responding
653	2	Cylinder #3 injector data incorrect
	5	Cylinder #3 injector open circuit
	6	Cylinder #3 injector short
	7	Cylinder #3 injector not responding
654	2	Cylinder #4 injector data incorrect
	5	Cylinder #4 injector open circuit
	6	Cylinder #4 injector short
	7	Cylinder #4 injector not responding
678	3	8V DC supply short to battery positive (+)
	4	8V DC supply shorted to ground
723	8	Secondary engine speed signal abnormal
1188	5	Turbo wastegate drive current low
1196	9	Machine security system module non-communication
1347	5	Fuel rail pump output current low
	6	Fuel rail pump output current high
	7	Fuel rail pressure valve solenoid not responding
2882	2	Mode selector switch: data erratic/ intermittent or incorrect
3509	3	5V DC power supply sensor short to battery positive (+)
	4	5V DC power supply sensor short to ground

How to Troubleshoot the Perkins 1104D-E44TA Engine

Troubleshooting procedures and additional engine information is available in the Perkins 1100 Troubleshooting Manual (Perkins part number SENR9982-01).

Perkins 1100 Troubleshooting Manual	
Genie part number	123583

Overload Warning System Fault Codes

When the overload warning system detects a malfunction, the LED on the function key of the display starts blinking.
The LED blink number varies in relation to the malfunction code. If there are different alarms at the same time, the system displays them showing the most critical first as explained hereinafter:

1 Machine start-up failure (1 blink)

2 Load cell failure or load cell not properly tightened (2 blinks)

3 Function manifold failure (3 blinks)

4 ECU failure (4 blinks)

5 Cab joystick failure (5 blinks)

6 Display failure (6 blinks).

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.

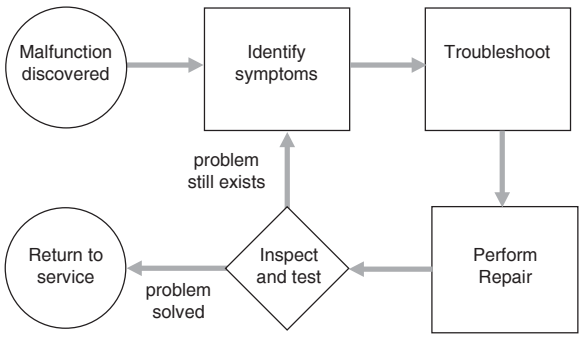
Electrical Schematics

⚠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

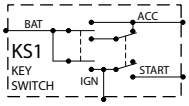
⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

