A TEREX BRAND

Service Manual

Serial number range

GTH-4016 R
From serial n.: GTH4016R15M-101

Stage 3A

Stage 3B

GTH-4018 R
From serial n.: GTH4018R15M-101

Stage 3A

Stage 3B

GTH-5021 R
From serial n.: GTH5021R14B-101

Stage 3A

Stage 3B

Part No. 57.4400.9209

Rev A

January 2016

Introduction

Important

Read, understand and obey the safety rules and operating instructions in the *Genie GTH-4016 R - 4018 R - 5021 R 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.

Copyright © 2016 by Terex Corporation

57.4400.9209 Rev A January 2016
First Edition, First Printing

"Genie" is a registered trademark of Terex South Dakota, Inc. in the U.S.A. and many other countries.
“GTH” is a trademark of Terex South Dakota, Inc.

♻ Printed on recycled paper

Revision History

Revision	Date	Section	Procedure / Schematic Page / Description
A	01/2016		Initial Release

REFERENCE EXAMPLES:

Perkins Engine_Section 2_Specifications.
A-10, C-1,D-7_Section 3_Maintenance Procedure.
4-1_Section 4_Repair Procedure.
Fault Codes_Section 6.
Section 7_Schematic Page #.

Electronic Version

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

REVISION HISTORY, CONTINUED

Revision	Date	Section	Procedure / Schematic Page / Description

REFERENCE EXAMPLES:

Perkins Engine_Section 2_Specifications.
A-10, C-1,D-7_Section 3_Maintenance Procedure.
4-1_Section 4_Repair Procedure.
Fault Codes_Section 6.
Section 7_Schematic Page #.

Electronic Version

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

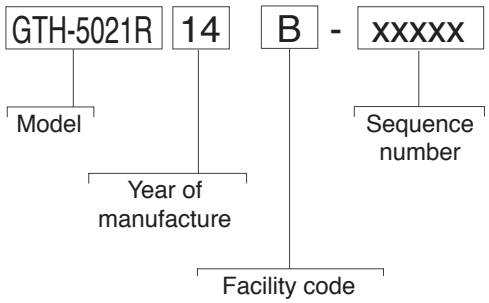
Serial Number PLate

Genie
A TEREX BRAND

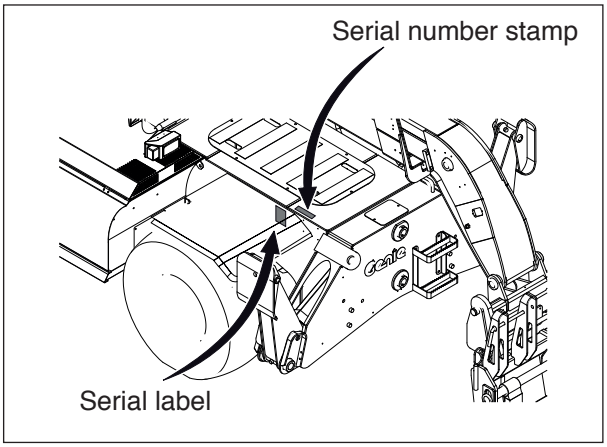
Model:
GTH-5021 R
Model Year: 2014
Designation:
ROUGH TERRAIN VARIABLE REACH TRUCK
Serial Number: GTH5021R-Xxxxx
Manufacture Date: 2014
Mass with Forks (Kg): 17320
Rated Capacity(Kg): 5000
Nominal Power (kW): 83
Max drawbar pull provided for all the coupling hook (N): 30000
Max vertical load provided for all the coupling hook (N): 10000
Country of Manufacture: ITALY

Manufacturer:
Terexlift S.r.l.
Zona Industriale Buzzacchero
06019 - Umbertide (Pg) Italy

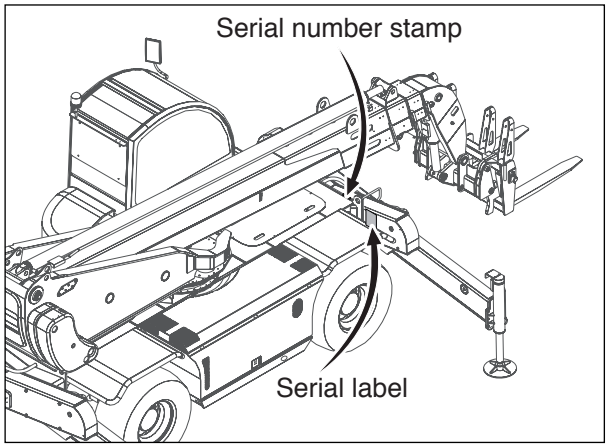
CE

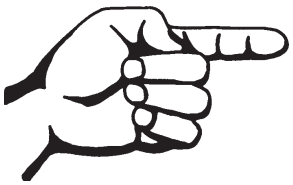


GTH 4016 R - GTH 4018 R



GTH 5021 R





This page intentionally left blank.

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 Manifold 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 26.32M 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 - Perkins Models ....3 - 8
A-6 Safety Devices ....3 - 9
A-7 Perform 30 Day Service ....3 - 9
A-8 Emergency Pump Operations (if equipped) ....3 - 10
A-9 Perform Axle Maintenance ....3 - 10
A-10 Perform Engine Maintenance - Perkins 854E Models....3 - 11
A-11 Perform Engine Maintenance - Perkins Models ....3 - 11
A-12 Perform Axle Maintenance ....3 - 12

Checklist B Procedures

B-1 Inspect the Electrical Wiring ....3 - 13
B-2 Gearbox Oil Level ....3 - 14
B-3 Slewing upper structure Reduction Gear Oil Level ....3 - 14
B-4 Check the Exhaust System ....3 - 15
B-5 Inspect the Engine Air Filter ....3 - 16
B-6 Inspect the Tires, Wheels and Lug Nut Torque ....3 - 17
B-7 Perform Hydraulic Oil Analysis ....3 - 17
B-8 Check the Boom Wear Pads ....3 - 18
B-9 Perform Axle Maintenance ....3 - 19

TABLE OF CONTENTS

Section 3 **Scheduled Maintenance Procedures**, continued

Checklist C Procedures

C-1 Perform Engine Maintenance - Perkins Models....3 - 20
C-2 Perform Engine Maintenance - Perkins Models....3 - 20
C-3 Inspect and Lubricate the Sequencing Chains - GTH-4018R/GTH-5021R....3 - 21

Checklist D Procedures

D-1 Inspect the Forks....3 - 23
D-2 Tighten the Boom Chains....3 - 23
D-3 Replace the Hydraulic Tank Return Filter Element....3 - 24
D-4 Change Gearbox Oil....3 - 25
D-5 Change Slewing upper structure Reduction Gear Oil....3 - 26
D-6 Perform Engine Maintenance - Perkins Models....3 - 26
D-7 Perform Axle Maintenance....3 - 27
D-8 Perform Engine Maintenance - Perkins 854E Models....3 - 27

Checklist E Procedures

E-1 Test or Replace the Hydraulic Oil....3 - 28
E-2 Perform Engine Maintenance - Perkins Models....3 - 29
E-3 Perform Engine Maintenance - Perkins Models....3 - 29
E-4 Perform Engine Maintenance - Perkins Models....3 - 30
E-5 Perform Engine Maintenance - Perkins Models....3 - 30
E-6 Perform Engine Maintenance - Perkins 854E Models....3 - 31
E-7 Perform Engine Maintenance - Perkins Models....3 - 31

TABLE OF CONTENTS

Section 4 **Repair Procedures**

Introduction....4 - 1

Boom Components

1-1 Boom Sensors....4 - 2
1-2 Boom....4 - 3
1-3 Boom Lift Cylinder....4 - 17
1-4 Boom Extend Cylinder....4 - 18
1-5 Fork Level Slave Cylinder....4 - 20
1-6 Fork Tilt Cylinder....4 - 22

Operator's compartment

2-1 Operator’s Compartment....4 - 23
2-2 Machine Controls....4 - 25

Fuel and Hydraulic Tanks

3-1 Fuel tank....4 - 29
3-2 Hydraulic tank....4 - 30

Engines

4-1 Engines....4 - 31
4-2 Engine Fault Codes....4 - 32

Transmission

5-1 Gearbox....4 - 33
5-2 Axle....4 - 33

Hydraulic pumps

6-1 Boom Function Gear Pump....4 - 35
6-2 Auxiliary Gear Pump....4 - 38
6-3 Hydrostatic Transmission Pump....4 - 41

Manifolds

7-1 Function Manifold components - Models with Single Joystick....4 - 45
7-2 Valve coils....4 - 48

TABLE OF CONTENTS

Section 4 **Repair Procedures**, continued

Outriggers

8-1 Outriggers....4 - 50

8-2 Outriggers sensors....4 - 54

Slewing upper structure

9-1 Slewing ring-pinion gap control and regulation....4 - 55

9-2 Slewing upper structure sensors....4 - 56

LMI (Overload System)

10-1 LMI....4 - 57

Miscellaneaous

11-1 Emergency Pump (if equipped)....4 - 58

11-2 Differential lock pressure reducing valve....4 - 58

TABLE OF CONTENTS

Section 5 **Settings**

Introduction....5 - 1
How to Read the Overload Warning System Display....5 - 2
How to Set the Overload Warning System Display....5 - 4

Section 6 **Fault Codes**

Introduction....6 - 1
Diagnostic Display....6 - 2
Engine Fault Codes - Models with Perkins 854E-E34TA Engine....6 - 3
Overload Warning System Fault Codes....6 - 10

Section 7 **Schematics**

Introduction....7 - 1
Electrical and Hydraulic Symbol Legends....7 - 2
Electrical Schematic....7 - 3
Hydraulic Schematic....7 - 82

Specifications

Machine Specifications

GTH-4016R / GTH-4018R fluid capacities	
Fuel tank	54 gallons 205 liters
Hydraulic tank	58 gallons 220 liters
Hydraulic system (including tank)	80 gallons 303 liters

GTH-5021R fluid capacities	
Fuel tank	54 gallons 205 liters
Hydraulic tank	58 gallons 220 liters
Hydraulic system (including tank)	80 gallons 303 liters

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

GTH-4016R / GTH-4018R tires and wheels	
Tire size	18 R 19.5
Tire ply rating	NA
Weight, rough terrain tire (air filled)	265 lbs 120 kg
Weight, rough terrain tire (foam filled)	772 ± 29 lbs 350 ± 13 kg
Tire pressure (models with air-filled tires)	80 psi 5,5 bar
Lug nut torque	340 ft-lbs 460 Nm
Lug pattern	10 x 13.189 (335 mm)
Wheel diameter	43.4 in 110,4 cm
Wheel width	18.1 in 46 cm

GTH-5021R tires and wheels	
Tire size	18 R 19.5
Tire ply rating	NA
Weight, rough terrain tire (air filled)	304 lbs 138 kg
Weight, rough terrain tire (foam filled)	911 ± 29 lbs 413 ± 13 kg
Tire pressure (models with air-filled tires)	109 psi 7,5 bar
Lug nut torque	340 ft-lbs 460 Nm
Lug pattern	10 x 13.189 (355 mm)
Wheel diameter	43.6 in 111 cm
Wheel width	17.8 in 45,2 cm

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

SPECIFICATIONS

Performance Specifications

Drive speed, maximum	19 mph 30 km/h
GTH-4016R / GTH-4018R draw bar pull	17,826 lbs 8086 kg
GTH-5021R draw bar pull	15,961 lbs 7240 kg
GTH-4016R / GTH-4018R / GTH-5021R max lift capacity (stabilizers up)	8,818 lbs 4000 kg
GTH-4016R max lift capacity (stabilizers up & machine not aligned)	4,409 lbs 2000 kg
GTH-4018R / GTH-5021R max lift capacity (stabilizers up & machine not aligned)	5,511 lbs 2500 kg
GTH-4016R / GTH-4018R max lift capacity (stabilizers down)	8,818 lbs 4000 kg
GTH-5021R max lift capacity (stabilizers down)	11,023 lbs 5000 kg
GTH-4016R max lift capacity (stabilizers down & machine not aligned)	8,818 lbs 4000 kg

GTH-4016R boom function speeds, maximum	
Boom up	14 seconds
Boom down	9 seconds
Boom extend	35 seconds
Boom retract	19 seconds
Chassis sway up	15 seconds
Chassis sway down	15 seconds
Fork tilt up	5 seconds
Fork tilt down	4 seconds

GTH-4018R boom function speeds, maximum	
Boom up	13 seconds
Boom down	9 seconds
Boom extend	25 seconds
Boom retract	29 seconds
Chassis sway up	15 seconds
Chassis sway down	15 seconds
Fork tilt up	4 seconds
Fork tilt down	3 seconds

GTH-5021R boom function speeds, maximum	
Boom up	22 seconds
Boom down	17 seconds
Boom extend	42 seconds
Boom retract	24 seconds
Chassis sway up	15 seconds
Chassis sway down	15 seconds
Fork tilt up	6 seconds
Fork tilt down	6 seconds

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

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.

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

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
Stand-by pressure (measured at test port TP8)	362 psi 25 bar

Auxiliary Gear Pump	
Type:	fixed displacement gear pump
Displacement	0.85 cu in 14 cc
Flow rate @ 2200 rpm	8 gpm 30 l/min
Pump pressure, max. (measured at test port TP4)	2,610 psi 180 bar
Relief valve pressure BB, max. (measured at test port TP4)	2,610 psi 180 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 setting pressure, max. (measured at test port TP2)	6,236 psi 430 bar
Pump relief valve pressure, max. (measured at test port TP2)	6,526 psi 450 bar
Pump charge relief valve pressure, max. (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
Transmission setting pressure, max. (measured at test port TP2)	6,236 psi 430 bar
Transmission relief valve pressure, max (measured at test port TP2)	6,526 psi 450 bar

Heat Exchanger Fan Hydraulic Motor (only with 1104D-44T Engine)	
Type:	fixed displacement gear motor
Displacement	0.67 cu in 11 cc

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

Function Manifold Specifications

Function Manifold	
Load sense relief valve pressure, max. (measured at test port TP1)	4,061 psi 280 bar
Fork tilt relief valve and pressure, max.	4,641 psi 320 bar

Secondary Function Valves	
Steer relief valve pressure, max.	2,755 psi 190 bar
Parking brake pressure reducing valve (measured at test port TP5)	362 psi 25 bar
Diff lock pressure reducing valve BN (measured at test port TP6)	145 psi 10 bar
Rear axle cylinder lock-up valve and pressure, max. (measured at test port TP3)	362 psi 25 bar
Undercarriage functions selector valve pressure, max. (measured at test port TP1)	4,061 psi 280 bar
Auxiliary line selector valve pressure, max. (measured at test port TP1)	4,061 psi 280 bar
Transmission gearbox speed shifting valve pressure, max. (measured at test port TP3)	362 psi 25 bar
Electrical driven Emergency Pump relief valve pressure, maximum (measured at test port TP9)	2,175 psi 150 bar

Air Conditioner Refrigerant Specifications

System Full Charge	
R134a	2 lb 3 oz

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

SPECIFICATIONS

Perkins 1104D-44T Engine

Displacement	269 ci 4408 cm^3
Number of cylinders	4
Bore and stroke	4.13 x 5 inches 105 x 127 mm
Horsepower	100.5 hp @ 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	18.2:1
Governor	Mechanical
Low idle Frequency	900 rpm 15 Hz
High idle Frequency	2300 rpm 38 Hz
Lubrication system	
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.	
Engine coolant	
Capacity	4.6 gallons 17.4 liters
Type	Extended Life
Alternator	
Output	100 A, 12V DC
Starter Motor	
Type	12 V, 3 kW
Battery	
Type	12V DC
Group	C31
Quantity	1
Cold cranking ampere @ 0°F	1200 EN

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

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 @ 2200 rpm 83 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	4.9 gallons 18.5 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 TB172/2 speed Transmission Repair Manual* (Carraro part number CA270305).	
Carraro TB172/2 speed Transmission Repair Manual	
Genie part number	57.4700.0010

Carraro 26.32M Drive Axle

Steering	Integrated steer cylinder
Joints	Heavy duty double U-joints
Steering angle, maximum	40 °
Front Axle Lubrication	
Front differential	8.45 quarts 8 liters
Axle planetary end (each)	1.37 quarts 1.3 liters
Rear Axle Lubrication	
Rear differential	12.15 quarts 11.5 liters
Axle planetary end (each)	1.37 quarts 1.3 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 26.32M Axle Maintenance and Repair Manual* (Carraro part number CA270015 - Front Axle, CA270016 - Rear Axle).	
Carraro 26.32M Front Axle Maintenance and Repair Instructions	
Genie part number (Genie Instructions Library)	57.4700.0002
Carraro 26.32M Rear Axle Maintenance and Repair Instructions	
Genie part number (Genie Instructions Library)	57.4700.0003

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

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)

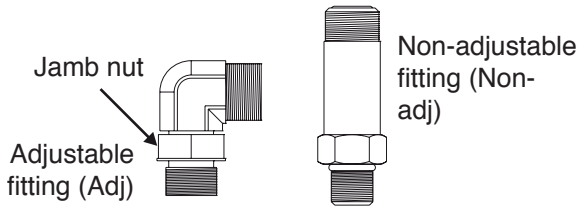
SAE Dash size	Torque
-4	10 ft-lbs / 13.6 Nm
-6	30 ft-lbs / 40.7 Nm
-8	40 ft-lbs / 54.2 Nm
-10	60 ft-lbs / 81.3 Nm
-12	85 ft-lbs / 115 Nm
-16	110 ft-lbs / 150 Nm
-20	140 ft-lbs / 190 Nm
-24	180 ft-lbs / 245 Nm

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.

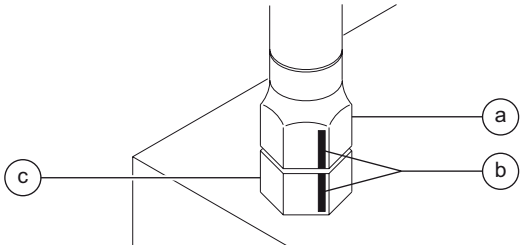


Figure 1

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.

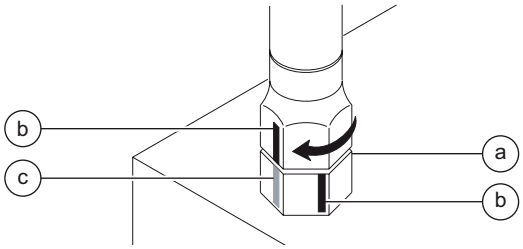


Figure 2

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

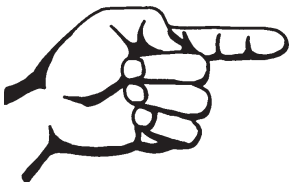
•This chart is to be used as a guide only unless noted elsewhere in this manual•

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



This page intentionally left blank.

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

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

Copyright © 2011 Terex Corporation. Genie® is a registered trademark of Terex South Dakota, Inc. 133192 Rev D

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 every week:				
A-10	Engine maintenance - Perkins 854E models			
Perform every 50 hours:				
A-11	Engine maintenance - Perkins models			
Perform after 150 hours:				
A-12	Axle maintenance			

Checklist B		**Y**	**N**	**R**
B-1	Electrical wiring			
B-2	Gearbox			
B-3	Slewing upper structure reduction gear			
B-4	Exhaust system			
B-5	Engine air filter			
B-6	Tires and wheels			
B-7	Hydraulic oil			
B-8	Boom wear pads			
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			
D-3	Hydraulic return filter			
D-4	Gearbox			
D-5	Slewing upper structure reduction gear			
D-6	Engine maintenance - Perkins models			
Perform every 1500 hours:				
D-7	Axle maintenance			
D-8	Engine maintenance - Perkins 854E 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 6000 hours:				
E-6	Engine maintenance - Perkins 854E models			
Perform after 12000 hours:				
E-7	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.

Note: 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.

To lubricate the boom of GTH-4016R / GTH-4018R:

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.

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

CHECKLIST A PROCEDURES

To lubricate the boom of GTH-5021R:

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

A-5
Perform Engine Maintenance - Perkins Models





Note: 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
Driven equipment - check
Engine air cleaner serive indicator - inspect
Engine air precleaner - check/clean
Walk-around inspection
V-belts - inspect/adjust/replace (only for 1104D)

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8325-01), *Perkins 854E Operation and Maintenance Manual* (Perkins part number SEBU8726-02).

Perkins 1104D Operation and Maintenance Manual	
Genie part number	57.4700.0025
Perkins 854E-E34TA 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 Parking Brake Switch
- 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.

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

CHECKLIST A PROCEDURES

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



Note: 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 26.32M Axle Maintenance and Repair Manual*
(Carraro part number CA270015 - Front Axle, CA270016 - Rear Axle).

Carraro 26.32M Front Axle Maintenance and Repair Instructions	
Genie part number (Genie Instructions Library)	57.4700.0002
Carraro 26.32M Rear Axle Maintenance and Repair Instructions	
Genie part number (Genie Instructions Library)	57.4700.0003

A-10
Perform Engine Maintenance - Perkins 854E Models



Note: Engine specifications require that this procedure be performed every week.

854E Engine
Hoses and clamps - inspect/replace

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

Perkins 854E-E34TA Operation and Maintenance Manual	
Genie part number	57.4700.0001

A-11
Perform Engine Maintenance - Perkins Models



Note: Engine specifications require that this procedure be performed every 50 hours or weekly, whichever comes first.

Fuel tank water and sediment - drain

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8325-01), *Perkins 854E Operation and Maintenance Manual* (Perkins part number SEBU8726-02).

Perkins 1104D Operation and Maintenance Manual	
Genie part number	57.4700.0025
Perkins 854E-E34TA Operation and Maintenance Manual	
Genie part number	57.4700.0001

CHECKLIST A PROCEDURES

A-12
Perform Axle Maintenance



Note: 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 *Carraro 26.32M Axle Maintenance and Repair Manual* (Carraro part number CA270015 - Front Axle, CA270016 - Rear Axle).

Carraro 26.32M Front Axle Maintenance and Repair Instructions	
Genie part number (Genie Instructions Library)	57.4700.0002
Carraro 26.32M Rear Axle Maintenance and Repair Instructions	
Genie part number (Genie Instructions Library)	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 Inspect 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.

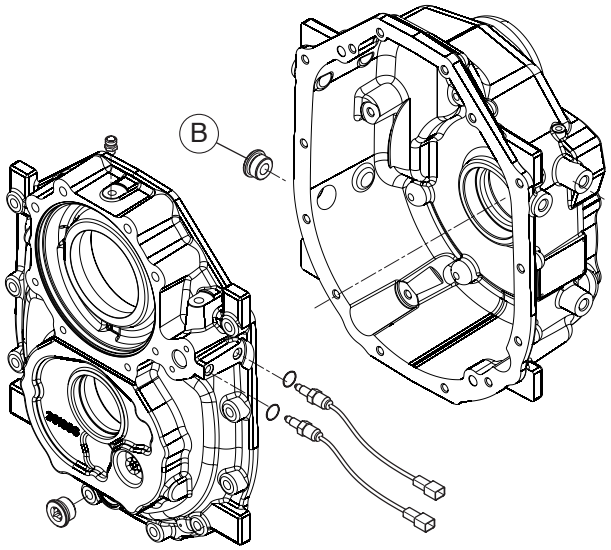
1 Stop the machine on a level ground and engage the parking brake.

2 Clean level plug (B) all around.

3 Remove the plug (B) and check if oil is level with the hole.

4 When necessary, add new oil through plug (B) until it is level with the hole.

5 Refit and tighten the plug (B).



B-3
Slewing upper structure Reduction Gear Oil Level

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

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

2 Clean level plug all around.

3 Loosen level plug and check if oil is level with the hole.

4 If necessary, unscrew the filling plug and pour new oil through the hole until it starts flowing out of hole.

5 Refit and tighten level and filling plugs.

B-4
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-5
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.

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

1 Open engine cover.

2 Open the four latches.

3 Remove the protection cap.

4 Extract the cartridge.

5 Clean the filter bowl.

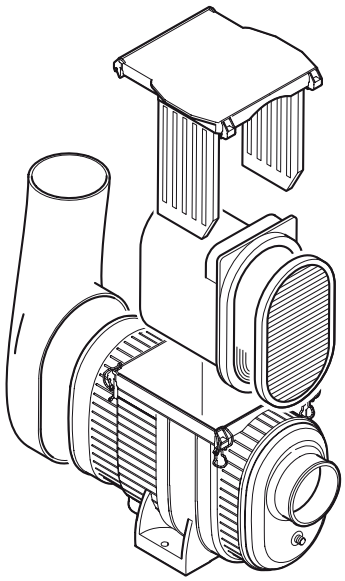
6 Dry clean the cartridge (max. pressure: 87 psi / 6 bar).

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-6
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.

Note: 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-7
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*.

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

CHECKLIST B PROCEDURES

B-8
Check the Boom Wear Pads

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

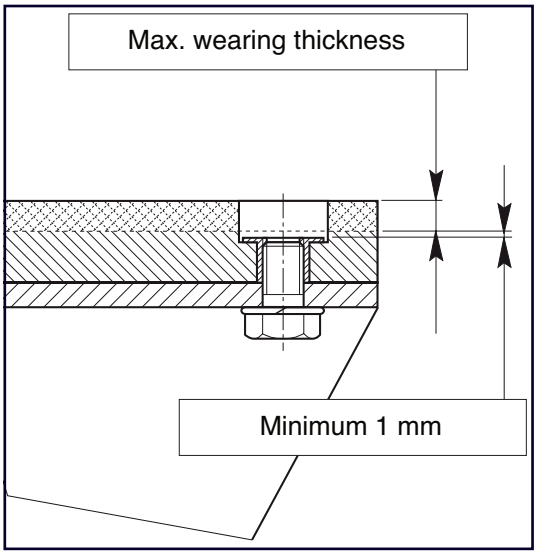
Any boom section is fitted with adjustable pads located on the four sides of the profile. These pads are secured to both fixed and mobile part of every section.
All pads can be adjusted by the special shims supplied by TEREXLIFT upon demand.

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 1-2, *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

B-9
Perform Axle Maintenance



Note: Axle specifications requires that this procedure be performed every 300 hours of operation.

Oil level - check/add
Oil breather - clean

Required maintenance procedures and additional axle information is available in the *Carraro 26.32M Axle Maintenance and Repair Manual* (Carraro part number CA270015 - Front Axle, CA270016 - Rear Axle).

Carraro 26.32M Front Axle Maintenance and Repair Instructions	
Genie part number (Genie Instructions Library)	57.4700.0002
Carraro 26.32M Rear Axle Maintenance and Repair Instructions	
Genie part number (Genie Instructions Library)	57.4700.0003

Checklist C Procedures

C-1
Perform Engine Maintenance - Perkins Models



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

Only 1104D Engine
V-belts - inspect/adjust/replace

Only 854E Engine
Fan clearance - check

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8325-01), *Perkins 854E Operation and Maintenance Manual* (Perkins part number SEBU8726-02).

Perkins 1104D Operation and Maintenance Manual	
Genie part number	57.4700.0025
Perkins 854E-E34TA Operation and Maintenance Manual	
Genie part number	57.4700.0001

C-2
Perform Engine Maintenance - Perkins Models



Note: Engine specifications require that this procedure be performed every 500 hours or annually.

Battery electrolite level - check
Cooling system supplemental coolant additive (SCA) test/add
Engine oil and filter - change
Fuel system primary filter (water separator) element - replace
Fuel system secondary filter - replace
Radiator - clean

Only 1104D Engine
Crankcase breather (canister) - replace
Engine air cleaner element (dual element) - clean/replace
Hoses and clamps - inspect/replace

Only 854E Engine
Engine air cleaner element (single element) - inspect/clean/replace

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8325-01), *Perkins 854E Operation and Maintenance Manual* (Perkins part number SEBU8726-02).

Perkins 1104D Operation and Maintenance Manual	
Genie part number	57.4700.0025
Perkins 854E-E34TA Operation and Maintenance Manual	
Genie part number	57.4700.0001

C-3
Inspect and Lubricate the Sequencing Chains - GTH-4018R/GTH-5021R



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

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

Note: 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.

Note: 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.

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

Note: Please ask the service to know the correct procedure to better understand 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.

Note: 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.

Note: 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-4018R/GTH-5021R

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.

Note: 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.

Note: Perform this procedure with the engine off.

1 Start the engine.

2 Remove the access cover to the tank.

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

4 Unscrew the return filter.

5 Install the new filter element.

6 Tighten the filler/breather cap.

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

8 Start the engine.

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

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

D-4
Change Gearbox Oil

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

1 Place a container of suitable size under drain plug (A).

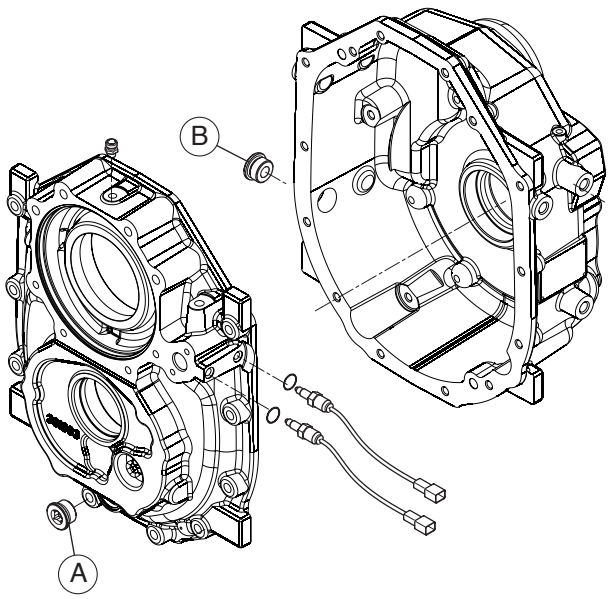
2 Remove plug (B).

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
Change Slewing Upper Structure Reduction Gear Oil



Note: Reduction gear specifications require that this procedure be performed every 1000 hours.

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

2 Place a container of suitable size under drain plug.

3 Remove drain plug and let oil flow out of the reduction gear.

4 Unscrew the filling plug.

5 Clean level plug all around.

6 Loosen level plug.

7 Refit and tighten drain plug.

8 Pour new oil through the hole of filling plug until it starts flowing out of hole of level plug.

9 Refit and tighten filling and level plugs.

D-6
Perform Engine Maintenance - Perkins Models



Note: Engine specifications require that this procedure be performed every 1000 hours.

Only 1104D Engine
Engine valve lash - inspect/adjust

Only 854E Engine
Water pump - Inspect

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8325-01), *Perkins 854E Operation and Maintenance Manual* (Perkins part number SEBU8726-02).

Perkins 1104D Operation and Maintenance Manual	
Genie part number	57.4700.0025
Perkins 854E-E34TA Operation and Maintenance Manual	
Genie part number	57.4700.0001

D-7
Perform Axle Maintenance



Note: Axle specifications require that this procedure be performed every 1500 hours of operation.

Change axle oil
clean magnetic oil plugs

Required maintenance procedures and additional axle information is available in the *Carraro 26.32M Axle Maintenance and Repair Manual* (Carraro part number CA270015 - Front Axle, CA270016 - Rear Axle).

Carraro 26.32M Front Axle Maintenance and Repair Instructions	
Genie part number (Genie Instructions Library)	57.4700.0002
Carraro 26.32M Rear Axle Maintenance and Repair Instructions	
Genie part number (Genie Instructions Library)	57.4700.00003

D-8
Perform Engine Maintenance - Perkins 854E Models



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

854E Engines
Engine crankcase breather element - replace

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

Perkins 854E-E34TA 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.

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

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 - Perkins Models



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

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

Only 1104D Engine
Alternator - inspect
Water pump - inspect

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8325-01), *Perkins 854E Operation and Maintenance Manual* (Perkins part number SEBU8726-02).

Perkins 1104D Operation and Maintenance Manual	
Genie part number	57.4700.0025
Perkins 854E-E34TA Operation and Maintenance Manual	
Genie part number	57.4700.0001

E-3
Perform Engine Maintenance - Perkins Models



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

Only 1104D Engine
Alternator Belt - Inspect/Adjust/Replace
Fuel injector - test/change

Only 854E Engine
Alternator - inspect
Alternator and Fan Belts - replace
Diesel Particulate Filter - clean
Oxygen sensor - replace
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 SEBU8325-01), *Perkins 854E Operation and Maintenance Manual* (Perkins part number SEBU8726-02).

Perkins 1104D Operation and Maintenance Manual	
Genie part number	57.4700.0025
Perkins 854E-E34TA Operation and Maintenance Manual	
Genie part number	57.4700.0001

CHECKLIST E PROCEDURES

E-4
Perform Engine Maintenance - Perkins Models



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

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 SEBU8325-01), *Perkins 854E Operation and Maintenance Manual* (Perkins part number SEBU8726-02).

Perkins 1104D Operation and Maintenance Manual	
Genie part number	57.4700.0025
Perkins 854E-E34TA Operation and Maintenance Manual	
Genie part number	57.4700.0001

E-5
Perform Engine Maintenance - Perkins Models



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

Aftercooler Core - Clean/Test

Required maintenance procedures and additional engine information is available in the *Perkins 1104D Operation and Maintenance Manual* (Perkins part number SEBU8325-01), *Perkins 854E Operation and Maintenance Manual* (Perkins part number SEBU8726-02).

Perkins 1104D Operation and Maintenance Manual	
Genie part number	57.4700.0025
Perkins 854E-E34TA Operation and Maintenance Manual	
Genie part number	57.4700.0001

E-6
Perform Engine Maintenance - Perkins 854E Models



Note: Engine specifications require that this procedure be performed every 6000 hours or every three years, whichever comes first.

Only 854E Engine
Cooling System Coolant
(Extended life coolant) - change

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

Perkins 854E-E34TA Operation and Maintenance Manual	
Genie part number	57.4700.0001

E-7
Perform Engine Maintenance - Perkins Models

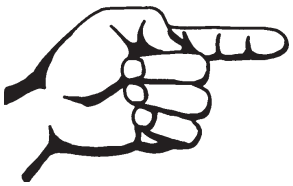


Note: Engine specifications require that this procedure be performed every 12000 hours or every six years, whichever comes first.

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 SEBU8325-01), *Perkins 854E Operation and Maintenance Manual* (Perkins part number SEBU8726-02).

Perkins 1104D Operation and Maintenance Manual	
Genie part number	57.4700.0025
Perkins 854E-E34TA Operation and Maintenance Manual	
Genie part number	57.4700.0001



This page intentionally left blank.

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 Sensors

How to Adjust The Boom Length and Angle Sensor

1 To adjust the sensors, proceed with a calibration of the overload system. Contact Service.

How to Test The Boom Length and angle sensor

1 Start the engine.

2 Fully retract the boom and move it to horizontal position (0°).

3 Confirm the position by pressing the "ENTER" key on the overload warning system and ensure that the message "boom length and angle" appears on the screen.

4 Gently operate the joystick to lift and extend the boom.

⊙ Result: Boom length and angle values on the display of the overload warning system shall increase gradually.

5 Gently operate the joystick to lower and retract the boom.

⊙ Result: Boom length and angle values on the display of the overload warning system shall decrease gradually.

1-2 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.

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.

BOOM COMPONENTS

How to Replace the Boom Retract Chains - GTH-4018R/ GTH-5021R

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

1 Start the engine and allow the engine to idle.

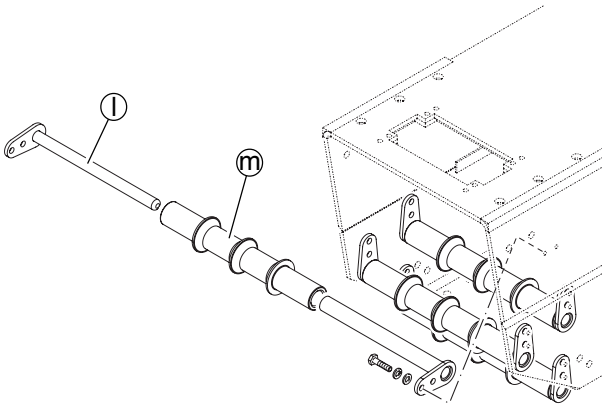
2 Raise the boom to a horizontal position.

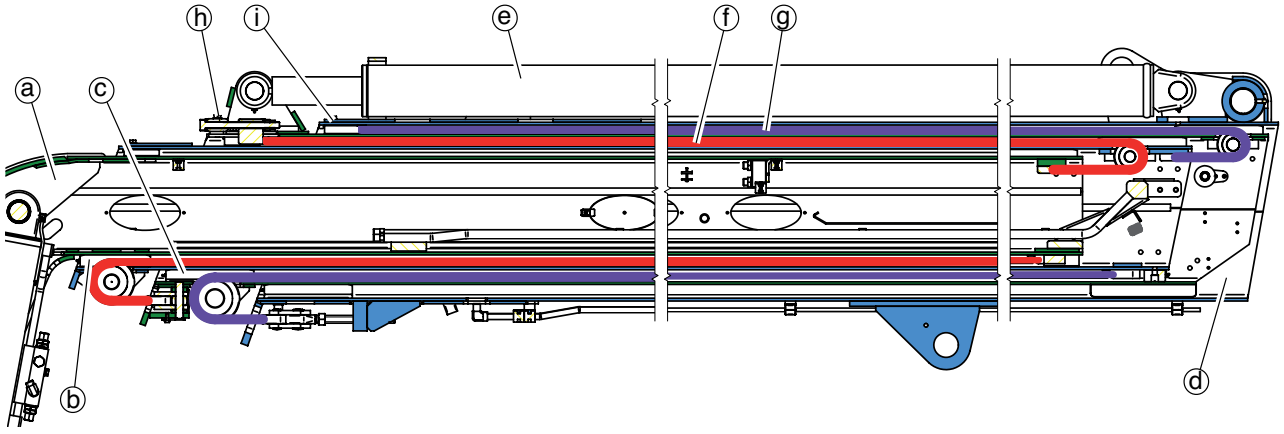
3 Fully retract the boom.

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

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.