General Repair Process

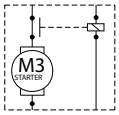


Electrical and Hydraulic Symbols Legends

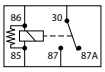
Electrical Schematic Symbols



Key switch



Engine start



Control relay



Alternator


Fuse

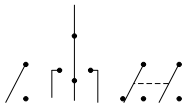

Circuit breaker


Horn or Alarm


Light


Valve coil


Valve coil with diode


Switch

Diode


Proximity switch


Limit switch


Temperature switch


Fuel level sender

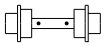

Battery


Pressure switch

Hydraulic Schematic Symbols


Pressure switch


Hydraulic cylinder


Axle

Orifice

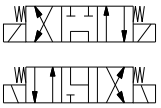

Adjustable orifice

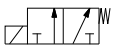

Filter

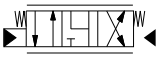

Check valve

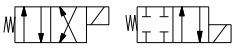

Flow regulator

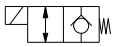

Relief valve

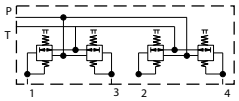

3 position 4 way solenoid valve


2 position 3 way directional valve

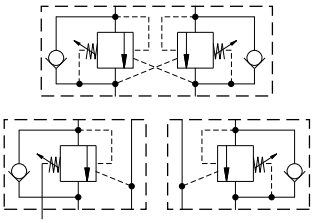

3 position 4 way proportional directional valve


2 position 4 way solenoid valve


2 position 2 way solenoid valve



Joystick

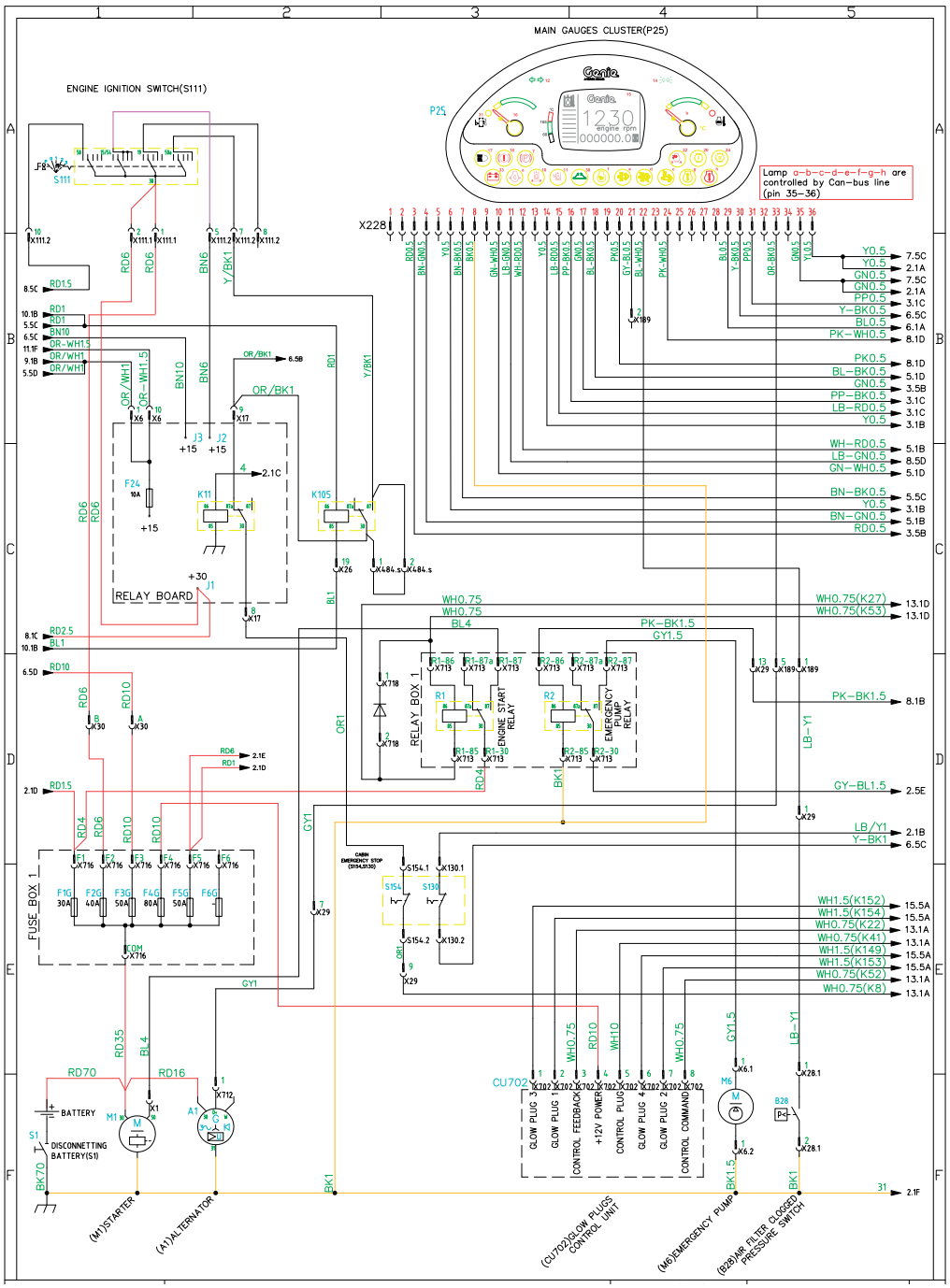

Counterbalance valve

Stage 3B

Electrical Schematic

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 1 of 15

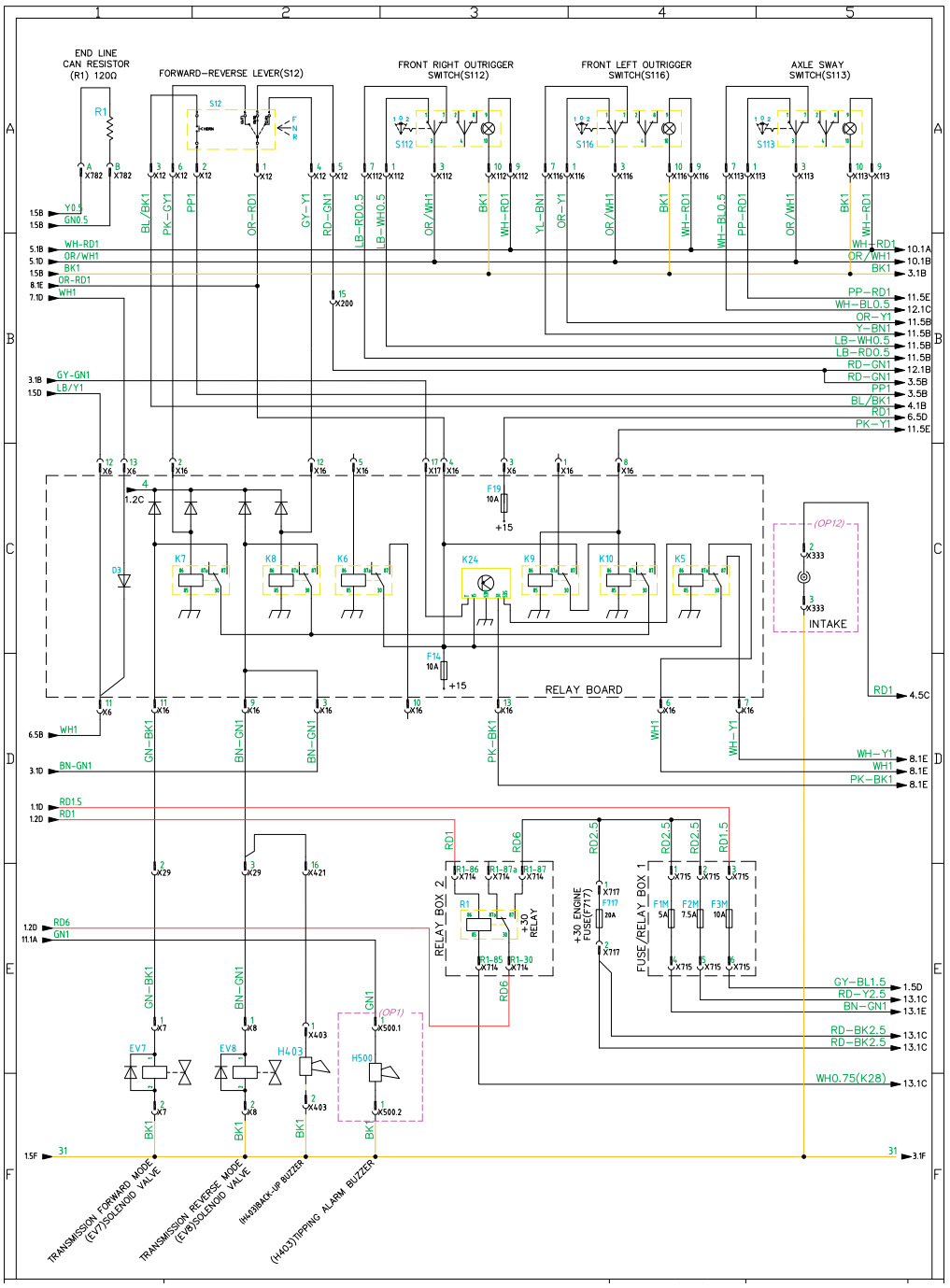


ELECTRICAL SCHEMATIC

Stage 3B

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 2 of 15

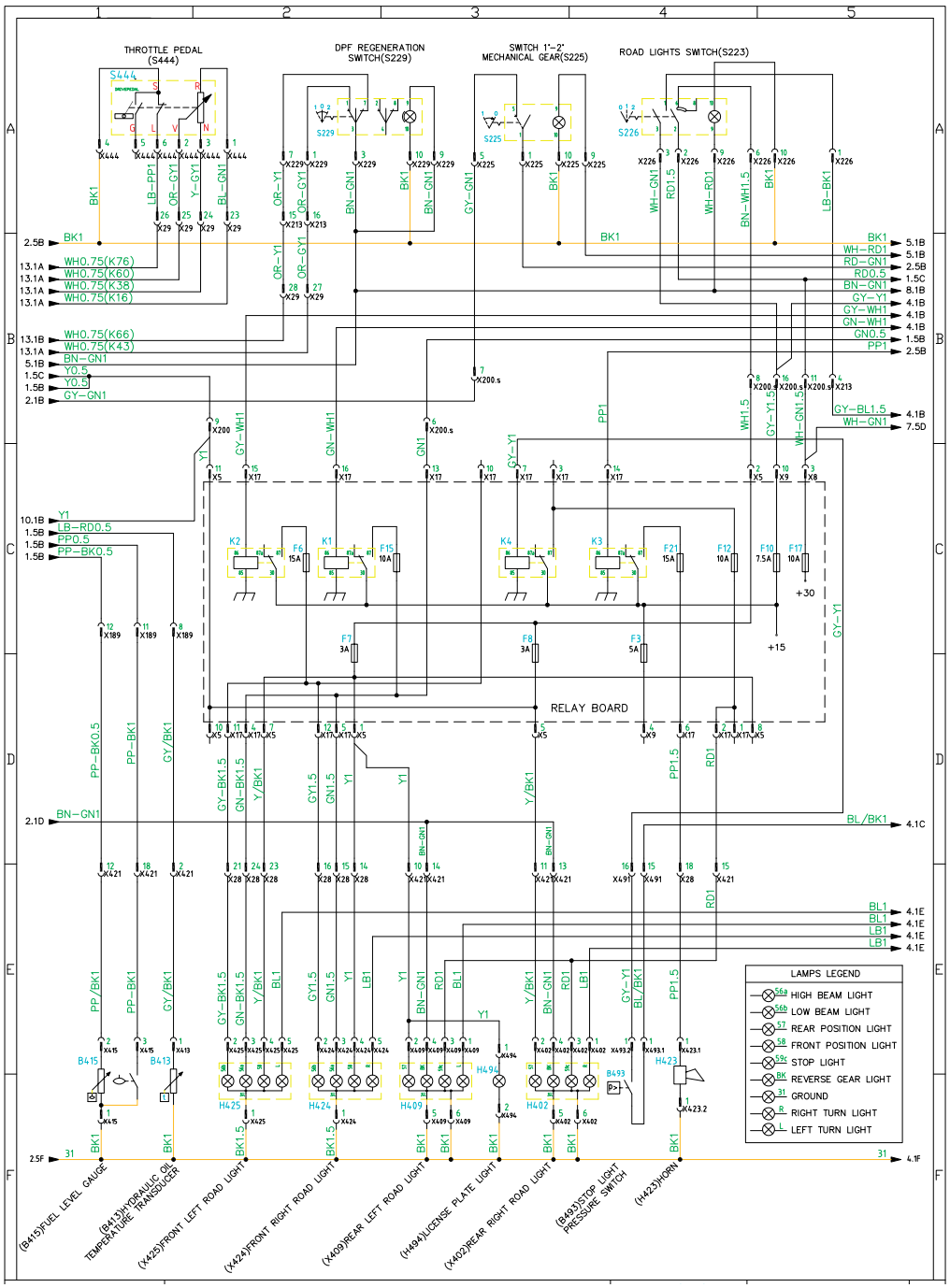