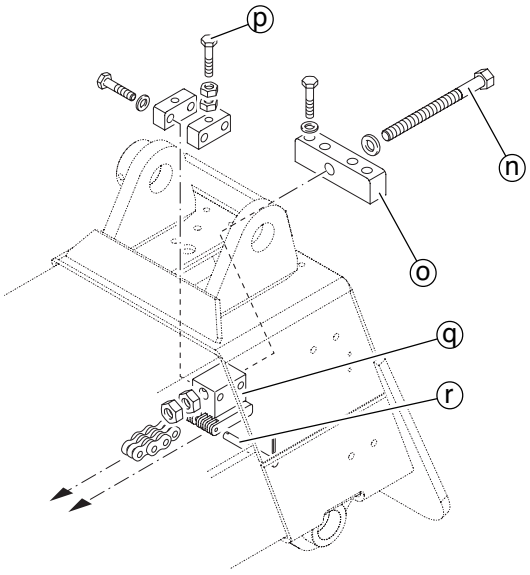
20 Install plate "o".

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.



BOOM COMPONENTS

How to Replace the Boom Extend Chains - GTH-4018R/ GTH-5021R

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

1 Start the engine and allow the engine to idle.

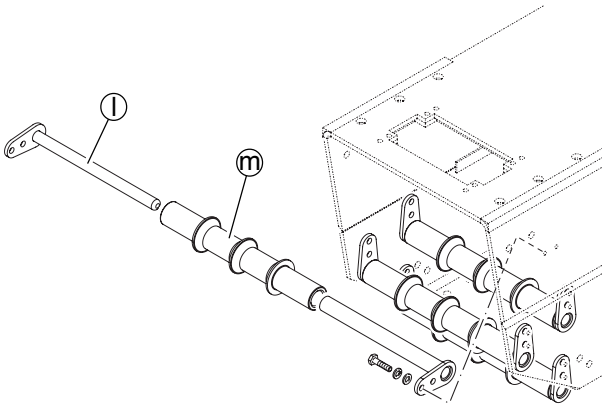
2 Raise the boom to a horizontal position.

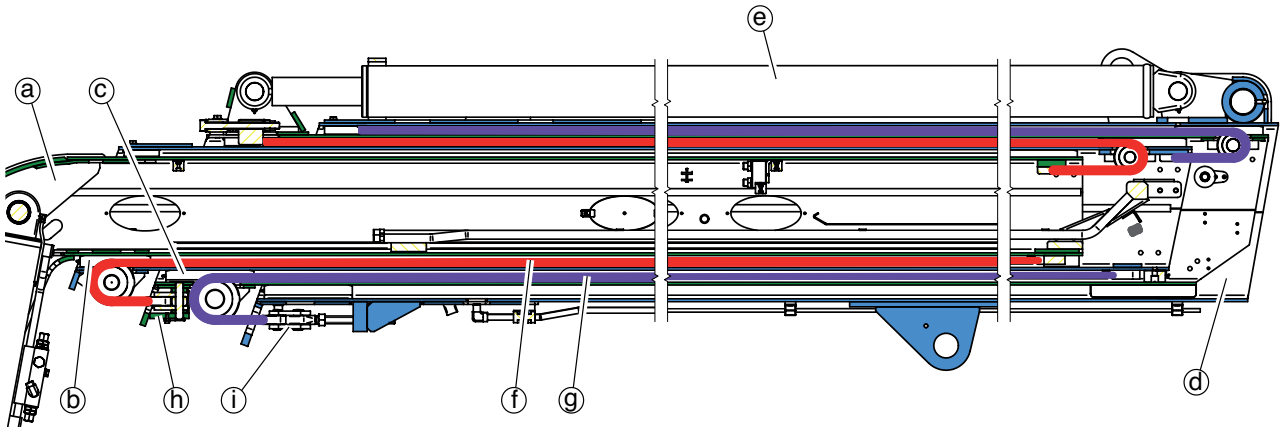
3 Fully retract the boom.

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".



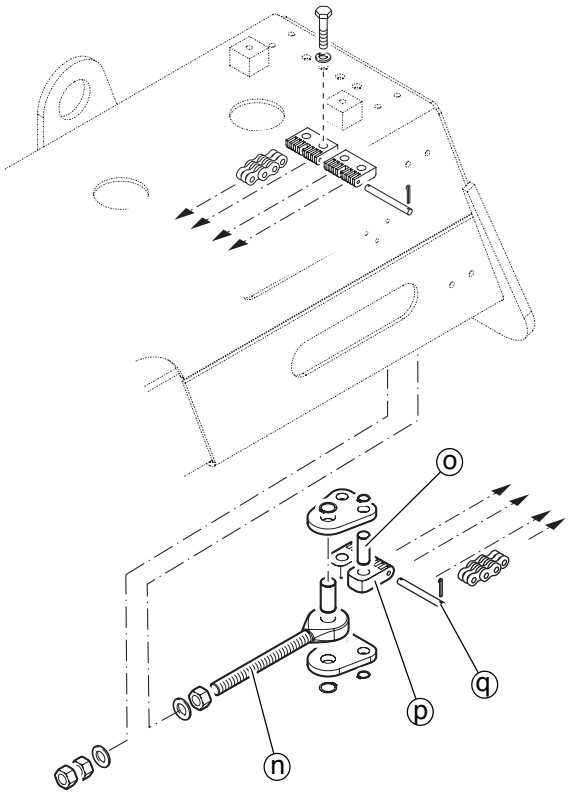


a boom tube number 1
b boom tube number 2
c boom tube number 3
d boom tube number 4
e extend cylinder
f extend chain tube number 1
g extend chain tube number 2
h tube number 1 extend chain locking device
i tube number 2 extend chain locking device

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.

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

12 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.

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

14 Remove the guide rope.

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

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

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

18 Tension the chain.

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

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

BOOM COMPONENTS

How to Remove the Boom

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

Note: When removing a hose assembly or fitting, the O-ring 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.

3 Lift the boom until the pin locking the lift cylinder 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.

How to Disassemble the Boom - GTH-4016R

⚠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 Lifting fork frame. See 1-2, *How to Remove the Lifting Fork Frame.*

2 Remove the bottom end carter of the boom.

3 Tag, disconnect and plug the hydraulic hoses of the boom tube number 1 extend cylinder.

4 Using a soft metal drift, remove the boom tube number 1 extend cylinder locking pin **a**, bottom end. Keep attention to choose a drift smaller than the pivot pin!

5 Using a soft metal drift, remove the boom tube number 2 extend cylinder locking pin **b**, rod end. Keep attention to choose a drift smaller than the pivot pin!

6 Tag, disconnect and plug the internal hydraulic hoses for fork levelling and attachment locking cylinder (when present).

7 Remove the hoses track.

8 Remove the front and upper lateral paths of the boom tube number 3.

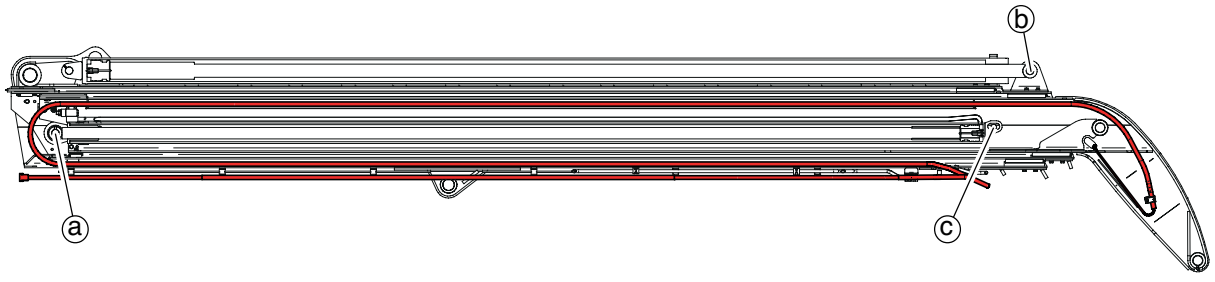
9 Remove the rear lateral and upper paths of the boom tube number 2.

10 With a lifting strap connected to the overhead crane, sling the boom tube number 1 and 2 out of the 3rd one. Just before completely separating the two sections, remove the lower paths of the boom tube number 3.

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

12 Using a soft metal drift, remove the boom tube number 1 extend cylinder locking pin **c**, rod end. Keep attention to choose a drift smaller than the pivot pin!

13 With a lifting strap connected to the overhead crane, sling the boom tube number 1 extend cylinder out of the boom.



BOOM COMPONENTS

14 Remove the front lateral and upper paths of the boom tube number 2.

15 Remove the rear lateral paths of the boom tube number 1.

16 With a lifting strap connected to the overhead crane, sling the boom tube number 1 out of the 2nd one. Just before completely separating the two sections, remove the front lower paths of the boom tube number 2.

How to Disassemble the Boom - GTH-4018R/GTH-5021R

⚠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 **1** from bracket **3**.

4 Remove the two brackets **2** 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.

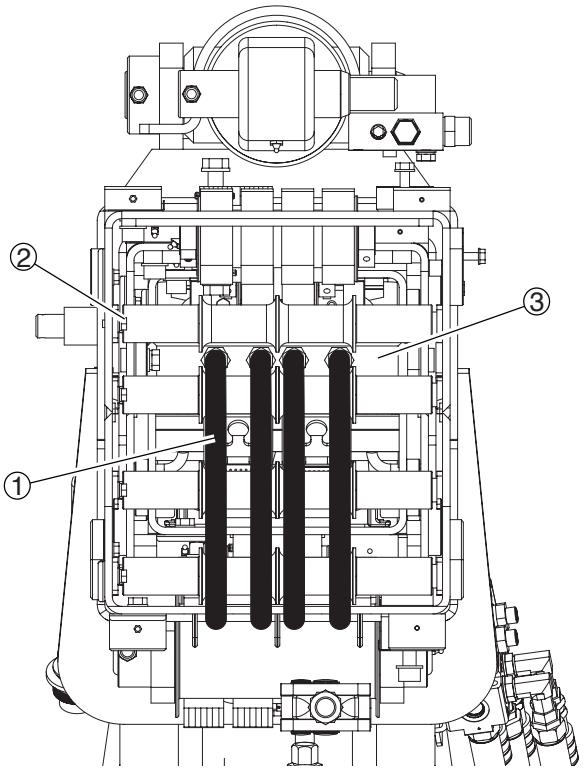
8 Pull out the internal steel hoses assembly.

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. See 1-2, *How to Disassemble and Reassemble the Boom 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.



BOOM COMPONENTS

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 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.

How to Disassemble and Reassemble the Boom Electrical Harness - GTH-4018R/GTH-5021R

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**”.

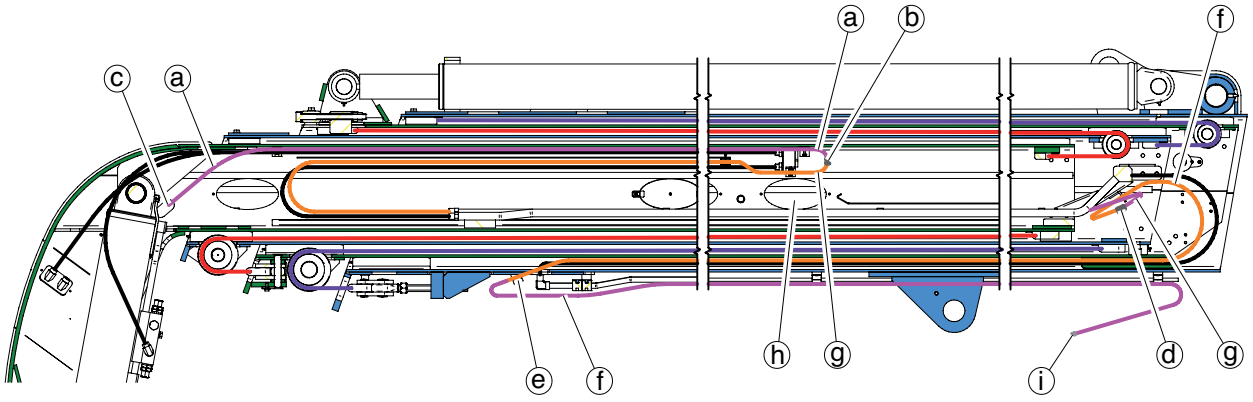
12 Refit all wire terminals and connect the wires to connectors “**b**”.

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

Re-Sequencing the Telesopic Boom - GTH-4016R

If, during normal operation, a change in the boom extended lengths of 150mm or more is noticed when the boom is retracted, proceed as follows:

1 Fully retract the telescope cylinder and keep the retraction system under pressure (approx. 15 seconds); the boom sections should become equal.

If after performing this procedure the boom still remains out of sequence, proceed with the steps below;

2 Move the boom to the zero position, fully retract the boom and keep the retraction system under pressure for approx. 20 seconds.

3 Raise the boom to approx. 60° and operate the retraction function for approx. 20 seconds.

4 Lower the fully retracted boom to the lowest angle possible without strinking the ground and keep the retraction system under pressure for approx. 20 seconds.

If, despite these procedures, the boom does not return in sequence, raise the boom to approx. 60°, fully extend and retract it to full stroke and keep the retraction system under pressure (approx. 20 seconds).
By following these procedures the boom resequencing should be correct.

1-3
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 Using the overhead crane, raise the boom to a horizontal position. Remove the cylinder from the machine.

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

BOOM COMPONENTS

1-4
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. Extend the boom enough to access the extend cylinder pivot pin.

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

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

4 Remove the retaining fasteners that secure the cylinder retainer.

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

6 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.

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 Partially pull the cylinder out. Using a lifting strap and an overhead crane, remove the cylinder.

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

How to Remove the Internal Extend Cylinder - GTH-4016R

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. Extend the boom enough to access the extend cylinder rod end pivot pin.

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

3 Using a soft metal drift and a hammer, remove the pivot pin. If necessary, lift the cylinder using a jack under the boom, corrisponding to the hole inside the 3rd boom section.

4 Retract the boom completely, remove the retaining fasteners that secure the pivot pin, bottom end using a soft metal drift and a hammer.

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

6 Tag, disconnect and plug the hydraulic hoses from the blocking valve of 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.

7 Remove the four screws fixing the cylinder to the boom.

8 Partially pull the cylinder out. Using a lifting strap and an overhead crane, remove the cylinder.

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

BOOM COMPONENTS

1-5
Fork Level Slave Cylinder

How to Remove the Fork Level Slave 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.

How to Replace the Fork Level Slave Cylinder Hoses

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 At the fork end of the boom, remove the plug and connect the replacement hydraulic hose to the hydraulic hose being replaced with a male union connector.

4 Install the replacement hydraulic hose by pulling the old hydraulic hose out of the pivot end of the boom assembly.

5 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.

BOOM COMPONENTS

1-6
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.

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.

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 Open the engine cover.

2 Disconnect the battery from the machine.

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

3 Open the access door above the hydraulic tank.

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

5 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.

6 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.

7 Disconnect the wire from the throttle pedal:
- remove the locking clip;
- remove the fasteners securing the throttle rope.

8 Disconnect the wire from the manual throttle:
- disconnect the wire of the manual accelerator;
- remove the fasteners securing the throttle bracket.

9 Disconnect the power cables from the horn.

OPERATOR'S COMPARTMENT

10 Disconnect the ground wire.

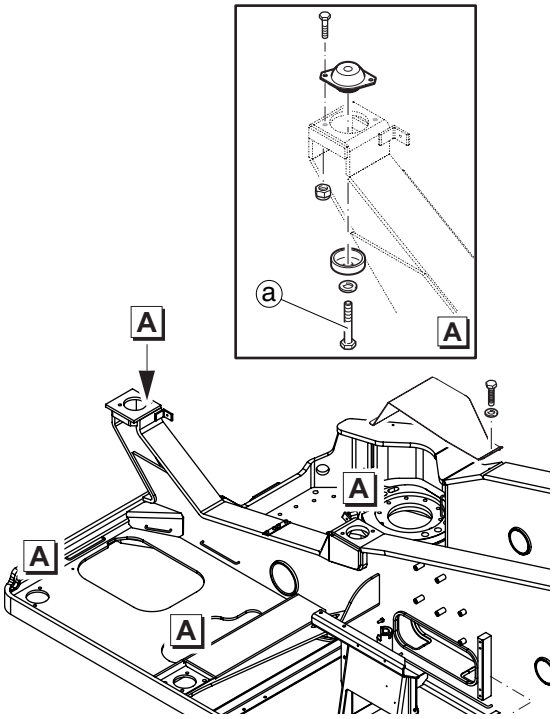
11 Remove the 4 retaining fasteners "a" of the cabin.

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

13 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)



2-2
Machine Controls

How to Remove the Steering Column

1 Open the engine cover.

2 Disconnect the battery from the machine.

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

3 Remove the lower part of the dashboard.

4 Remove the upper part of the dashboard.

5 Remove the transmission control lever.

6 Remove the light control lever.

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

8 Remove the steering column.

How to Remove the Steering Wheel

1 Open the engine cover.

2 Disconnect the battery from the machine.

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

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

OPERATOR'S COMPARTMENT

How to Remove the Steer Rotation Actuator

1 Remove the steering column. See 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 - Models with Single Joystick

1 Open the engine cover.

2 Disconnect the battery from the machine.

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

3 Remove the retaining fasteners that secure the joystick to the right armrest.

4 Remove the joystick.

5 Disconnect the joystick harness connector.

How to Remove the Joystick - Models with Dual Joysticks

1 Open the engine cover.

2 Disconnect the battery from the machine.

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

3 Remove the retaining fasteners that secure the joystick to the left armrest.

4 Remove the joystick.

5 Disconnect the joystick harness connector.

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 Open the engine cover.

5 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.

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.

OPERATOR'S COMPARTMENT

How to Remove the Gauge Cluster Assembly

1 Open the engine cover.

2 Disconnect the battery from the machine.

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

3 Remove the upper part of the dashboard.

4 Reach under the dashboard and gently push the gauge cluster through the opening in the dashboard.

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

Fuel and Hydraulic Tank

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 Open the engine cover.

2 Disconnect the battery from the machine.

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

3 Remove the filler cap from the fuel tank.

4 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.

5 Remove the small cover located on the top of the fuel tank.

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

7 Loosen all the clamps and pull out the hoses.

8 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.

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

10 Remove the tank from the machine.

FUEL AND HYDRAULIC TANK

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 Open the engine cover.

3 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 Close the oil intake valve.

5 Remove the small cover located on the top of the oil tank.

6 Remove the filler cap from the hydraulic tank.

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

8 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.

9 Remove the carter located on the top of the oil tank.

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

11 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.

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

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

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

15 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.

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

17 Remove the tank 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 SEBU8325-01) and the *Perkins 1104D Disassembly and Assembly Manual* (Perkins part number KENR6247).

Perkins 1104D Operation and Maintenance Manual	
Genie part number	57.4700.0025
Perkins 1104D Disassembly and Assembly Manual	
Genie part number	57.4700.0024

How to Repair the Perkins 854E Engine

Repair procedures and additional engine information is available in the *Perkins 854E Operation and Maintenance Manual* (Perkins part number SEBU8726-02) and the *Perkins 854E Disassembly and Assembly Manual* (Perkins part number KENR6247-02) and the *Perkins 854E Troubleshooting Manual* (Perkins part number UENR0612-06).

Perkins 854E-E34TA Operation and Maintenance Manual	
Genie part number	57.4700.0001
Perkins 854E-E34TA Disassembly and Assembly Manual	
Genie part number	57.4700.0013
Perkins 854E-E34TA Troubleshooting Manual	
Genie part number	57.4700.0016

ENGINES

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 located behind the cabin steps.

2 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.

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

4 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 Install the boom function pump on the transmission pump.

2 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.

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

4 Start the engine and prime the pump. See 6-1, *How to Prime the Boom Function Gear Pump*.

5 Inspect for leaks.

6 Adjust the pump pressure. See 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 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to port TP4 (auxiliary circuit pressure test port).

2 Start the engine.

3 Increase the engine speed to 2000 rpm.

4 Close the valve placed near to the relief valve.

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

⊠ Pressure is not within specification. Adjust the auxiliary system relief valve.

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 located behind the cabin steps.

2 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.

3 Cap the auxiliary gear pump holes and the hoses ones.

4 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 Install the auxiliary gear pump to the engine.

2 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.

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

4 Start the engine and prime the pump. See 6-2, *How to Prime the Auxiliary Gear Pump.*

5 Inspect for leaks.

6 Adjust the pump pressure. See 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 Connect a 0 to 8700 psi / 0 to 600 bar pressure gauge to port TP2 (hydrostatic transmission high pressure test port).

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. 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.

4 Increase the engine speed to 1100 rpm.

5 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 the high pressure relief valve located under the pump.

6 Increase the engine speed to maximum rpm.

⊙ Result: the pressure gauge on test port TP2 reads 6525 psi / 450 bar.

⊠ Pressure is not within specification. Adjust the high pressure relief valve located on the right side of the pump.

7 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 front cover of the engine housing.

3 Remove the cover that is under engine.

4 Locate the battery disconnect switch and disconnect the battery from the machine.

5 Remove the retaining fasteners that secure the battery disconnect switch mounting plate.

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 Remove the auxiliary gear pump from the hydrostatic transmission pump.

8 Tag and disconnect the harness from the transmission.

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

10 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 front cover of the engine housing.

3 Remove the cover that is under engine.

4 Attach a lifting strap and lift the transmission pump using a overhead crane.

5 Install the hydrostatic transmission pump on the engine.

6 Remove the fitting caps from the hydrostatic transmission pump.

7 Remove the hoses caps.

8 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.

10 Connect the harness to the transmission pump.

11 Install the auxiliary gear pump on the hydrostatic transmission pump.

12 Install the retaining fasteners securing the battery disconnect switch mounting plate.

13 Start the engine and prime the pump. See 6-3, *How to Prime the Hydrostatic Transmission Pump.*

14 Inspect for leaks.

15 Adjust the pump pressure. See 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 Connect a 0 to 870 psi / 0 to 60 bar pressure gauge to port TP3 (hydrostatic transmission boost pressure test port).

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

3 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
Function Manifold Components - Models with Single Joystick

How to Adjust the Load Sense Relief Valve

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to port TP1 on the function manifold (telescopic boom, slewing upper structure and undercarriage functions hydraulic circuit test port).

2 Start the engine.

3 Increase the engine speed to 2000 rpm.

4 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 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 located behind the cabin steps.

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.

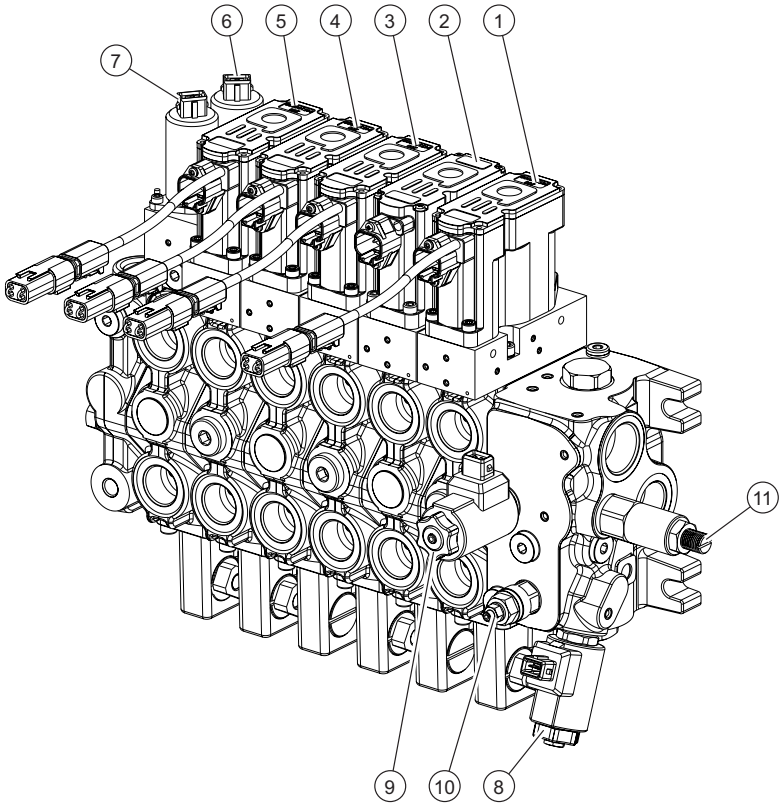
4 Support and secure the function manifold to a suitable lifting device. Do not apply lighting pressure.

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.

Function Manifold Components



Index No.	Description	Schematics Item	Function
1	Proportional directional solenoid valve	X104	Boom up/down
2	Proportional directional solenoid valve	X105	Forks tilt
3	Proportional directional solenoid valve	X106	Boom in/out
4	Proportional directional solenoid valve	X107	Attachment lock/unlock
5	Proportional directional solenoid valve	X108	Slewing upper structure rotation
6	solenoid valve, 2 position 6 way	X110	Outriggers down/sway
7	solenoid valve, 2 position 6 way	X109	Outriggers up/sway
8	solenoid valve, 2 position 2 way	X103	Main flow cut-off solenoid valve
9	solenoid valve, 2 position 3 way	X102	Internal piloting line cut-off solenoid valve
10	Relief valve, 4050 psi / 280 bar	MD	System relief
11	Differential sensing valve	MC	Meters flow to functions
12	Pressure reducing valve	ME	Pilot pressure to functions

MANIFOLDS

7-2
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

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

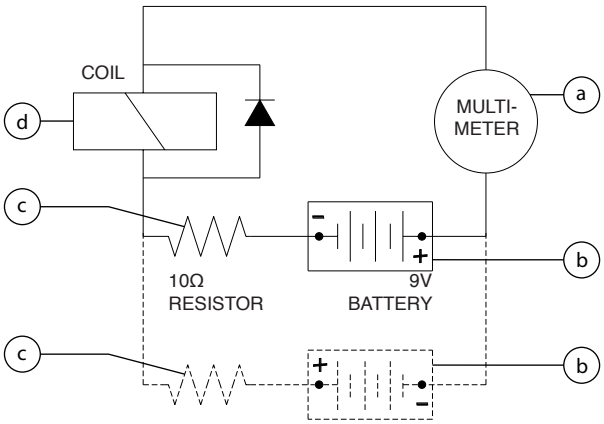
Note: The battery should read 9V DC or more when measured across the terminals.

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 Valve Block

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*.

⚠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 Tag and disconnect the harness from the outrigger selector valve block.

2 Tag, disconnect and plug the hoses from the outrigger selector valve block.

⚠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 retaining fasteners securing the outrigger selector valve block.

4 Remove the outrigger valve block.

How to Test the Outriggers Valve Block

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to port TP1 on the function manifold (telescopic boom, slewing upper structure and undercarriage functions hydraulic circuit test port).

2 Start the engine and lower the outriggers.

3 Increase the engine speed to maximum rpm.

4 Activate and hold the outrigger down switches.

⊙ Result: the pressure gauge on test port TP1 reads 4050 psi / 280 bar.

How to Remove an Outrigger Cylinder - GTH-4016R

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*.

1 Start the engine and lower the outrigger.

2 Remove the cover protecting the extend cylinder.

3 Tag, disconnect and plug the two hydraulic supply hoses at the outrigger cylinder. Cap the fittings.

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

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

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

5 Remove the fasteners securing the outrigger cylinder barrel-end pivot pin to the chassis.

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

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

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

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

9 Remove the cylinder from the machine.

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

OUTRIGGERS

How to Remove an Outrigger Arm Extend/Retract Cylinder - GTH-4018R/GTH-5021R

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*.

1 Start the engine and extend the outrigger arm until the pin is accessible.

2 Remove the cover protecting the extend cylinder.

3 Tag, disconnect and plug the two hydraulic supply hoses at the outrigger cylinder. Cap the fittings.

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

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

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

5 Remove the fasteners securing the outrigger cylinder barrel-end pivot pin to the chassis.

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

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

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

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

9 Remove the cylinder from the machine.

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

How to Remove an Outrigger Foot Raise/Retract Cylinder - GTH-4018R/GTH-5021R

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*.

1 Tag, disconnect and plug the two hydraulic supply hoses at the foot cylinder. Cap the fittings.

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

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

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

3 Remove the fasteners securing the outrigger foot barrel-end to the machine.

4 Remove the cylinder from the machine.

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

OUTRIGGERS

8-2 Outriggers Sensors

How to Test the Outriggers Proximity Switches

To test the outriggers proximity switches, refer to Section 5, *How to read the Overload Warning System Dsplay*.

How to Test the Outriggers Load Pins

To test the load pins refer to Section 5, *How to read the Overload Warning System Dsplay.*

- Result: with the outriggers fully retracted, a value of 100 BIT will be displayed.
- Result: with the outriggers fully extended and no load on the machine, a value of 400 BIT will be displayed.

Slewing upper structure

9-1
Slewing upper structure

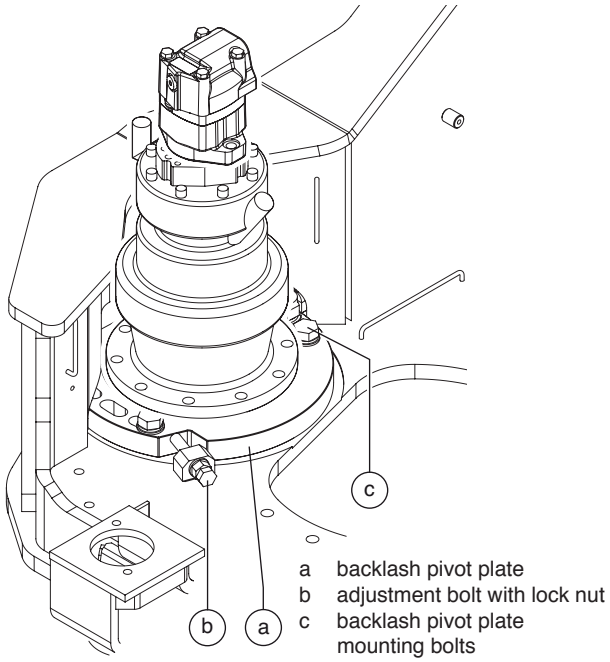
How to Adjust the Slewing upper structure Rotation Gear Backlash

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

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

1 Secure the slewing upper structure from rotating with the slewing upper structure rotation lock pin.

Note: The slewing upper structure rotation lock pin is located next to the boom rest pad.



a backlash pivot plate
b adjustment bolt with lock nut
c backlash pivot plate mounting bolts

2 Loosen the backlash pivot plate mounting fasteners.

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

4 Loosen the lock nut on the adjustment bolt.

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

6 Turn the adjustment bolt $^{1}/_{2}$ turn counterclockwise. Tighten the lock nut on the adjustment bolt.

7 Rotate the backlash pivot plate away from the slewing upper structure until it contacts the adjustment bolt.
Then torque the mounting fasteners on the backlash pivot plate to specification. Refer to Section 2, *Specifications*.

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

SLEWING UPPER STRUCTURE

9-2
Slewing upper structure Sensors

How to Test the Slewing upper structure Proximity Switches

1 Align the slewing upper structure to the chassis.

2 Insert the slewing upper structure rotation lock pin.

3 The overload system display will show "Slewing upper structure ALIGNED" on the eighth line.

4 With the outriggers fully extended, the overload system display will show "OUTRIGGERS FRONTAL" on the second line.

5 Remove the slewing upper structure rotation lock pin.

6 Rotate the slewing upper structure more then 10° (refer to the decal applied on the chassis).

7 With the outriggers fully extended, the overload system display will show "OUTRIGGERS LATERAL" on the second line.

LMI (Overload System)

10-1 LMI

How to Test the Pressure Switches

To test the pressure switches, refer to Section 6, *Overload Warning System Fault Codes*.

How to Remove a Pressure Switch

⚠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 Elevate the boom to 50°.

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

3 Tag and disconnect the harness from the pressure switch.

4 Operate the lever of the function manifold and relieve pressure in the circuit.

5 Slowly remove the pressure switch.

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

6 Plug the cavity in the cylinder.

Miscellaneaous

11-1
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 TP9 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 TP9 reads 2200 psi / 150 bar.

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

11-2
Differential Lock Pressure Reducing Valve

How to Test the Differential Lock Pressure Reducing Valve

1 Connect a 0 to 870 psi / 0 to 60 bar pressure gauge to test port TP7 located on the fork end, engine side of the drive chassis.

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

⊙ Result: the pressure gauge on test port TP7 reads 145 psi / 10 bar.

⊠ Pressure is not within specification. Adjust the pressure reducing relief valve.

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 Read the Overload Warning System Display

1 Start the engine.

2 Select “Forks”.

3 ENTER.

4 Simultaneously press the PLUS (+) and MINUS (-) button.

5 Page 1 - SENSOR PAGE
- **frontal slewing upper structure** when the value is 1, it indicates the slewing upper structure is between -10° and +10°;
- **aligned slewing upper structure** when the value is 1, it indicates the slewing upper structure is perfectly aligned and the slewing upper structure rotation lock pin can be inserted;
- **rear tires aligned** when the value is 1, it indicates the rear tires are perfectly aligned;
- **boom plug connected** when the value is 1, it indicates the man-platform plug is connected and the controls in the operator's compartment are disabled.

6 Press the ARROW UP button

7 Page 2 - “STABILIZERS SENSOR”
- **stab down** when the value is 1, it indicates the outrigger is fully extended. It is connected to the load cell pin and safety switch;
- **safety switch** when the value is 1, it indicates the outrigger is fully extended.

8 Press the ARROW UP button

9 Page 3 - “STABILIZERS SENSOR”
- **stab down** when the value is 1, it indicates the outrigger is on the ground. It is connected to the load cell pin;
- **bit** is the signal that the load cell pin sent. If the value is lower than 82 BIT, the cell is broken or disconnected. If the value if higher than 940 BIT, the cell is broken. In both situations the warning system will enter in alarm mode and the message “err stab fw/bw left/right open” will appear at the bottom of the main page. If the load cell seized up, the warning message “err stab fw/bw left/righ vbat” will appear.

10 Press the ARROW UP button

11 Page 4 - “TILT SENSOR”
- it represents (in BIT) the electronic levelling sensor and it ranges between ± 2.5°. When the value it registers is beyond the set range, the man-platform controls cannot be used and the machine levelling warning light on the dashboard starts blinking.

12 Press the ARROW UP button

13 Page 5 - “MOTION SENSORS”
- **raised stab** when the value is 1, it indicates the outrigger is in storage position, and the machine can be moved;
- **parking brake** when the value is 1, it indicates the parking brake is not engaged.

14 Press the ARROW UP button

15 Page 6 - “STABILIZERS PUSHBUTT”
- when the value is 1, it indicates the outriggers pushbutton is active.

16 Press the ARROW UP button

17 Page 7 - "SWITCHES/PUSHBUTTON"
this screen includes the following pushbuttons:

- **job site, platform, 2nd hydr line, mixing bucket, load limiter bypass, coordinate steering, crab steering**: for each of them, when the value is 1, it indicates the pushbutton is active.

18 Press the ARROW UP button

19 Page 8
- "MAX SPEED TUR ROT POT"

- it indicates the % value of the slewing upper structure rotation speed potentiometer;

- "ENVIRONMENT TEMPERAT"

- it indicates the ambient temperature, joystick doesn't work under -20°C;

- "DUMP VALVE STATUS"

- when the value is 1, it indicates the dump valve status is active.

20 Press the ARROW UP button

21 Page 9 - "RIGHT JOYSTICK"
it indicates the right joystick movement values:

- **y** raise/lower;
- **x** forks rotation/attachment hydraulic locking %;
- **fpry** extension/retraction %;
- **fprx** slewing upper structure rotation %;
- **aut.Funct.Button** when the value is 1, the white pushbutton on the joystick is active;
- **enabling button** when the value is 1, the enabling control switch on the joystick is active;
- **function button** not active.

22 Press the ARROW UP button

23 Page 10 - "LEFT JOYSTICK"
it indicates the left joystick movement values:

- **y** lower/recover the winch rope;
- **x** slewing upper structure rotation %;
- **enabling button** when the value is 1, the enabling control switch on the joystick is active.

24 Press the ARROW UP button

25 Page 10 - "PRESSURE SENSORS"
it represents the pressure value (in bar and BIT) for the pressure switches of the lift and level cylinders:

- **Psp** pressure switch value for lift cylinder rod chamber;
- **psr** pressure switch value for lift cylinder piston chamber;
- **pep** pressure switch value for level cylinder rod chamber;
- **per** pressure switch value for level cylinder piston chamber.

26 Press the ARROW UP button

27 Page 10 - "MAIN VALVE DRIVER"
indicates the INPUT values to the control unit from the function manifold and from the joystick.

- **pwm** is the value in BIT from the joystick;
- **pos** is the value in BIT from the function manifold. This value can be displayed only with the engine on.

SETTINGS

How to Set the Overload Warning System Display

Note: Prior to setting the Overload Warning system, contact Genie Service Department to obtain the programming password.

1 Start the engine.

2 Stabilize the machine on a level ground.

3 Align the slewing upper structure to the chassis.

4 Insert the slewing upper structure rotation lock pin.

5 Turn off the engine.

6 Start the engine again.

7 Press “ENTER” and then simultaneously press the PLUS (+) or MINUS (-) key up to the request of password.

8 Press the PLUS (+) key in order to increase the value. Press the MINUS (-) key in order to decrease the value.

9 Press "ENTER" to confirm each character.

10 Once the correct password has been entered, the message “2nd LEVEL ACCESS” is displayed.

11 Press the PLUS (+) key in order to display the setting options.

12 Language.

13 Press ENTER to confirm.

14 Access the language menu and use the ARROW UP or ARROW DOWN key to select the language.

15 Press ENTER to confirm.

16 Press the PLUS (+) or MINUS (-) key to select “SAVE”.

17 Press ENTER to confirm.

18 Press the PLUS (+) or MINUS (-) key to select “EXIT”.

19 Press ENTER to confirm.

20 Press the ARROW UP or ARROW DOWN key and highlight “LENGTH”.

21 Completely retract the boom.

22 Press ENTER to confirm.

23 Press the PLUS (+) or MINUS (-) key to select “MIN”.

24 Press ENTER to confirm.

25 Press the PLUS (+) or MINUS (-) key to select “SAVE”.

26 Press ENTER to confirm.

27 Completely extend the boom.

28 Press the PLUS (+) or MINUS (-) key to select “MAX”.

29 Press ENTER to confirm.

30 Press the PLUS (+) or MINUS (-) key to select “SAVE”.

31 Press ENTER to confirm.

32 Press the PLUS (+) or MINUS (-) key to select “EXIT”.

33 Press ENTER to confirm.

SETTINGS

34 Press the ARROW UP key or the ARROW DOWN key to highlight “ANGLE”.

35 Press ENTER to confirm.

36 Raise the boom to a horizontal position. Using a digital level, adjust the boom to 0°.

37 Press the PLUS (+) or MINUS (-) key to select “ZERO”.

38 Press ENTER to confirm.

39 Press the PLUS (+) or MINUS (-) key to select “SAVE”.

40 Press ENTER to confirm.

41 Press the PLUS (+) or MINUS (-) key to select “EXIT”.

42 Press ENTER to confirm.

43 TILT SENSOR (if equipped).

44 Press ENTER to confirm.

45 Press the PLUS (+) or MINUS (-) key to select “ZERO”.

46 Press ENTER to confirm.

47 Press the PLUS (+) or MINUS (-) key to select “SAVE”.

48 Press ENTER to confirm.

49 Press the PLUS (+) or MINUS (-) key to select “EXIT”.

50 Verify the Machine Levelled Warning Light is on.

51 CLOCK.

52 Press ENTER to confirm.

53 Press the PLUS (+) or MINUS (-) key to select “MODIF”.

54 Press ENTER to confirm.

55 Blinking cursor passes to year field: enter the correct year using the PLUS (+) or MINUS (-) key.

56 Press ENTER to confirm.

57 Blinking cursor passes to month field: enter the correct month using the PLUS (+) or MINUS (-) key.

58 Press ENTER to confirm.

59 Blinking cursor passes to to day field: enter the correct day using the PLUS (+) or MINUS (-) key.

60 Press the PLUS (+) or MINUS (-) key to select “SAVE”.

61 Press ENTER to confirm.

62 Press the PLUS (+) or MINUS (-) key to select “EXIT”.

63 Press ENTER to confirm.

64 Press the ARROW UP key or the ARROW DOWN key to highlight “ENABLING IMPLEMENTS”.

65 Press ENTER to confirm.

SETTINGS

66 Press the ARROW UP or ARROW DOWN key to highlight the attachment to be modified.

67 Press ENTER to confirm.

68 Press the PLUS (+) or MINUS (-) key to highlight “MODIF”.

69 Press ENTER to confirm.

70 Press the PLUS (+) or MINUS (-) key and select “0” if no attachment is present, or “1” if the attachment is present.

71 Press the PLUS (+) or MINUS (-) key to highlight “SAVE”.

72 Press ENTER to confirm.

73 Press the PLUS (+) or MINUS (-) key to highlight “EXIT”.

74 Press ENTER to confirm.

75 Press the ESC key.

76 Turn off the engine and then start it again.

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:

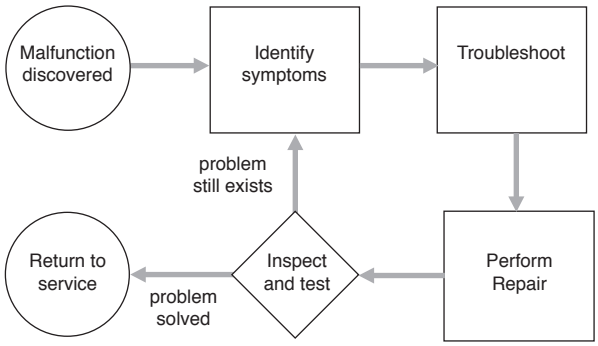
- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

⚠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.

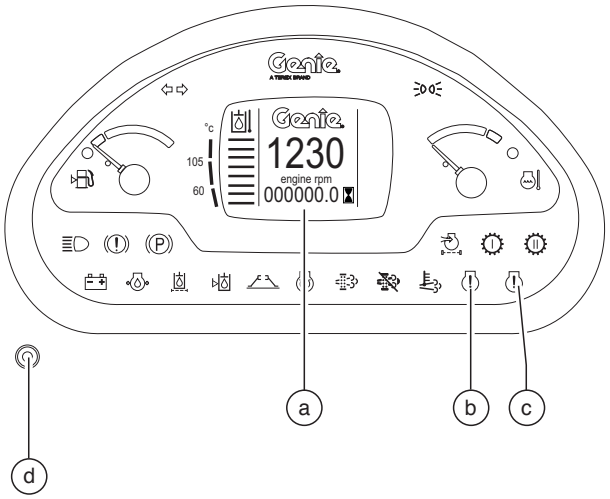
Active Fault Codes
To make the active fault codes visible, start the engine or simply switch on the electric circuit by cycling the key switch from off to on. Press the diagnostic button “d” and hold it pressed for at least 5 seconds.
To quit the active fault codes page, press the diagnostic button “d” 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 854E-E34TA Engine

SPN	FMI	Description
27	3	Engine Exhaust Gas Recirculation Valve Postion: Voltage Above Normal
27	4	Engine Exhaust Gas Recirculation Valve Postion: Voltage Below Normal
29	3	Accelerator Pedal Position 2: Voltage Above Normal
29	4	Accelerator Pedal Position 2: Voltage Below Normal
51	3	Engine Throttle Valve Position 1: Voltage Above Normal
51	4	Engine Throttle Valve Position 1: Voltage Below Normal
91	3	Accelerator Pedal Position 1: Voltage Above Normal
91	4	Accelerator Pedal Position 1: Voltage Below Normal
97	15	Water in Fuel indicator: High - least severe
100	2	Engine Oil Pressure: Erratic, Intermittent or Incorrect
100	17	Engine Oil Pressure: Low - least severe
102	3	Engine Intake Manifold #1 Pressure: Voltage Above Normal
102	4	Engine Intake Manifold #1 Pressure: Voltage Below Normal
102	20	Engine Intake Manifold #1 Pressure: Data Drifted High
102	21	Engine Intake Manifold #1 Pressure: Data Drifted Low
105	3	Engine Intake Manifold #1 Temperature: Voltage Above Normal
105	4	Engine Intake Manifold #1 Temperature: Voltage Below Normal
107	2	Engine Air Filter 1 Differential Pressure: Erratic, Intermittent or Incorrect
107	15	Engine Air Filter 1 Differential Pressure: High - least severe
107	16	Engine Air Filter 1 Differential Pressure: High - moderate severity
108	3	Barometric Pressure: Voltage Above Normal
108	4	Barometric Pressure: Voltage Below Normal
110	3	Engine Coolant Temperature: Voltage Above Normal
110	4	Engine Coolant Temperature: Voltage Below Normal
110	15	Engine Coolant Temperature: High - least severe
110	16	Engine Coolant Temperature: High - moderate severity
152	2	Number of ECU Resets: Erratic, Intermittent or Incorrect
157	0	Engine Injector Metering Rail #1 Pressure: High - most severe
157	2	Engine Injector Metering Rail #1 Pressure: Erratic, Intermittent or Incorrect
157	3	Engine Injector Metering Rail #1 Pressure: Voltage Above Normal

FAULT CODES

SPN	FMI	Description
157	4	Engine Injector Metering Rail #1 Pressure: Voltage Below Normal
157	10	Engine Injector Metering Rail #1 Pressure: Abnormal Update Rate
157	16	Engine Injector Metering Rail #1 Pressure: High - moderate severity
157	17	Engine Injector Metering Rail #1 Pressure: High - Low - least severe
157	18	Engine Injector Metering Rail #1 Pressure: Low - moderate severity
166	2	Engine Rated Power: Erratic, Intermittent or Incorrect
166	14	Engine Rated Power: Special Instruction
168	3	Battery Potential / Power Input 1: Voltage Above Normal
168	4	Battery Potential / Power Input 1: Voltage Below Normal
172	3	Engine Air Inlet Temperature: Voltage Above Normal
172	4	Engine Air Inlet Temperature: Voltage Below Normal
173	3	Engine Exhaust Gas Temperature: Voltage Above Normal
173	4	Engine Exhaust Gas Temperature: Voltage Below Normal
174	3	Engine Fuel Temperature 1: Voltage Above Normal
174	4	Engine Fuel Temperature 1: Voltage Below Normal
190	8	Engine Speed: Abnormal Frequency, Pulse Width or Period
190	15	Engine Speed: High - least severe
558	2	Accelerator Pedal 1 Low Idle Switch: Erratic, Intermittent or Incorrect
593	31	Engine Idle Shutdown has Shutdown Engine
594	31	Engine Idle Shutdown Driver Alert Mode
623	5	Red Stop Lamp: Current Below Normal
623	6	Red Stop Lamp: Current Above Normal
624	5	Amber Warning Lamp: Current Below Normal
624	6	Amber Warning Lamp: Current Above Normal
630	2	Calibration Memory: Erratic, Intermittent or Incorrect
637	11	Engine Timing Sensor: Other Failure Mode
639	9	J1939 Network #1: Abnormal Update Rate
639	14	J1939 Network #1: Special Instruction
651	5	Engine Injector Cylinder #01: Current Below Normal
651	6	Engine Injector Cylinder #01: Current Above Normal
651	20	Engine Injector Cylinder #01: Data Drifted High
651	21	Engine Injector Cylinder #01: Data Drifted Low
652	5	Engine Injector Cylinder #02: Current Below Normal
652	6	Engine Injector Cylinder #02: Current Above Normal
652	20	Engine Injector Cylinder #02: Data Drifted High

FAULT CODES

SPN	FMI	Description
652	21	Engine Injector Cylinder #02: Data Drifted Low
653	5	Engine Injector Cylinder #03: Current Below Normal
653	6	Engine Injector Cylinder #03: Current Above Normal
653	20	Engine Injector Cylinder #03: Data Drifted High
653	21	Engine Injector Cylinder #03: Data Drifted Low
654	5	Engine Injector Cylinder #04: Current Below Normal
654	6	Engine Injector Cylinder #04: Current Above Normal
654	20	Engine Injector Cylinder #04: Data Drifted High
654	21	Engine Injector Cylinder #04: Data Drifted Low
676	5	Engine Glow Plug Relay: Current Below Normal
676	6	Engine Glow Plug Relay: Current Above Normal
676	19	Engine Glow Plug Relay: Data Error
677	3	Engine Starter Motor Relay: Voltage Above Normal
677	5	Engine Starter Motor Relay: Current Below Normal
677	6	Engine Starter Motor Relay: Current Above Normal
723	8	Engine Speed Sensor #2: Abnormal Frequency, Pulse Width or Period
970	31	Engine Auxiliary Shutdown Switch
976	2	PTO Governor State: Erratic, Intermittent or Incorrect
1041	2	Start Signal Indicator: Erratic, Intermittent or Incorrect
1076	2	Engine Fuel Injection Pump Fuel Control Valve: Erratic, Intermittent or Incorrect
1076	5	Engine Fuel Injection Pump Fuel Control Valve: Current Below Normal
1076	6	Engine Fuel Injection Pump Fuel Control Valve: Current Above Normal
1081	5	Engine Wait to Start Lamp: Current Below Normal
1081	6	Engine Wait to Start Lamp: Current Above Normal
1110	31	Engine Protection System has Shutdown Engine
1127	16	Engine Turbocharger 1 Boost Pressure: High - moderate severity
1127	18	Engine Turbocharger 1 Boost Pressure: Low - moderate severity
1188	5	Engine Turbocharger Wastegate Actuator 1 Position: Current Below Normal
1188	6	Engine Turbocharger Wastegate Actuator 1 Position: Current Above Normal
1209	3	Engine Exhaust Gas Pressure: Voltage Above Normal
1209	4	Engine Exhaust Gas Pressure: Voltage Below Normal
1221	2	Continuously Monitored System Support/Status: Erratic, Intermittent or Incorrect
1221	14	Continuously Monitored System Support/Status: Special Instruction
1239	0	Engine Fuel Leakage 1: High - most severe
1485	7	ECM Main Relay: Not Responding Properly

FAULT CODES

SPN	FMI	Description
1485	14	ECM Main Relay: Special Instruction
2791	5	Engine Exhaust Gas Recirculation (EGR) Valve Control: Current Below Normal
2791	6	Engine Exhaust Gas Recirculation (EGR) Valve Control: Current Above Normal
2791	7	Engine Exhaust Gas Recirculation (EGR) Valve Control: Not Responding Properly
2797	6	Engine Injector Group 1: Current Above Normal
2797	7	Engine Injector Group 1: Not Responding Properly
2798	6	Engine Injector Group 2: Current Above Normal
2840	12	ECU Instance: Failure
2840	14	ECU Instance: Special Instruction
2880	2	Engine Operator Primary Intermediate Speed Select: Erratic, Intermittent or Incorrect
2880	3	Engine Operator Primary Intermediate Speed Select: Voltage Above Normal
2880	4	Engine Operator Primary Intermediate Speed Select: Voltage Below Normal
2970	2	Accelerator Pedal 2 Low Idle Switch: Erratic, Intermittent or Incorrect
3217	3	Aftertreatment #1 Intake O2: Voltage Above Normal
3217	4	Aftertreatment #1 Intake O2: Voltage Below Normal
3217	5	Aftertreatment #1 Intake O2: Current Below Normal
3217	6	Aftertreatment #1 Intake O2: Current Above Normal
3217	12	Aftertreatment #1 Intake O2: Failure
3217	13	Aftertreatment #1 Intake O2: Out of Calibration
3217	15	Aftertreatment #1 Intake O2: High - least severe
3219	15	Aftertreatment #1 Intake Gas Sensor at Temperature: High - least severe
3219	17	Aftertreatment #1 Intake Gas Sensor at Temperature: Low - least severe
3222	3	Aftertreatment #1 Intake Gas Sensor Heater: Voltage Above Normal
3222	3	Aftertreatment #1 Intake Gas Sensor Heater: Voltage Above Normal
3222	4	Aftertreatment #1 Intake Gas Sensor Heater: Voltage Below Normal
3222	5	Aftertreatment #1 Intake Gas Sensor Heater: Current Below Normal
3242	0	Particulate Trap Intake Gas Temperature: High - most severe
3242	3	Particulate Trap Intake Gas Temperature: Voltage Above Normal
3242	4	Particulate Trap Intake Gas Temperature: Voltage Below Normal
3251	0	Particulate Trap Differential Pressure: High - most severe
3251	3	Particulate Trap Differential Pressure: Voltage Above Normal
3251	4	Particulate Trap Differential Pressure: Voltage Below Normal
3251	7	Particulate Trap Differential Pressure: Not Responding Properly
3251	10	Particulate Trap Differential Pressure: Abnormal Rate of Change
3251	16	Particulate Trap Differential Pressure: High - moderate severity

FAULT CODES

SPN	FMI	Description
3251	17	Particulate Trap Differential Pressure: Low - least severe
3251	18	Particulate Trap Differential Pressure: Low - moderate severity
3358	10	Engine Exhaust Gas Recirculation 1 Intake Pressure: Abnormal Rate of Change
3509	2	Sensor Supply Voltage 1: Erratic, Intermittent or Incorrect
3510	2	Sensor Supply Voltage 2: Erratic, Intermittent or Incorrect
3511	2	Sensor Supply Voltage 3: Erratic, Intermittent or Incorrect
3697	5	Particulate Trap Lamp Command: Current Below Normal
3697	6	Particulate Trap Lamp Command: Current Above Normal
3698	5	Exhaust System High Temperature Lamp Command: Current Below Normal
3698	6	Exhaust System High Temperature Lamp Command: Current Above Normal
3702	5	Diesel Particulate Filter Active Regeneration Inhibited Status: Current Below Normal
3702	6	Diesel Particulate Filter Active Regeneration Inhibited Status: Current Above Normal
3719	0	Aftertreatment 1 Diesel Particulate Filter Soot Load Percent: High - most severe
3719	16	Aftertreatment 1 Diesel Particulate Filter Soot Load Percent: High - moderate severity
4765	3	Aftertreatment #1 Diesel Oxidant Catalyst Intake Gas Temperature: Voltage Above Normal
4765	4	Aftertreatment #1 Diesel Oxidant Catalyst Intake Gas Temperature: Voltage Below Normal
5055	17	Engine Oil Viscosity: Low - least severe
5055	18	Engine Oil Viscosity: Low - moderate severity
5099	5	Engine Oil Pressure Lamp Data - Current Below Normal
5099	6	Engine Oil Pressure Lamp Data - Current Above Normal
5246	15	Aftertreatment SCR Operator Inducement Severity: High - least severe
5246	16	Aftertreatment SCR Operator Inducement Severity: High - moderate severity
5319	13	Aftertreatment 1 Diesel Particulate Filter Incomplete Regeneration
5324	7	Engine Glow Plug 1: Not Responding Properly
5325	7	Engine Glow Plug 2: Not Responding Properly
5326	7	Engine Glow Plug 3: Not Responding Properly
5327	7	Engine Glow Plug 4: Not Responding Properly
5357	31	Engine Fuel Injection Quantity Error for Multiple Cylinders
5419	5	Engine Throttle Actuator #1: Current Below Normal
5419	6	Engine Throttle Actuator #1: Current Above Normal
5419	7	Engine Throttle Actuator #1: Not Responding Properly
5571	2	High Pressure Common Rail Fuel Pressure Relief Valve: Erratic, Intermittent or Incorrect

FAULT CODES

SPN	FMI	Description
5571	7	High Pressure Common Rail Fuel Pressure Relief Valve: Not Responding Properly
5571	10	High Pressure Common Rail Fuel Pressure Relief Valve: Abnormal Rate of Change
5571	14	High Pressure Common Rail Fuel Pressure Relief Valve: Special Instruction
5571	16	High Pressure Common Rail Fuel Pressure Relief Valve: High - moderate severity
5826	15	Emission Control System Operator Inducement Severity: High - least severe
5826	16	Emission Control System Operator Inducement Severity: High - moderate severity

How to Troubleshoot the Perkins 854E-E34TA Engine

Troubleshooting procedures and additional engine information is available in the Perkins 854E Troubleshooting Manual (Perkins part number UENR0612-06).

Perkins 854E Troubleshooting Manual	
Genie part number	57.4700.0016

FAULT CODES

Overload Warning System Fault Codes

1 CAN ERROR
Incorrect or missing CAN signal between control units.

2 LOAD TABLE ERROR
Incorrect load table signal from EEPROM.

3 MACHINE DATA ERROR
Incorrect machine data signal from EEPROM.

4 CB0 TABLE ERROR
Incorrect CB0 table data signal from EEPROM.

5 ERR LEN SENS 1 VBAT / ERR LEN SENS 2 VBAT
Signal from length sensor 1 or 2 is greater than the stored value of MAX1/MIN2.
- Sensor not calibrated
- Faulty potentiometer
- Shorted +5V DC or +12V DC

6 ERR LEN SENS 1 OPEN / ERR LEN SENS 2 OPEN
Signal from length sensor 1 or 2 is less than the stored value of MIN1.
- Sensor not calibrated
- Faulty potentiometer
- Shorted to ground (-)
- Sensor disconnected from power (+)

7 ERR LEN SENS DIFF
Value of length sensors 1 and 2 do not match.
- Sensors not calibrated
- Faulty potentiometer
- Faulty wire connections

8 ERR ANG SENS 1 VBAT / ERR ANG SENS 2 VBAT
Signal from angle sensor 1 or 2 is greater than the maximum stored value (4.5V or 920 BIT).
- Sensor not calibrated
- Faulty potentiometer
- Shorted +5V DC or +12V DC
- Sensor disconnected from power (+)

9 ERR ANG SENS 1 OPEN / ERR ANG SENS 2 OPEN
Signal from angle sensor 1 or 2 is less than the minimum stored value (0.5V or 102 BIT).
- Sensor not calibrated
- Faulty potentiometer
- Shorted to ground (-)
- Sensor disconnected from power (+)
- Faulty wire connections

10 ERR ANG SENS DIFF
Value of angle senors 1 and 2 do not match.
- Sensors not calibrated
- Faulty potentiometer
- Faulty wire connections

11 ERR SENS PSP VBAT / ERR SENS PSR VBAT / ERR SENS PEP VBAT / ERR SENS PER VBAT
Signal from pressure sensor is greater than the maximum stored value (4.5V or 920 BIT).
- Faulty sensor
- Shorted +5V DC or +12V DC
- Sensor disconnected from power (+)

12 ERR SENS PSP OPEN / ERR SENS PSR OPEN / ERR SENS PEP OPEN / ERR SENS PER OPEN
Signal from pressure sensor is less than the minimum stored value (0.5V or 102 BIT).
- Faulty sensor
- Shorted to ground (-)
- Sensor disconnected from power (+)
- Faulty wire connections

13 ONLY IMPLEMENTS
Platform/Road/Job site switch is on Job site position but a platform is installed.
The telehandler cannot be operated.

14 ONLY PLATFORMS
Platform/Road/Job site switch is on Platform position but an implement is installed.
The telehandler cannot be operated.

15 ERR MODE SELECTOR
+12V DC on job site mode and platform mode.
- Faulty switch
- Faulty wire connections
- Red LED is activated and alarm is not activated.

FAULT CODES

How to Troubleshoot the Boom Movements

1 Check the display for error messages.

2 Check the display function manifold values. Refer to *How to Read the Overload Warning System Display*, step 27.

⊙ Result: no error messages, check for hydraulic faults.

⊠ Error messages are displayed, continue to step 3.

3 Check the following:
- Verify the joystick values. Refer to *How to Read the Overload Warning System Display*, step 21.

  ⊙ Result: values are correct, continue to correct values.

  ⊠ values are incorrect, continue to incorrect values.

  Incorrect values:
  - Verify the machine is in job site mode.
  - Verify there is no voltage on fuse F13.
  - Check the harness connections to the Job site/Road/Platform mode selector switch.
  - Check harness connections to the joystick.

  Note: If no faulty components or wiring is found, replace the joystick.

Correct values:
- Check harness connections to the function manifold located behind the seat.
- Verify voltage at valve coils EV102 and EV103 when the joystick is moved off center.

⊙ Result: continue to the next step.

⊠ Check input and output voltages at joystick and harness connections.

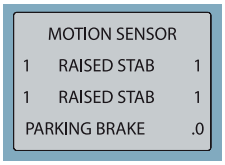
- Use the joystick and the manual control lever to activate a boom function.

⊙ Result: function operates. Replace faulty solenoid valve.

⊠ Function does not operate. Check the main system pressure, Refer to repair procedure 6-1, *How to Test the Boom Function Gear Pump*.

How to Troubleshoot the Transmission

1 Check the display values for the parking brake and outriggers. If one or more values are 0, the transmission will not operate.



If all values are 1, check the following.

- Verify input voltage at connector X208, pin 18. (Cabin seat microswitch).
- Verify output voltage at connector X208, pin 17. (Cabin seat microswitch).
  Note: The micro switch must be activated.
- Check fuse F14 for open.
- Check harness connection X182. (Forward/ Reverse lever).
- Check connector X16, pin 2. (Forward drive input).
- Check connector X16, pin 12. (Reverse drive input).
- Check connector X16, pin 11. (Forward drive solenoid output).
- Check connector X16, pin 9. (Reverse drive solenoid output).
- (Connector X170 does not have pins 5 & 6. It connects to the key switch service relay).
- Verify input voltage at connector X179 in forward drive mode. (Forward drive coil).
- Verify input voltage at connector X180 in reverse drive mode. (Reverse drive coil).

If any RAISED STAB value is 0, check the following.

- Check fuse F20 for open.
- Verify input voltage at connector X140, pin A. (Right front outrigger).
- Verify input voltage at connector X143, pin A. (Left front outrigger).
- Verify input voltage at connector X147, pin A. (Left rear outrigger).
- Verify input voltage at connector X148, pin A. (Right rear outrigger).
- With the outriggers in the stowed position, verify input voltage at connectors X140, X143, X147 and X148, pin A.
- Check connector X129, pin 1. (Right rear)
- Check connector X129, pin 2. (Left rear).
- Check connector X130, pin 3. (Right front).
- Check connector X130, pin 6. (Left front).
- X935, pin 48 is empty.
- X935, pin 49 is input from stabilizers switch.
- X934, pin 50 is input Transmission reverse.
- X934, pin 51 is input Transmission forward.

FAULT CODES

How to Troubleshoot the Gearbox

1 Verify the gear selector is in neutral position.

2 Check fuse F14-10A integrity.

3 Check the mechanical gear selector connector S14.

4 Check pin 6 and pin 7 (fuse board) of connector X16 to verify relay K5.

5 Check connector X162 (speed sensor B162): if it's disconnected the main unit doesn't allow shifting.

6 Check pin 13 of connector X16 (speed sensor input), located in the fuse board.

7 If all listed above is confirmed, replace the shift control unit K24. Otherwise:
- verify there are 12V on one of the two shifting valve connectors: X131 (first gear) and X132 (second gear).

8 If all listed above is confirmed, check the hydraulic system. Keep particular attention for the overcharged pressure on port TP3 which must be about 360 psi / 25 bar.

How to Troubleshoot the Jobsite Position

1 Verify the Jobsite/Road/Platform selector is in Jobsite position.

2 Check fuse F13-10A integrity.

3 Verify there is voltage (12V) at connector X231/3 (steering selection). If there is no voltage, verify connector X180.2 and connector X180.1. If there is no voltage, replace the faulty connectors.

4 Verify there are 12V on pin 41 or pin 42 of connectors X934 (main control unit), located behind the seat.

5 If not, verify voltage (12V) on pin 24 or pin 25. If there is no voltage, the problem comes from the Software and/or Hardware. Contact Genie Service.

6 If all listed above is confirmed, check pin 24 and pin 23 of connector X130.

7 If all listed above is confirmed, verify that, according to the selected steering mode, there is voltage (12V) at one of the two valve connectors, EV137 and EV138.

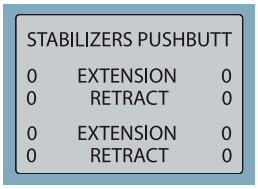
8 If all listed above is confirmed, check the hydraulic system.

How to Troubleshoot the Outriggers Movements

1 Verify the boom is under 20° and the machine is not in alarm.

2 Verify the Jobsite/Road/Platform selector is in Jobsite position.

3 Check fuse F13-10A integrity.



4 Using the screen page above, test the four outrigger pushbuttons. When the pushbutton is active, the value shown on the display goes from 0 to 1; if, pressing the button, this doesn't happen, verify the button connectors X171, X172, X173, X174. Replace it if necessary.

5 If all listed above is confirmed, check pins 1,2,3,4,5,6,7,8 of connector X201.

6 If all listed above is confirmed, check pins 9,10,11,12,29,38,39,40 of connector X935.

7 If all listed above is confirmed, verify voltage (12V) on pin 42 (L-front), pin 19 (R-front), pin 12 (L-rear) and pin 16 (R-rear) of connector X935. If there is no voltage, the problem comes from the Software and/or Hardware. Contact Genie Service.

8 If all listed above is confirmed, check pins 19,20,21,22 of connector X130.

9 If all listed above is confirmed, verify voltage (12V) at one of the following valve connectors - EV133 (L-front), EV134 (R-front), EV135 (L-rear), EV136 (R-rear) - every time the dedicated button is pressed.

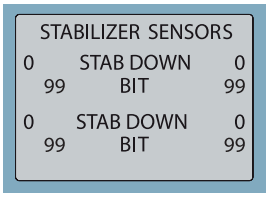
10 If all listed above is confirmed, check the hydraulic system.

FAULT CODES

How to Troubleshoot the Working Mode Selection

1 Lower the outriggers.

2 Using the screen page below, verify that all the sensors values are **1**. If the STAB DOWN sensors are **0**, check the next page (see below): the BIT value has to be above 204.



3 If all listed above is confirmed but the system doesn't change scale then the problem comes from the Software and/or Hardware. Contact Genie Service.

4 If one or more of the values listed on item 2 is **0**, check the following items:
- If the value of one of the four SAFETY SWITCH sensors is 0:

a Check that the specific sensor and the target are lined up;
b Check the fuse F20-10A integrity;
c Check there are 12V on pin 1 (power) and pin 2 (signal) of connectors X901 (R-front), X902 (L-front), X905 (L-rear), X907 (R-rear);
d If all listed above is confirmed, check pins 3,6,8,10,15,17,25,26 of connector X130;
e If all listed above is confirmed, verify there are 12V on pin 38 of connector X935 (L-rear) and pin 43 (R-rear), pin 48 (L-front), pin 19 (R-front) of connector X934;
f If all listed above is confirmed, the problem comes from the Software and/or Hardware. Contact Genie Service.

- If the value of one of the load cells, STAB DOWN, is **0**, verify, using the screen page STABILIZER SENSOR, the value of the cell. If the value is above 940 BIT, the cell is broken. If the cell is not faulty, check the following:

a Check the fuse F20-10A integrity;
b Verify voltage (12V) on pin A (power) of connectors X900 (R-front), X903 (L-front), X904 (L-rear), X906 (R-rear);
c If all listed above is confirmed, verify voltage (12V) on pin 9 (L-rear) and pin 11 (R-rear), pin 18 (L-front), pin 16 (R-front) of connector X130;
d If all listed above is confirmed, verify voltage (12V) on pin A6 (L-rear) and pin B5 (R-rear), pin A2 (L-front), pin B6 (R-front) of connector X933 of the display;
e If all listed above is confirmed, the problem comes from the Software and/or Hardware. Contact Genie Service.

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. An illustration legend precedes each group of drawings.

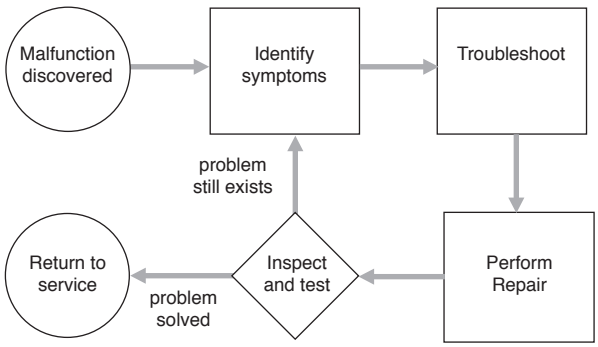
Electrical Schematics

⚠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

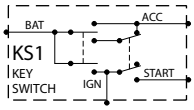
⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