Stage 3B

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 3 of 15

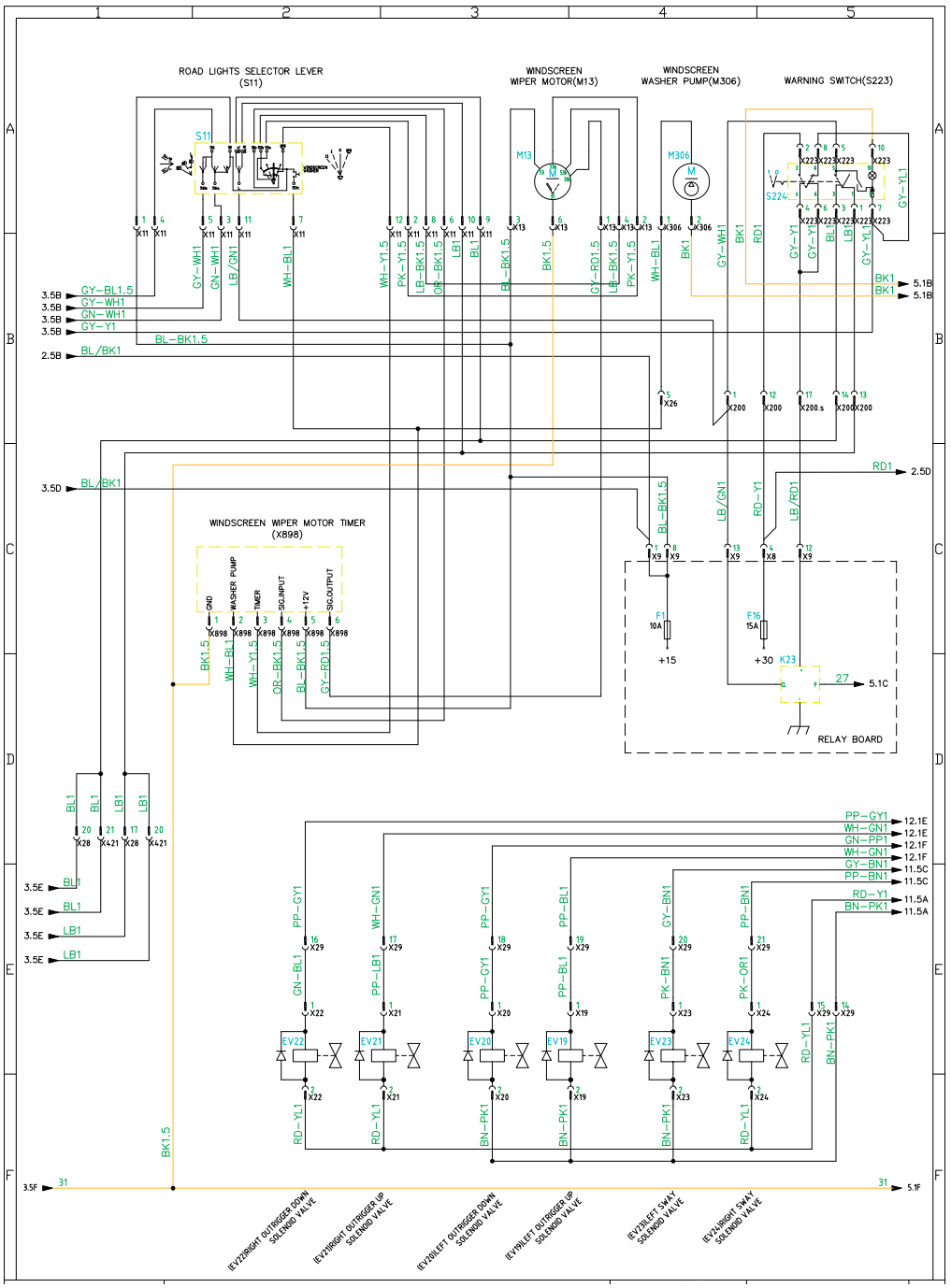


ELECTRICAL SCHEMATIC

Stage 3B

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 4 of 15

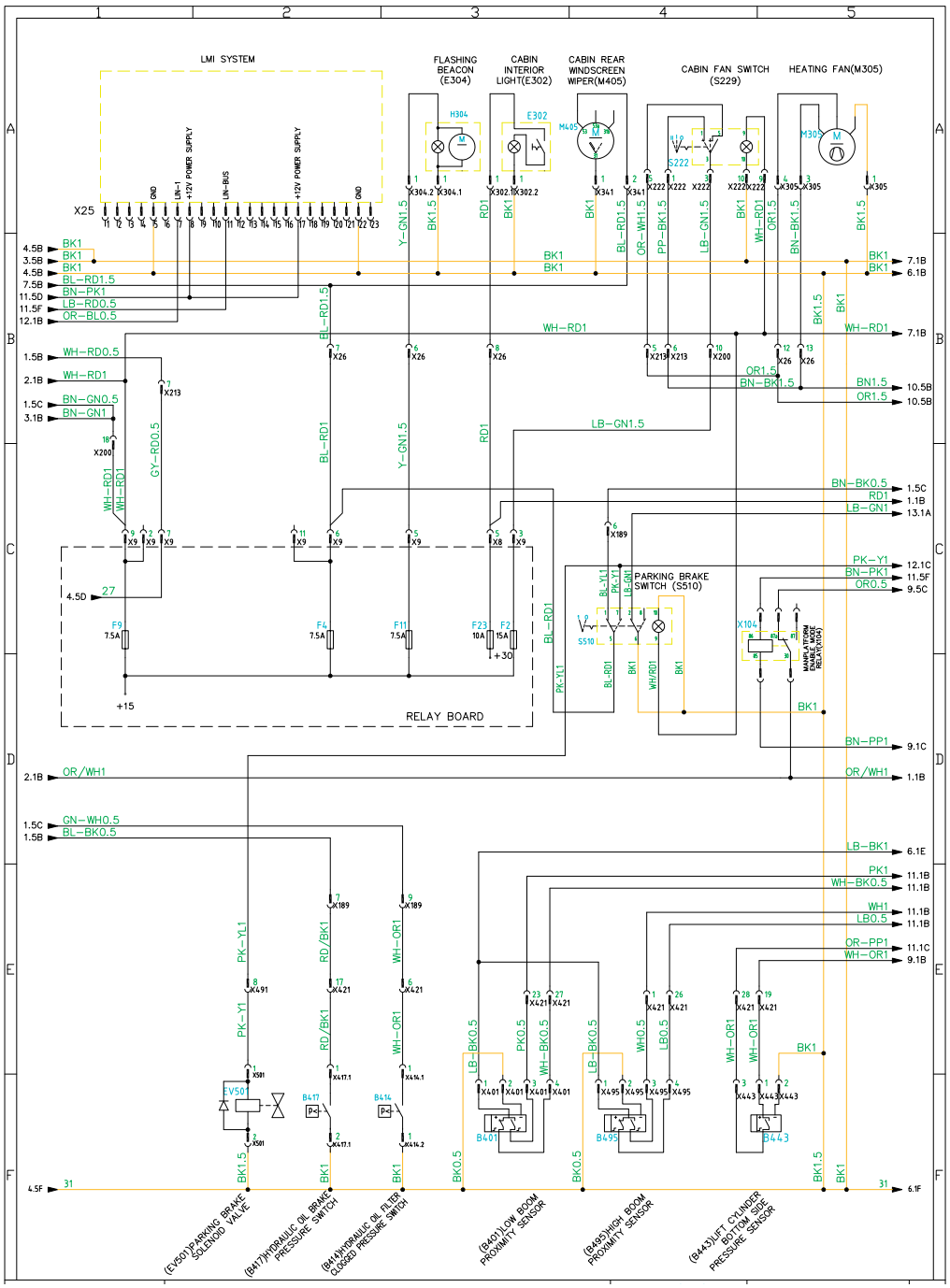


Stage 3B

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 5 of 15

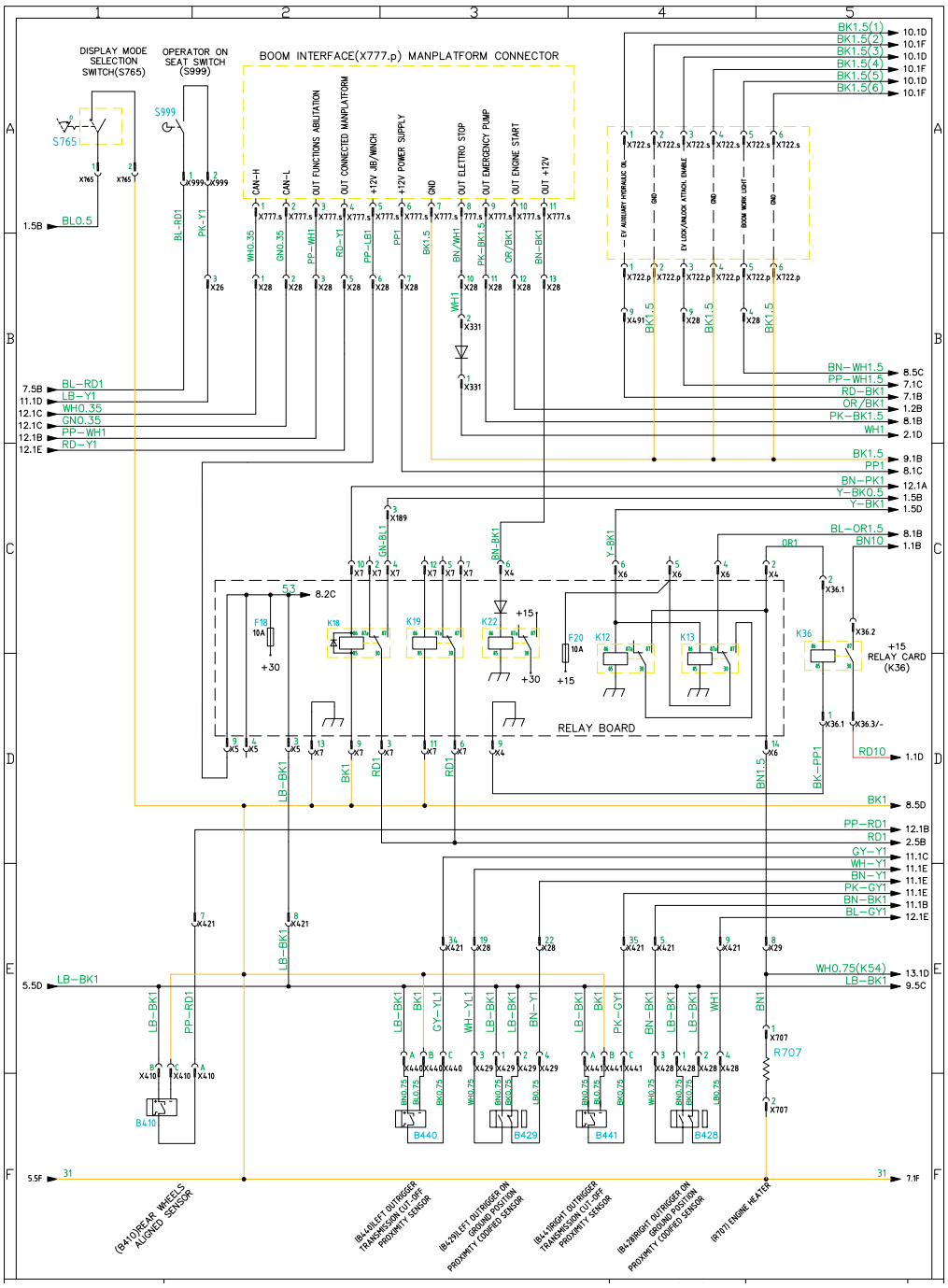


ELECTRICAL SCHEMATIC

Stage 3B

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 6 of 15

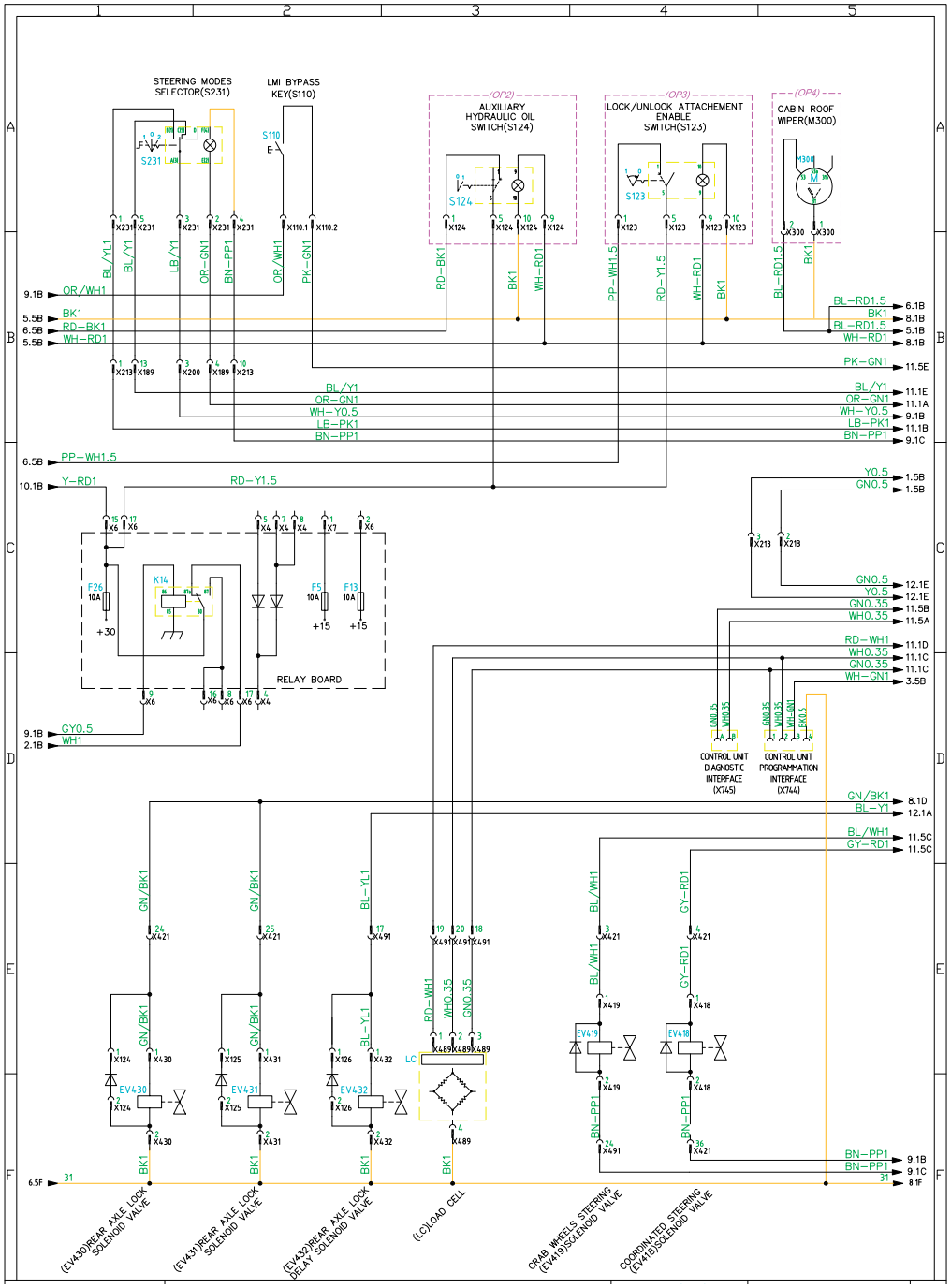


Stage 3B

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 7 of 15

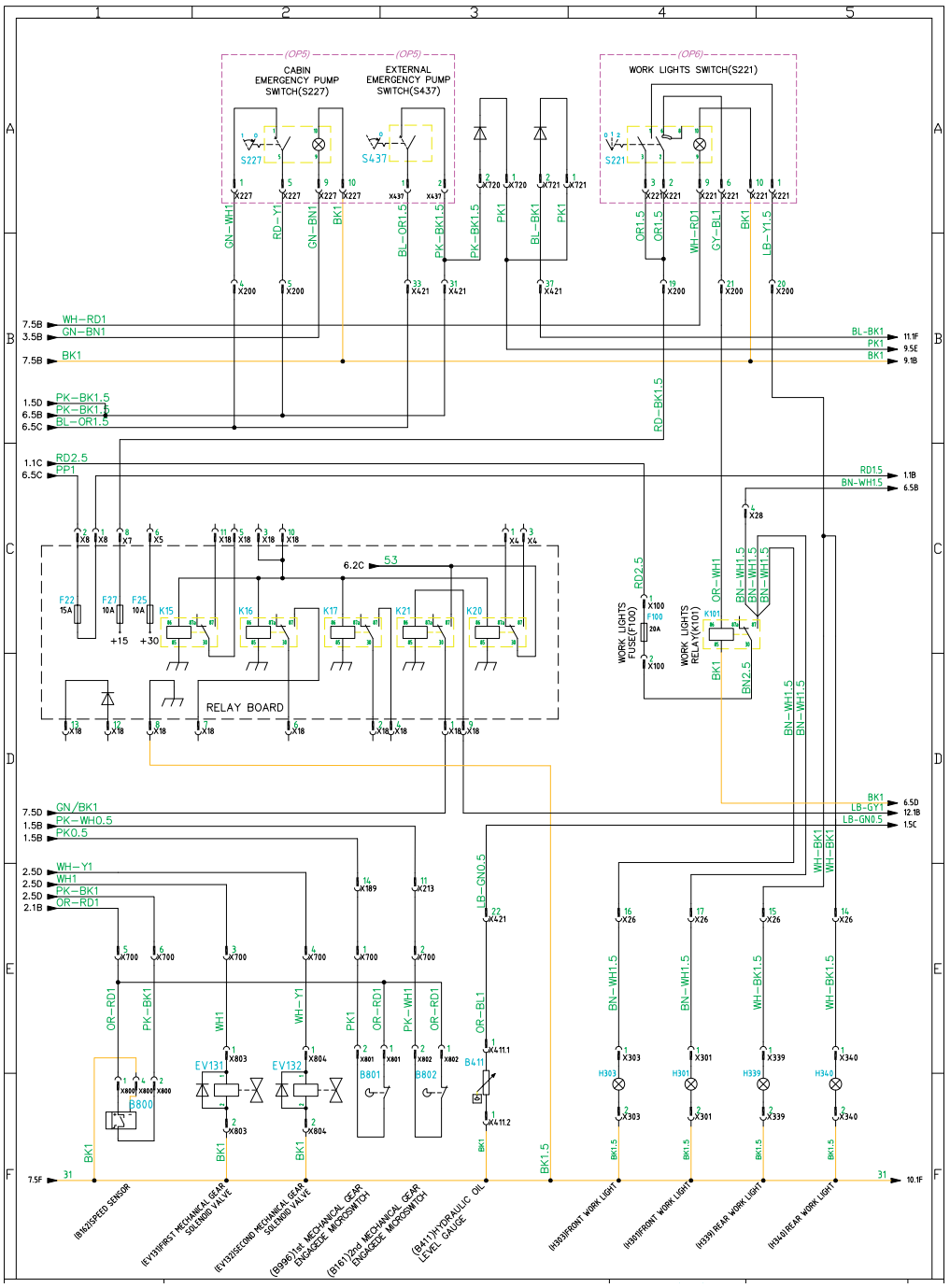


ELECTRICAL SCHEMATIC

Stage 3B

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 8 of 15

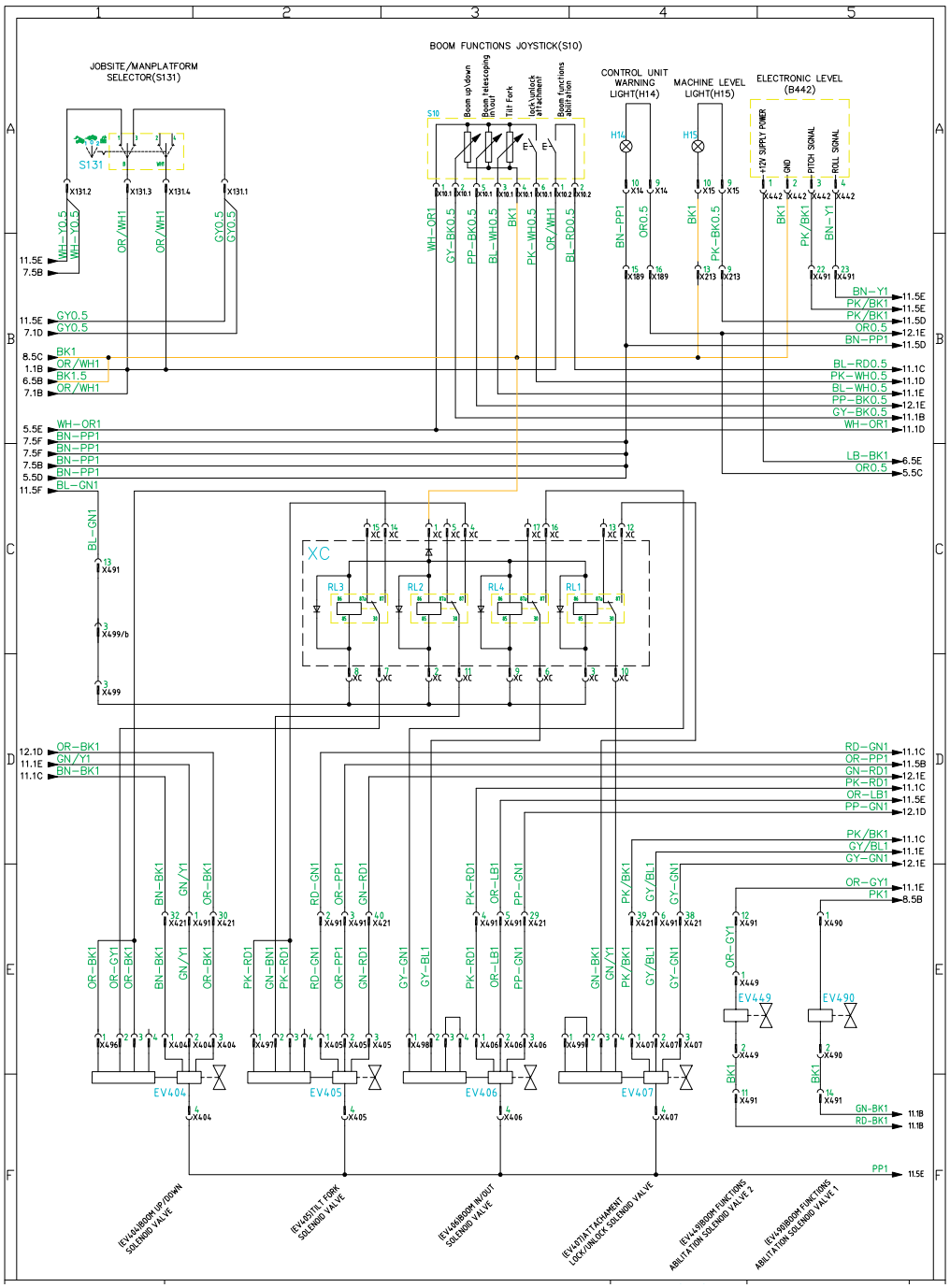