General Repair Process

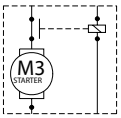


Electrical and Hydraulic Symbols Legend

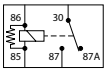
Electrical Schematic Symbols



Key switch



Engine start



Control relay



Alternator


Fuse

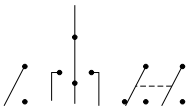

Circuit breaker


Horn or Alarm


Light


Valve coil


Valve coil with diode


Switch

Diode


Proximity switch


Limit switch


Temperature switch


Fuel level sender

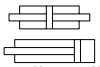


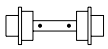
Battery


Pressure switch

Hydraulic Schematic Symbols


Pressure switch


Hydraulic cylinder


Axle


Orifice

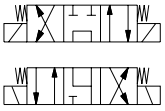

Adjustable orifice

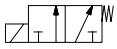

Filter

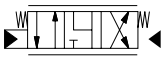

Check valve

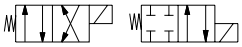

Flow regulator

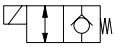

Relief valve

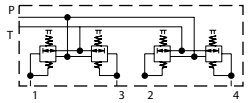

3 position 4 way solenoid valve


2 position 3 way directional valve

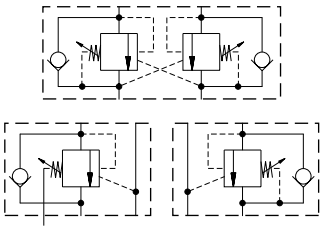

3 position 4 way proportional directional valve


2 position 4 way solenoid valve


2 position 2 way solenoid valve

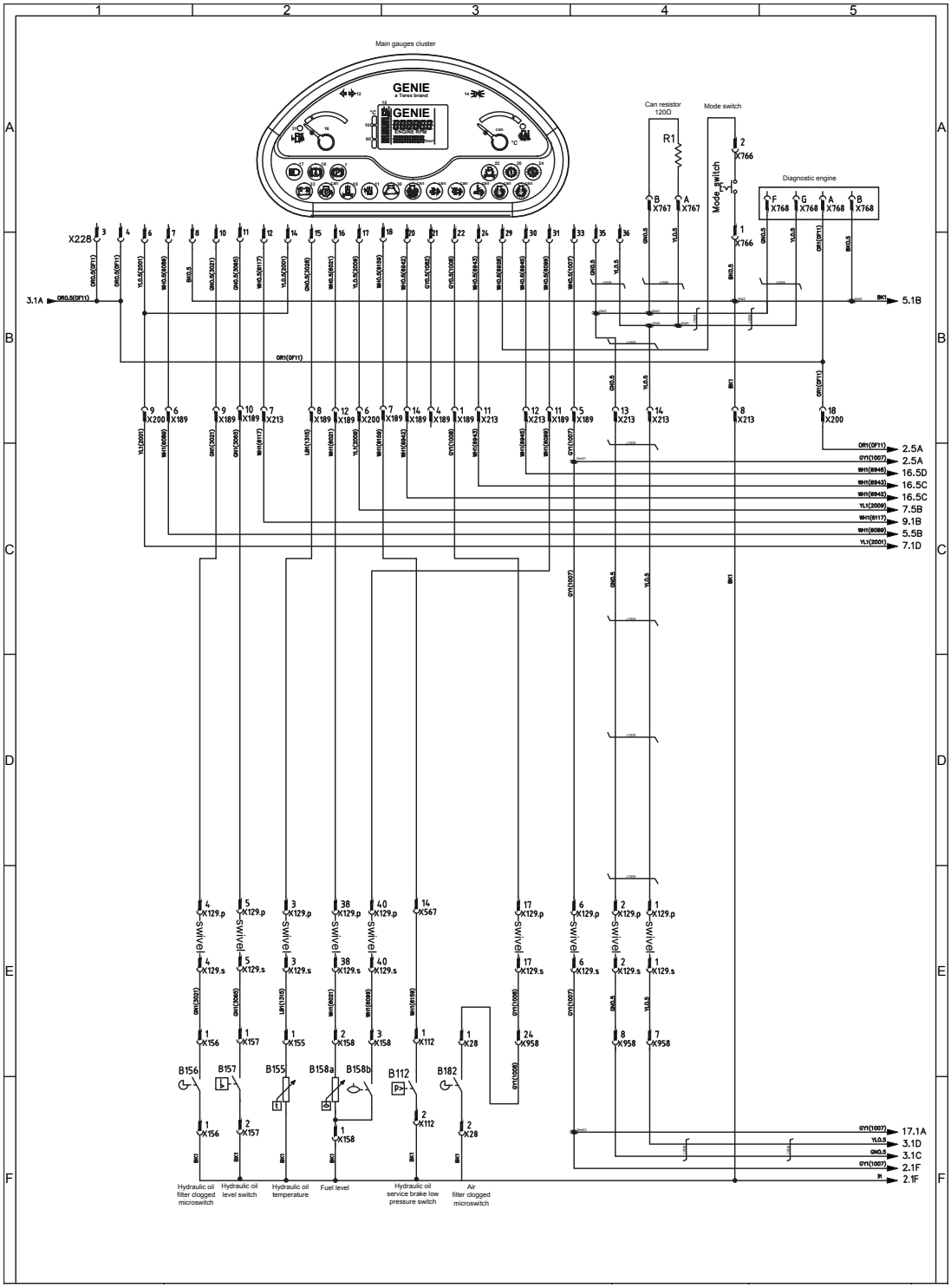


Joystick


Counterbalance valve

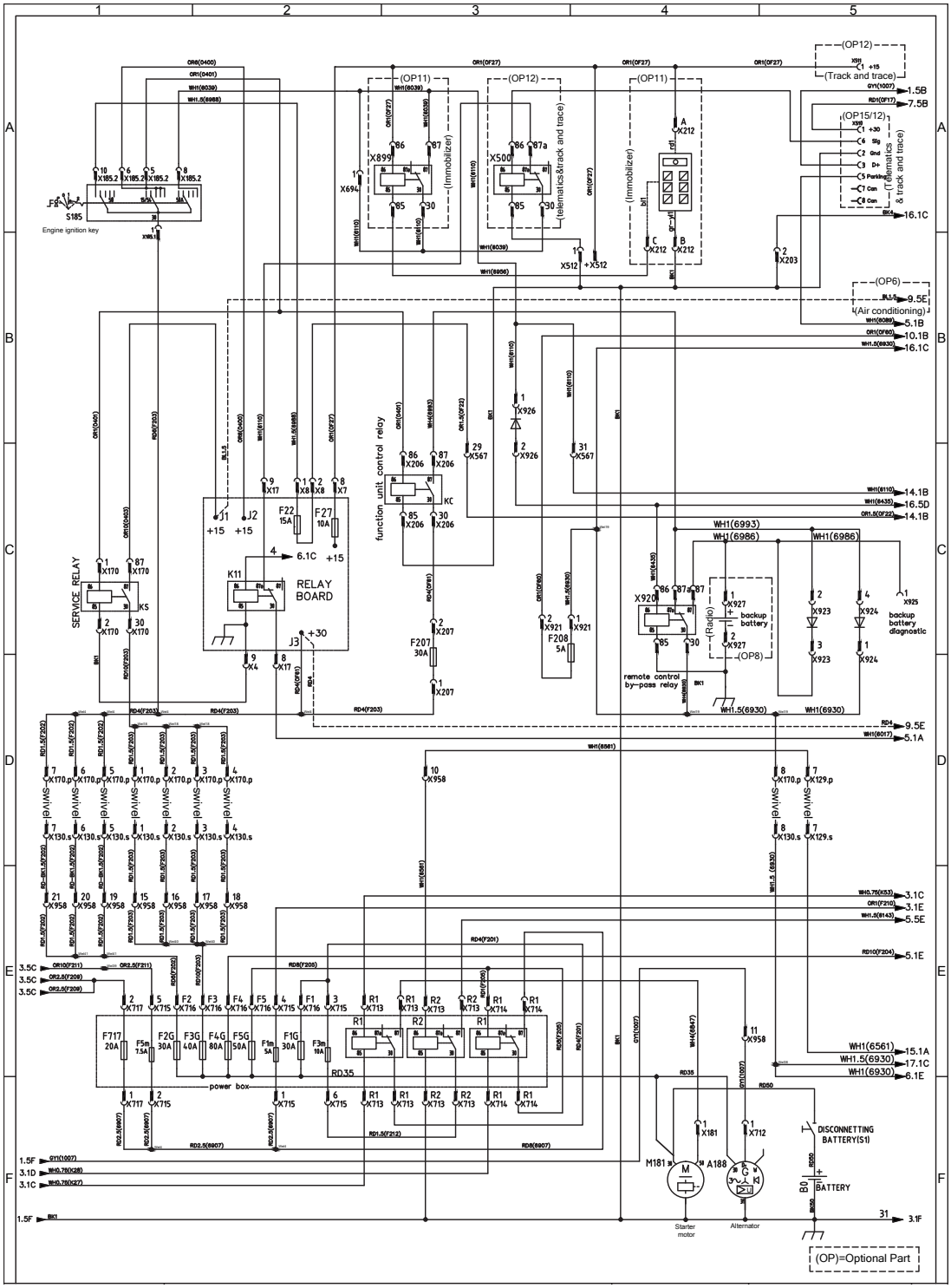
Electrical Schematic

GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105) *Sheet 1 of 20*



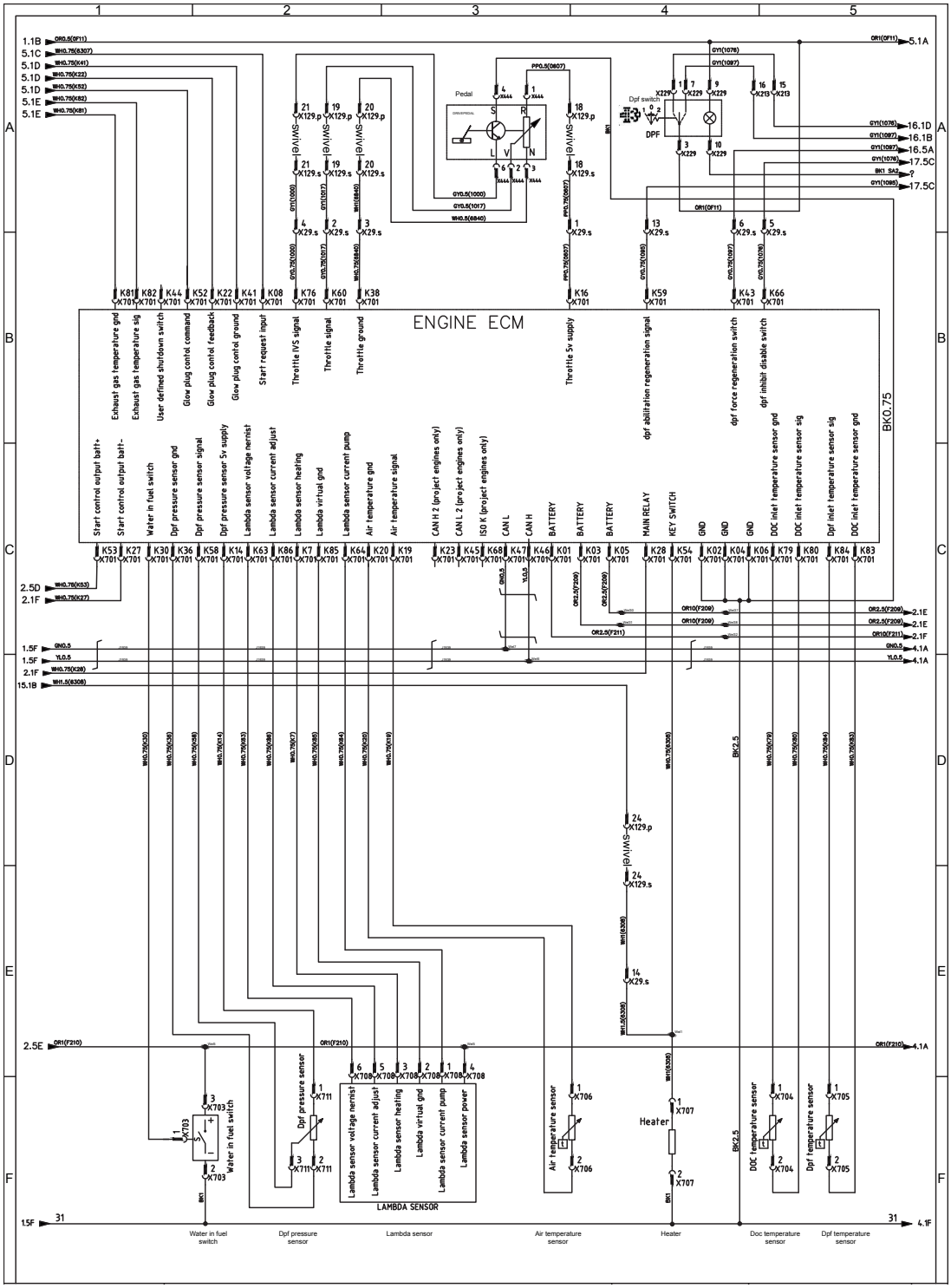
ELECTRICAL SCHEMATIC

Sheet 2 of 20 **GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105)**



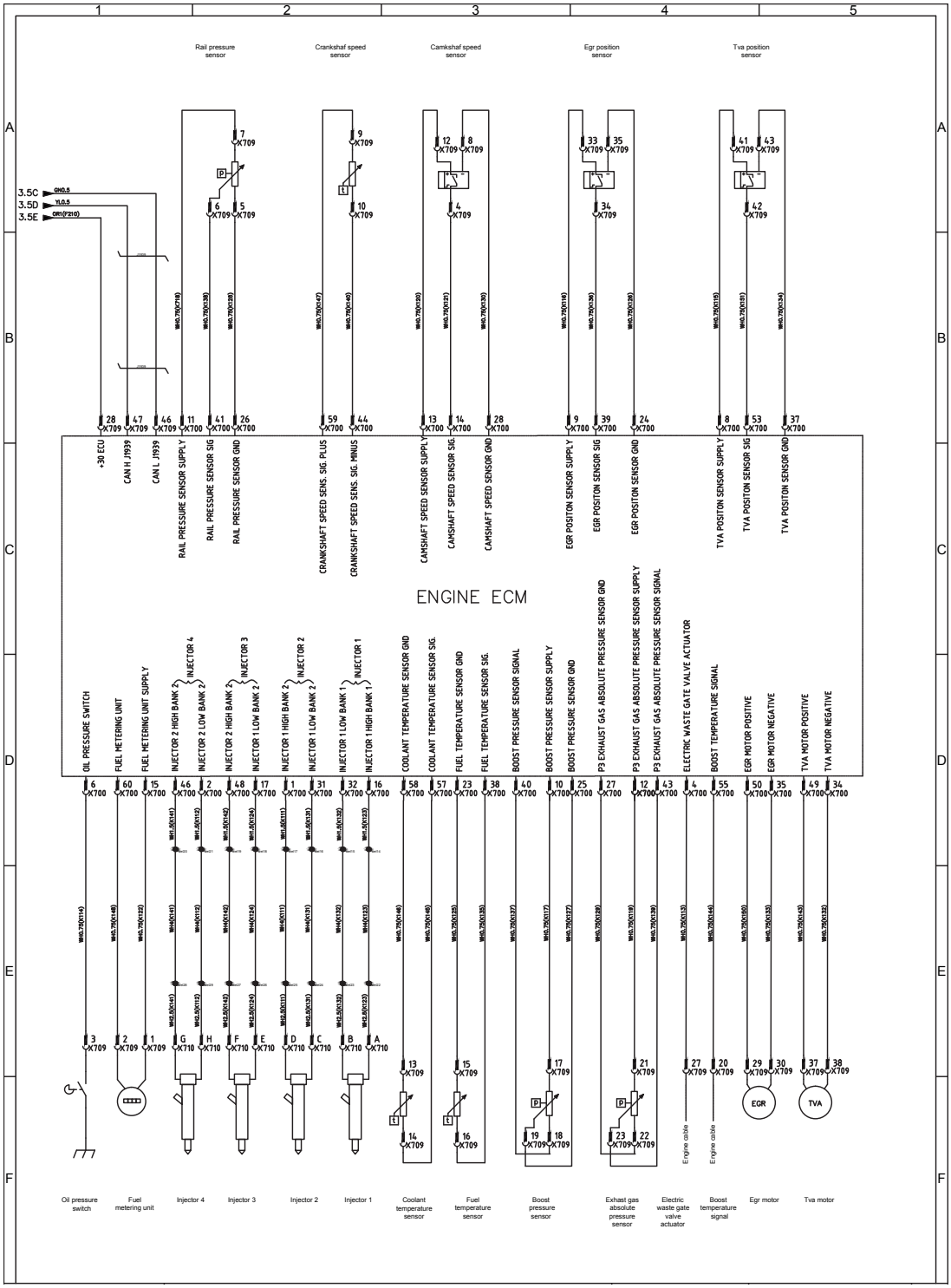
ELECTRICAL SCHEMATIC

GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105) *Sheet 3 of 20*



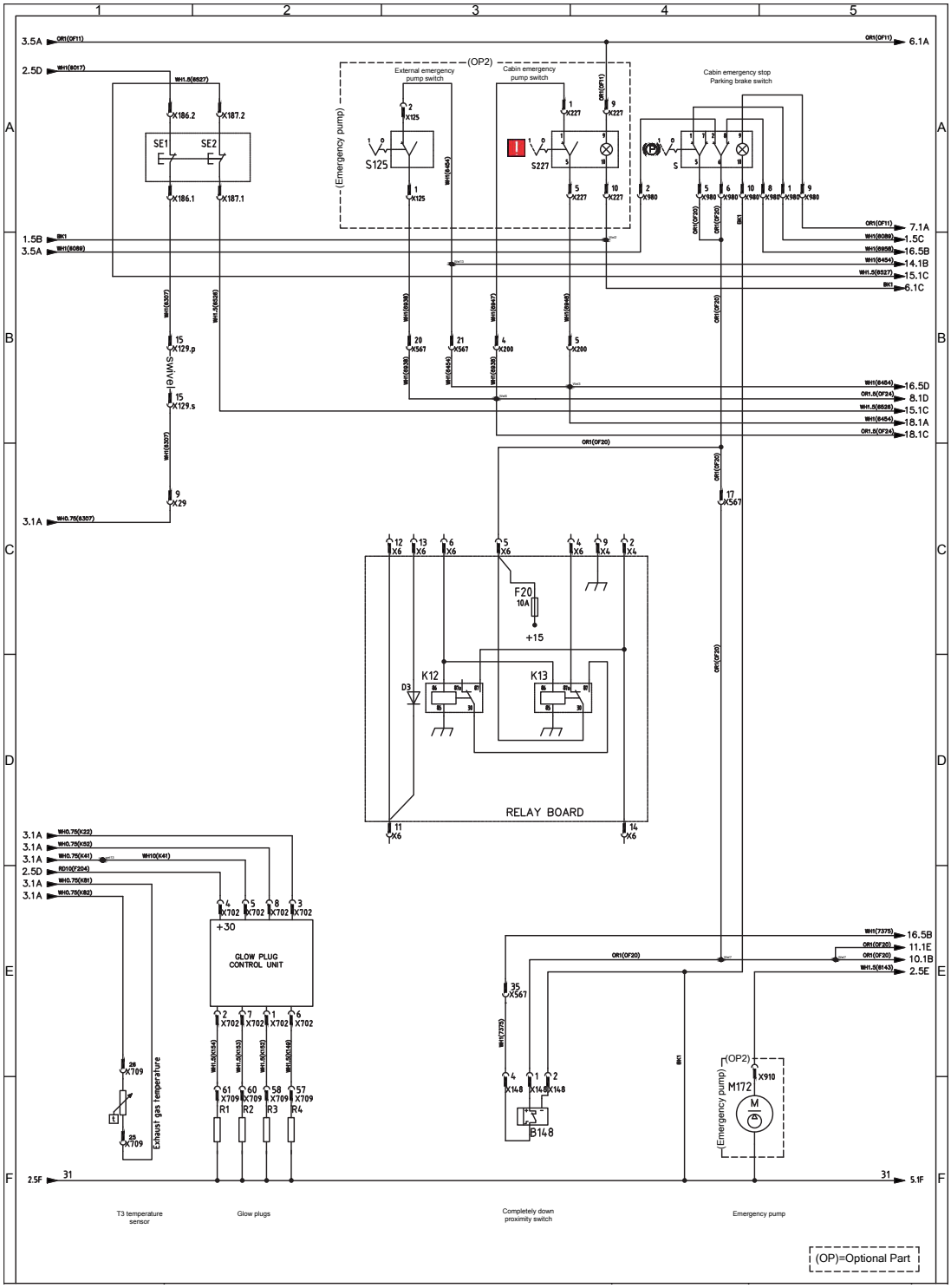
ELECTRICAL SCHEMATIC

Sheet 4 of 20 **GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105)**



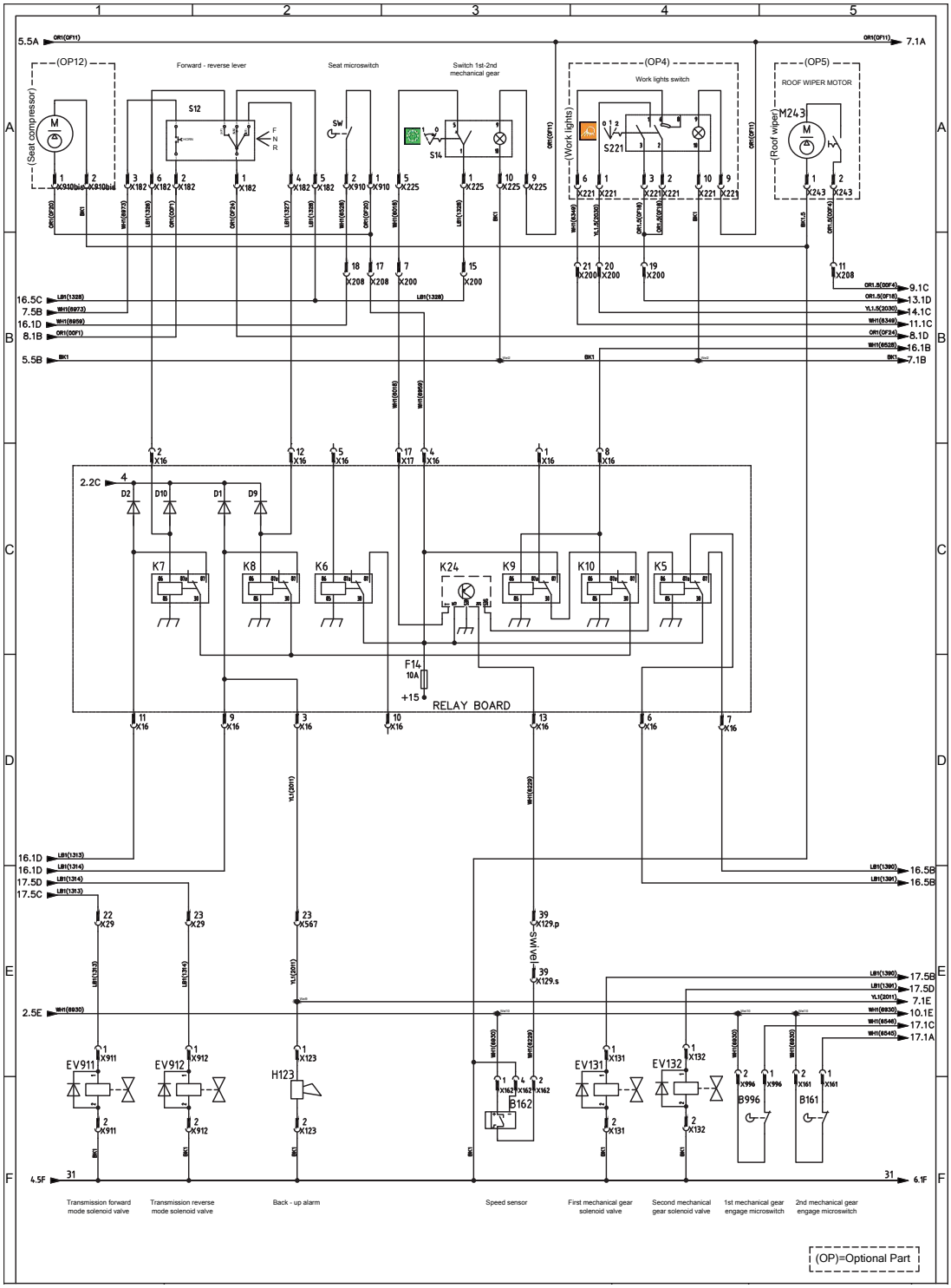
ELECTRICAL SCHEMATIC

GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105) *Sheet 5 of 20*



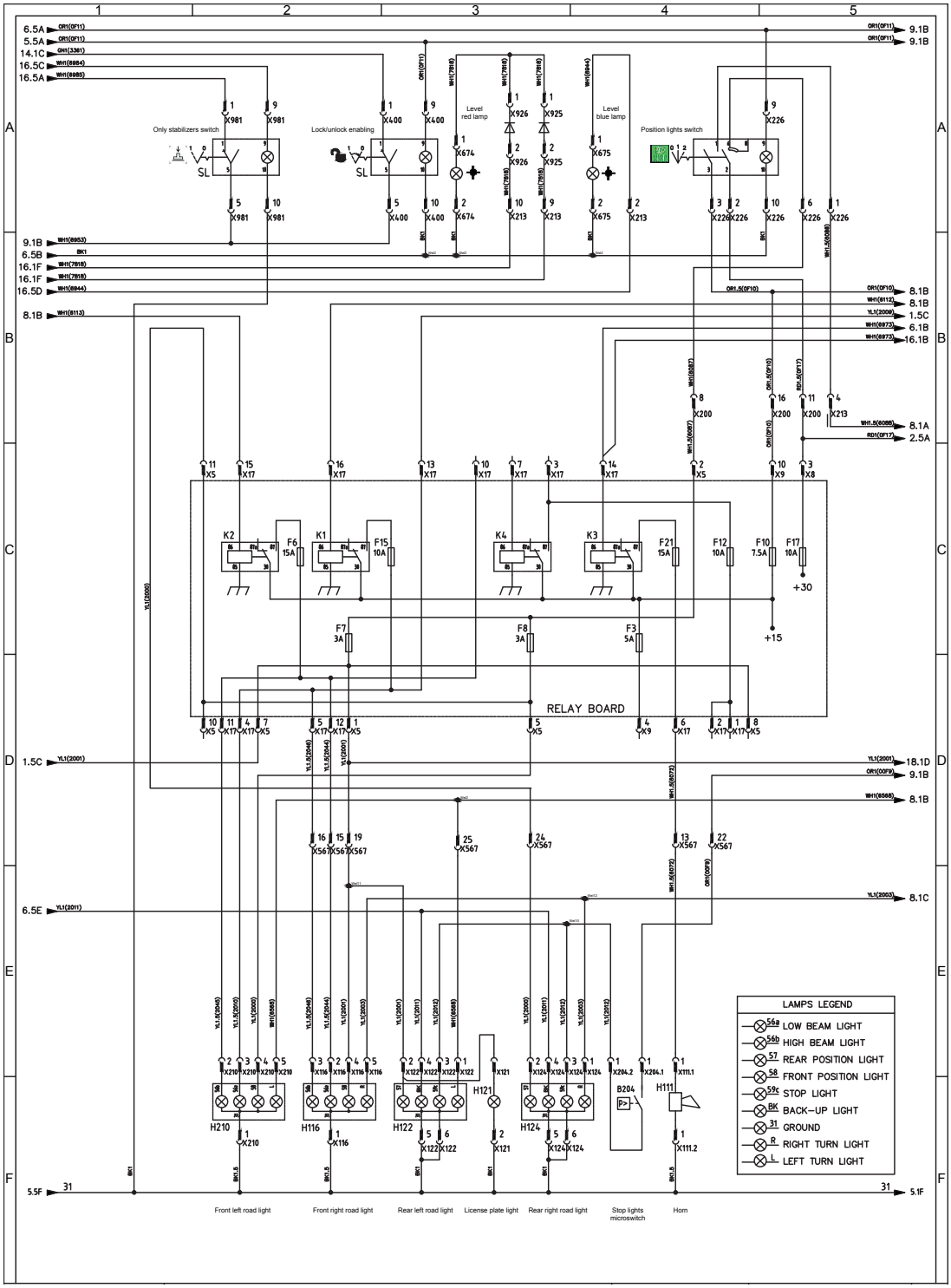
ELECTRICAL SCHEMATIC

Sheet 6 of 20 **GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105)**



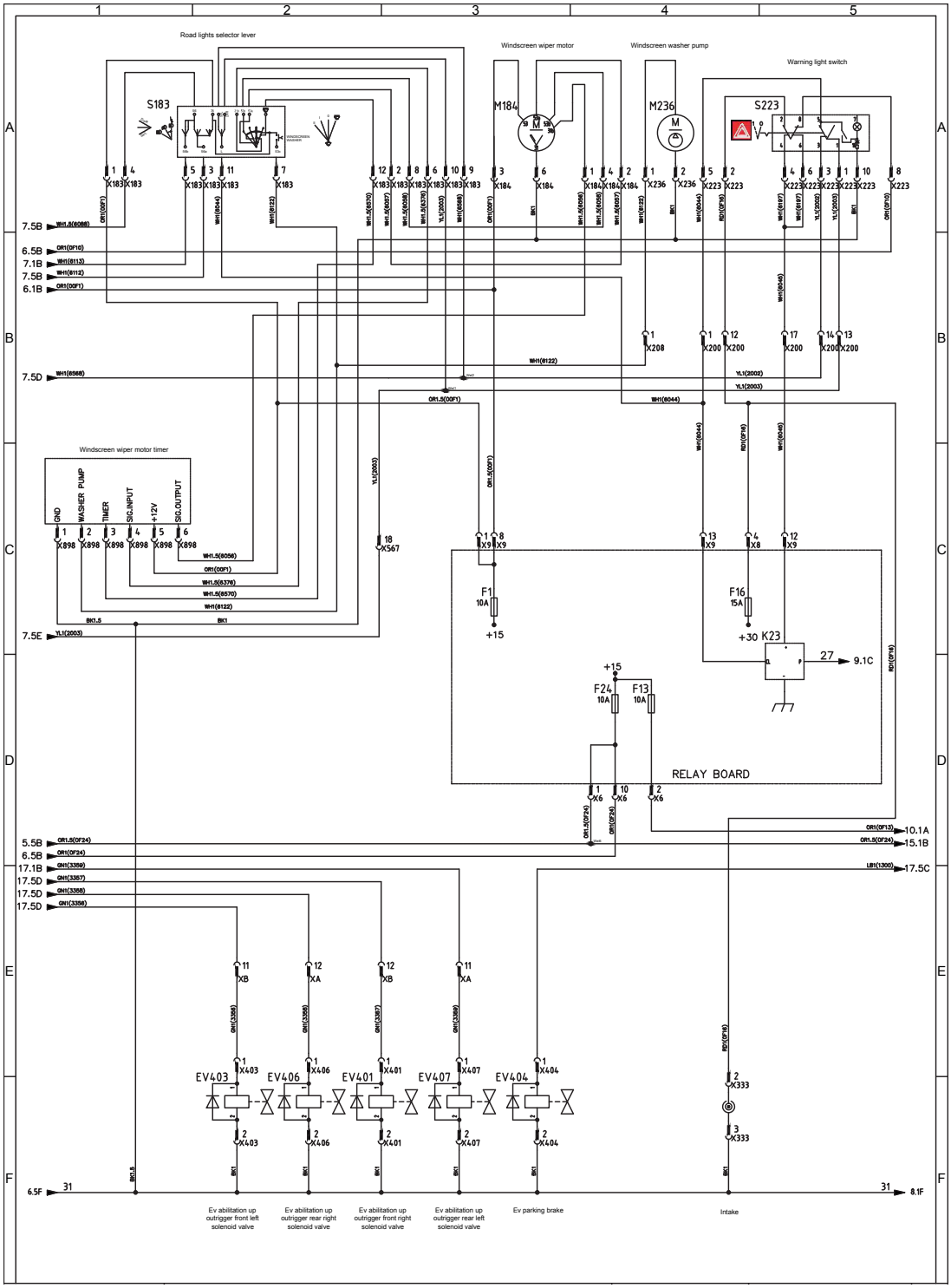
ELECTRICAL SCHEMATIC

GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105) *Sheet 7 of 20*



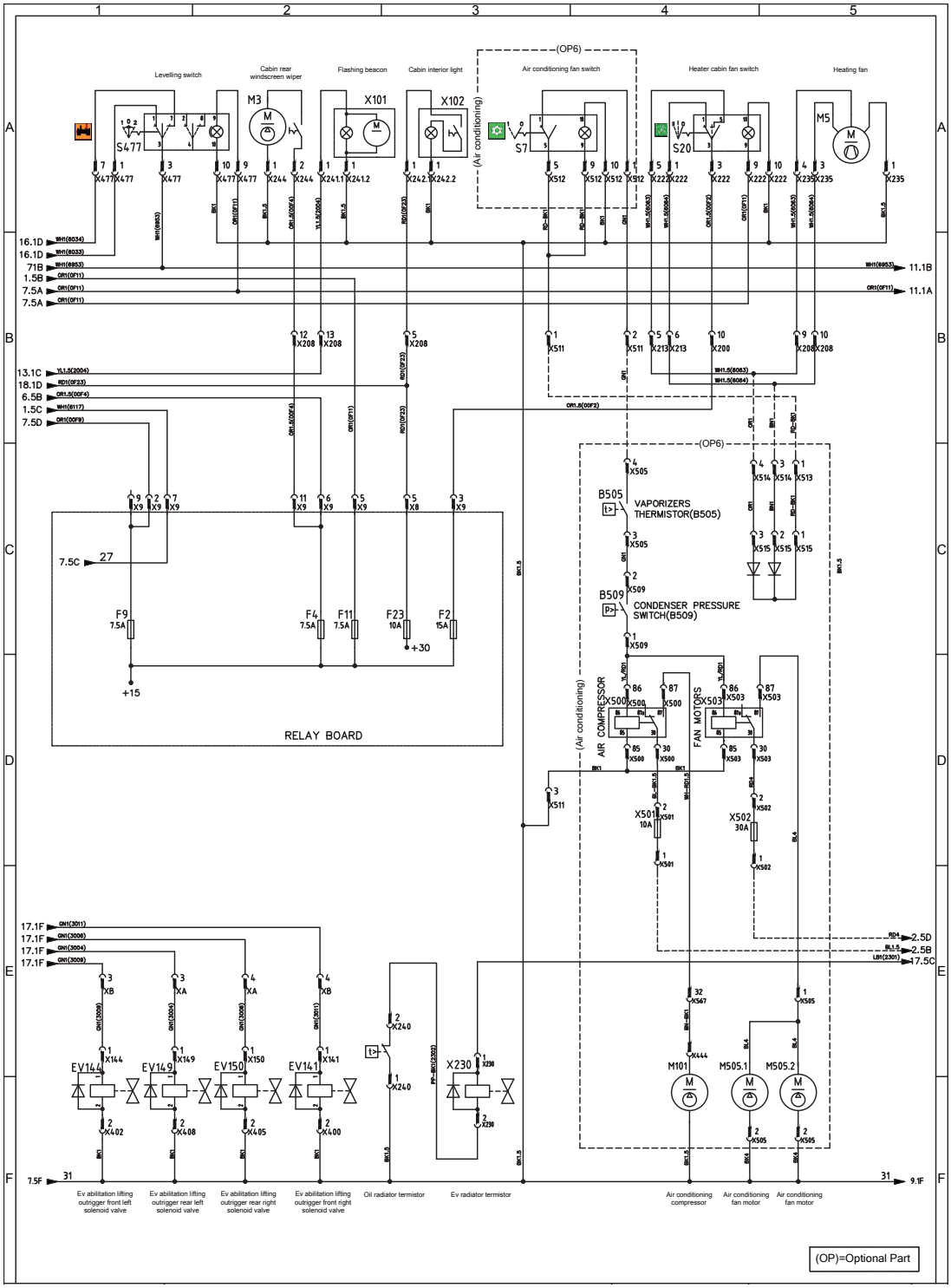
ELECTRICAL SCHEMATIC

Sheet 8 of 20 **GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105)**



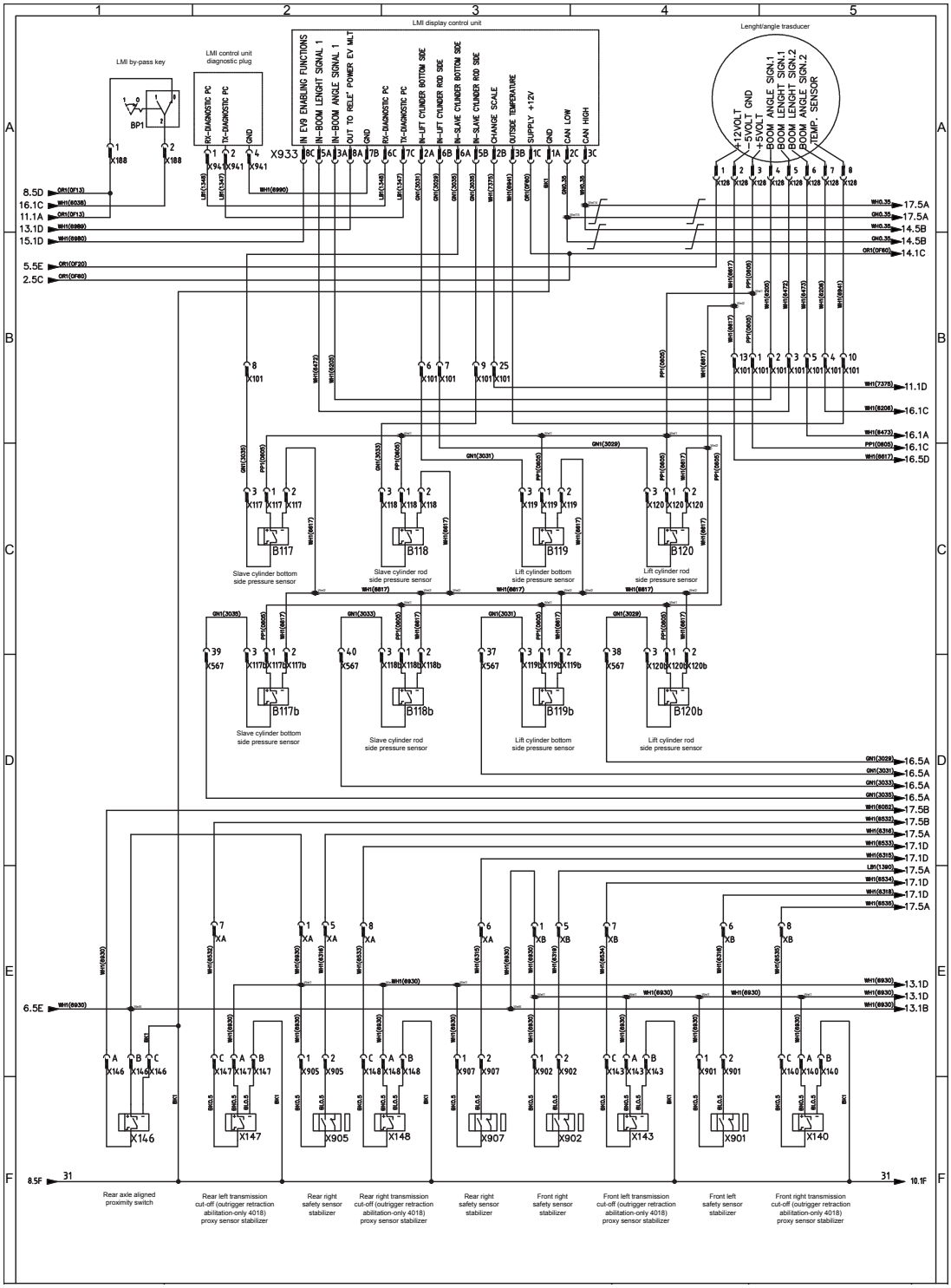
ELECTRICAL SCHEMATIC

GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105) *Sheet 9 of 20*



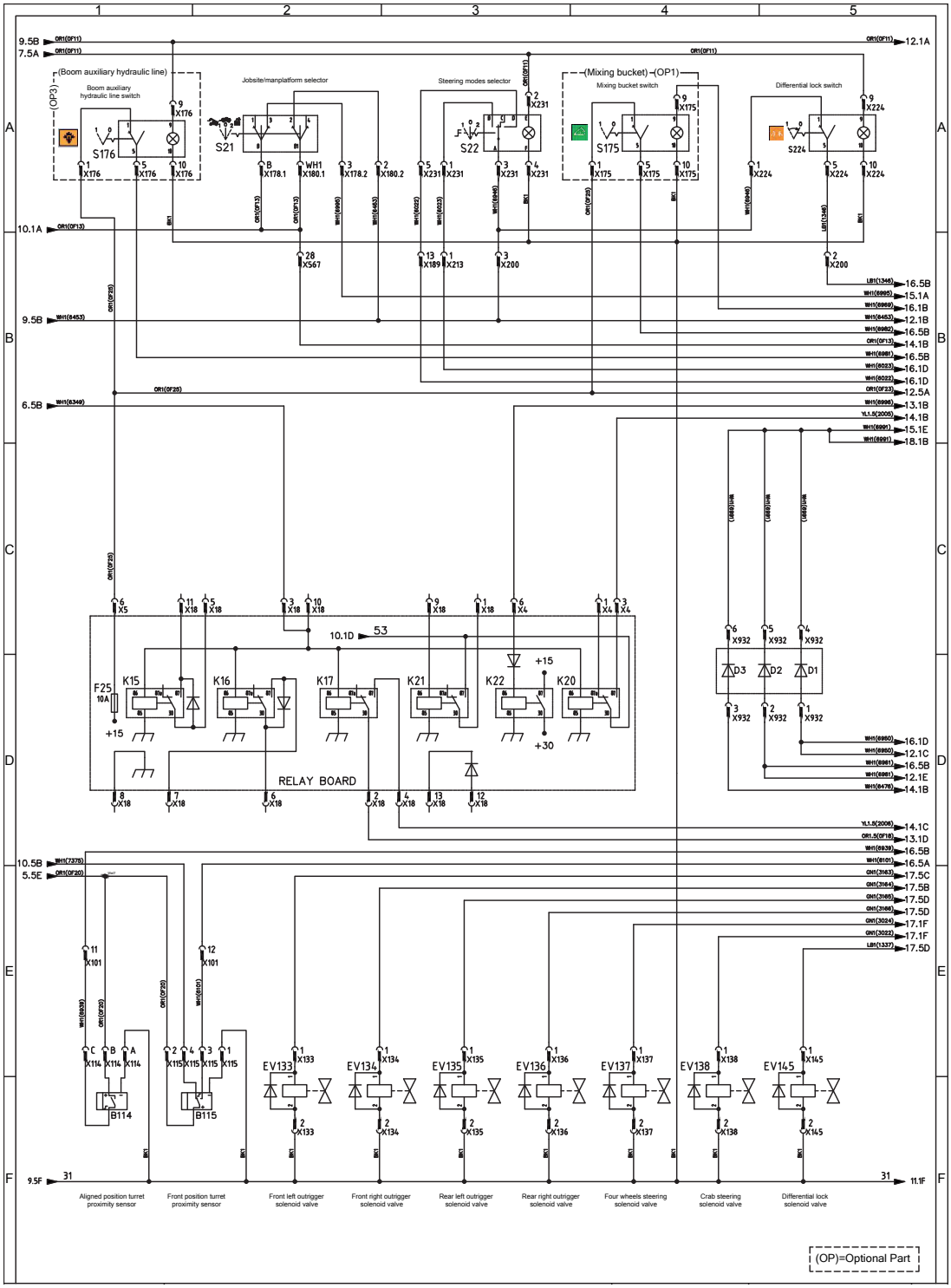
ELECTRICAL SCHEMATIC

Sheet 10 of 20 **GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105)**



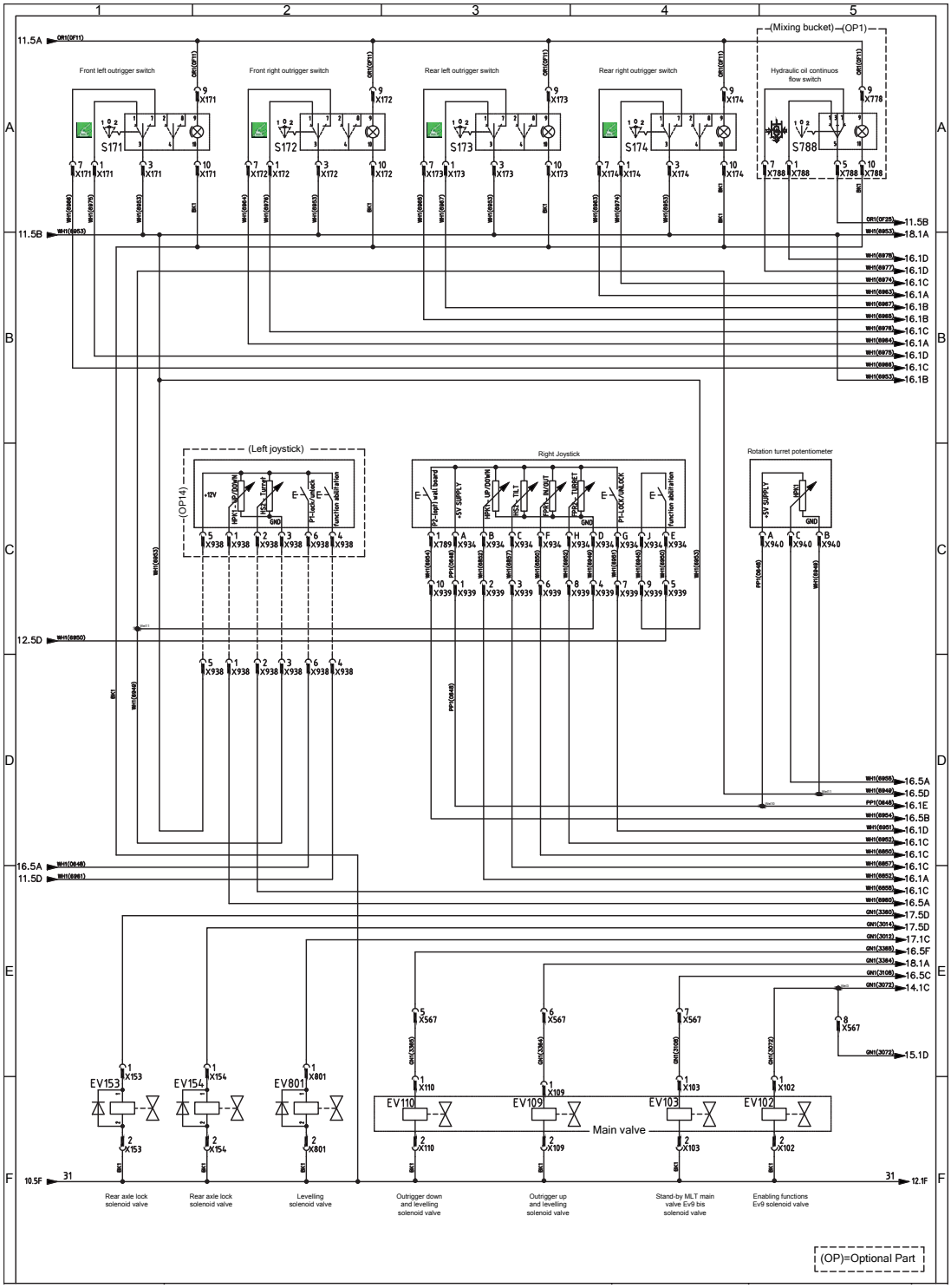
ELECTRICAL SCHEMATIC

GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105) *Sheet 11 of 20*



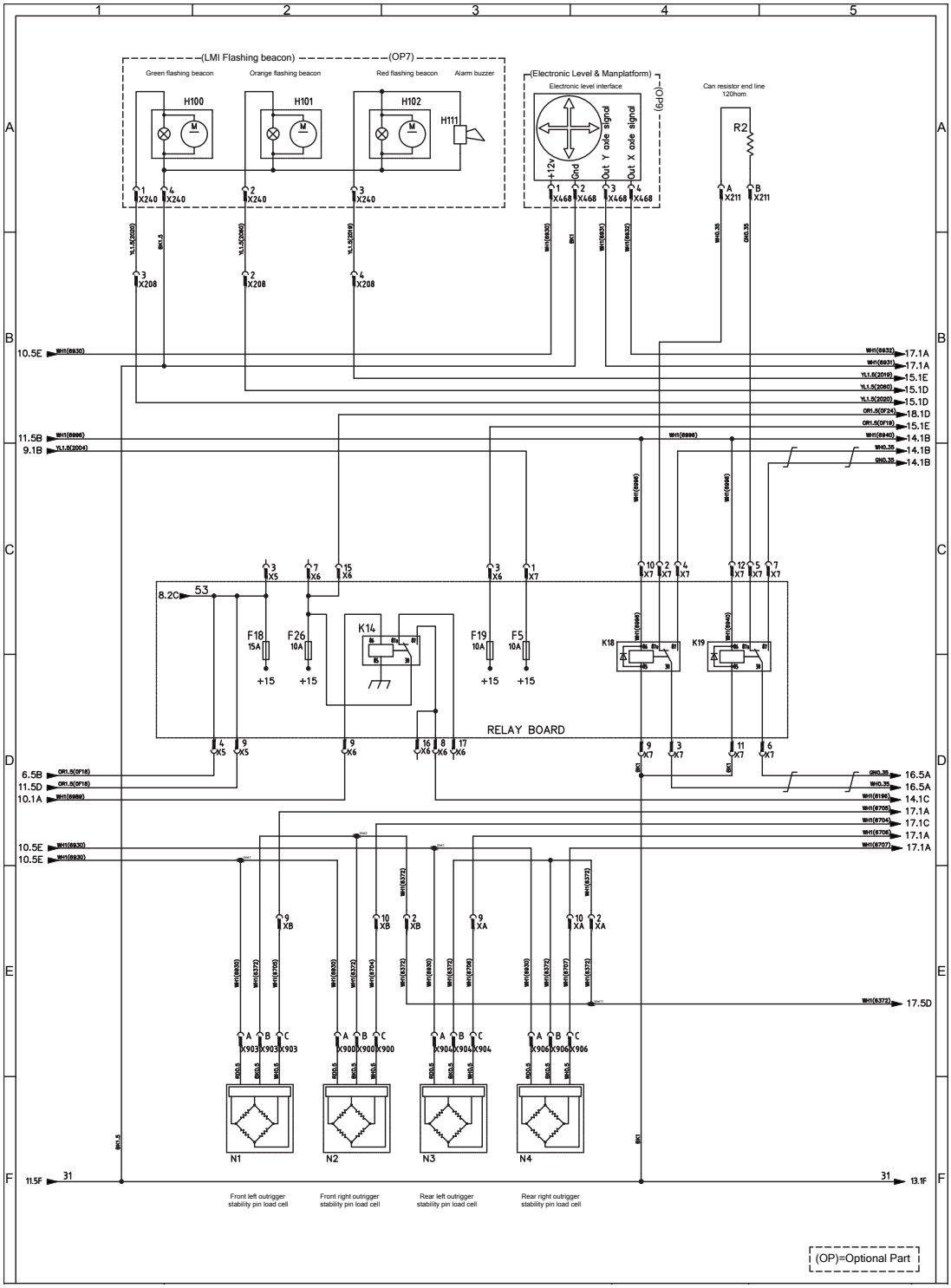
ELECTRICAL SCHEMATIC

Sheet 12 of 20 **GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105)**



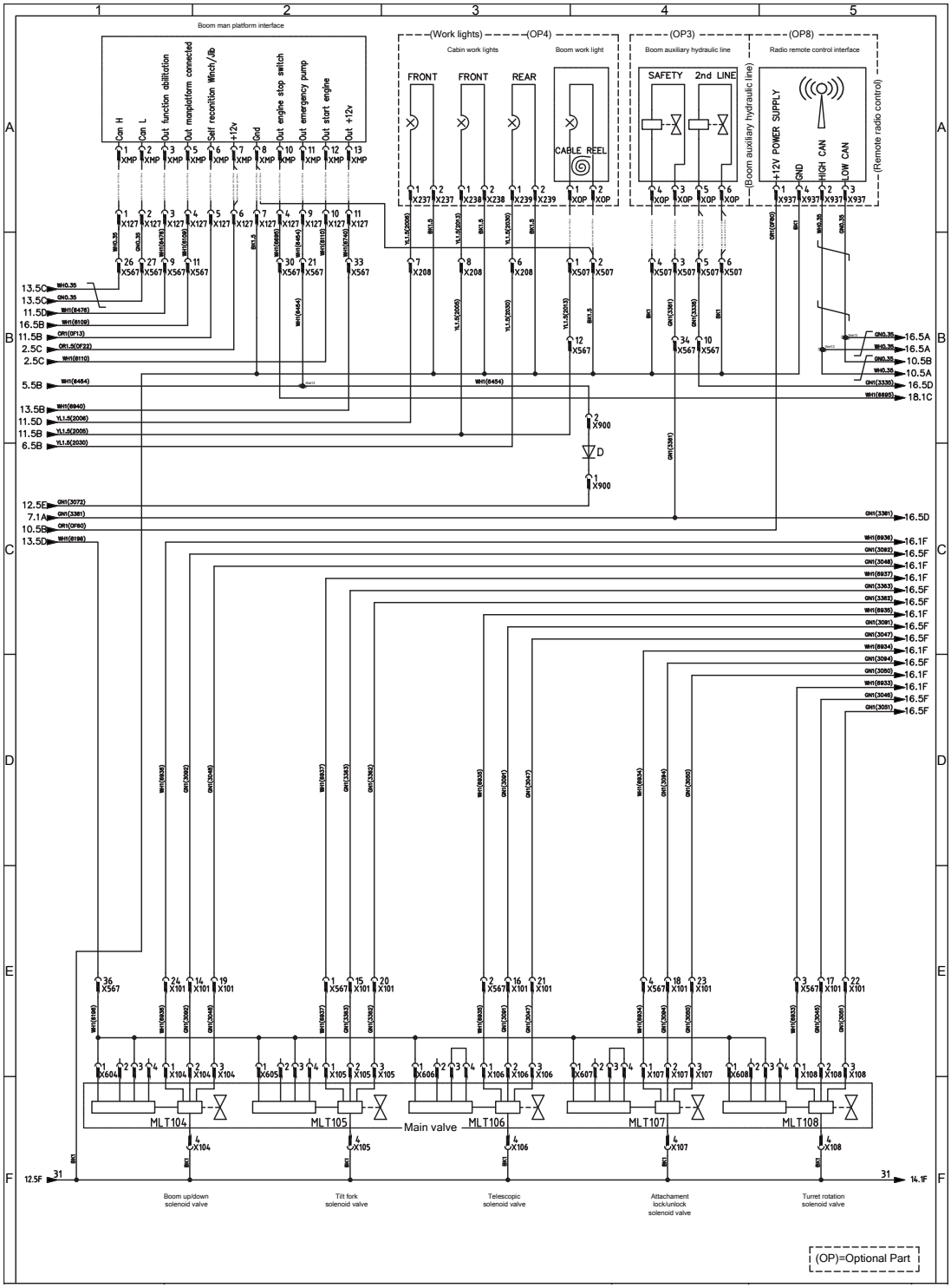
ELECTRICAL SCHEMATIC

GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105) *Sheet 13 of 20*



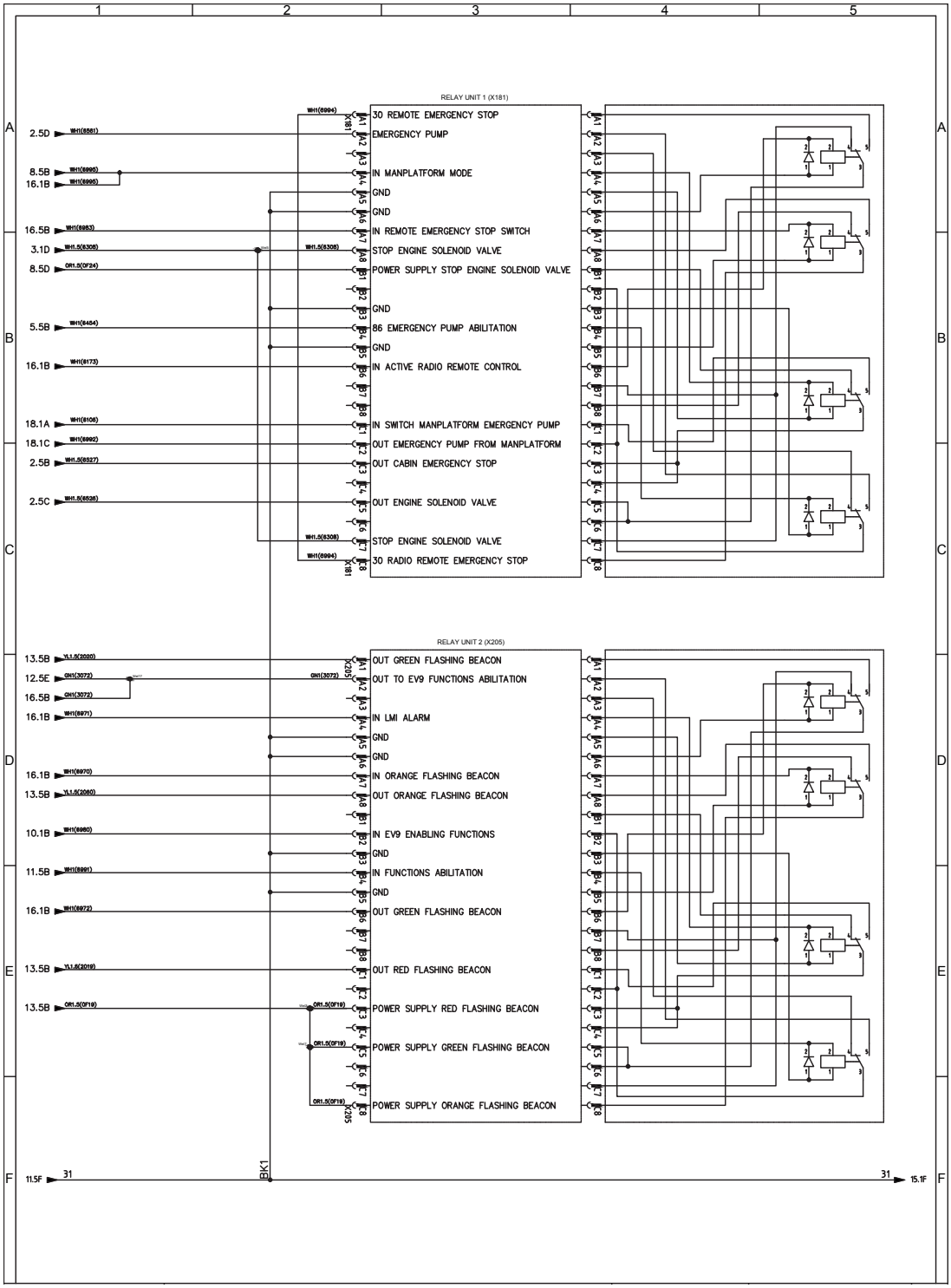
ELECTRICAL SCHEMATIC

Sheet 14 of 20 **GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105)**



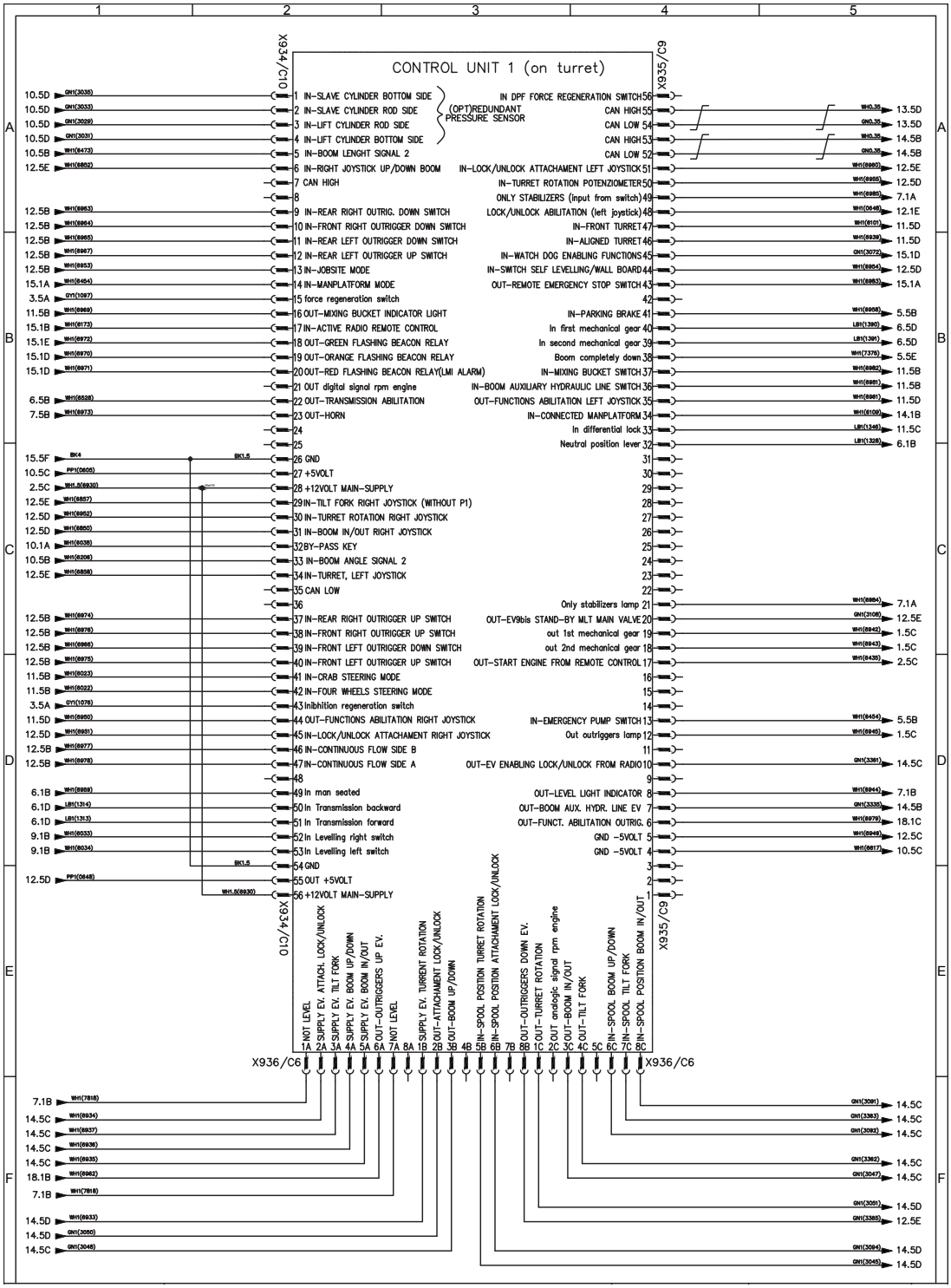
ELECTRICAL SCHEMATIC

GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105) *Sheet 15 of 20*



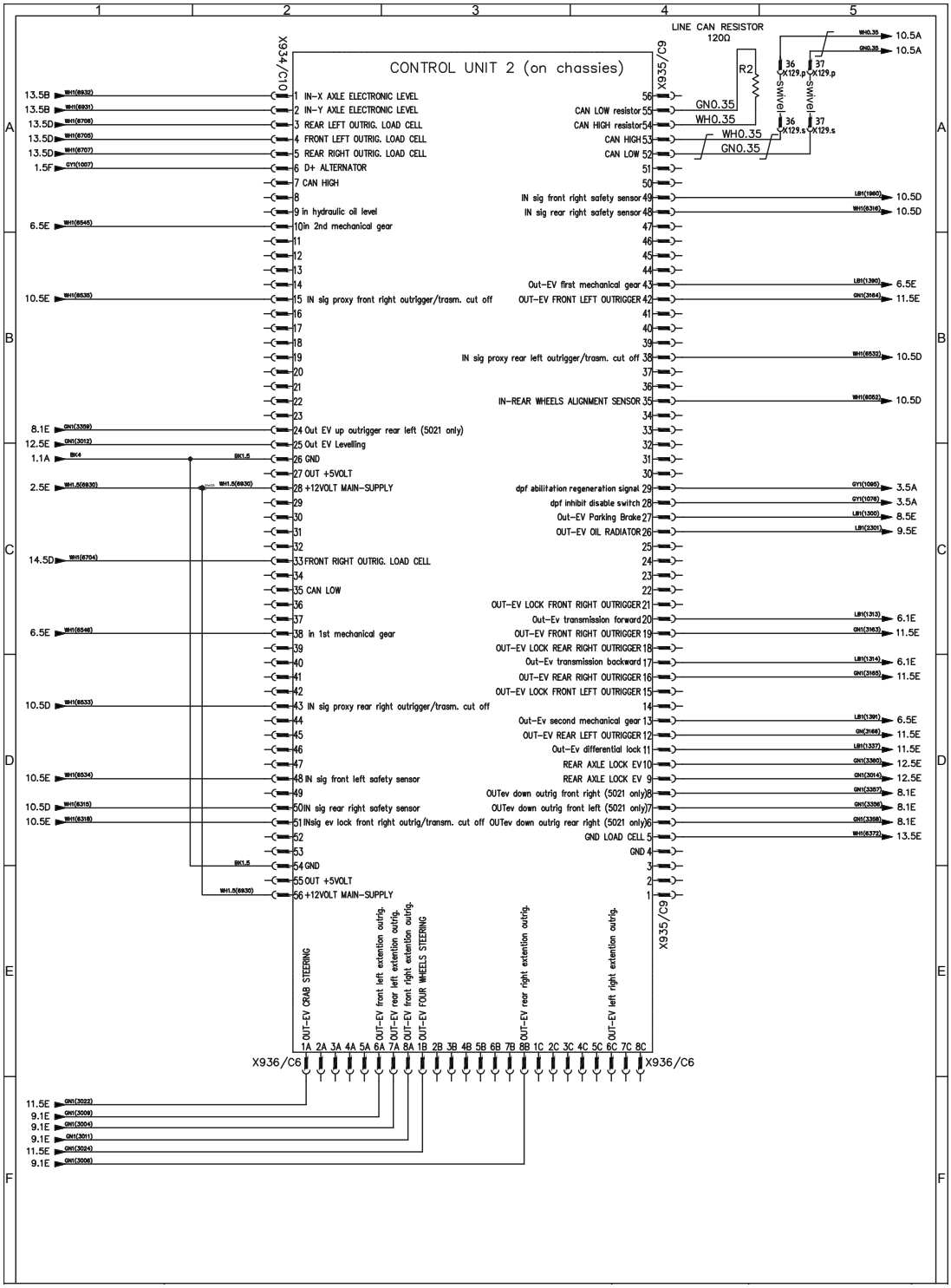
ELECTRICAL SCHEMATIC

Sheet 16 of 20 **GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105)**



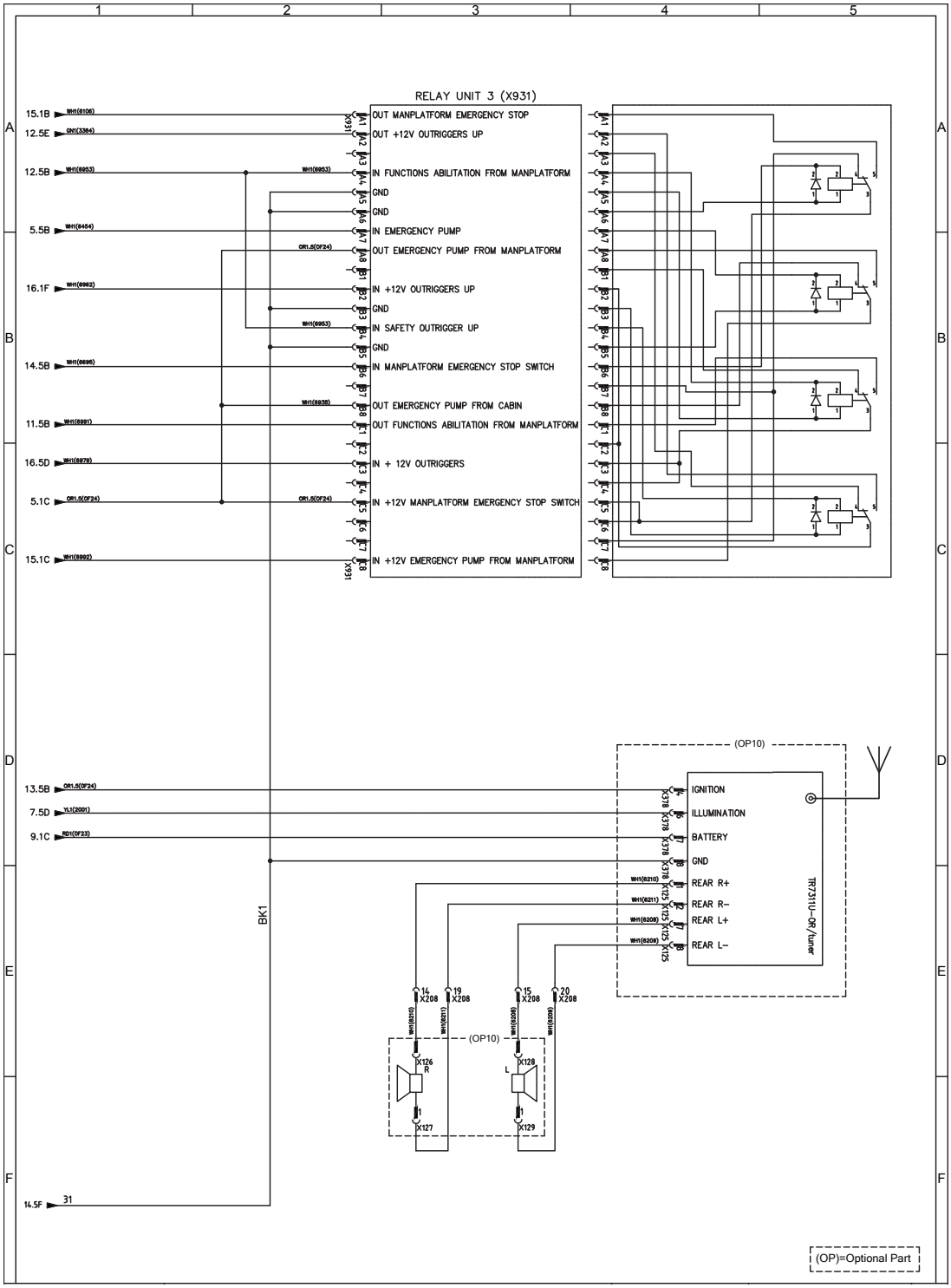
ELECTRICAL SCHEMATIC

GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105) *Sheet 17 of 20*



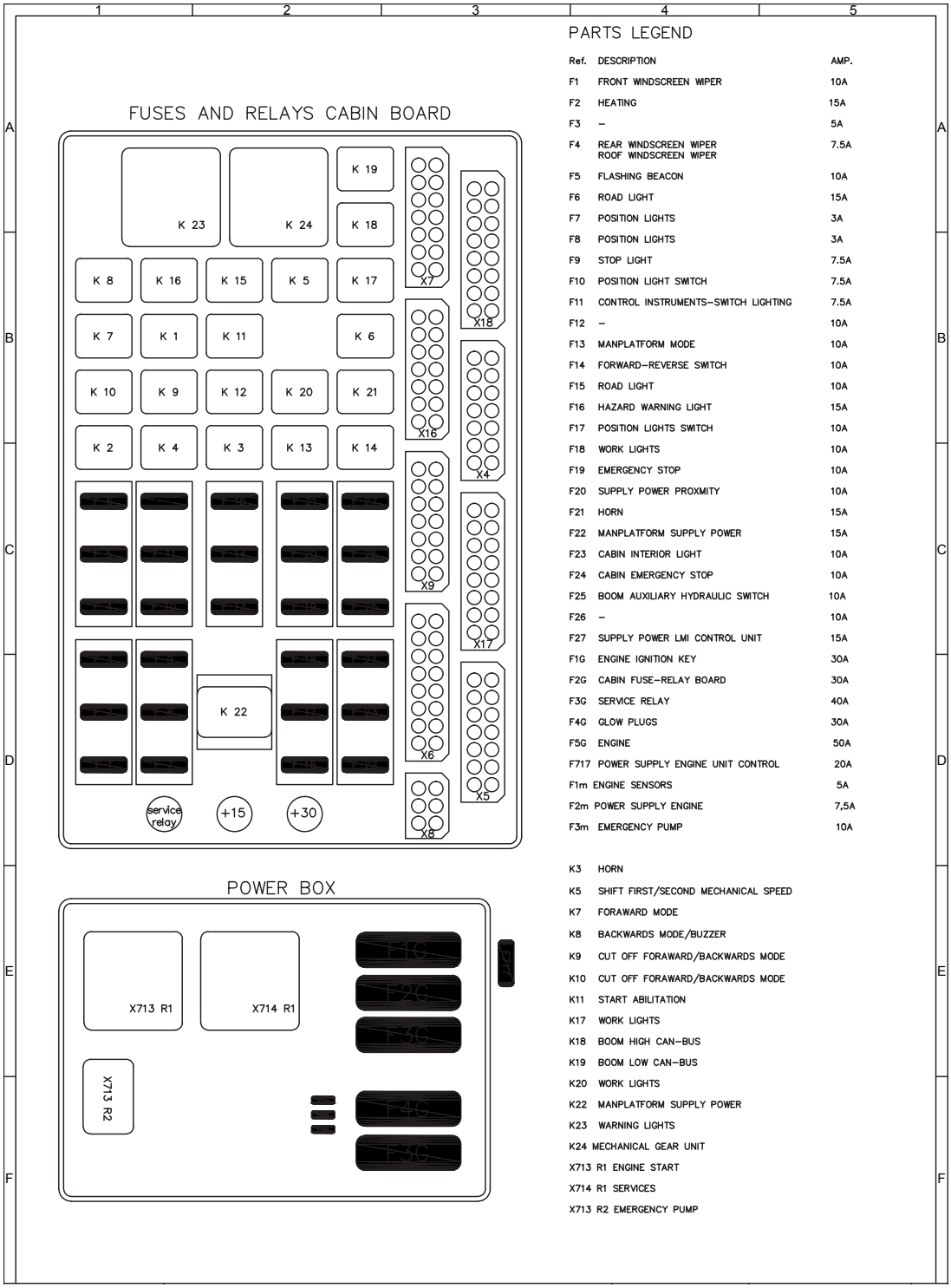
ELECTRICAL SCHEMATIC

Sheet 18 of 20 **GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105)**



ELECTRICAL SCHEMATIC

GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105) *Sheet 19 of 20*



ELECTRICAL SCHEMATIC

Sheet 20 of 20 **GTH-4016R/GTH-4018R Stage IIIB EN280 (from GTH4016R15M-105 & from GTH4018R15M-105)**

OPTIONAL LEGEND

OP1 - MIXING BUCKET
OP2 - ELECTRICAL EMERGENCY PUMP
OP3 - BOOM AUXILIARY HYDRAULIC LINE
OP4 - CABIN/BOOM WORK LIGHT
OP5 - ROOF WINDSCREEN
OP6 - AIR CONDITIONING
OP7 - LMI FLASHING BEACON
OP8 - REMOTE RADIO CONTROL
OP9 - MANPLATFORM and/or LEVELLING (to separate wiring diagram)
OP10- TUNER
OP11 - UNLOCK DEVICE
OP12 - TRACK AND TRACE
OP13 - SEAT CONFORT
OP14 - LEFT JOYSTICK
OP15 - TELEMATICS READY

WIRE COLOR LEGEND

LB	LIGHT BLUE	YL	YELLOW
BN	BROWN	PK	PINK
WH	WHITE	GY	GREY
BK	BLACK	GN	GREEN
OR	ORANGE	BL	BLUE
RD	RED	PP	PURPLE

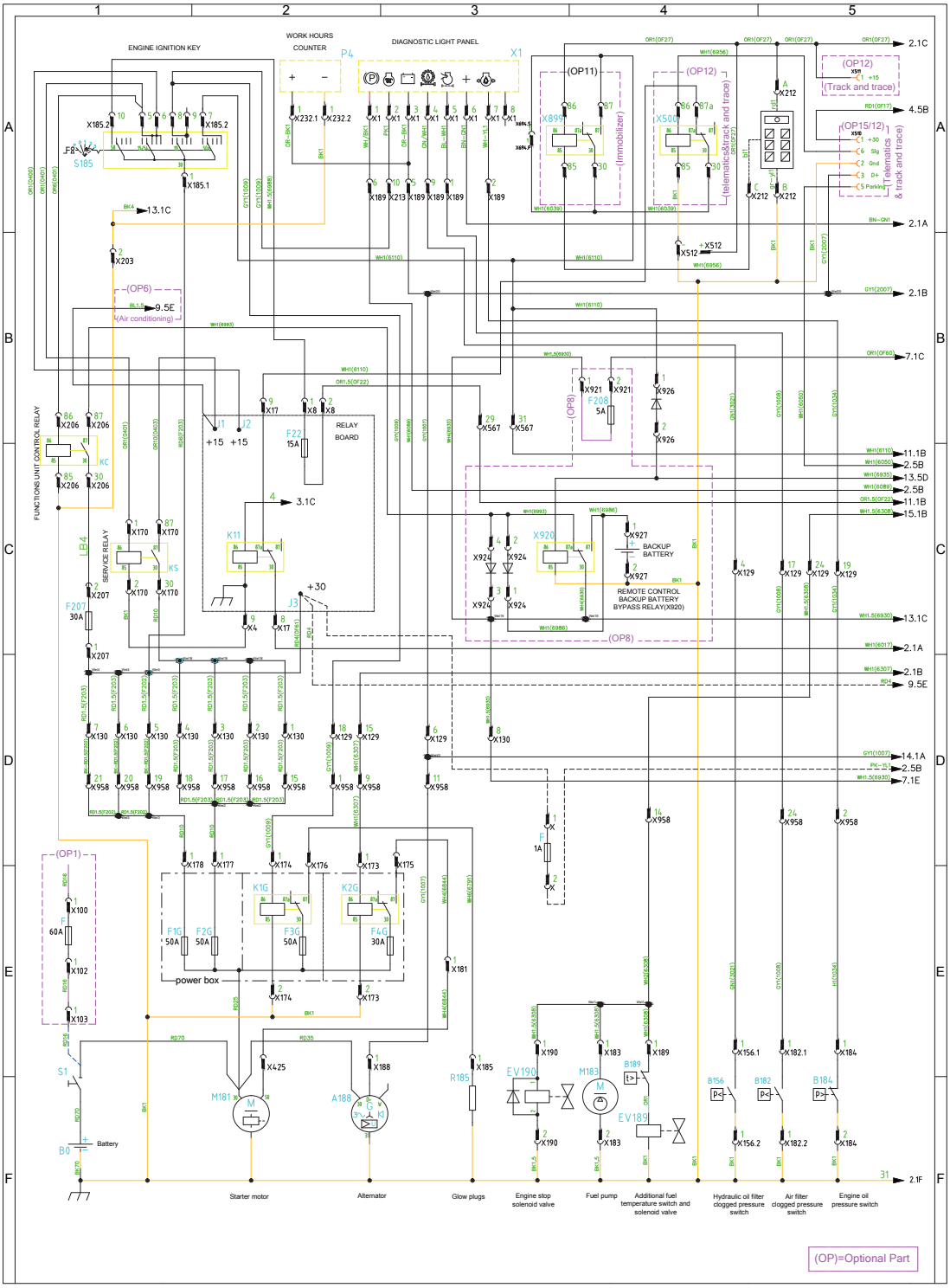
REMARK: Two colorwires are indicated through a combination of the aforesaid initials as follows:
YL/GN= YELLOW/GREEN (crosswise colouring)
YL-GN= YELLOW-GREEN (lengthswise colouring)

MODIFICATIONS HISTORY

REVISION	DATE	ECN	DESCRIPTION
0	12/11/2015	/	First Release

ELECTRICAL SCHEMATIC

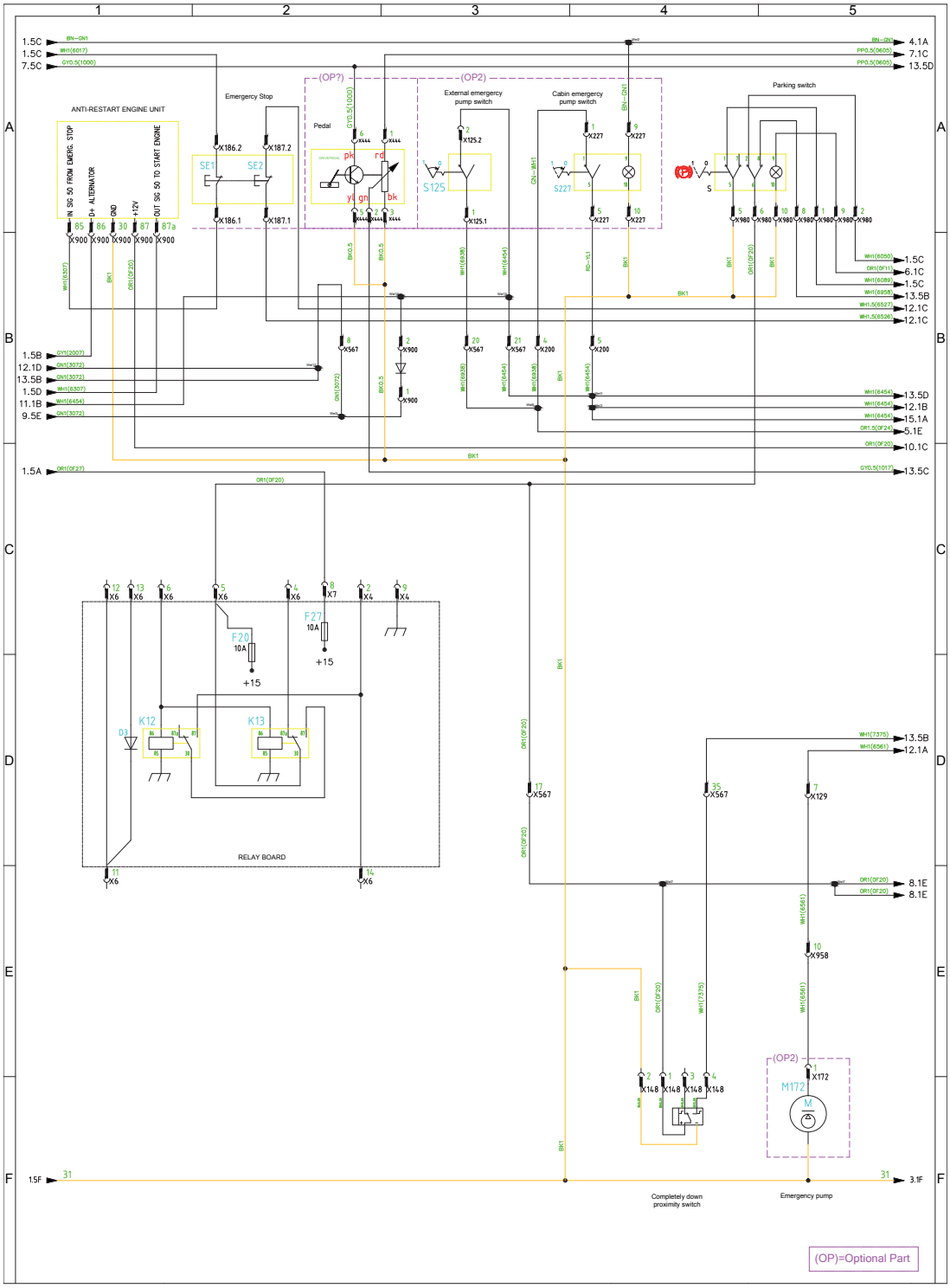
GTH-5021R Stage IIIA (from GTH5021R14B-117) *Sheet 1 of 17*