Stage 3B

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 9 of 15

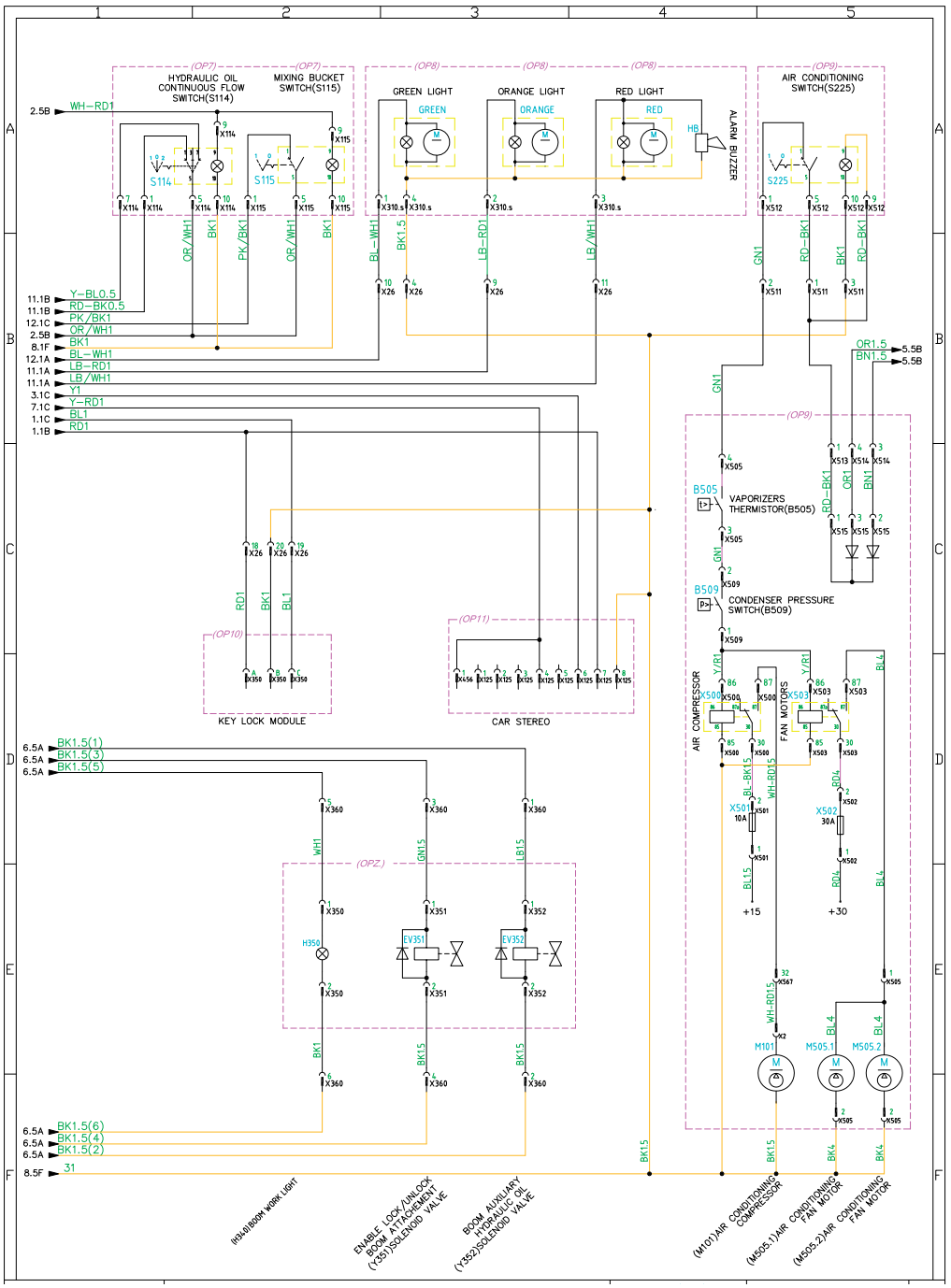


ELECTRICAL SCHEMATIC

Stage 3B

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 10 of 15



Stage 3B

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 11 of 15

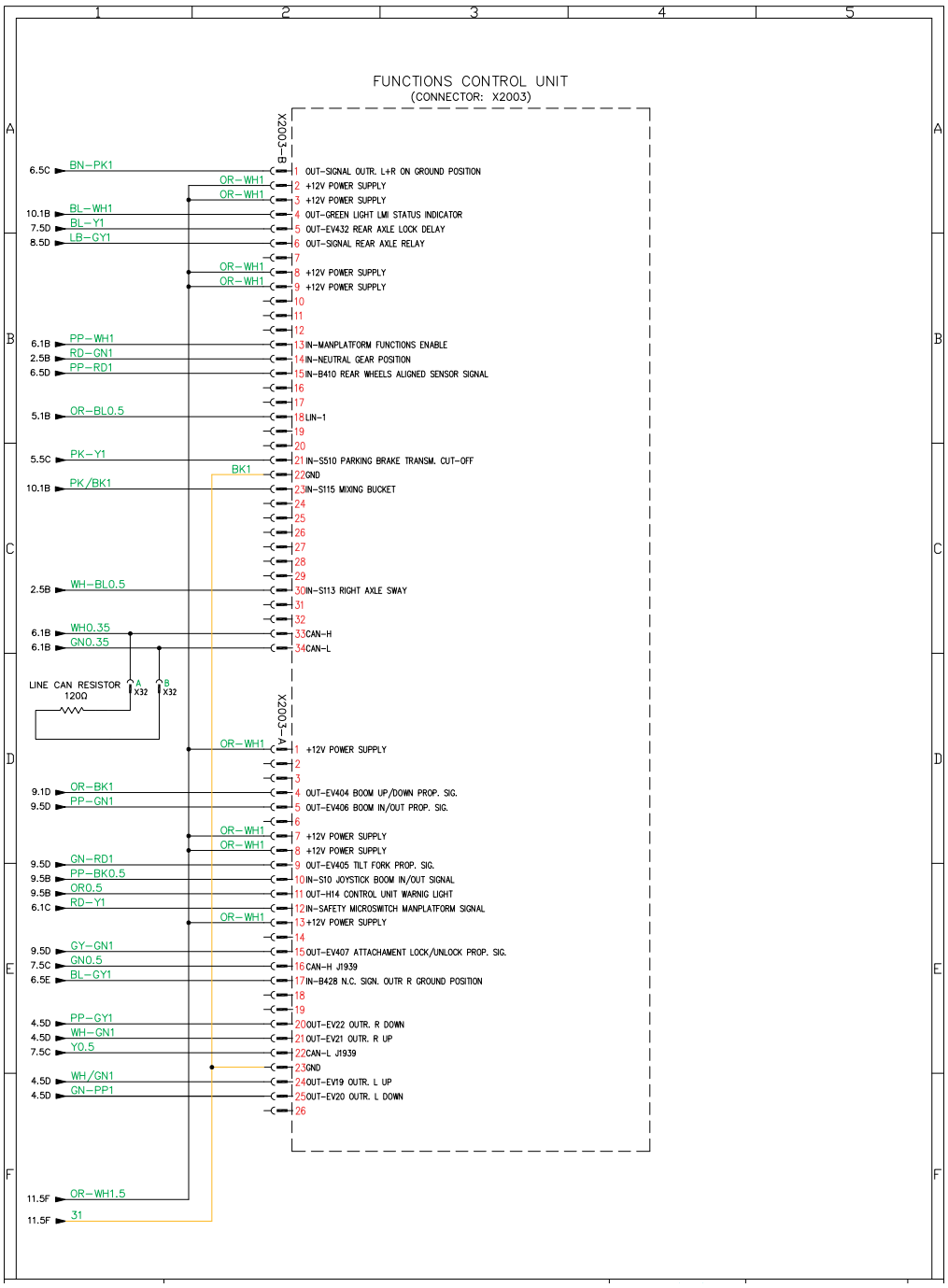


ELECTRICAL SCHEMATIC

Stage 3B

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 12 of 15

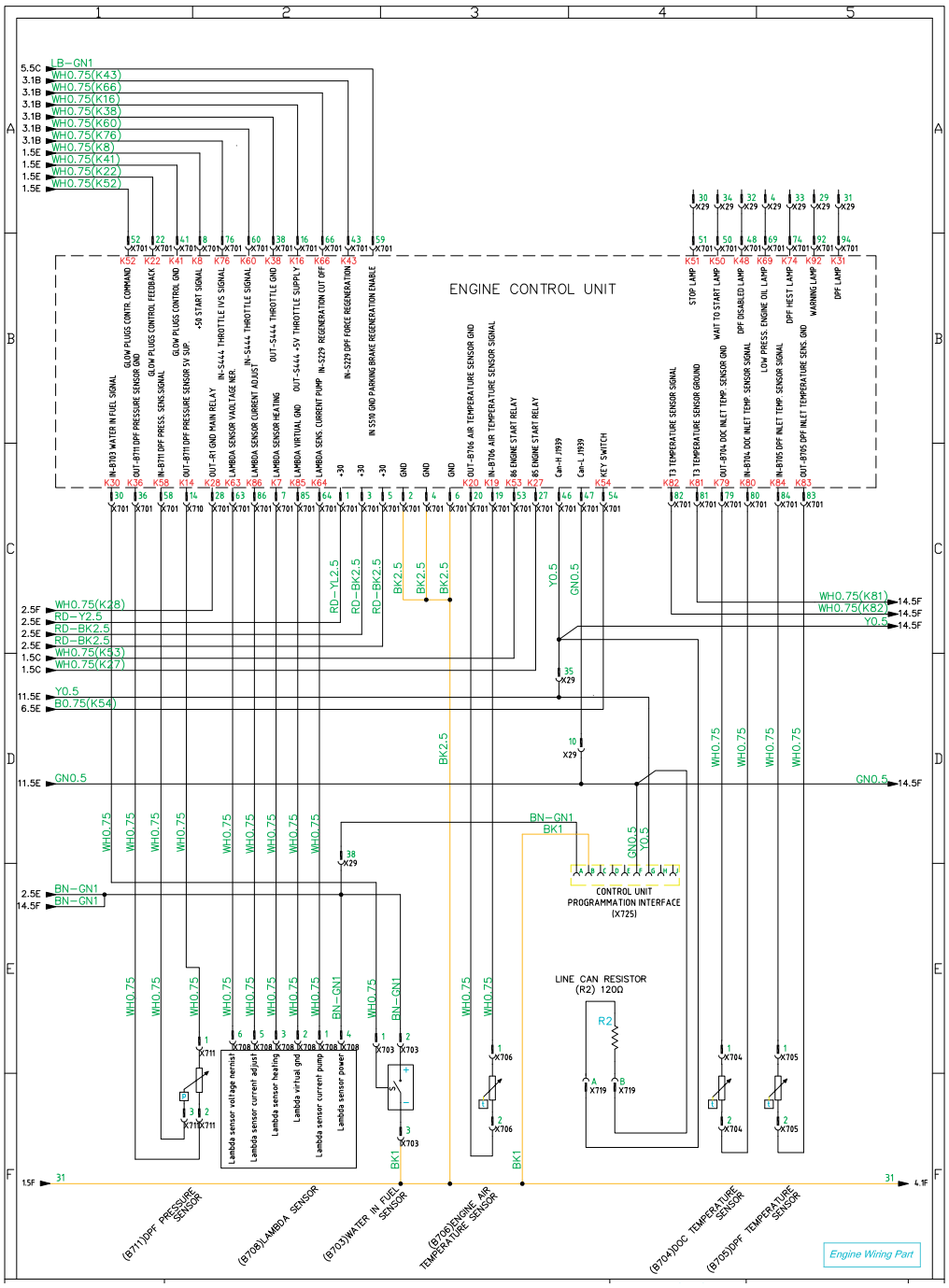


Stage 3B

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 13 of 15

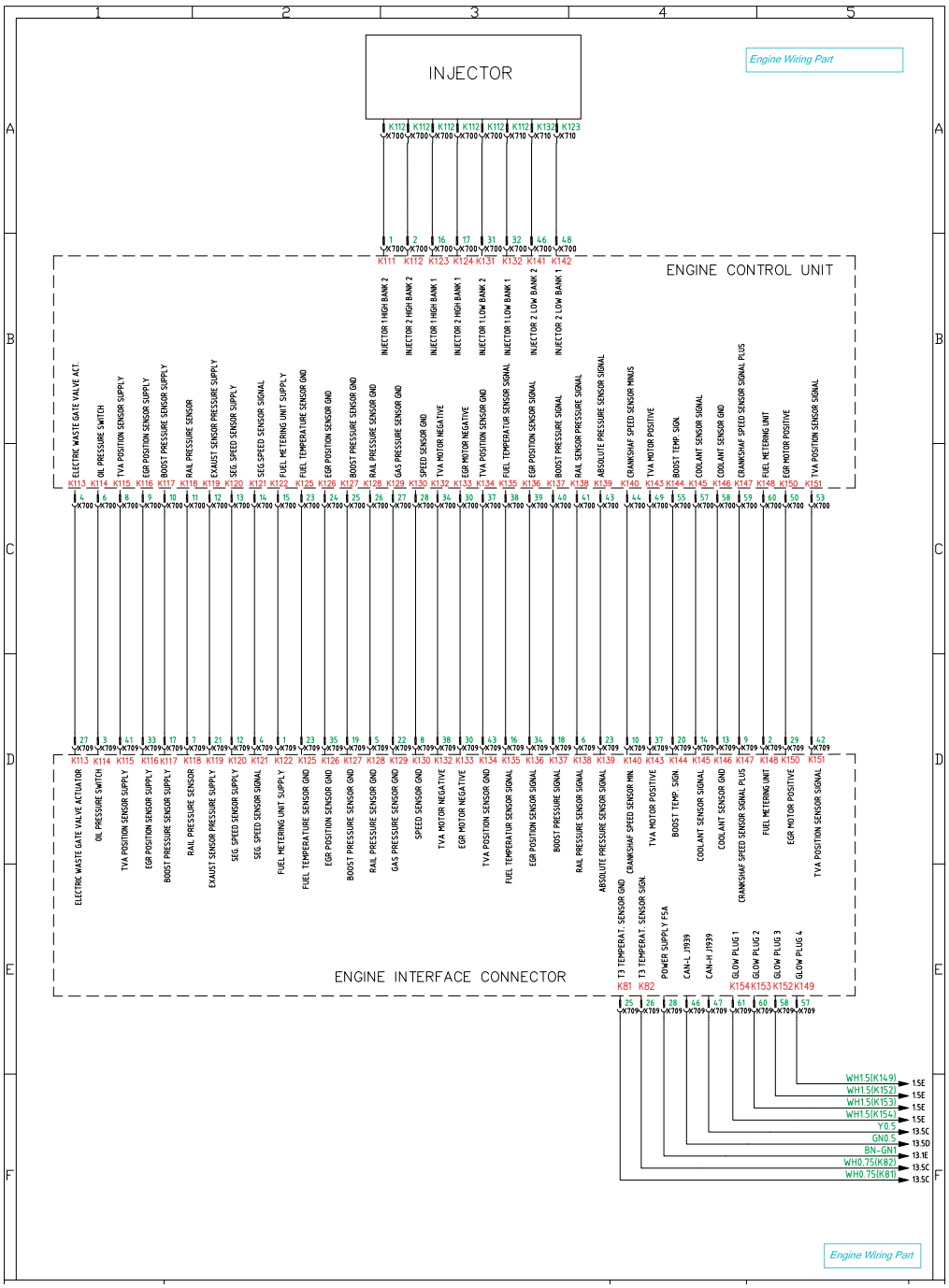


ELECTRICAL SCHEMATIC

Stage 3B

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 14 of 15

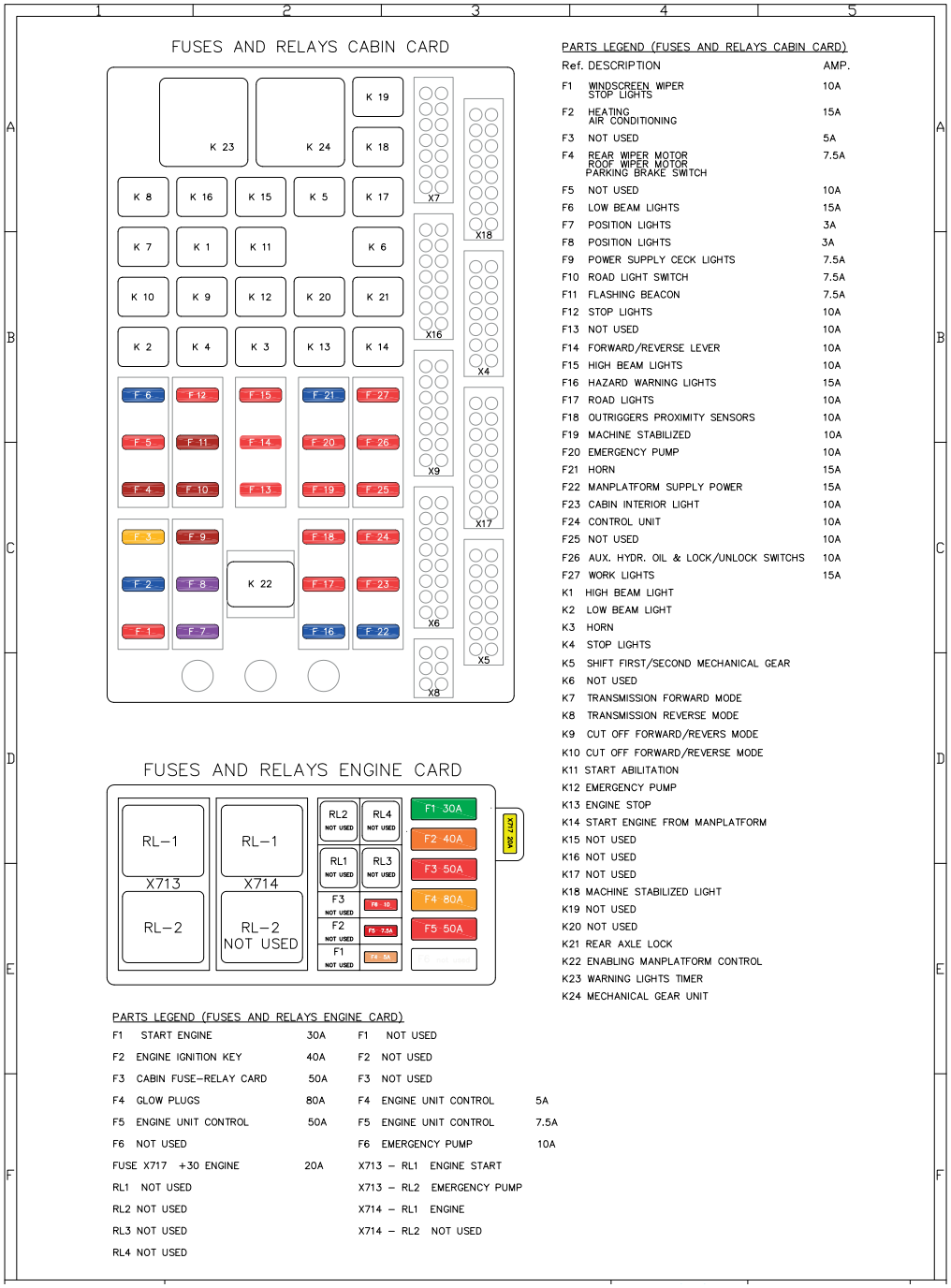


Stage 3B