ELECTRICAL SCHEMATIC

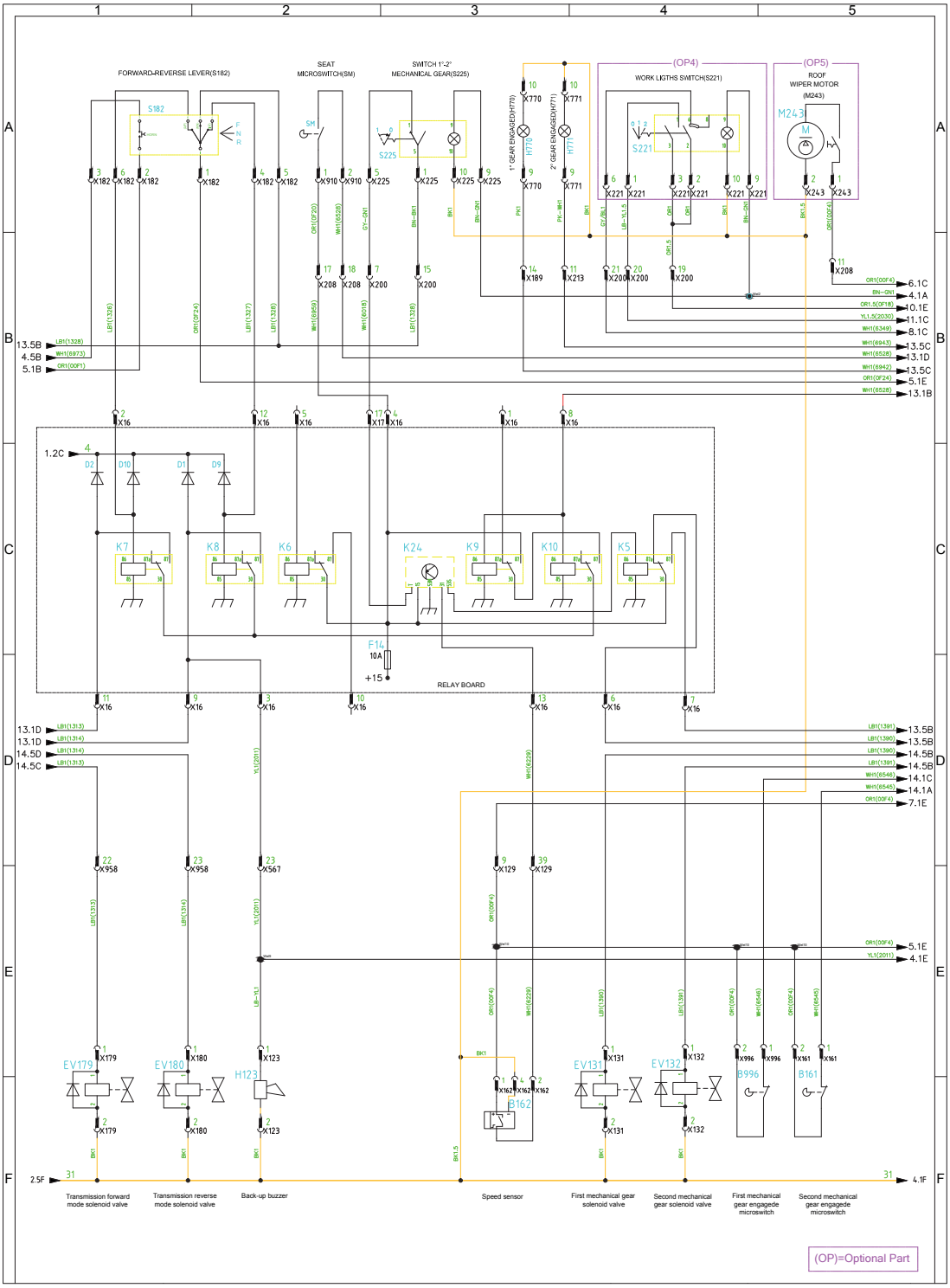
Sheet 2 of 17

GTH-5021R Stage IIIA (from GTH5021R14B-117)



ELECTRICAL SCHEMATIC

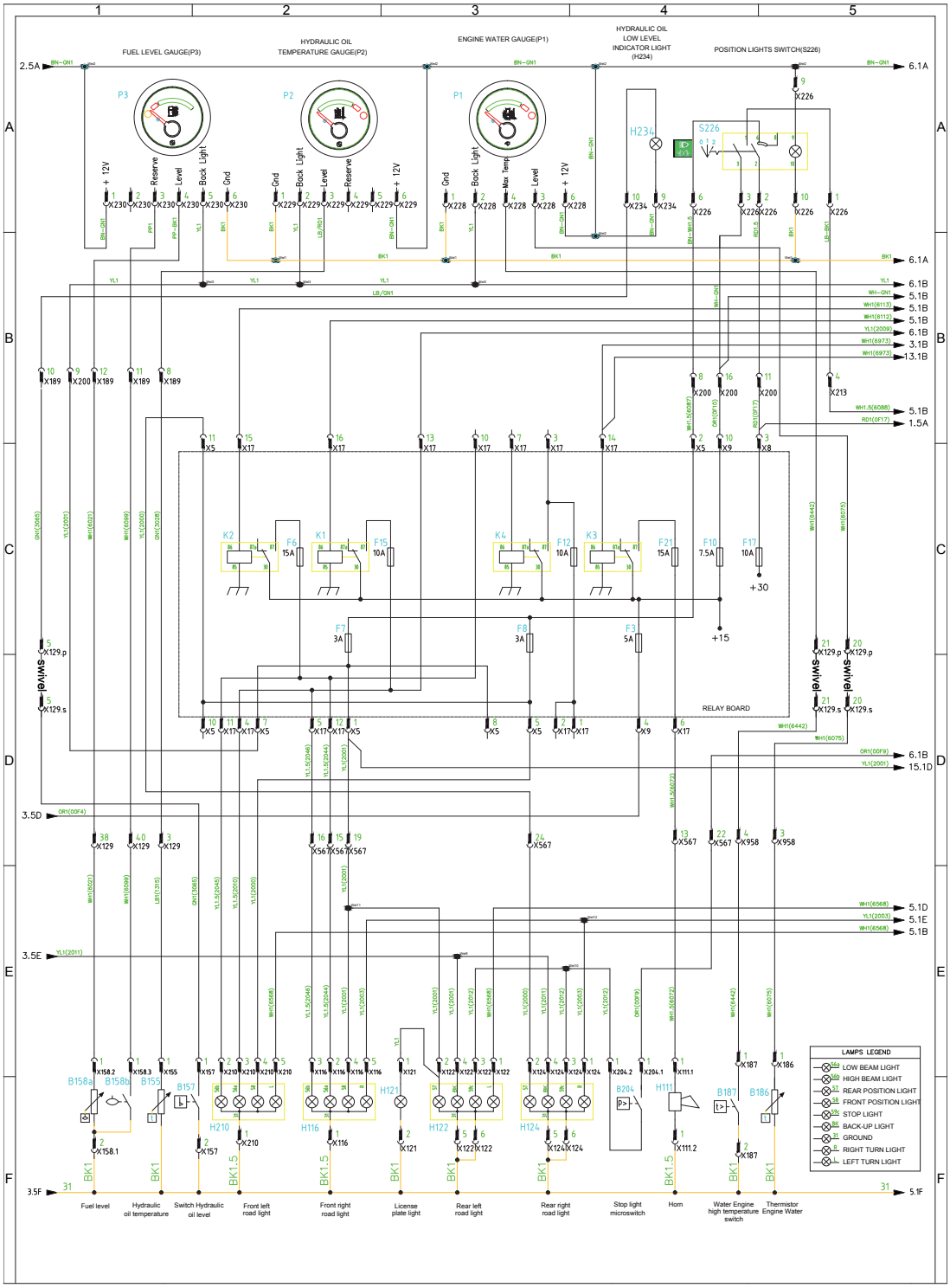
GTH-5021R Stage IIIA (from GTH5021R14B-117) *Sheet 3 of 17*



ELECTRICAL SCHEMATIC

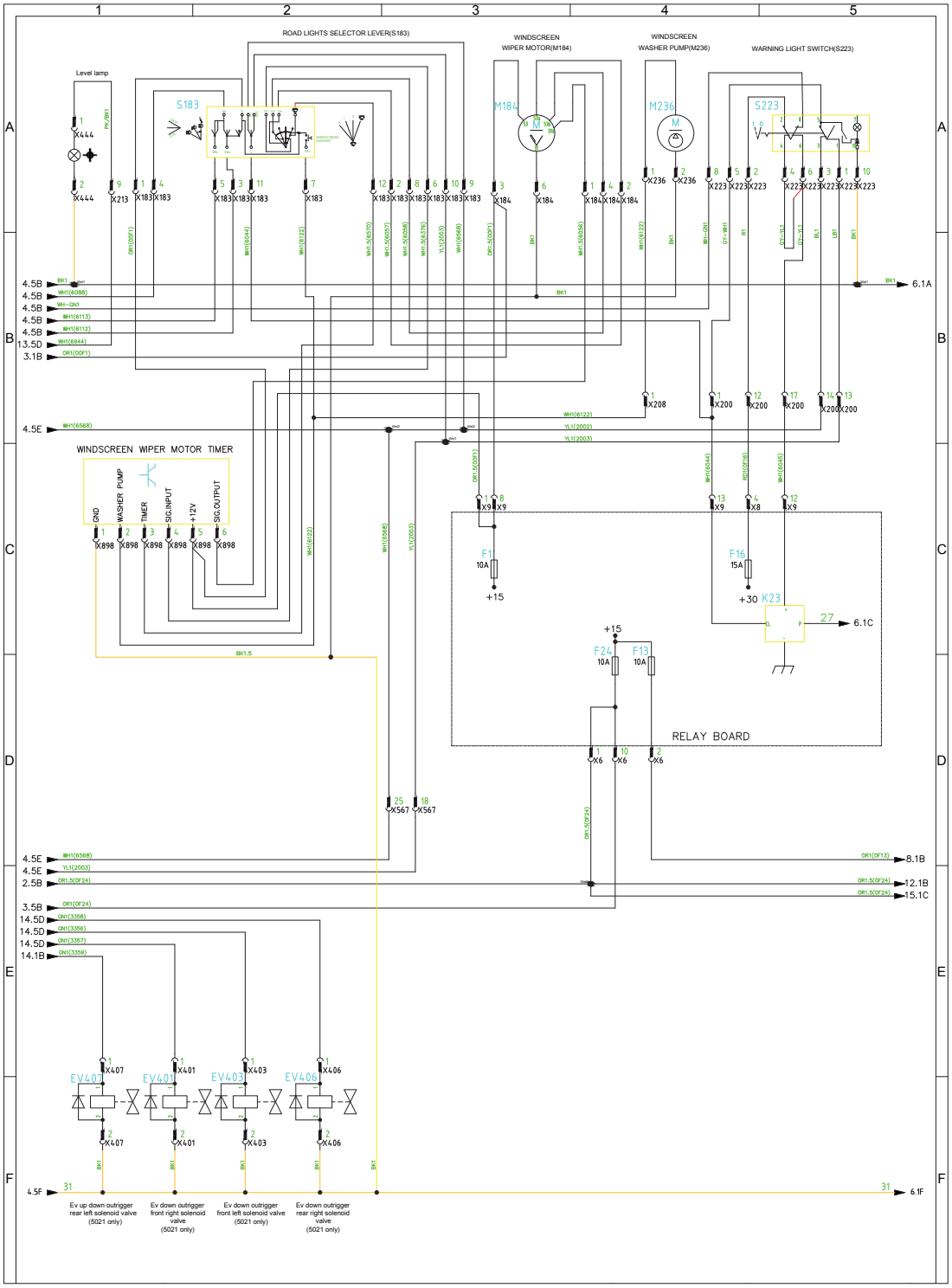
Sheet 4 of 17

GTH-5021R Stage IIIA (from GTH5021R14B-117)



ELECTRICAL SCHEMATIC

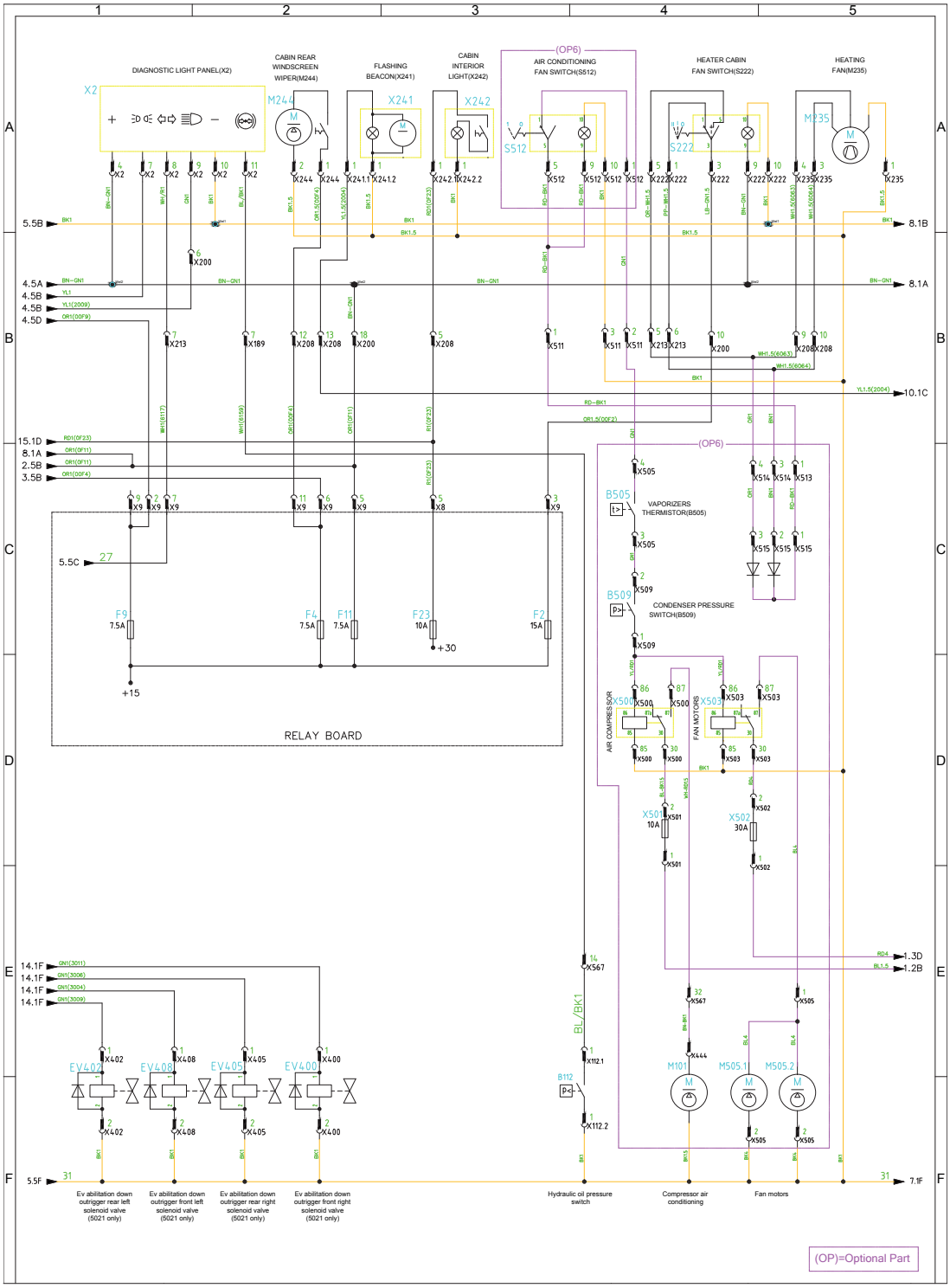
GTH-5021R Stage IIIA (from GTH5021R14B-117) *Sheet 5 of 17*



ELECTRICAL SCHEMATIC

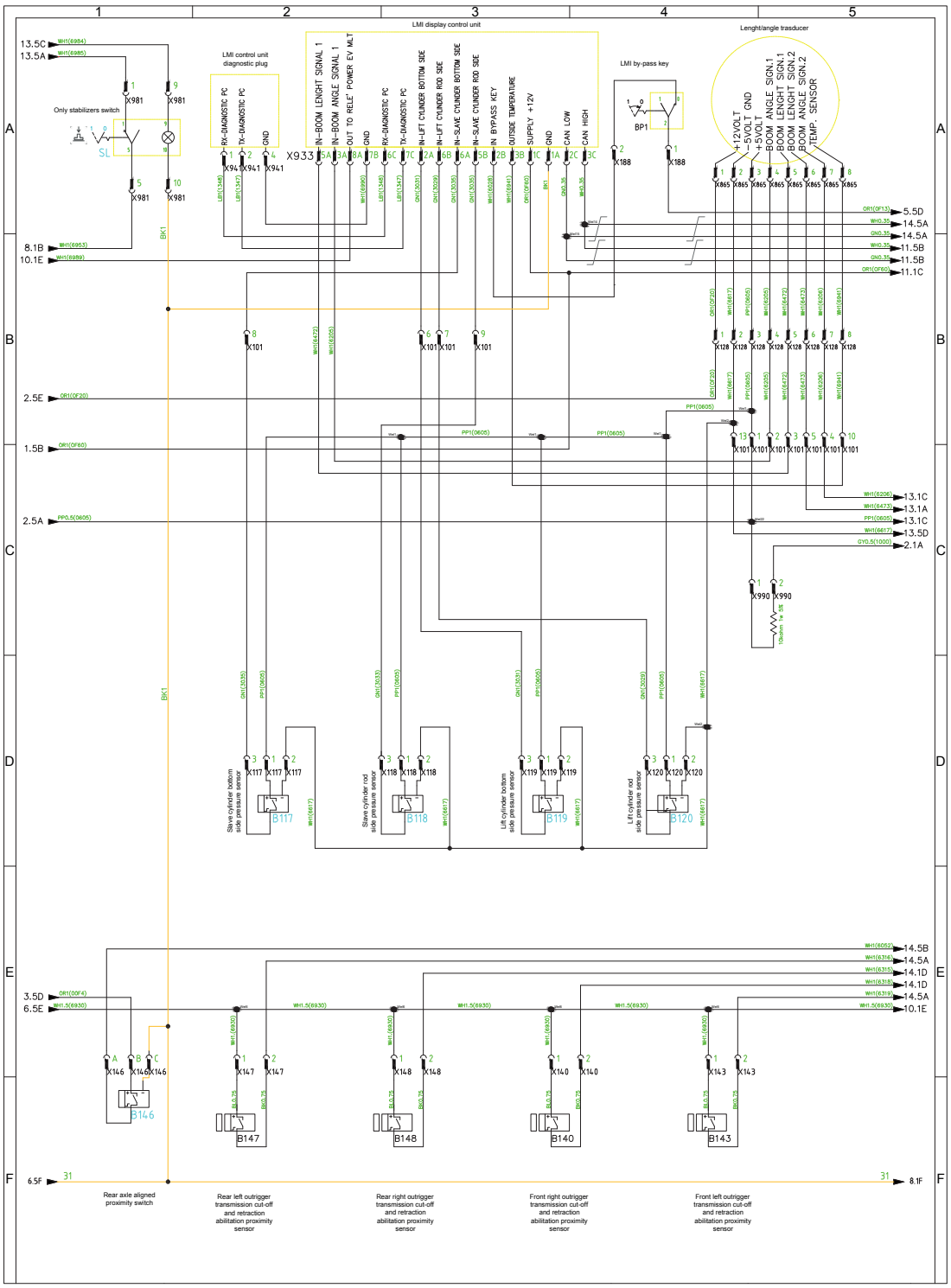
Sheet 6 of 17

GTH-5021R Stage IIIA (from GTH5021R14B-117)



ELECTRICAL SCHEMATIC

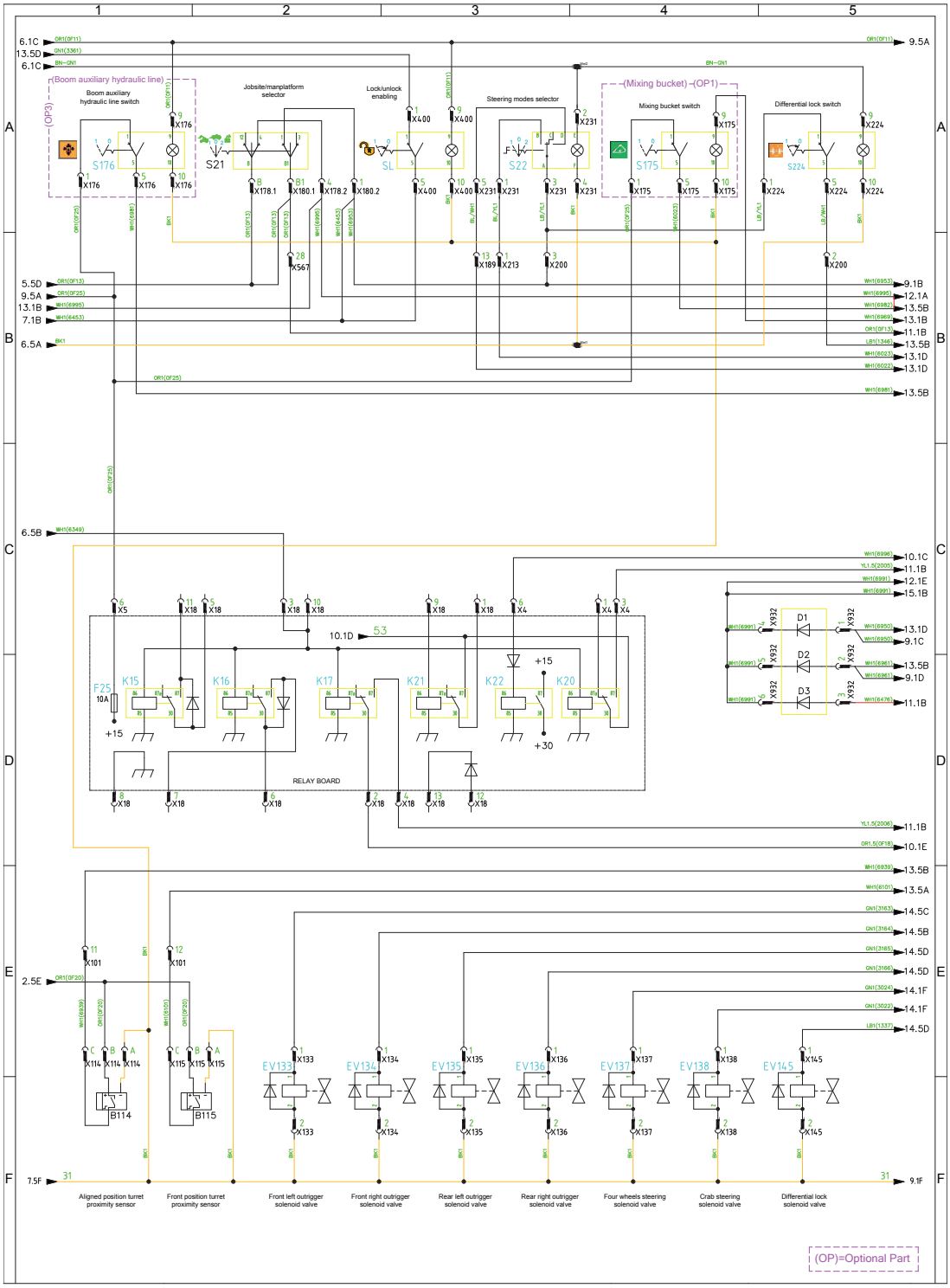
GTH-5021R Stage IIIA (from GTH5021R14B-117) *Sheet 7 of 17*



ELECTRICAL SCHEMATIC

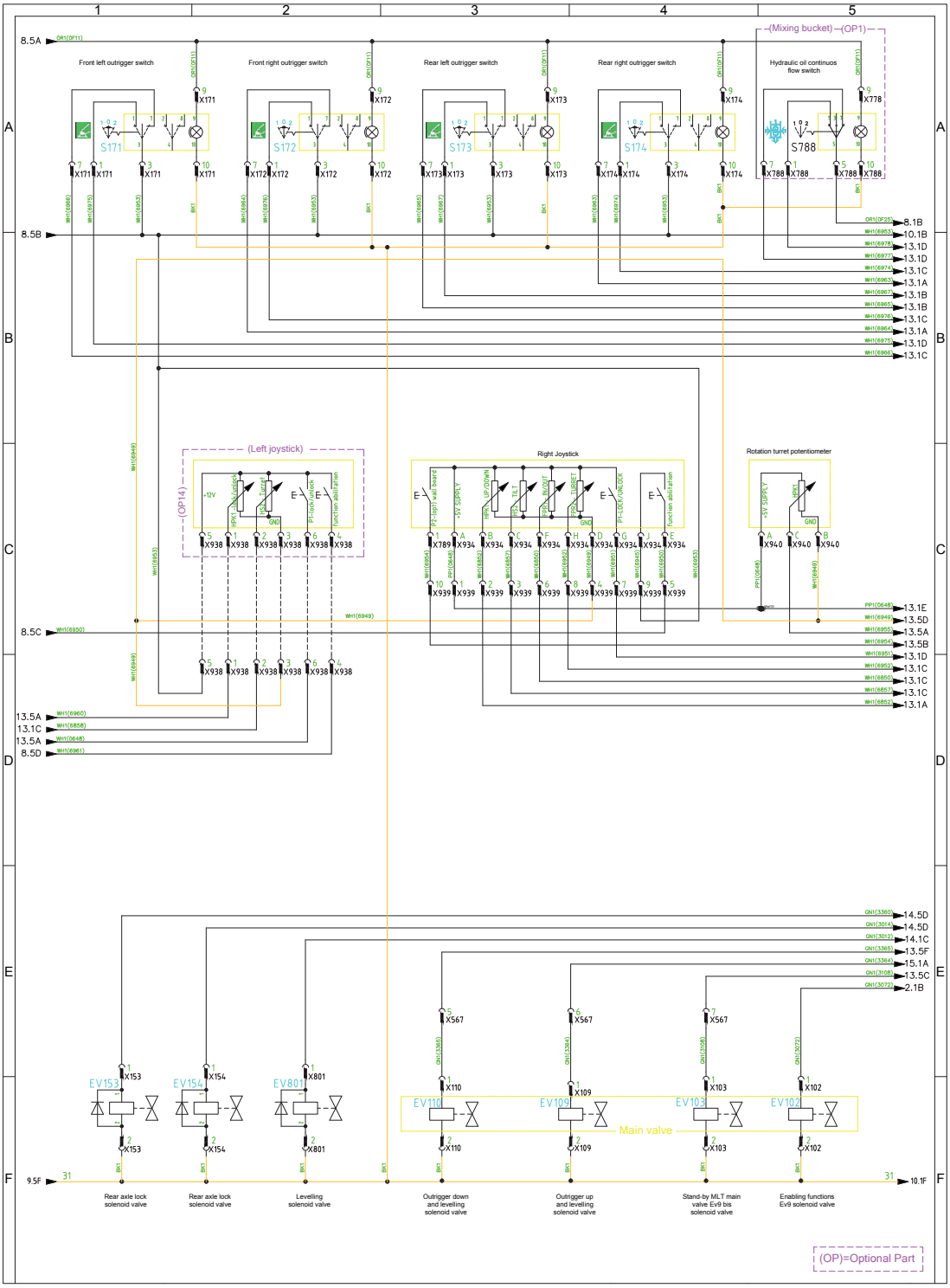
Sheet 8 of 17

GTH-5021R Stage IIIA (from GTH5021R14B-117)



ELECTRICAL SCHEMATIC

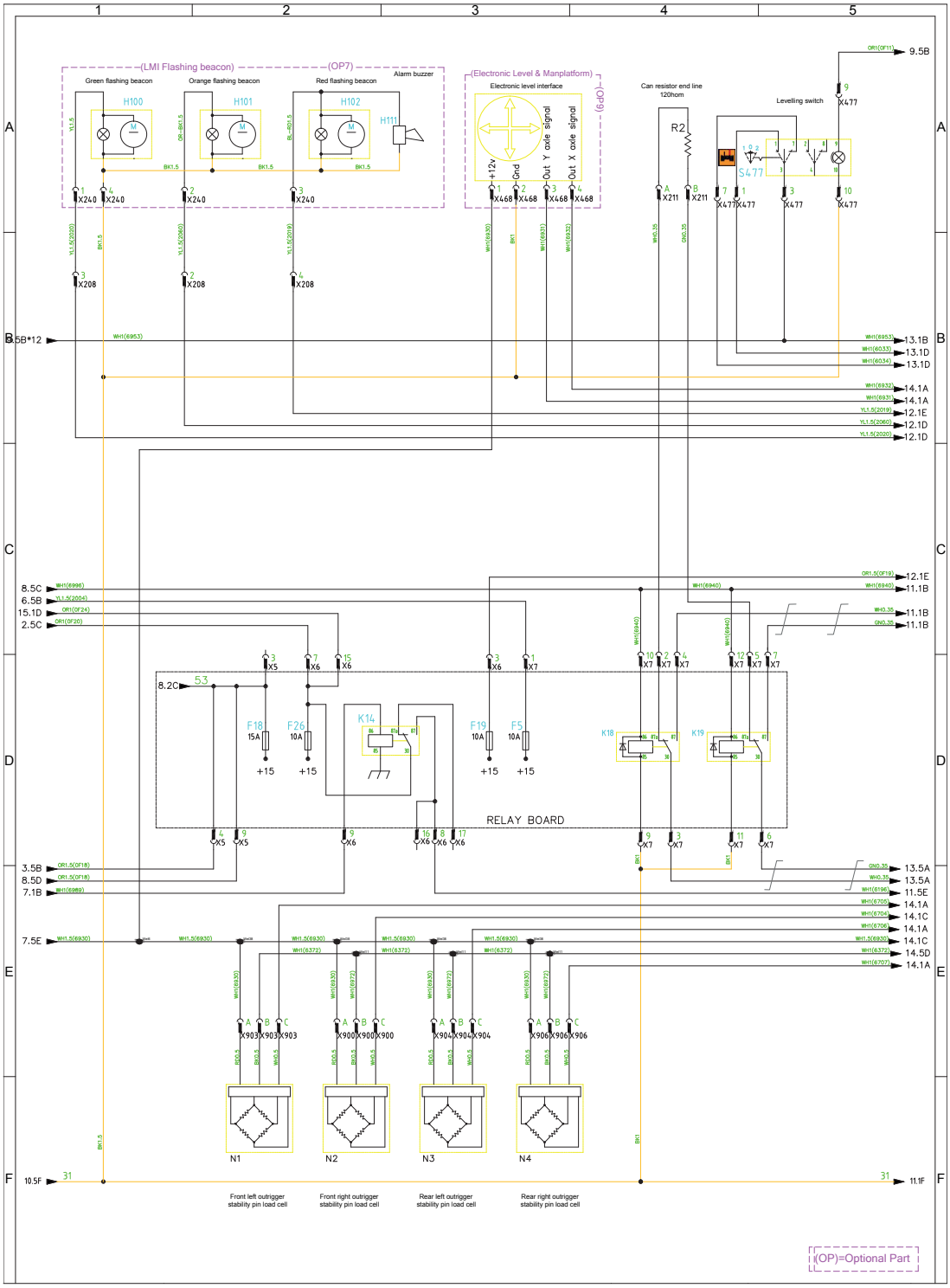
GTH-5021R Stage IIIA (from GTH5021R14B-117) *Sheet 9 of 17*



ELECTRICAL SCHEMATIC

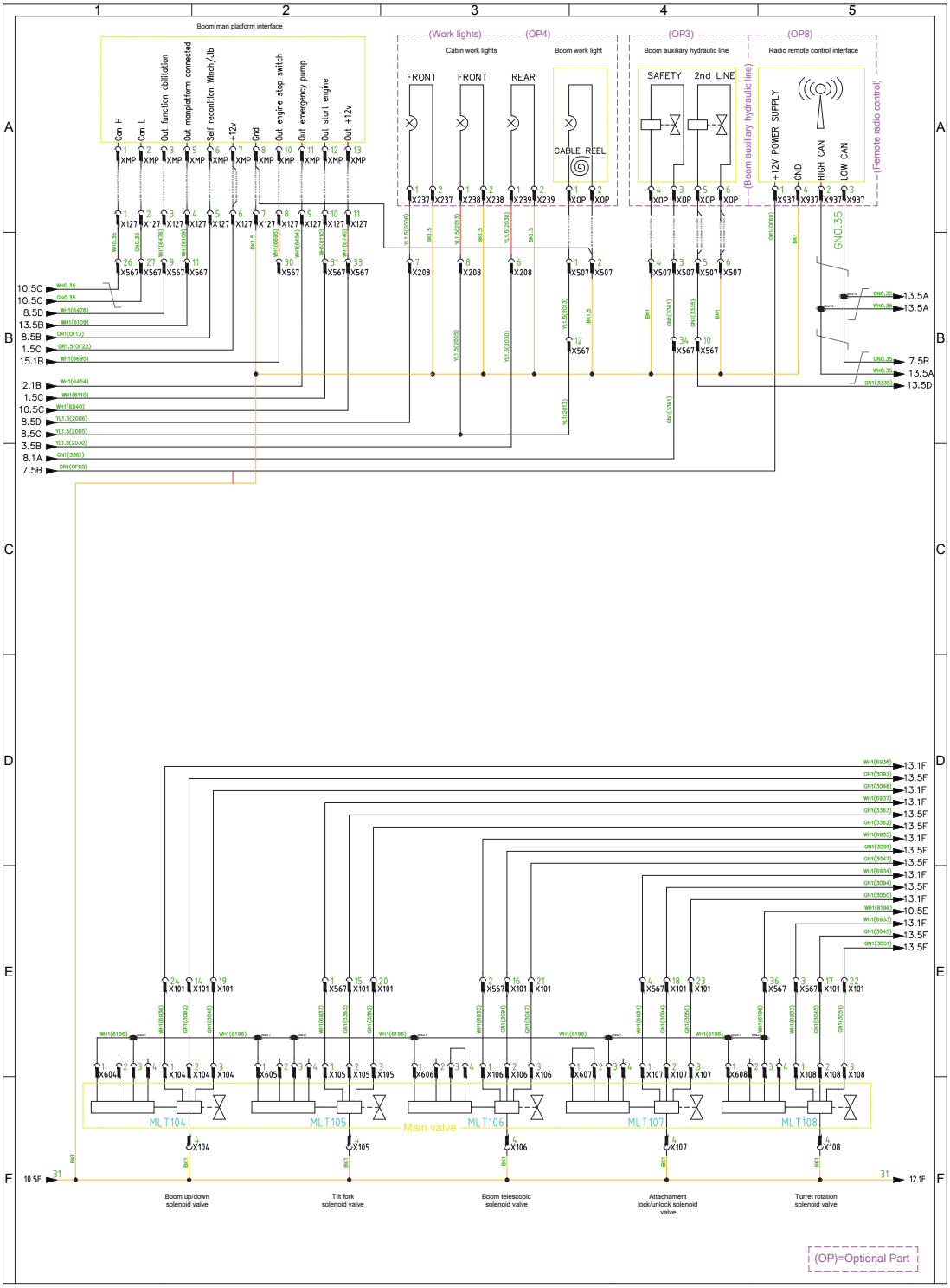
Sheet 10 of 17

GTH-5021R Stage IIIA (from GTH5021R14B-117)



ELECTRICAL SCHEMATIC

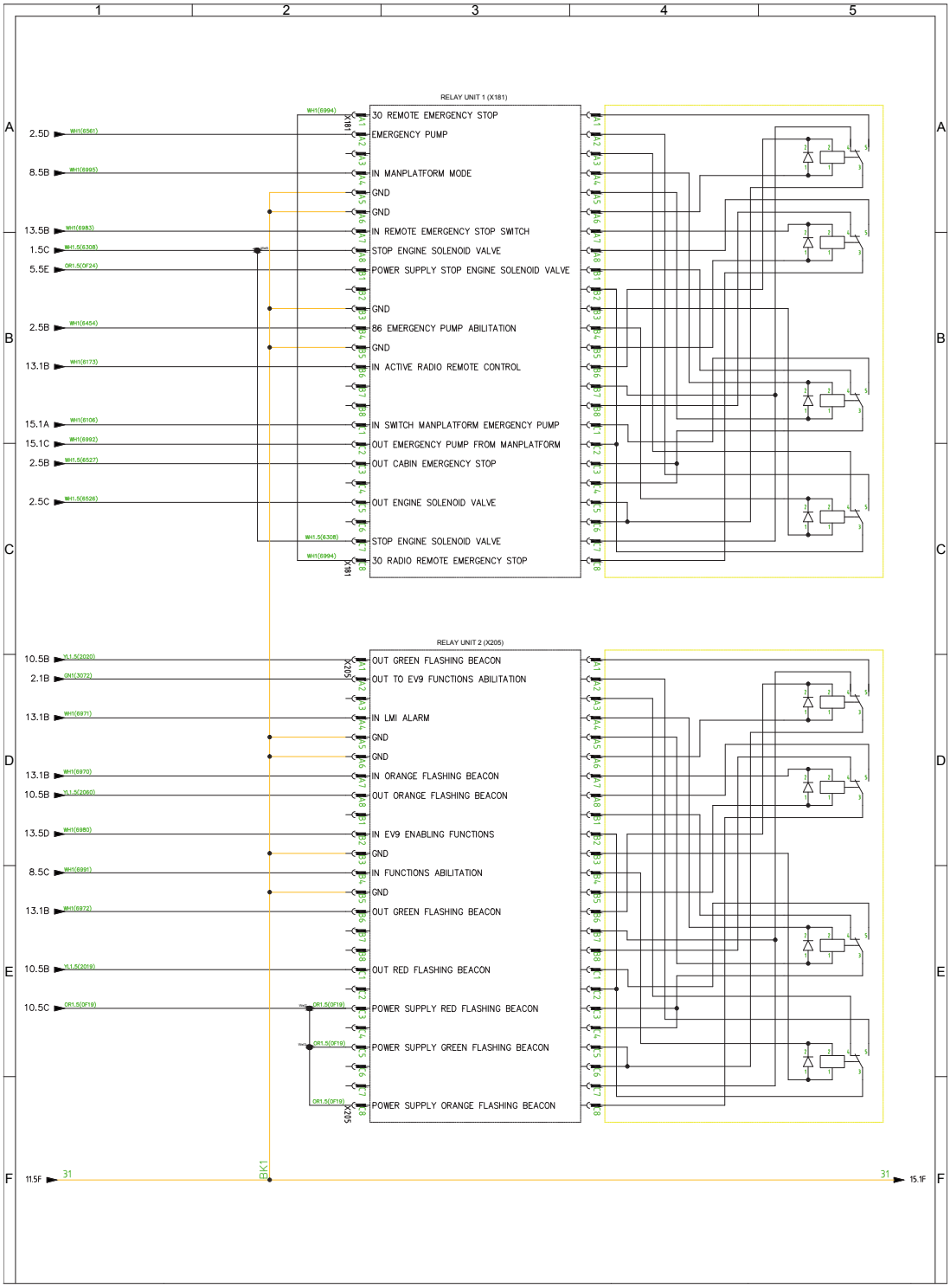
GTH-5021R Stage IIIA (from GTH5021R14B-117) *Sheet 11 of 17*



ELECTRICAL SCHEMATIC

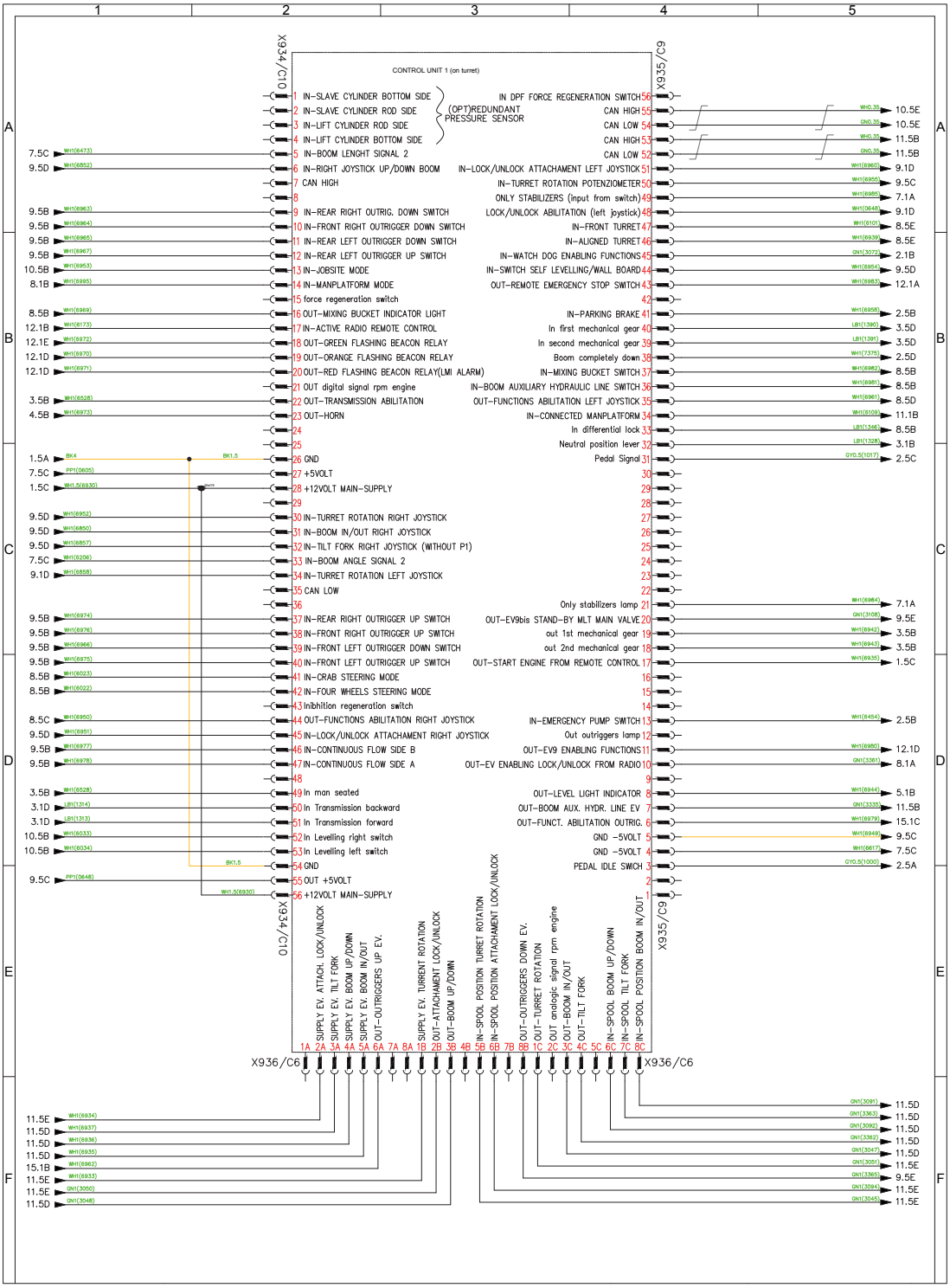
Sheet 12 of 17

GTH-5021R Stage IIIA (from GTH5021R14B-117)



ELECTRICAL SCHEMATIC

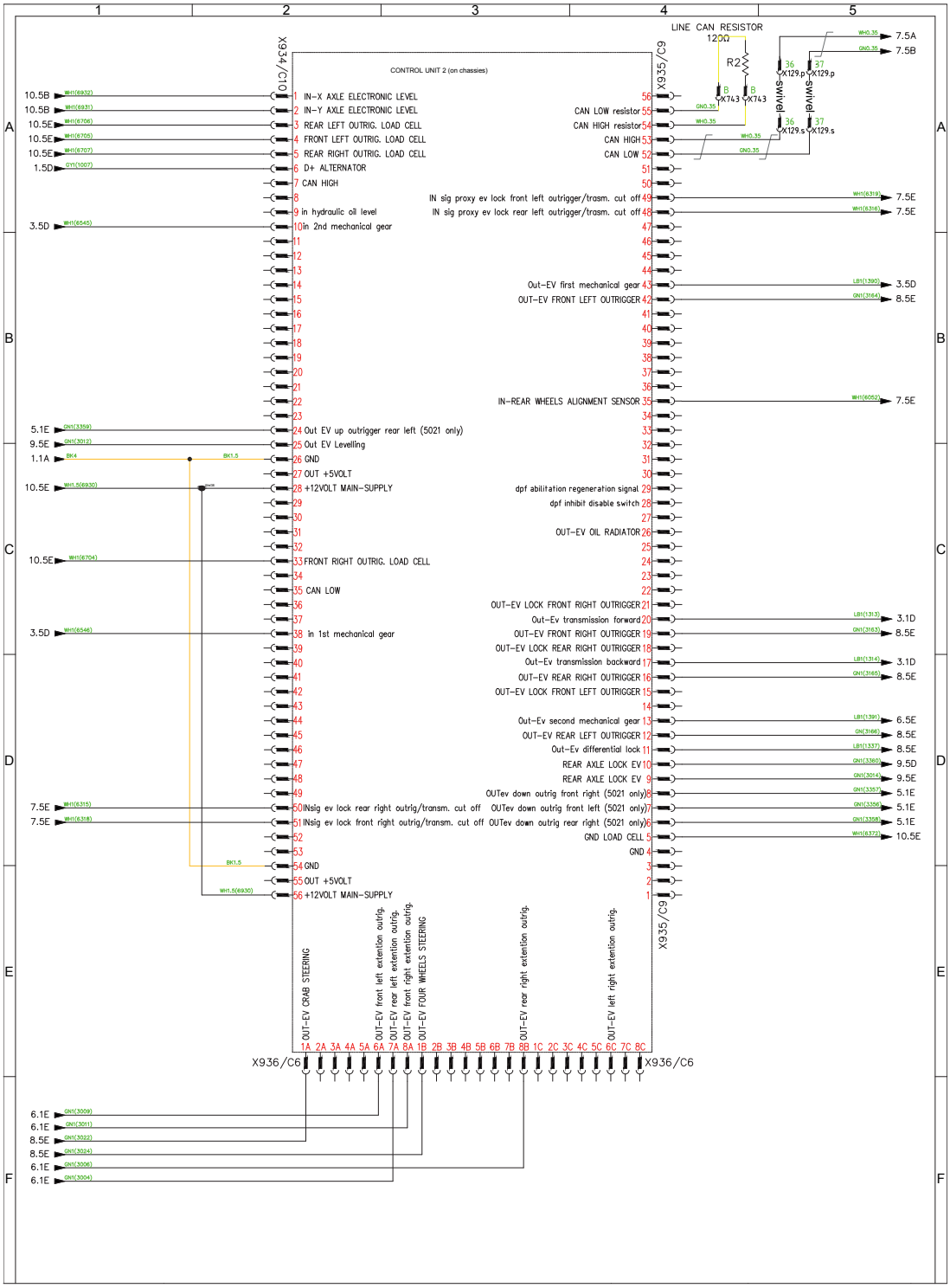
GTH-5021R Stage IIIA (from GTH5021R14B-117) *Sheet 13 of 17*



ELECTRICAL SCHEMATIC

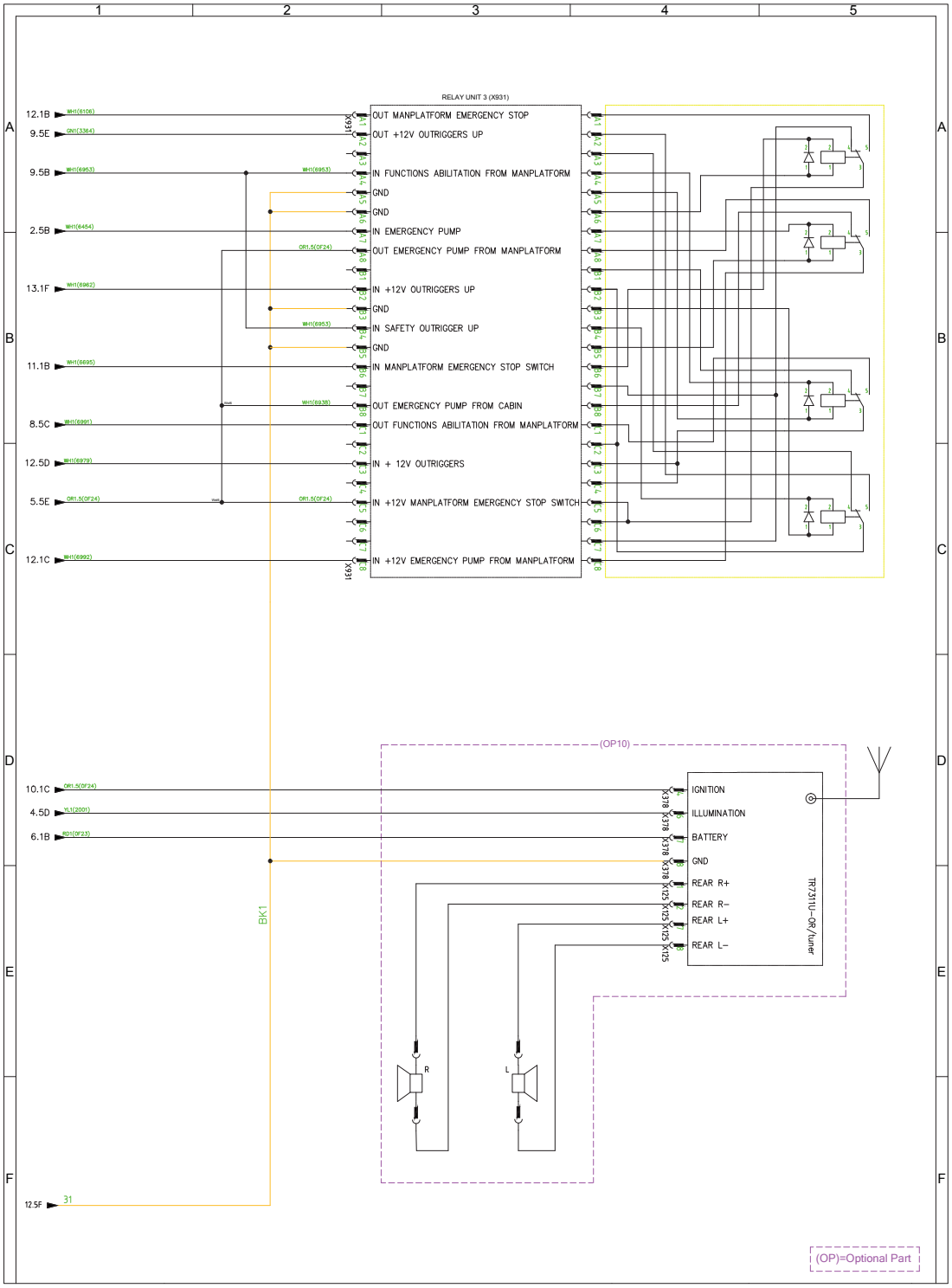
Sheet 14 of 17

GTH-5021R Stage IIIA (from GTH5021R14B-117)



ELECTRICAL SCHEMATIC

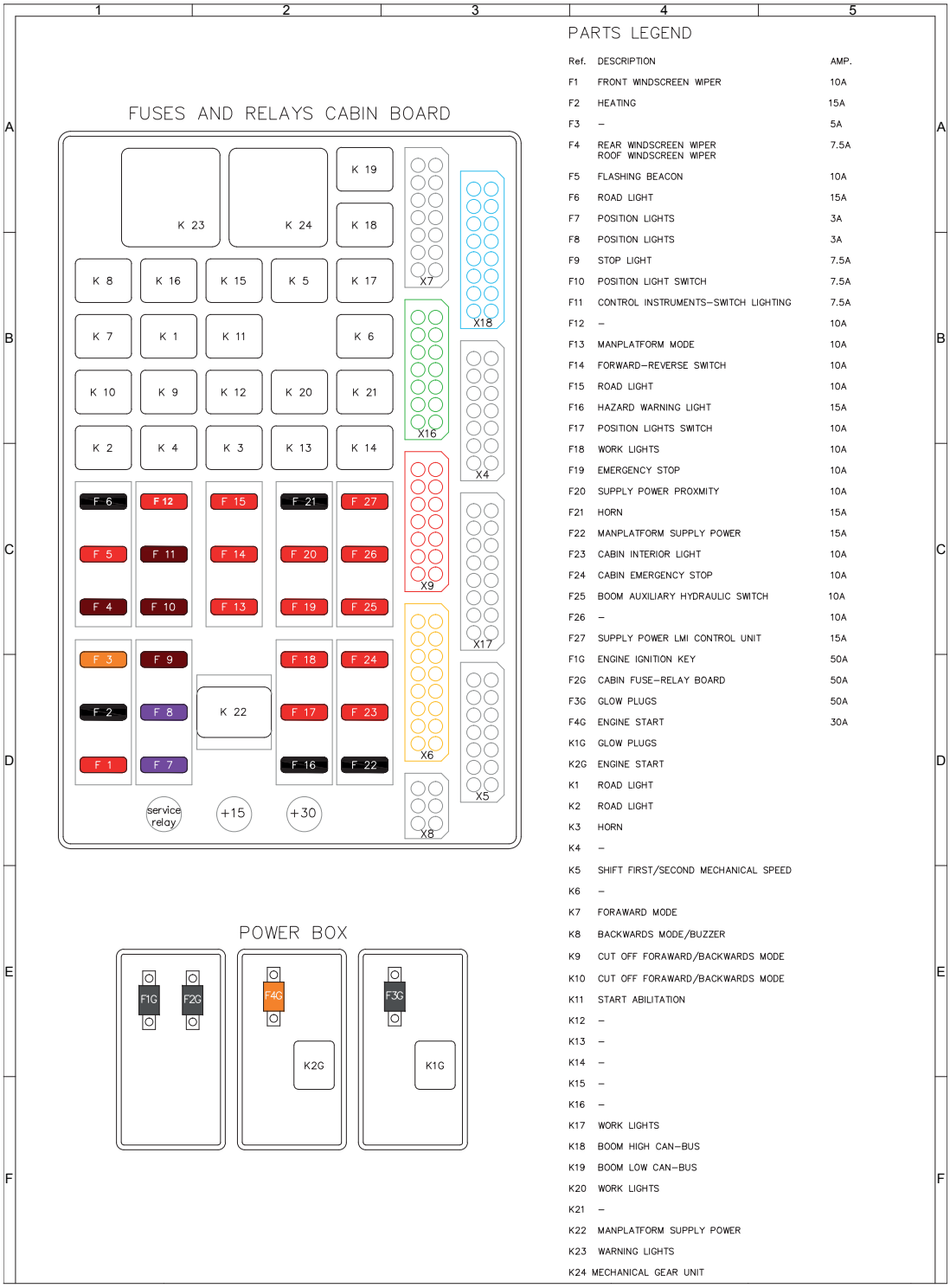
GTH-5021R Stage IIIA (from GTH5021R14B-117) *Sheet 15 of 17*



ELECTRICAL SCHEMATIC

Sheet 16 of 17

GTH-5021R Stage IIIA (from GTH5021R14B-117)



PARTS LEGEND

Ref.	DESCRIPTION	AMP.
F1	FRONT WINDSCREEN WIPER	10A
F2	HEATING	15A
F3	–	5A
F4	REAR WINDSCREEN WIPER ROOF WINDSCREEN WIPER	7.5A
F5	FLASHING BEACON	10A
F6	ROAD LIGHT	15A
F7	POSITION LIGHTS	3A
F8	POSITION LIGHTS	3A
F9	STOP LIGHT	7.5A
F10	POSITION LIGHT SWITCH	7.5A
F11	CONTROL INSTRUMENTS–SWITCH LIGHTING	7.5A
F12	–	10A
F13	MANPLATFORM MODE	10A
F14	FORWARD–REVERSE SWITCH	10A
F15	ROAD LIGHT	10A
F16	HAZARD WARNING LIGHT	15A
F17	POSITION LIGHTS SWITCH	10A
F18	WORK LIGHTS	10A
F19	EMERGENCY STOP	10A
F20	SUPPLY POWER PROXMITY	10A
F21	HORN	15A
F22	MANPLATFORM SUPPLY POWER	15A
F23	CABIN INTERIOR LIGHT	10A
F24	CABIN EMERGENCY STOP	10A
F25	BOOM AUXILIARY HYDRAULIC SWITCH	10A
F26	–	10A
F27	SUPPLY POWER LMI CONTROL UNIT	15A
F1G	ENGINE IGNITION KEY	50A
F2G	CABIN FUSE–RELAY BOARD	50A
F3G	GLOW PLUGS	50A
F4G	ENGINE START	30A
K1G	GLOW PLUGS	
K2G	ENGINE START	
K1	ROAD LIGHT	
K2	ROAD LIGHT	
K3	HORN	
K4	–	
K5	SHIFT FIRST/SECOND MECHANICAL SPEED	
K6	–	
K7	FORAWARD MODE	
K8	BACKWARDS MODE/BUZZER	
K9	CUT OFF FORAWARD/BACKWARDS MODE	
K10	CUT OFF FORAWARD/BACKWARDS MODE	
K11	START ABILITATION	
K12	–	
K13	–	
K14	–	
K15	–	
K16	–	
K17	WORK LIGHTS	
K18	BOOM HIGH CAN–BUS	
K19	BOOM LOW CAN–BUS	
K20	WORK LIGHTS	
K21	–	
K22	MANPLATFORM SUPPLY POWER	
K23	WARNING LIGHTS	
K24	MECHANICAL GEAR UNIT	

ELECTRICAL SCHEMATIC

GTH-5021R Stage IIIA (from GTH5021R14B-117) *Sheet 17 of 17*

OPTIONAL LEGEND

OP1 - MIXING BUCKET
OP2 - ELECTRICAL EMERGENCY PUMP
OP3 - BOOM AUXILIARY HYDRAULIC LINE
OP4 - CABIN/BOOM WORK LIGHT
OP5 - ROOF WINDSCREEN
OP6 - AIR CONDITIONING
OP7 - LMI FLASHING BEACON
OP8 - REMOTE RADIO CONTROL
OP9 - MANPLATFORM and/or LEVELLING (to separate wiring diagram)
OP10- TUNER
OP11 - UNLOCK DEVICE
OP12 - TRACK AND TRACE or TELEMATICS
OP13 - SEAT CONFORT
OP14 - LEFT JOYSTICK

WIRE COLOR LEGEND

LB	LIGHT BLUE	YL	YELLOW
BN	BROWN	PK	PINK
WH	WHITE	GY	GREY
BK	BLACK	GN	GREEN
OR	ORANGE	BL	BLUE
RD	RED	PP	PURPLE

REMARK: Two colorwires are indicated through a combination of the aforesaid initials as follows:
Y/GN= YELLOW/GREEN (crosswise colouring)
Y-GN= YELLOW-GREEN (lengthswise colouring)

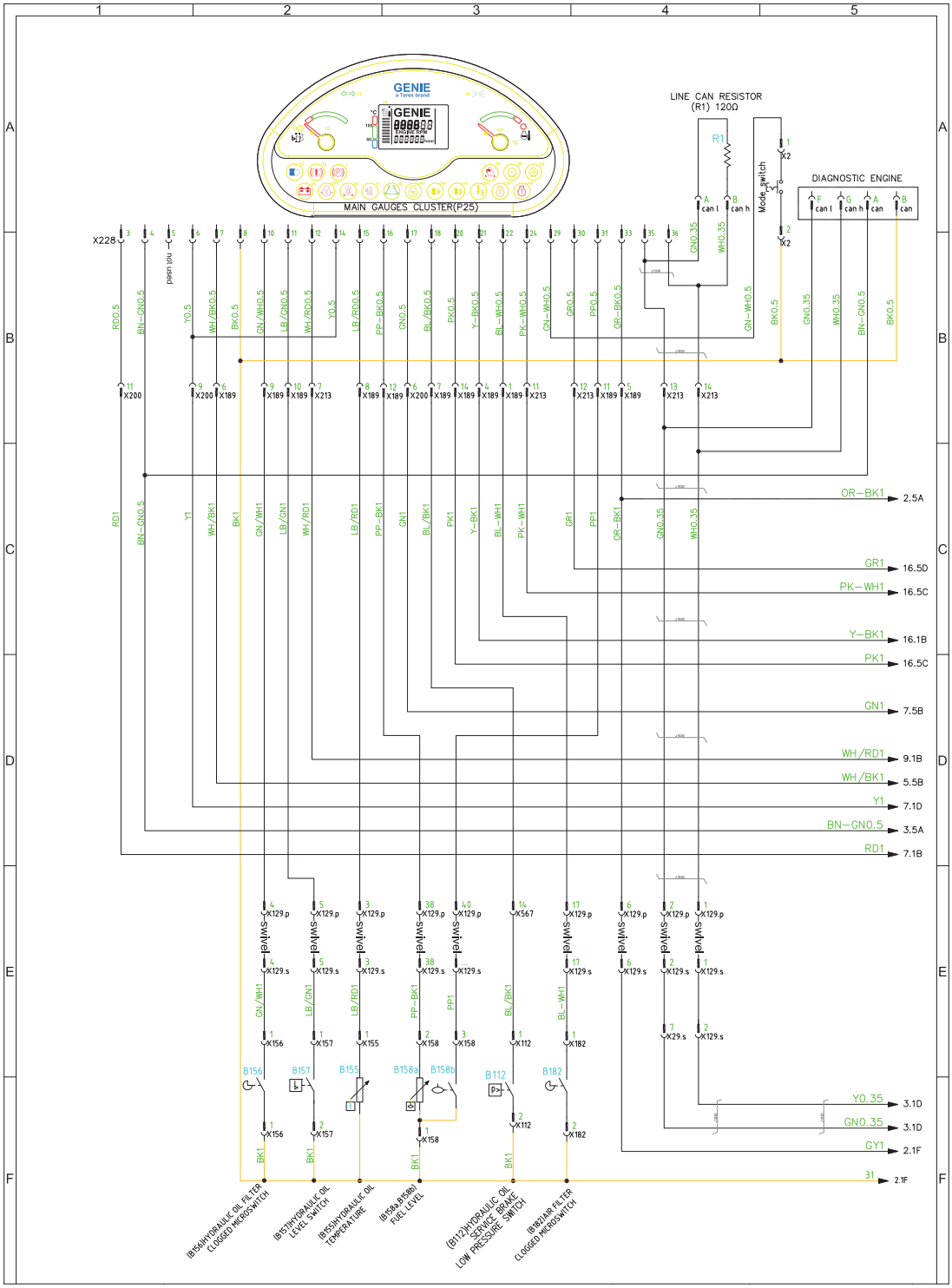
MODIFICATIONS HISTORY

REVISION	DATE	ECN	DESCRIPTION
Rev.A	30/09/2015	/	First Release

ELECTRICAL SCHEMATIC

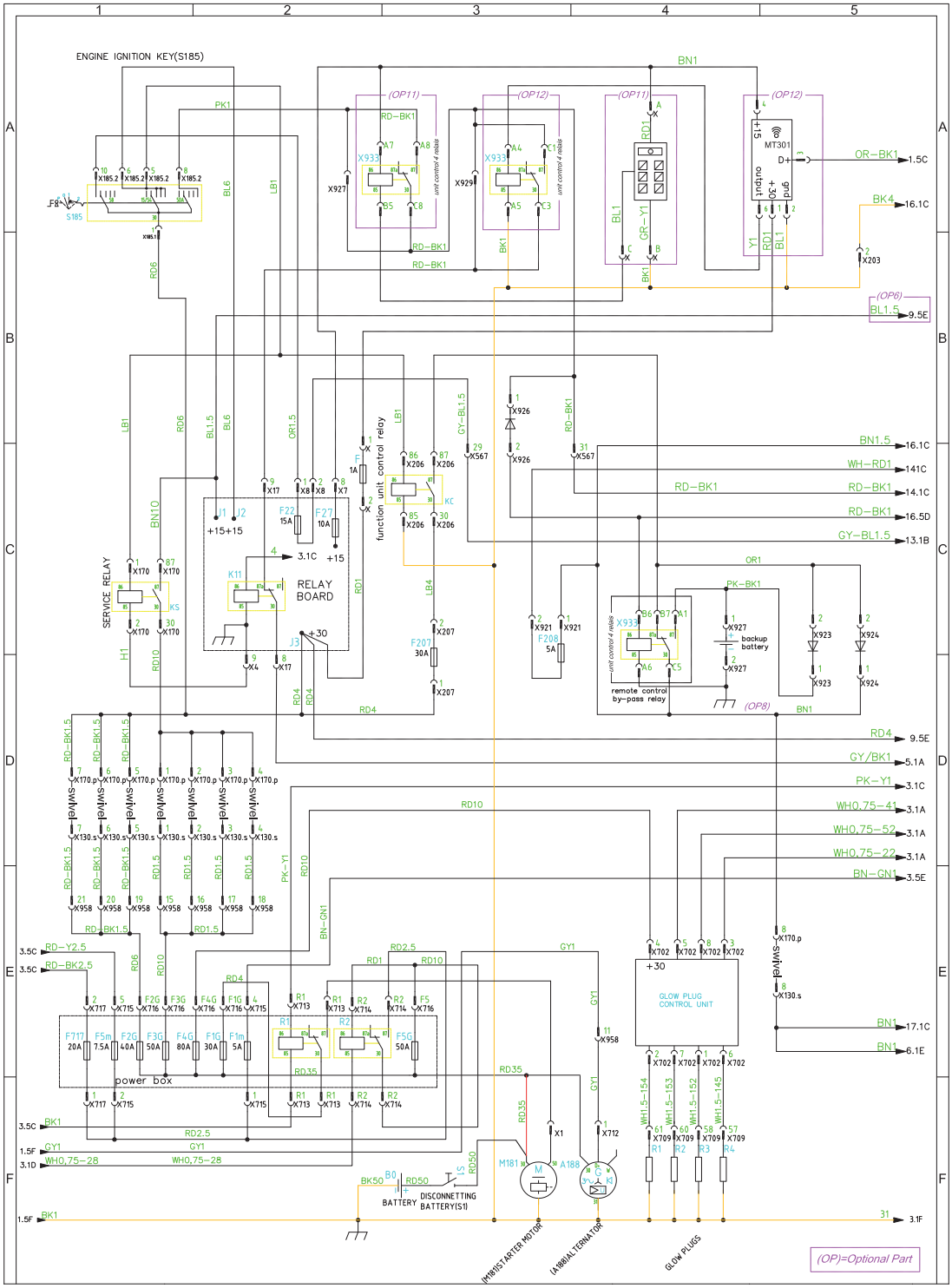
Sheet 1 of 20

GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129)



ELECTRICAL SCHEMATIC

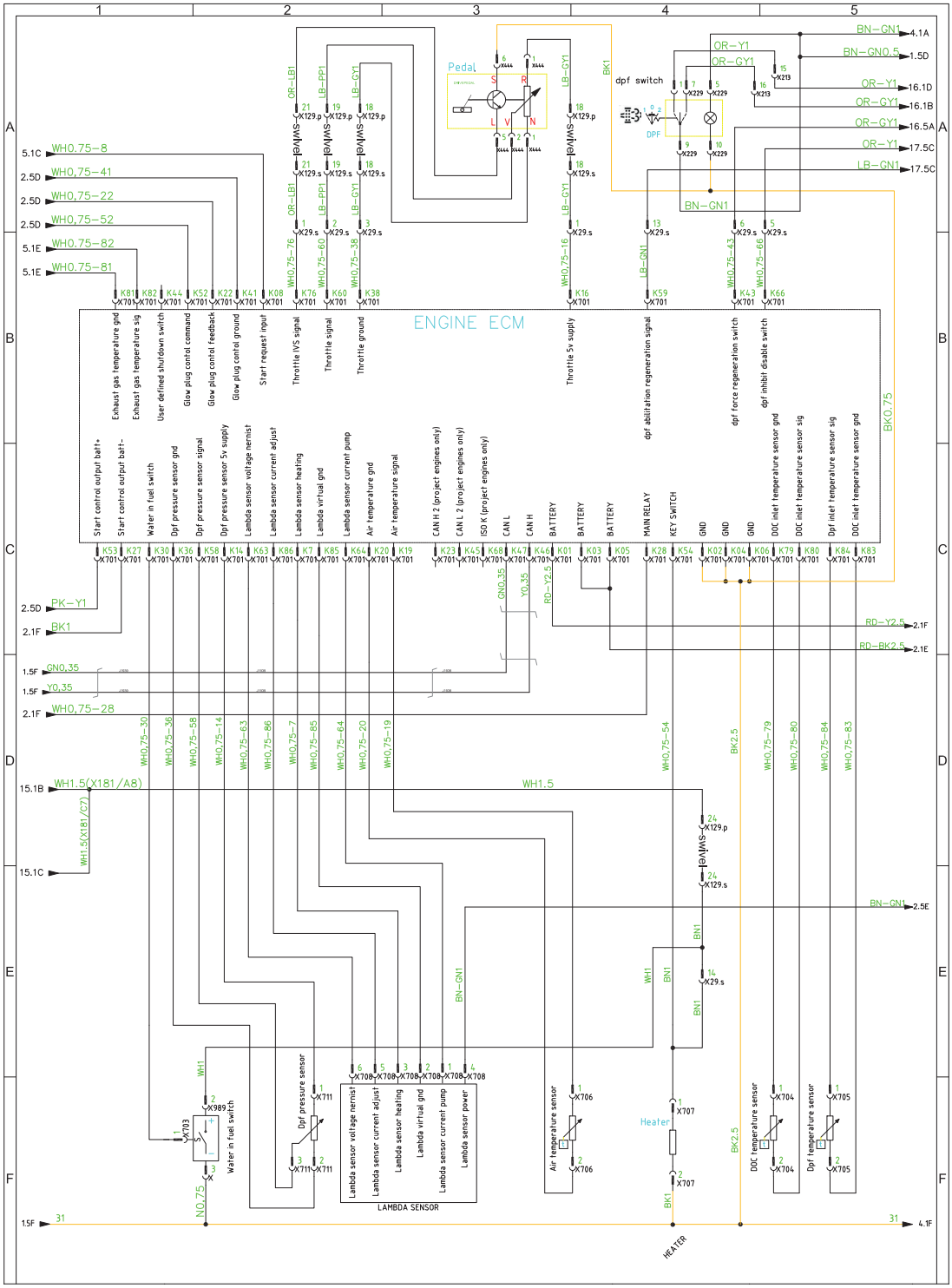
GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129) *Sheet 2 of 20*



ELECTRICAL SCHEMATIC

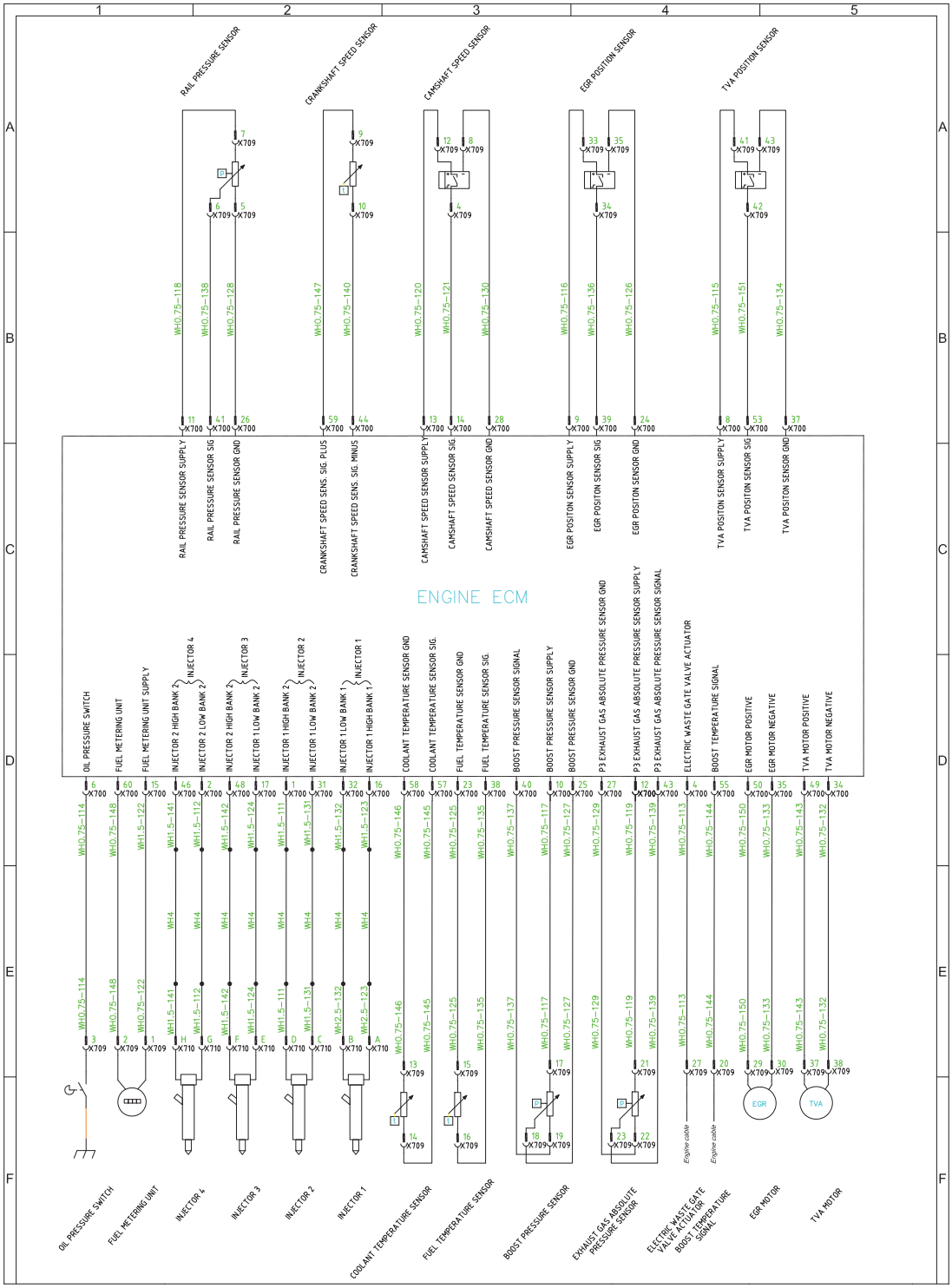
Sheet 3 of 20

GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129)