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 15 of 15

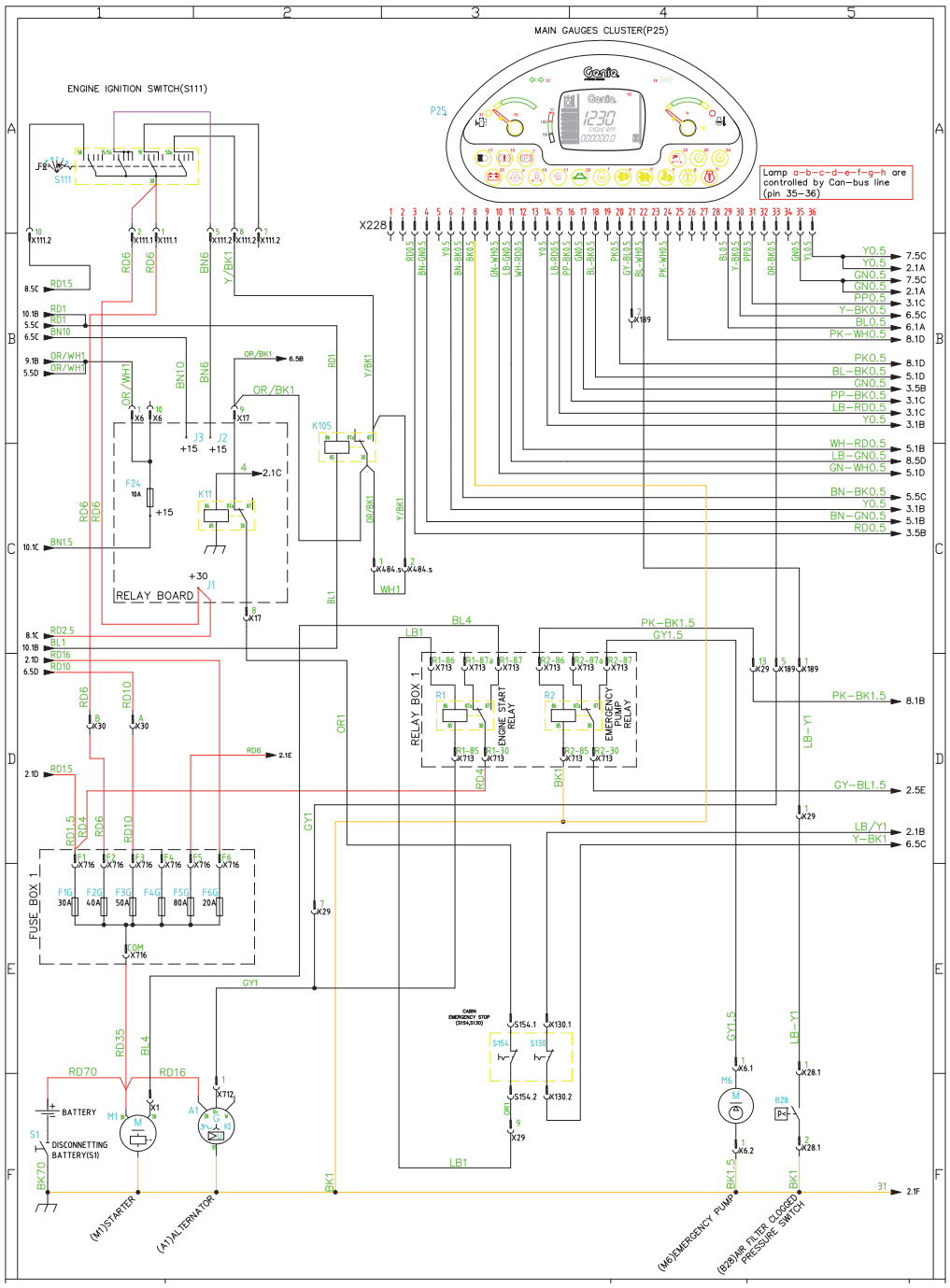


ELECTRICAL SCHEMATIC

Stage 3A

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 1 of 15

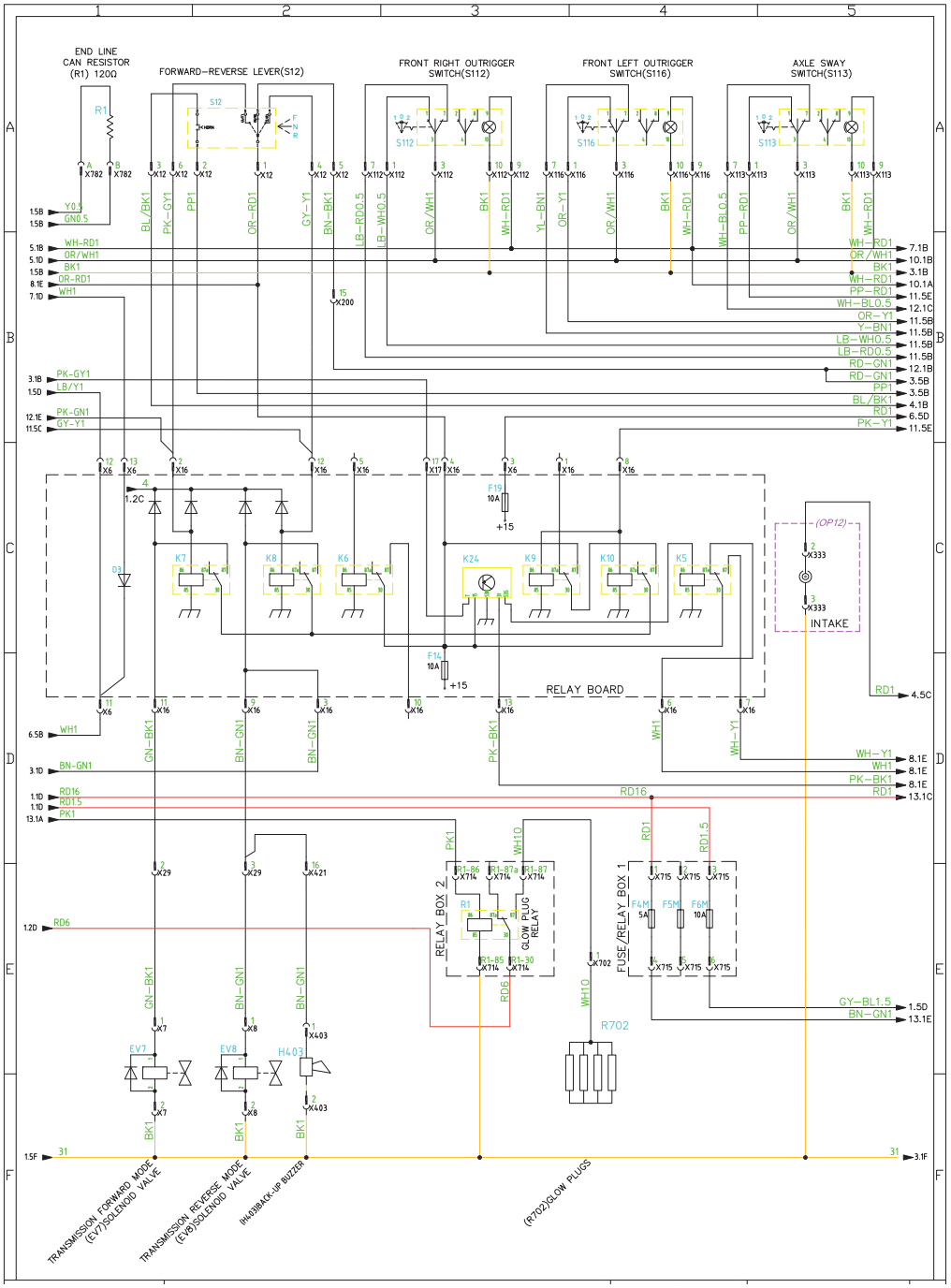


Stage 3A

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 2 of 15

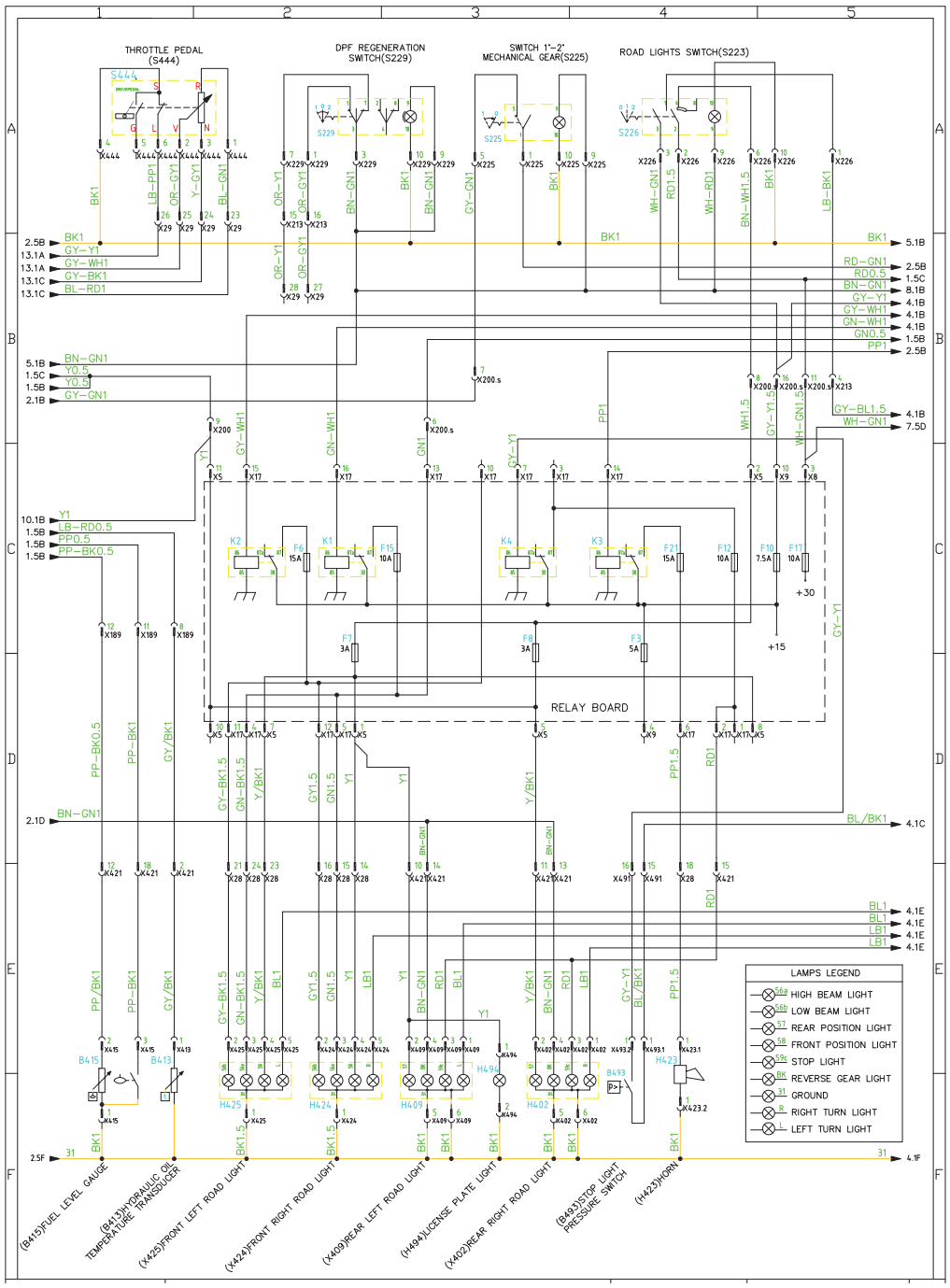


ELECTRICAL SCHEMATIC

Stage 3A

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 3 of 15

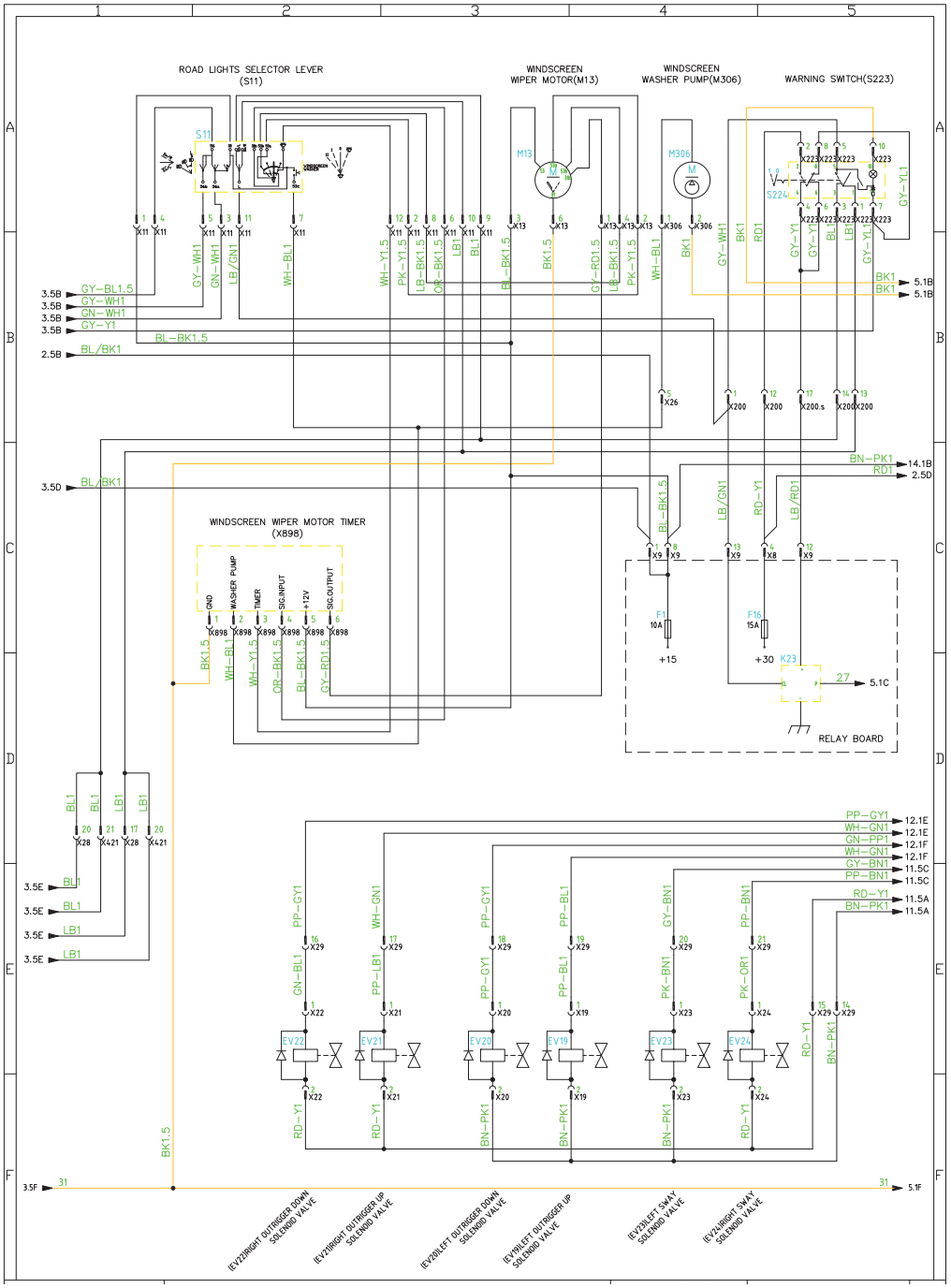


Stage 3A

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 4 of 15

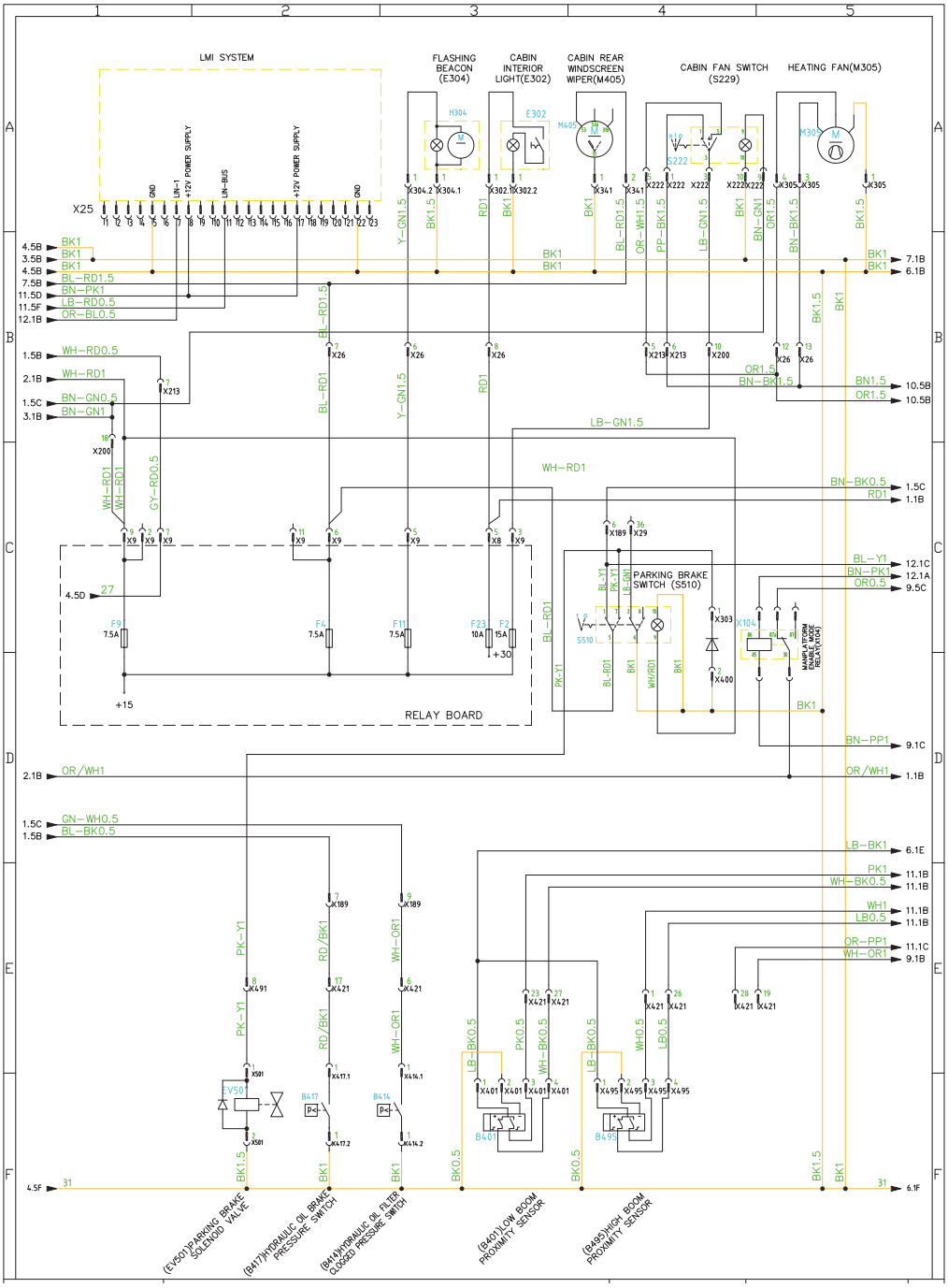


ELECTRICAL SCHEMATIC

Stage 3A

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 5 of 15

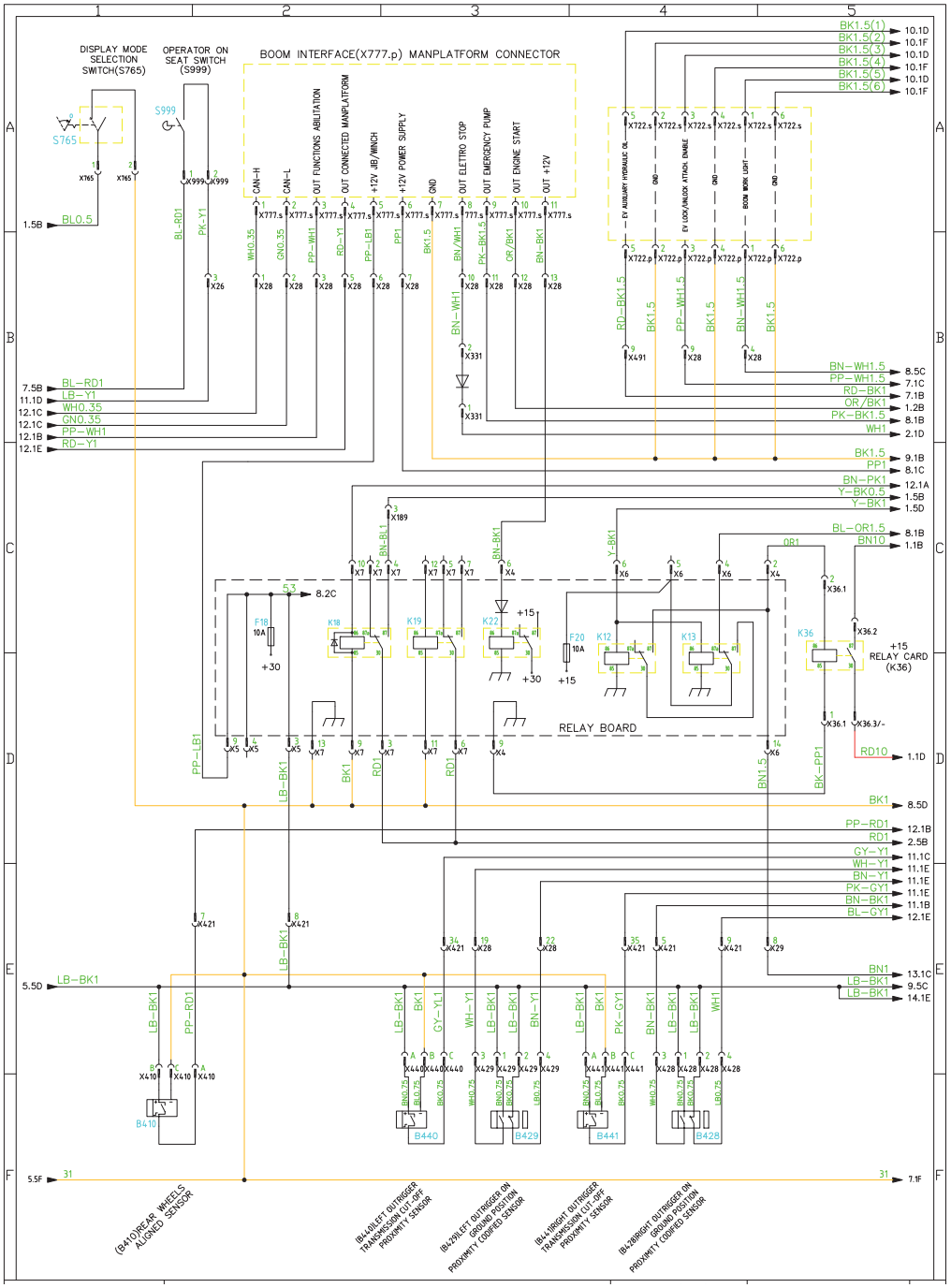


Stage 3A

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 6 of 15

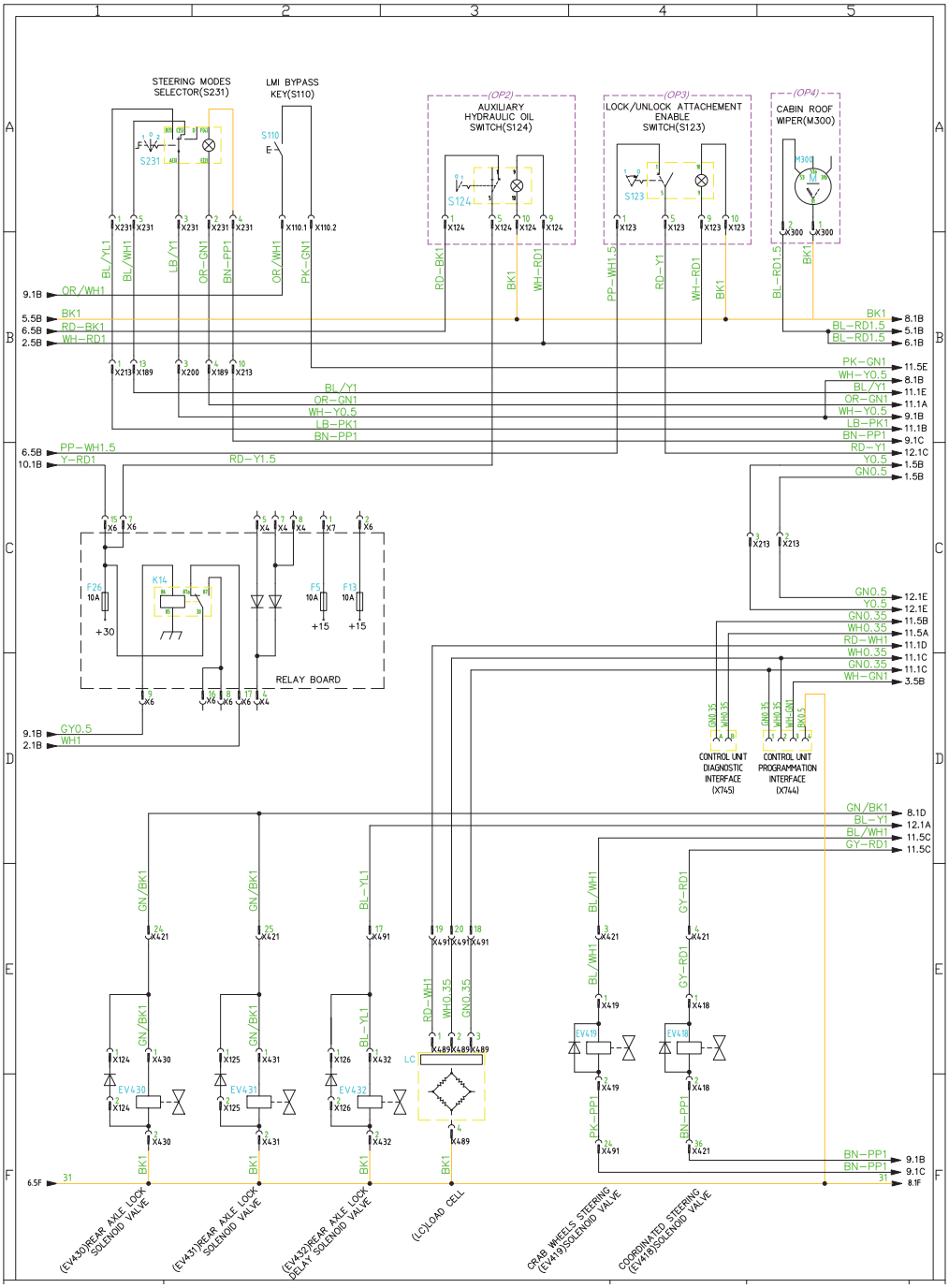


ELECTRICAL SCHEMATIC

Stage 3A

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 7 of 15

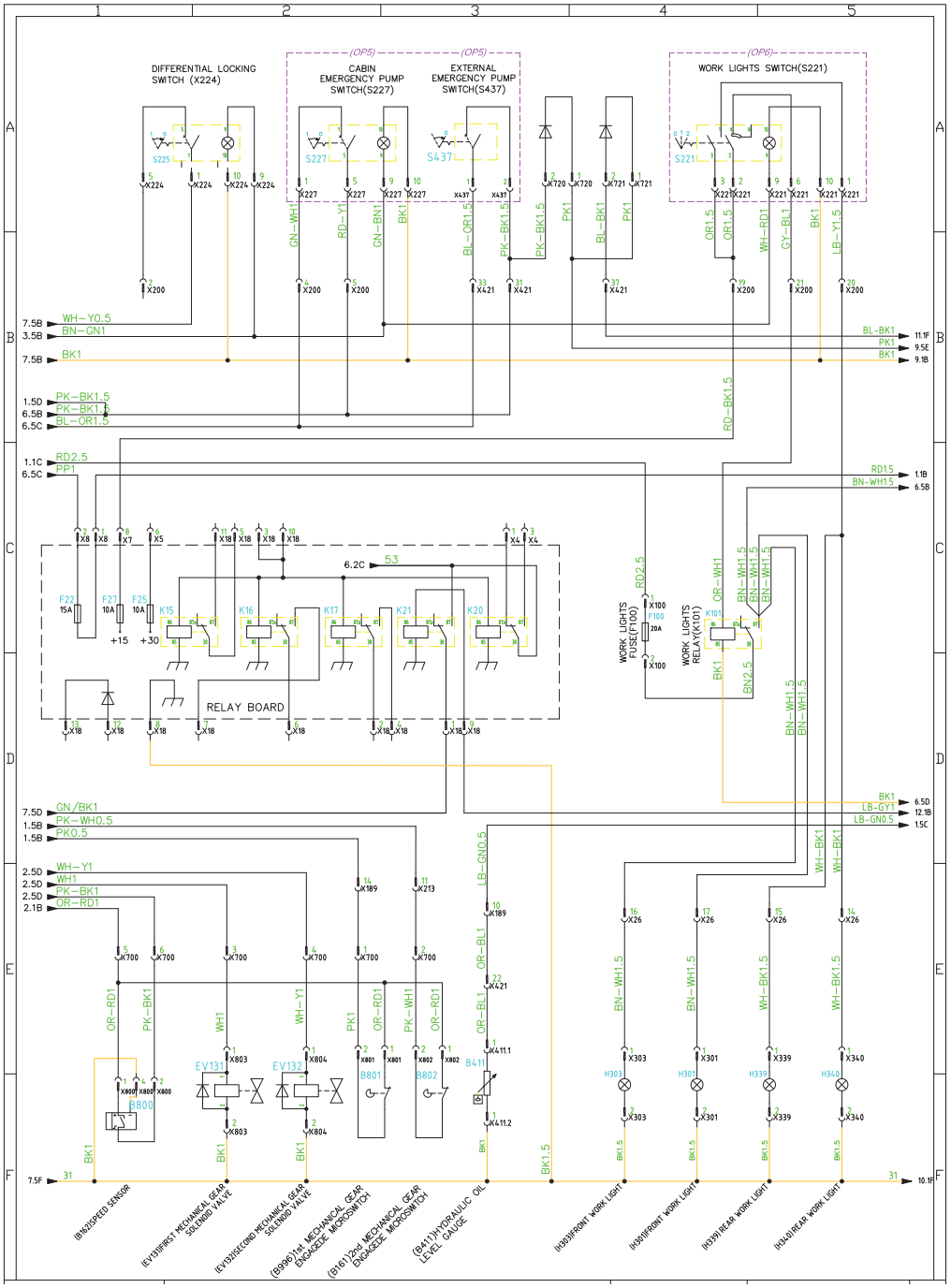


Stage 3A

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 8 of 15

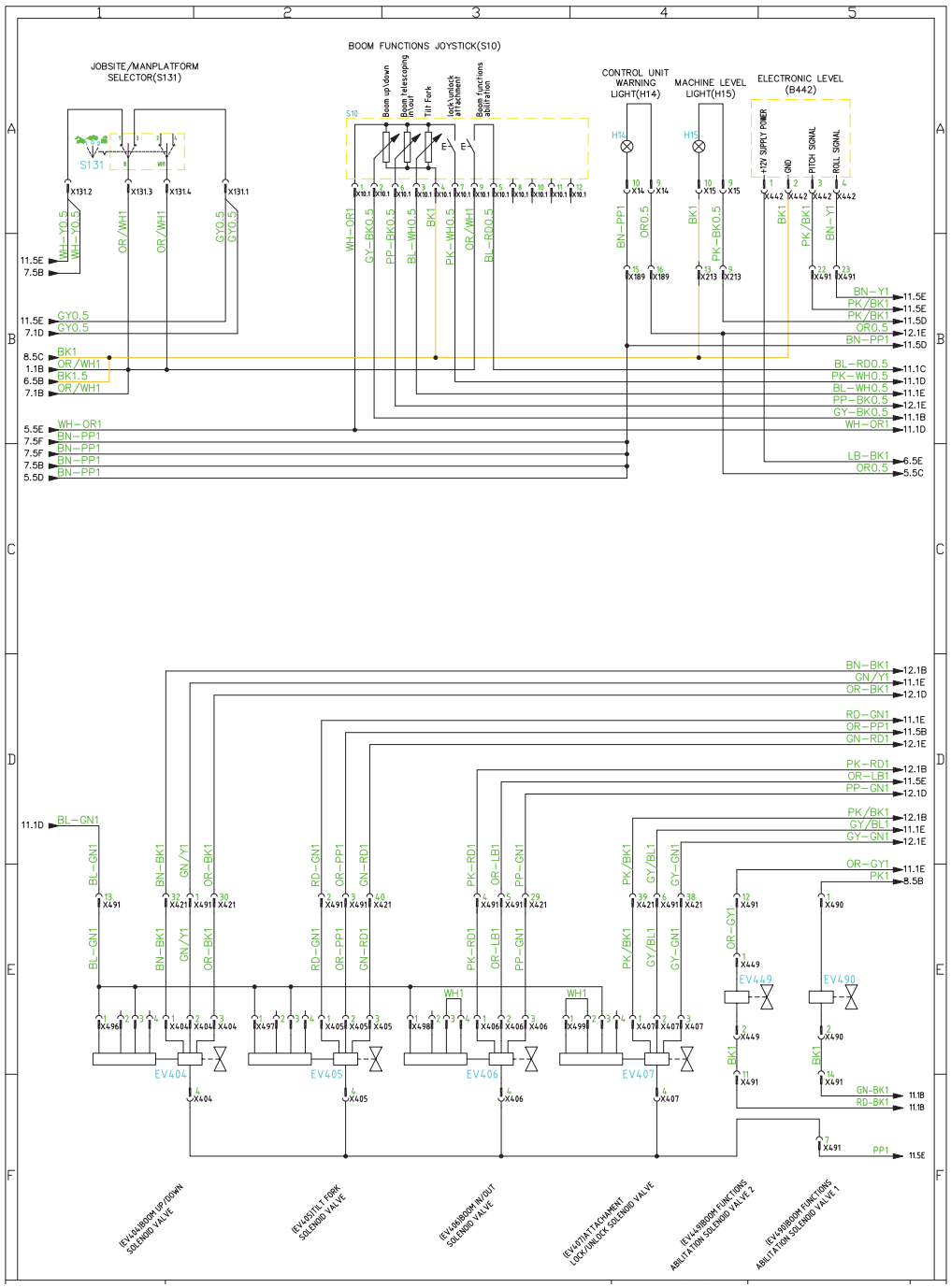


ELECTRICAL SCHEMATIC

Stage 3A

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 9 of 15

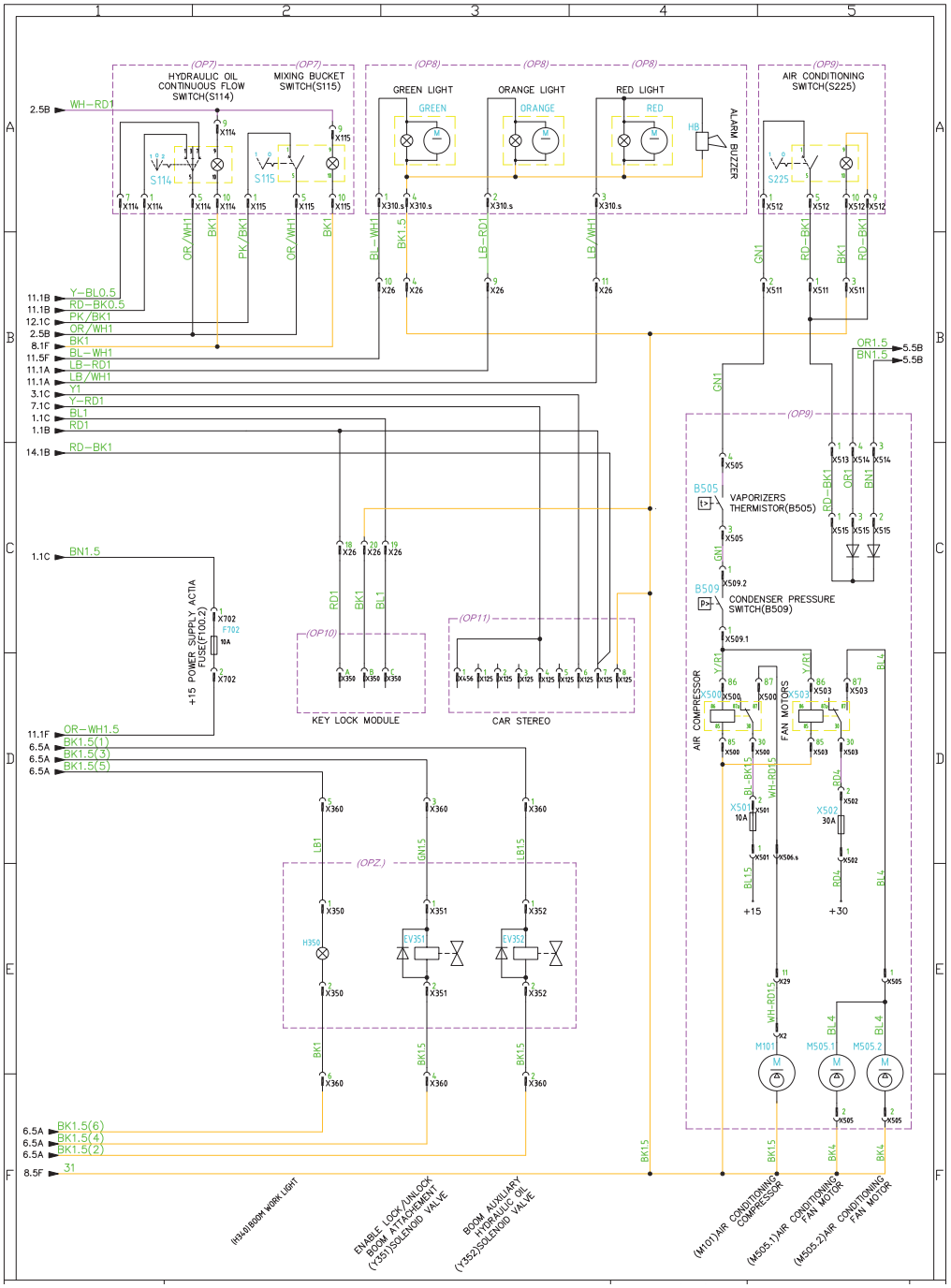


Stage 3A

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 10 of 15



ELECTRICAL SCHEMATIC

Stage 3A

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 11 of 15



Stage 3A

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 12 of 15

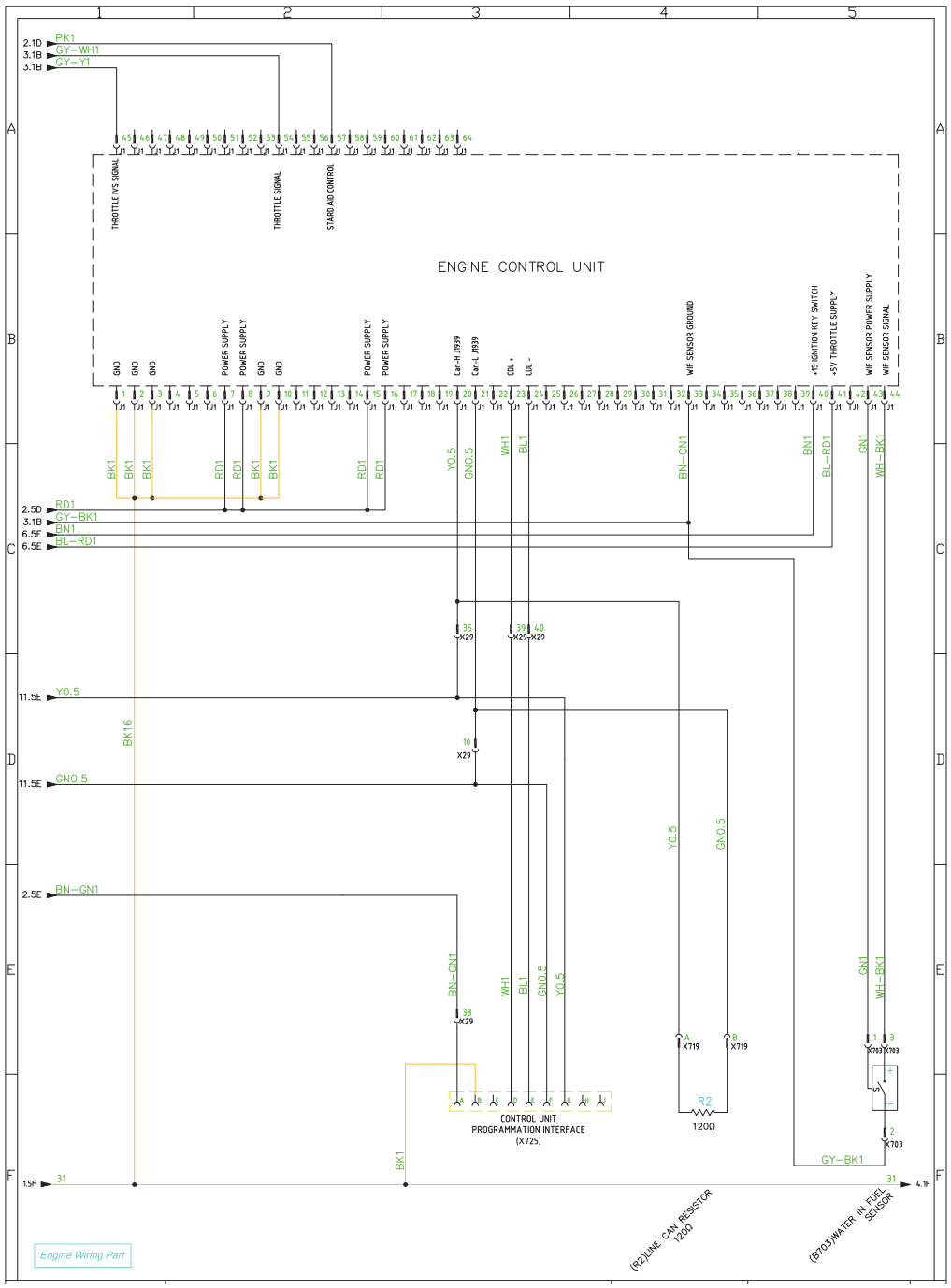


ELECTRICAL SCHEMATIC

Stage 3A

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 13 of 15

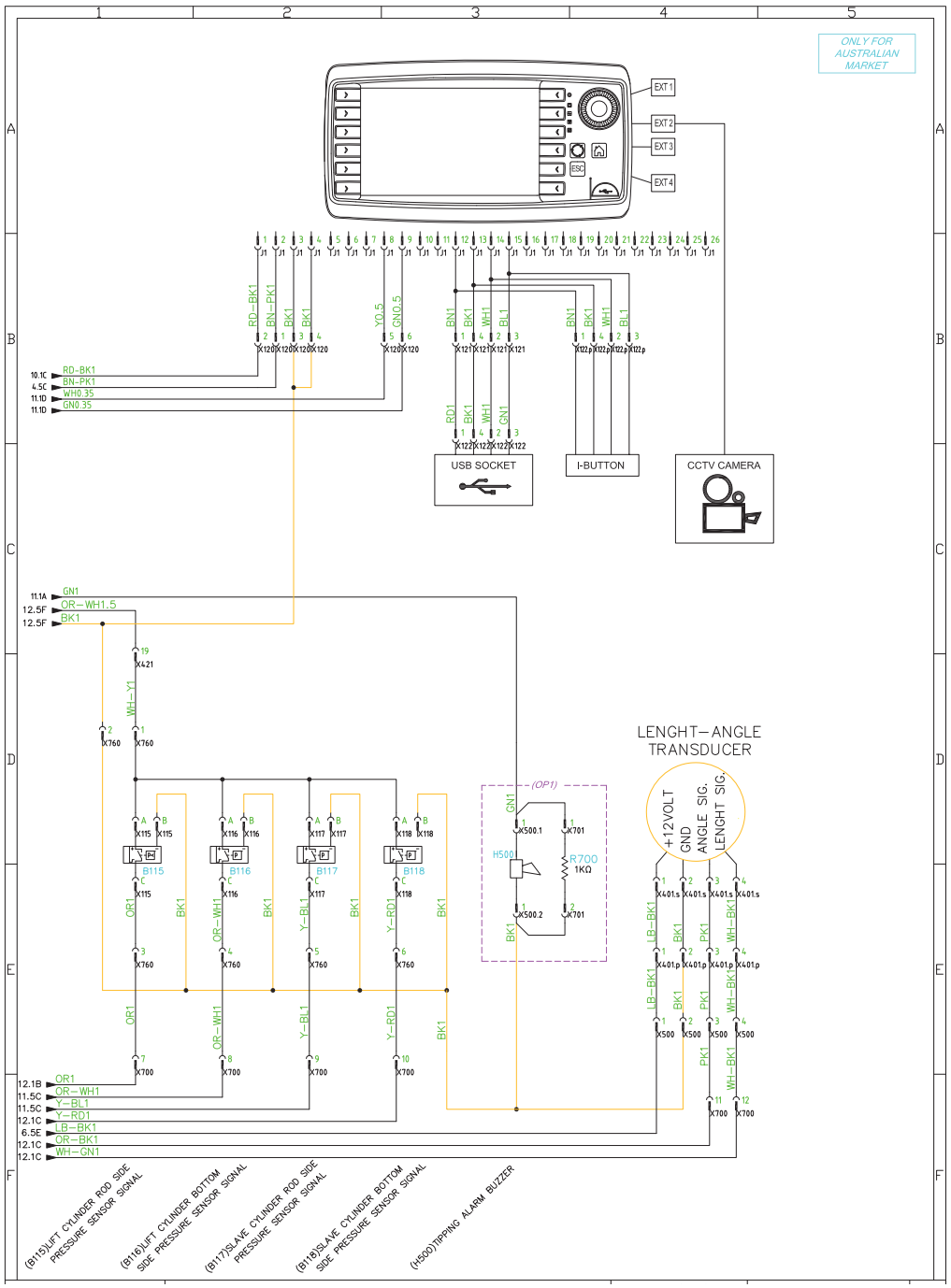


Stage 3A

ELECTRICAL SCHEMATIC

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 14 of 15

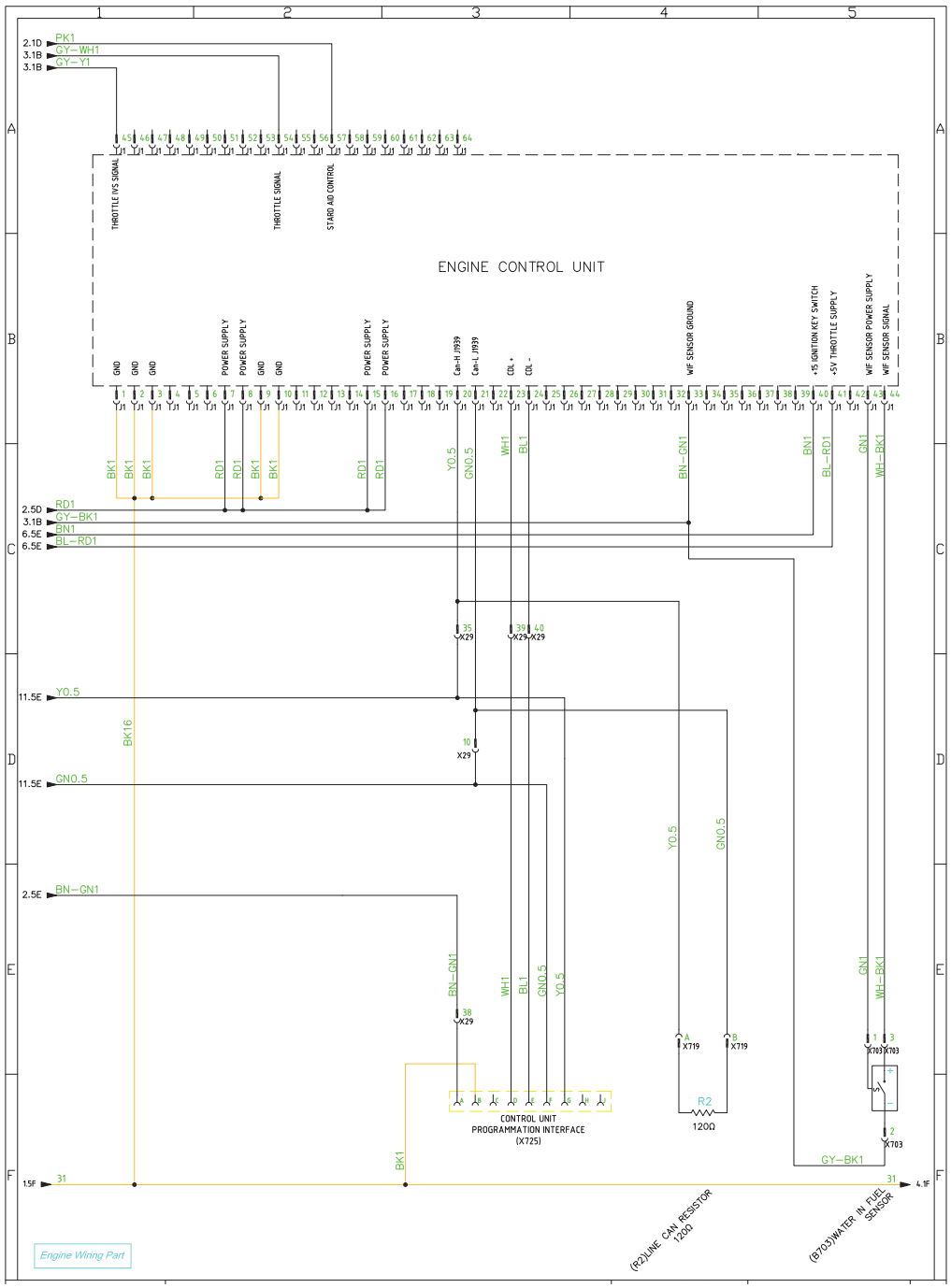


ELECTRICAL SCHEMATIC

Stage 3A

From GTH401414-101
From GTH401814-101

GTH-4014 & GTH-4018 - Sheet 15 of 15



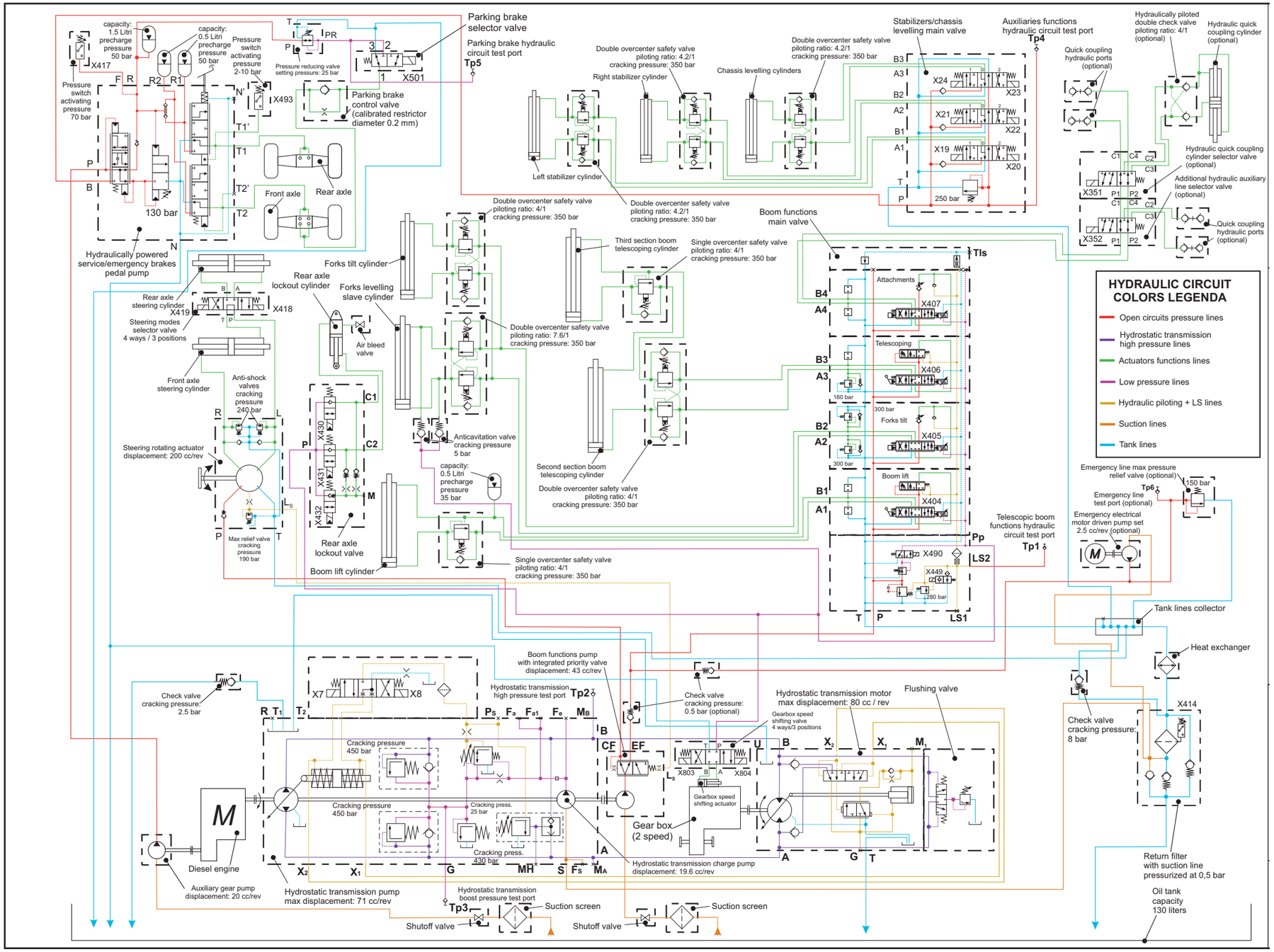
Hydraulic Schematic





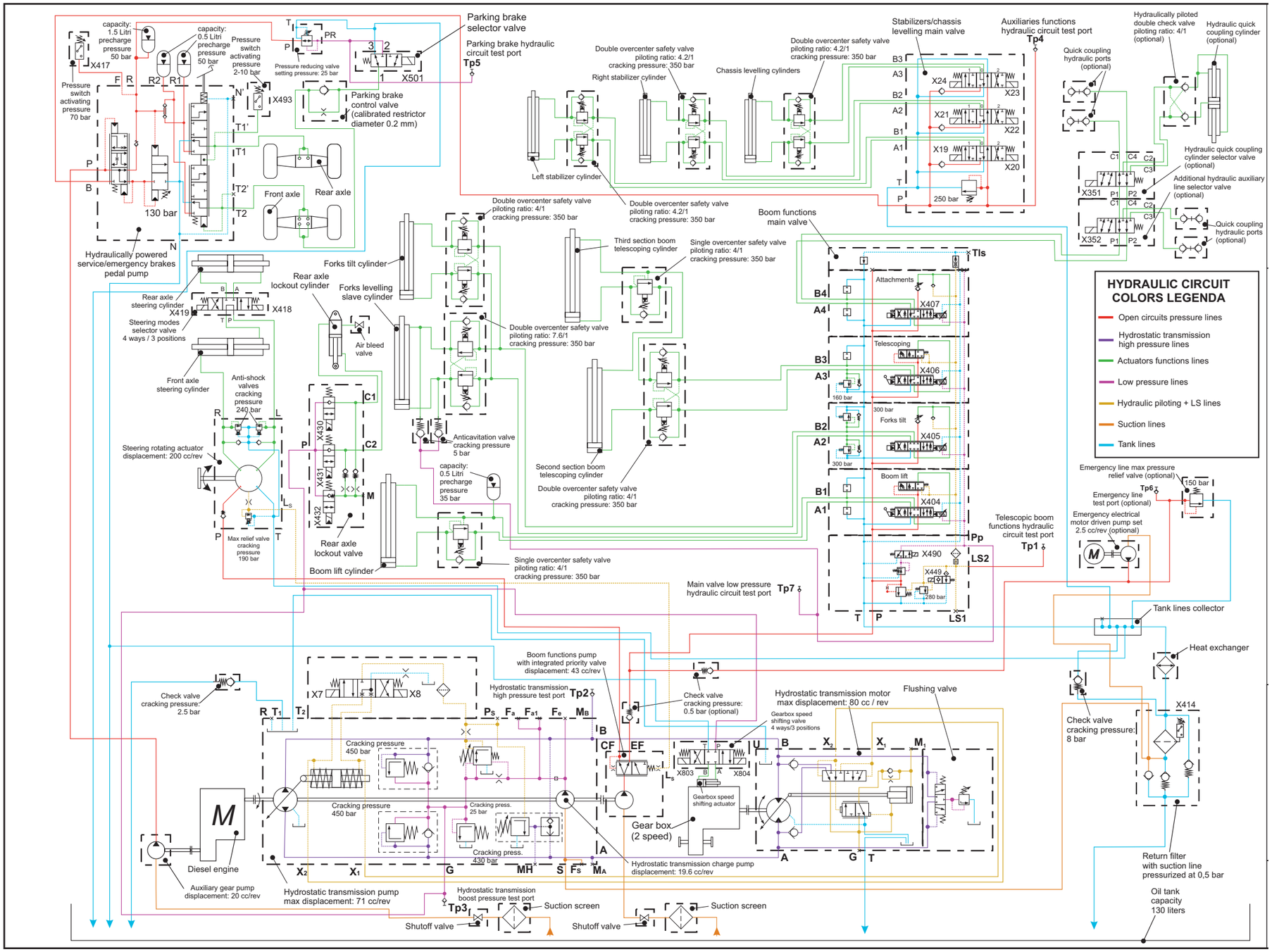
GTH-4014 Hydraulical Schematic

up to GTH401415B-145



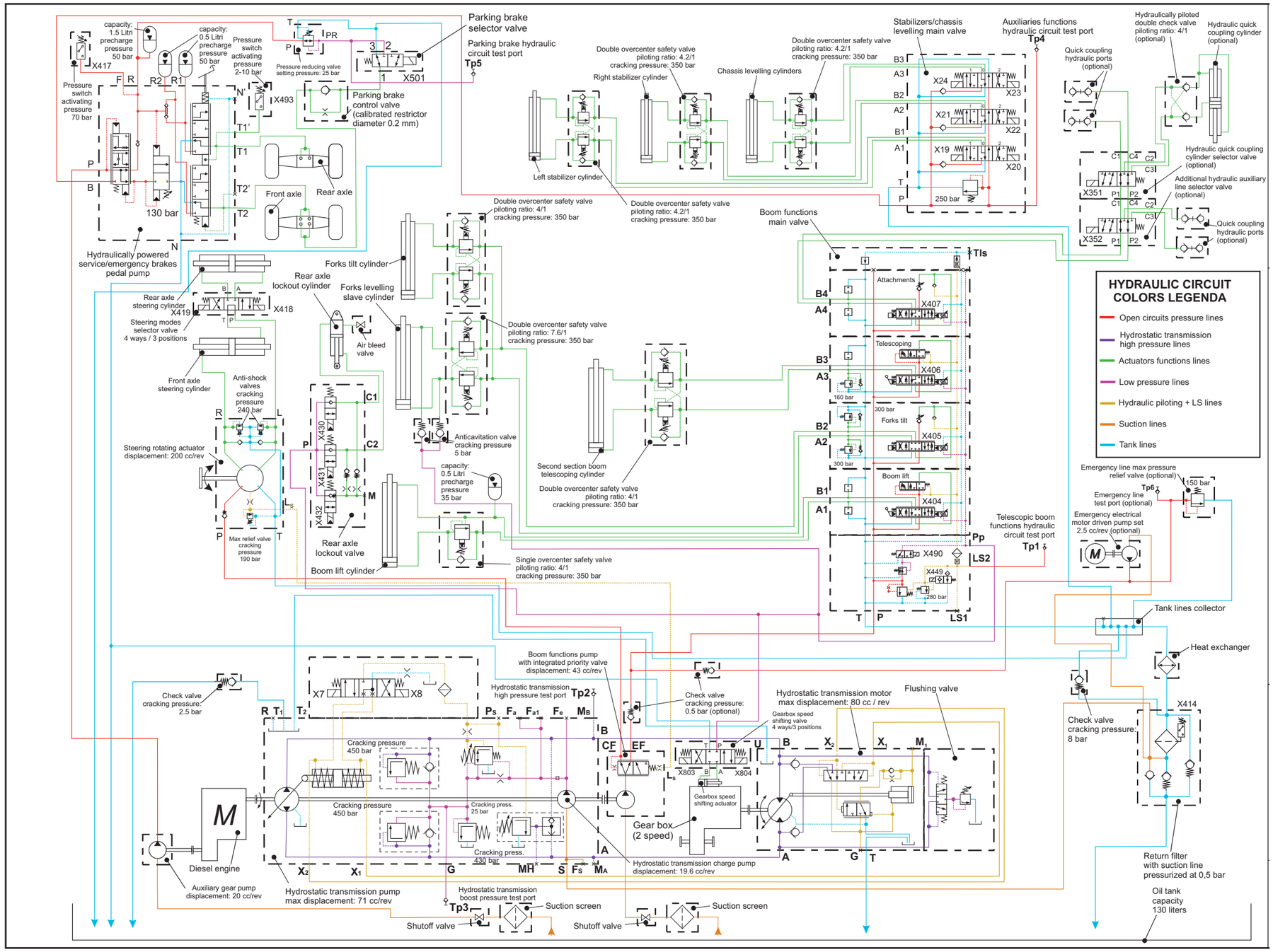
GTH-4014 Hydraulical Schematic

From GTH401415B-146



GTH-4018 Hydraulical Schematic

Up GTH401815B-152



GTH-4018 Hydraulical Schematic

From GTH401815B-153