ELECTRICAL SCHEMATIC

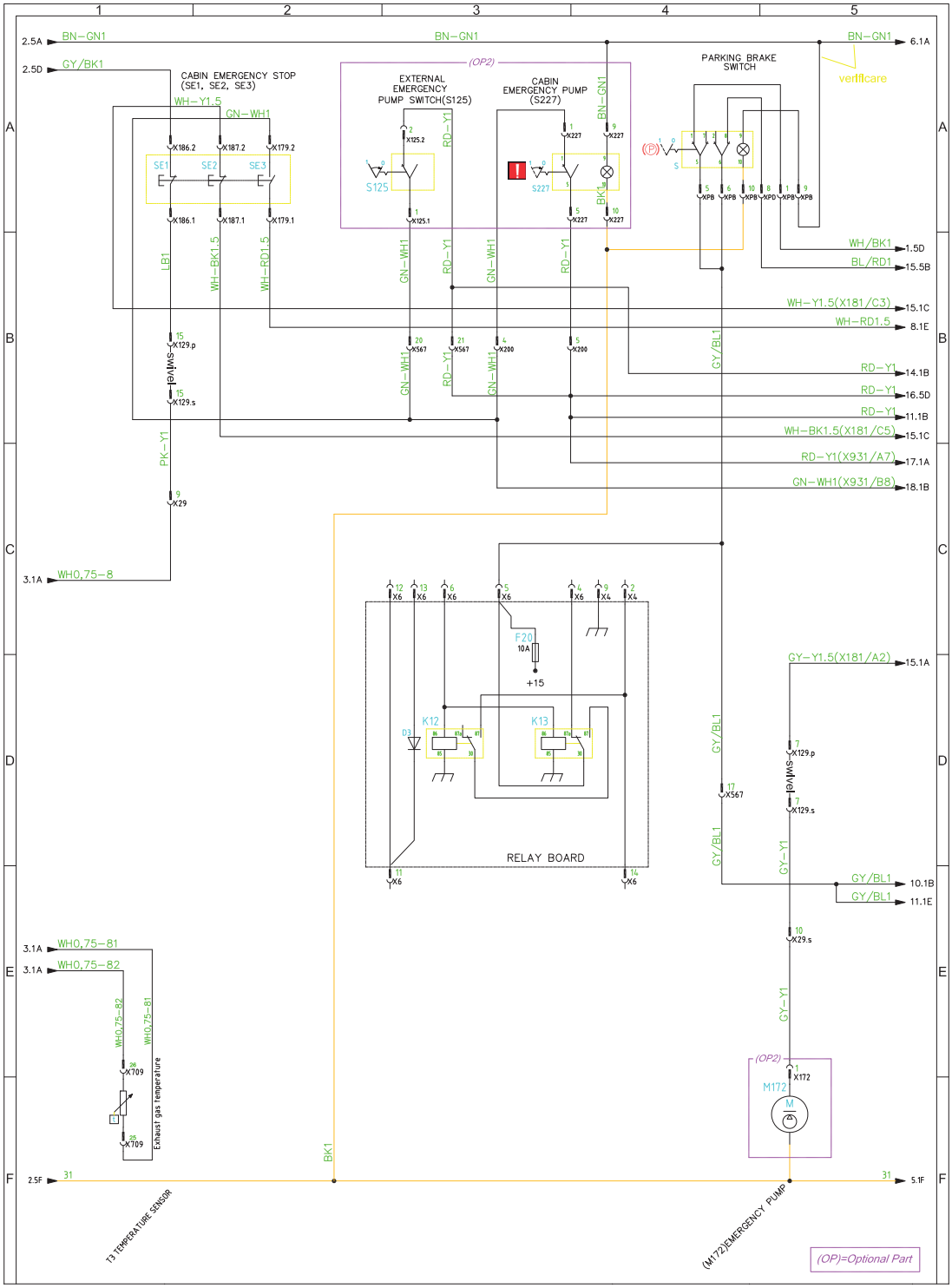
GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129) *Sheet 4 of 20*



ELECTRICAL SCHEMATIC

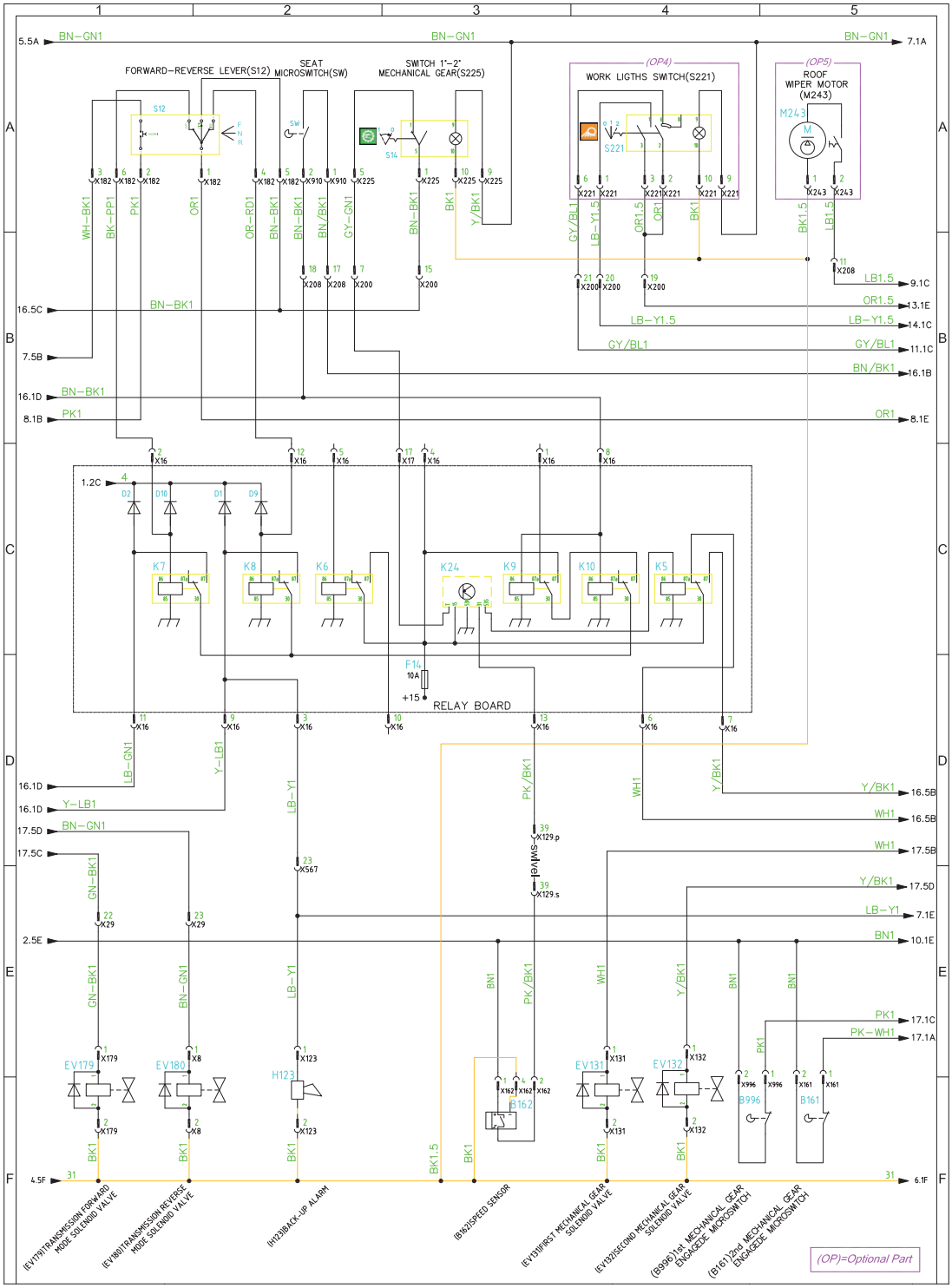
Sheet 5 of 20

GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129)



ELECTRICAL SCHEMATIC

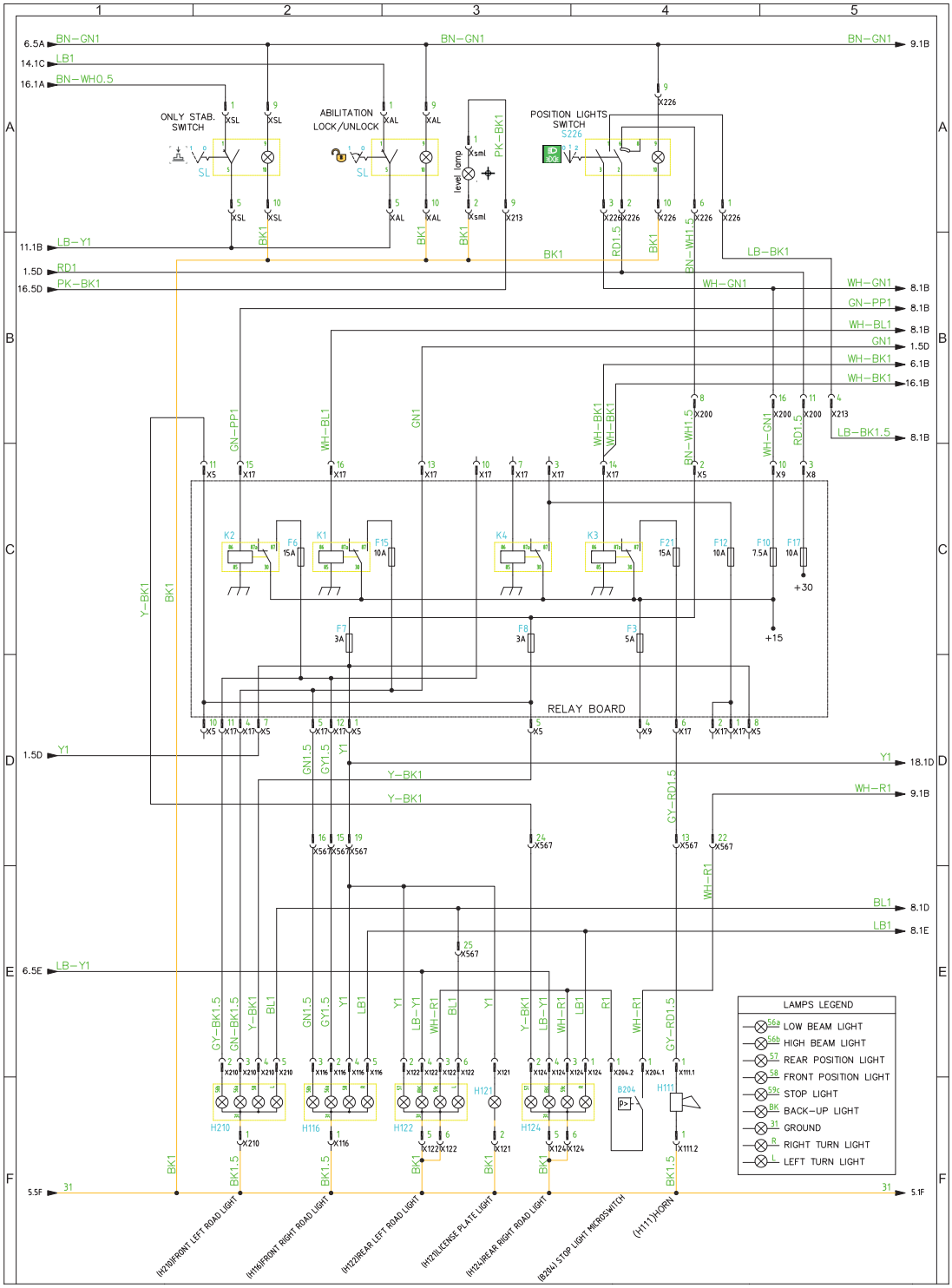
GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129) *Sheet 6 of 20*



ELECTRICAL SCHEMATIC

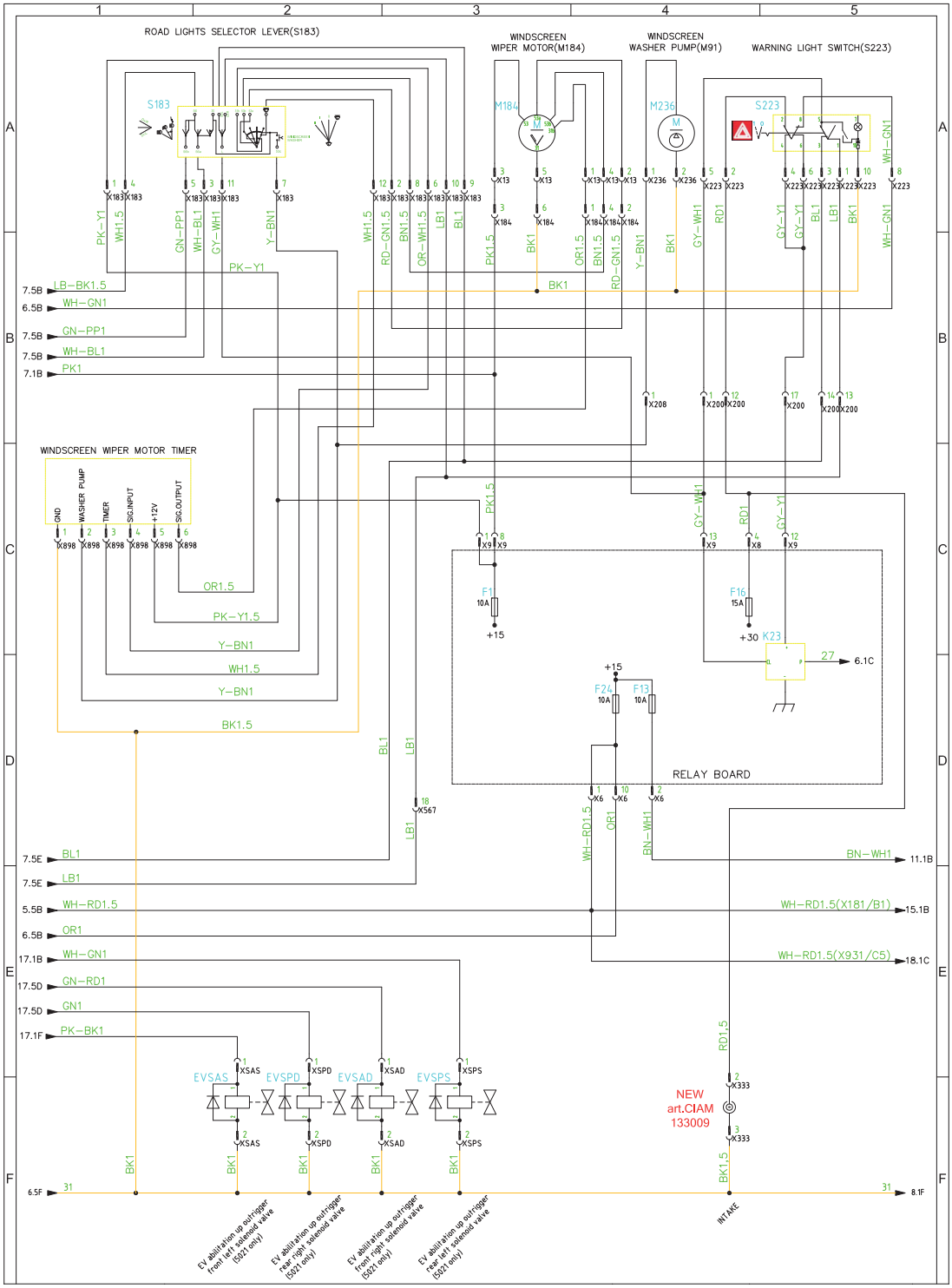
Sheet 7 of 20

GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129)



ELECTRICAL SCHEMATIC

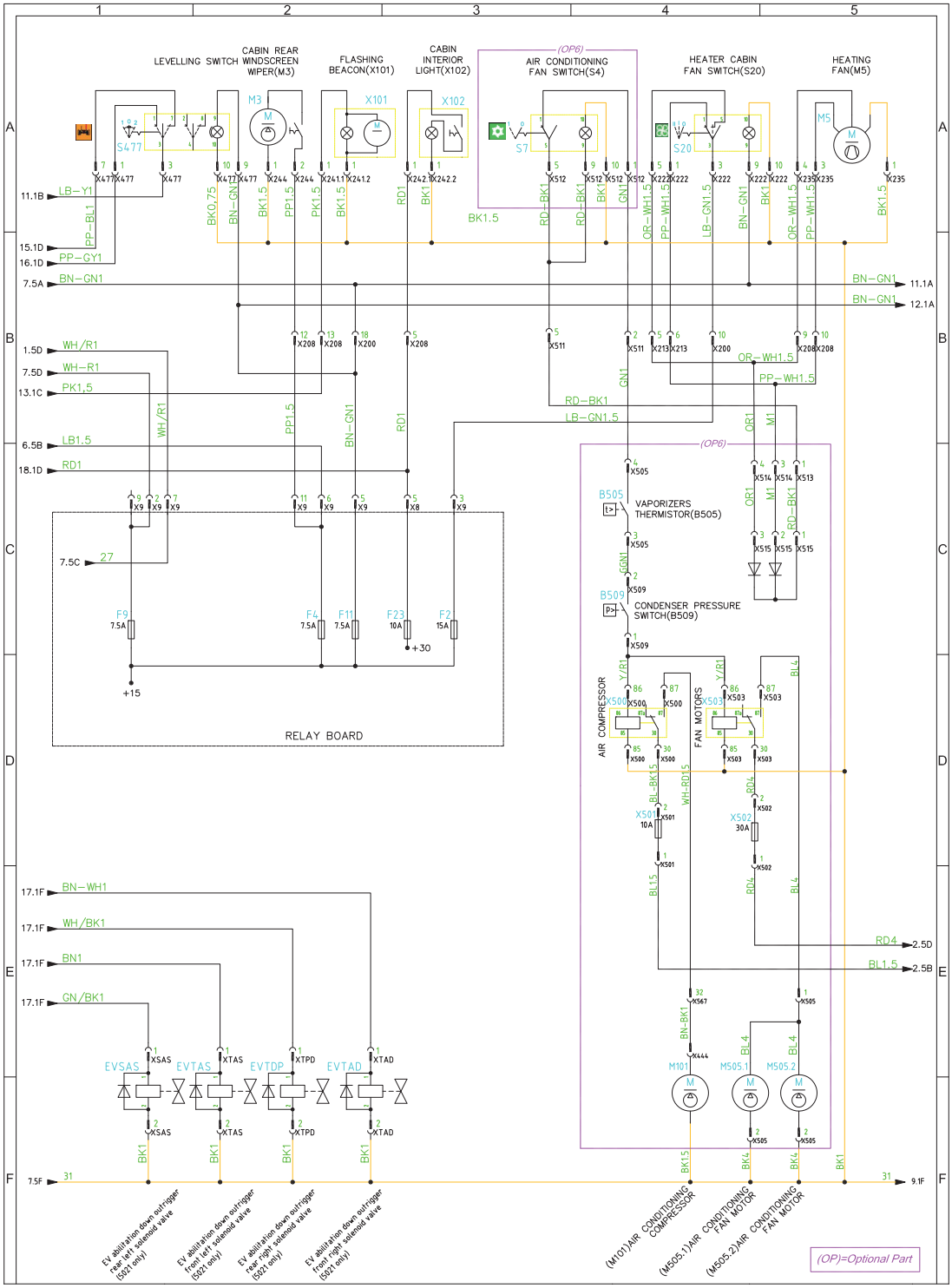
GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129) *Sheet 8 of 20*



ELECTRICAL SCHEMATIC

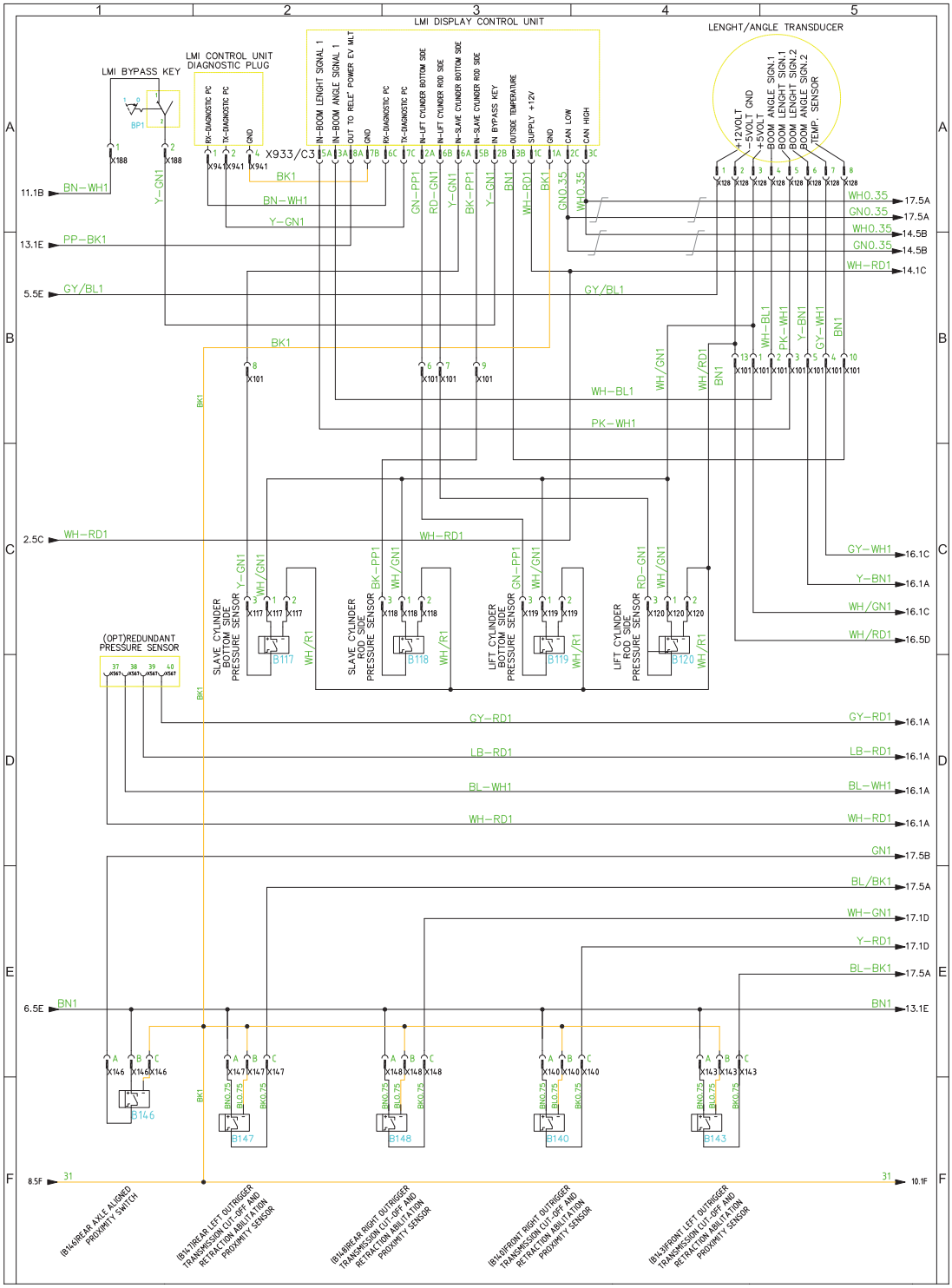
Sheet 9 of 20

GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129)



ELECTRICAL SCHEMATIC

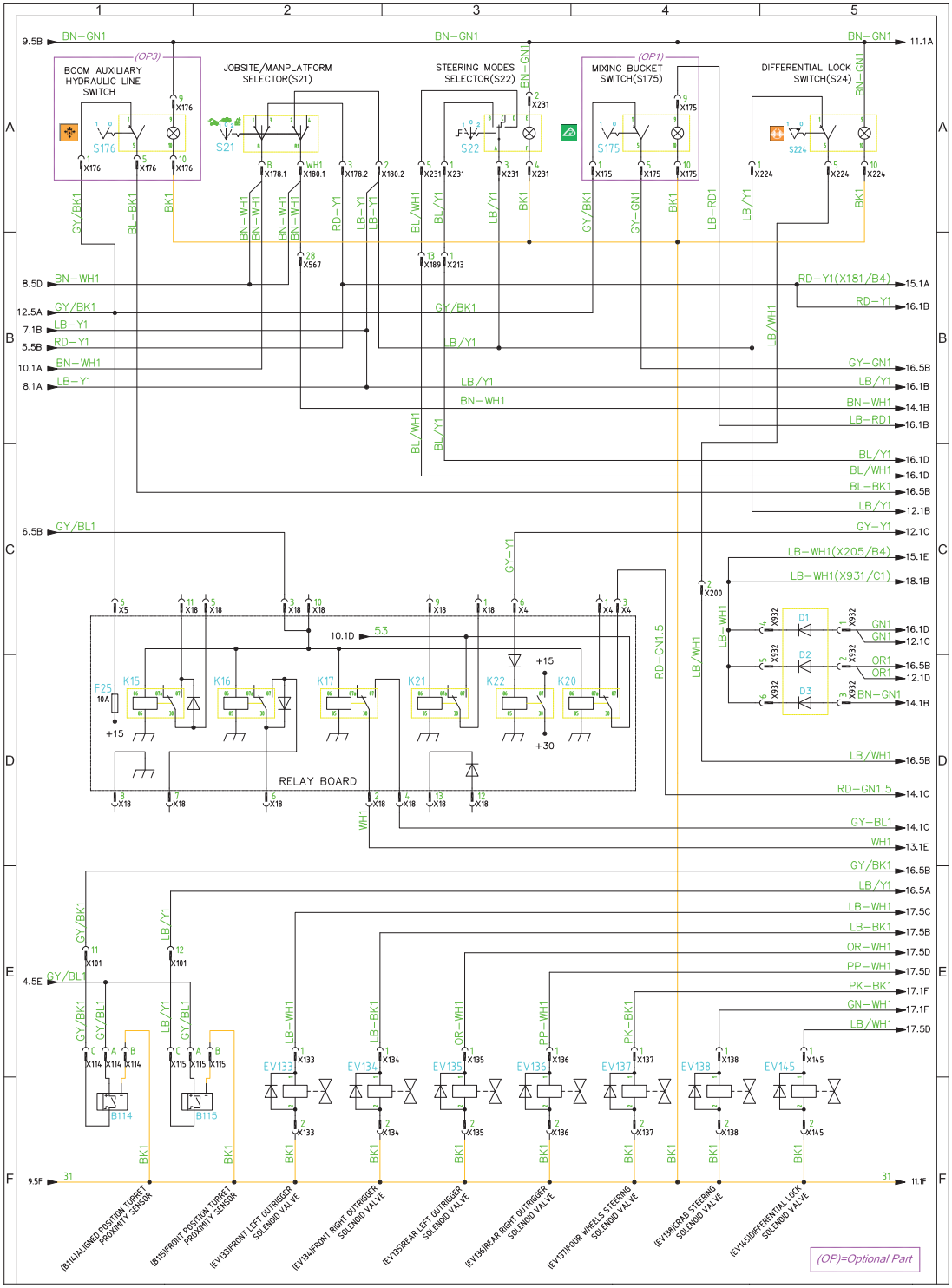
GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129) *Sheet 10 of 20*



ELECTRICAL SCHEMATIC

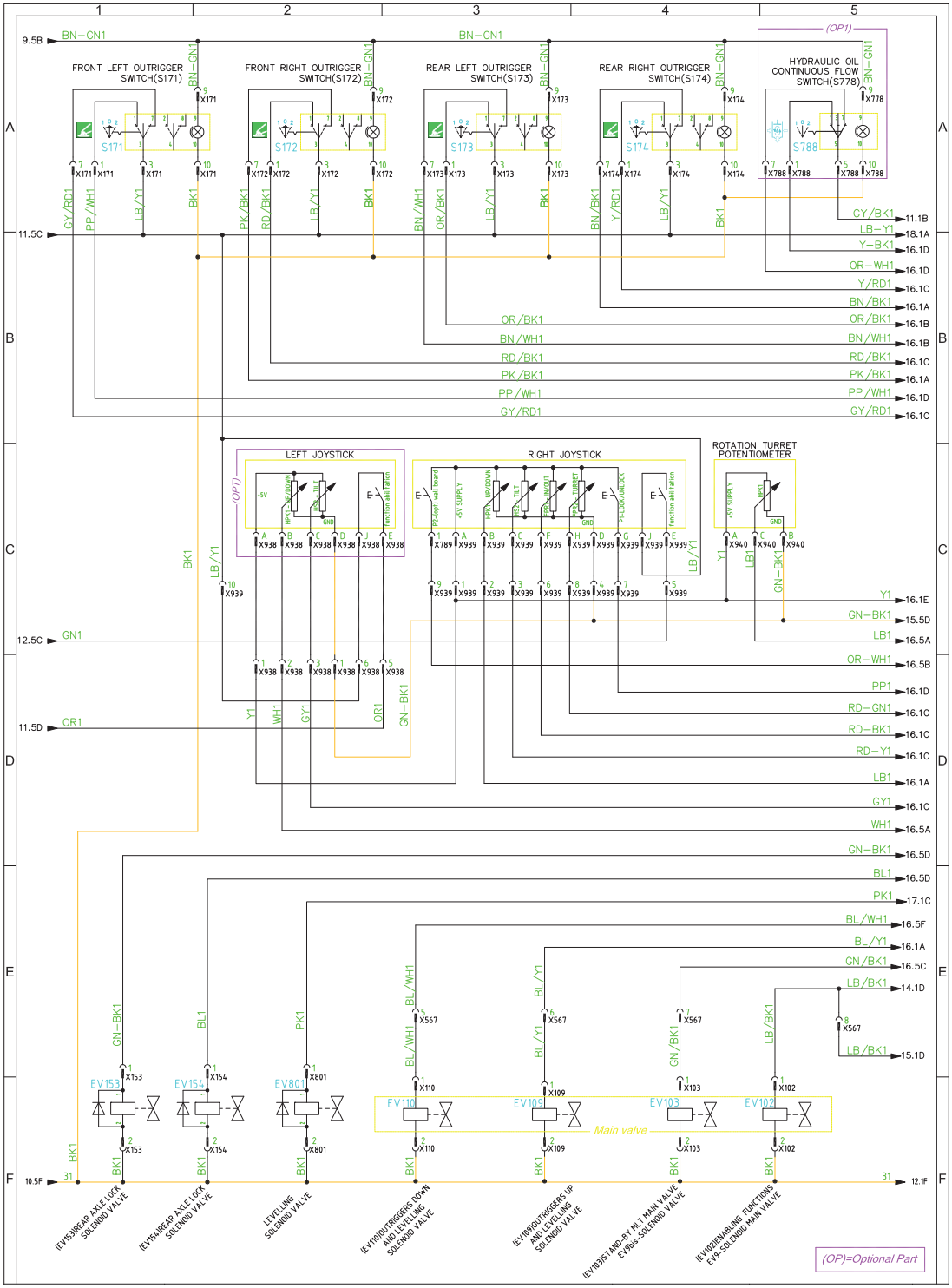
Sheet 11 of 20

GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129)



ELECTRICAL SCHEMATIC

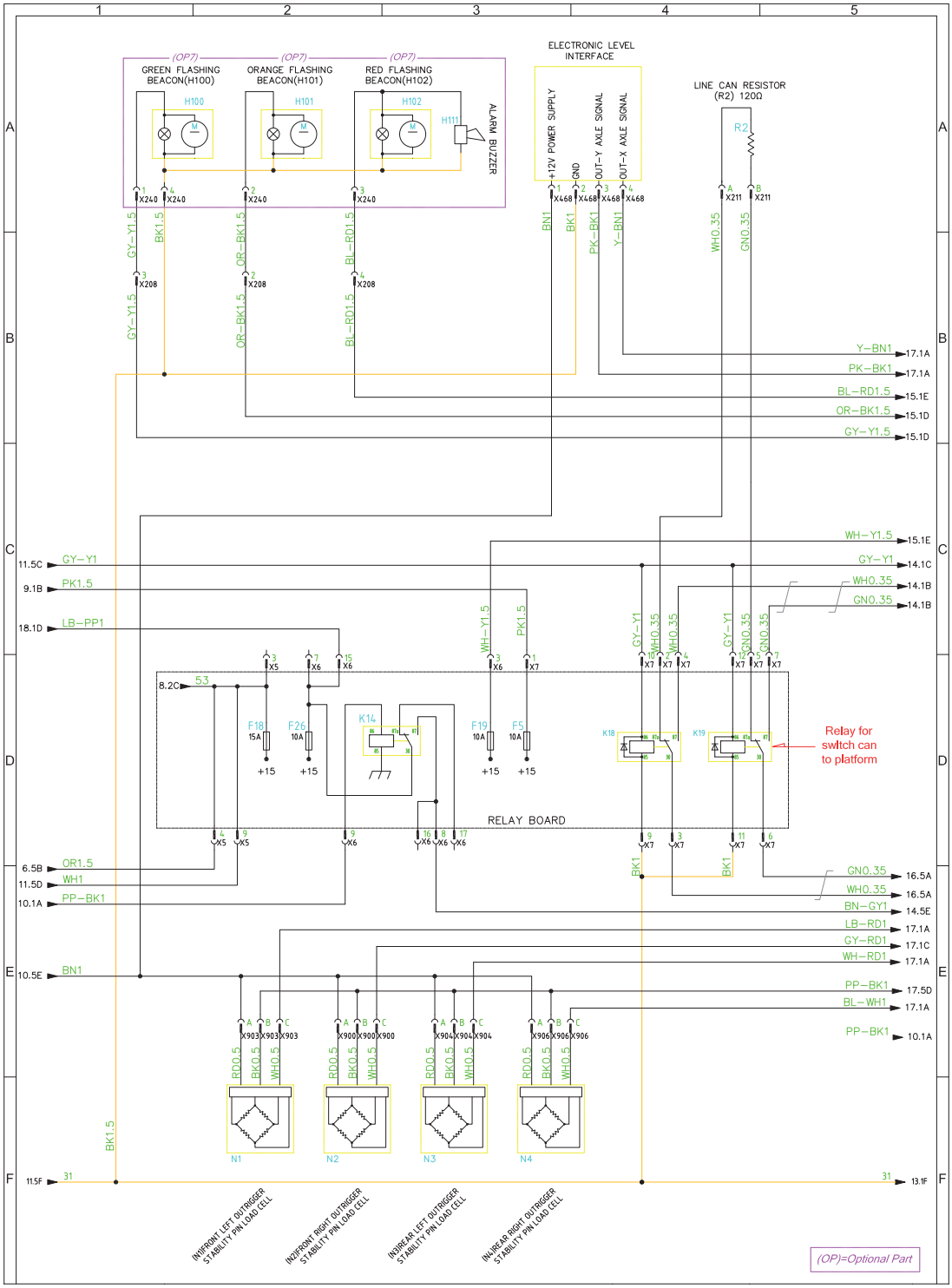
GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129) *Sheet 12 of 20*



ELECTRICAL SCHEMATIC

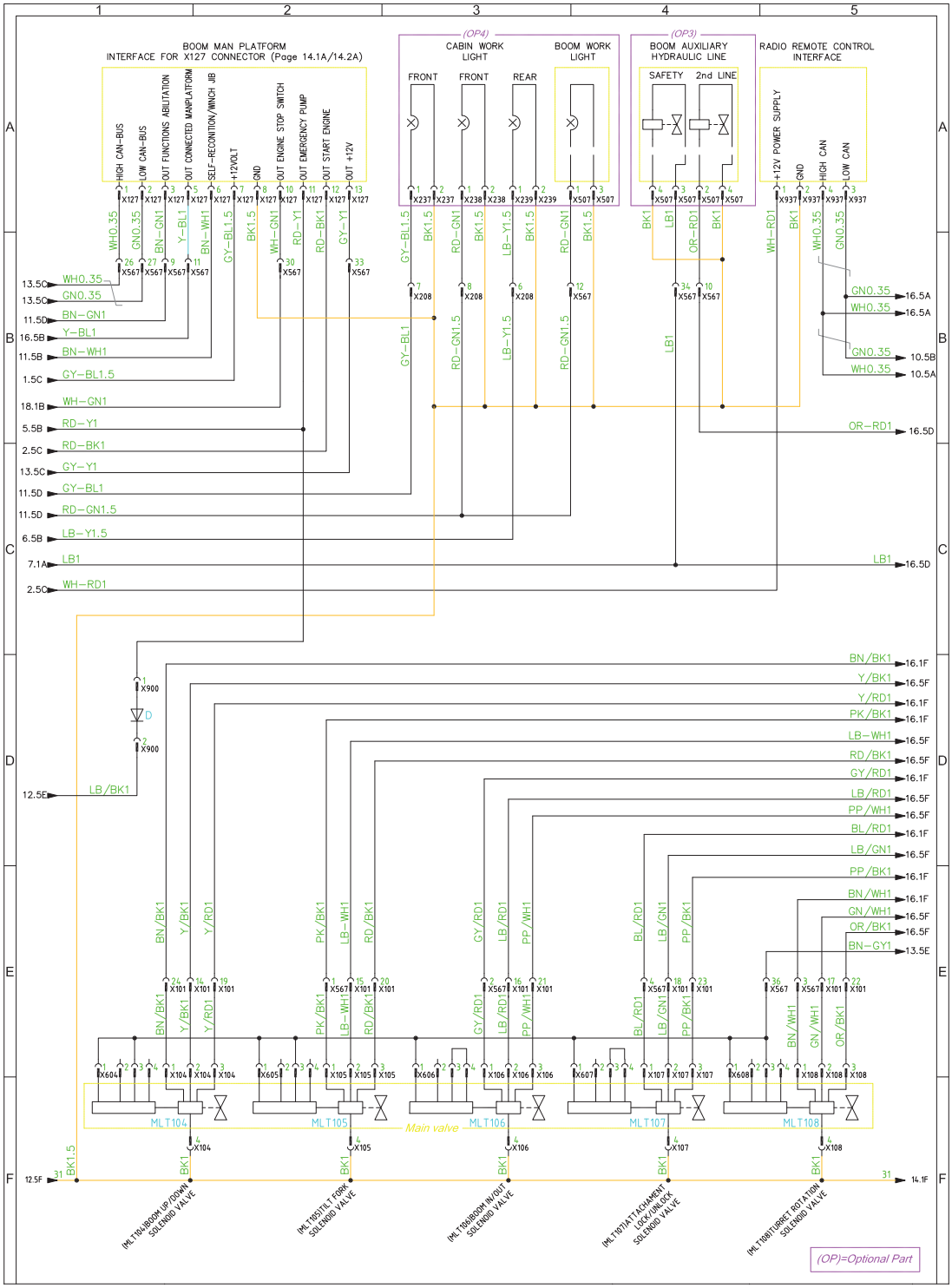
Sheet 13 of 20

GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129)



ELECTRICAL SCHEMATIC

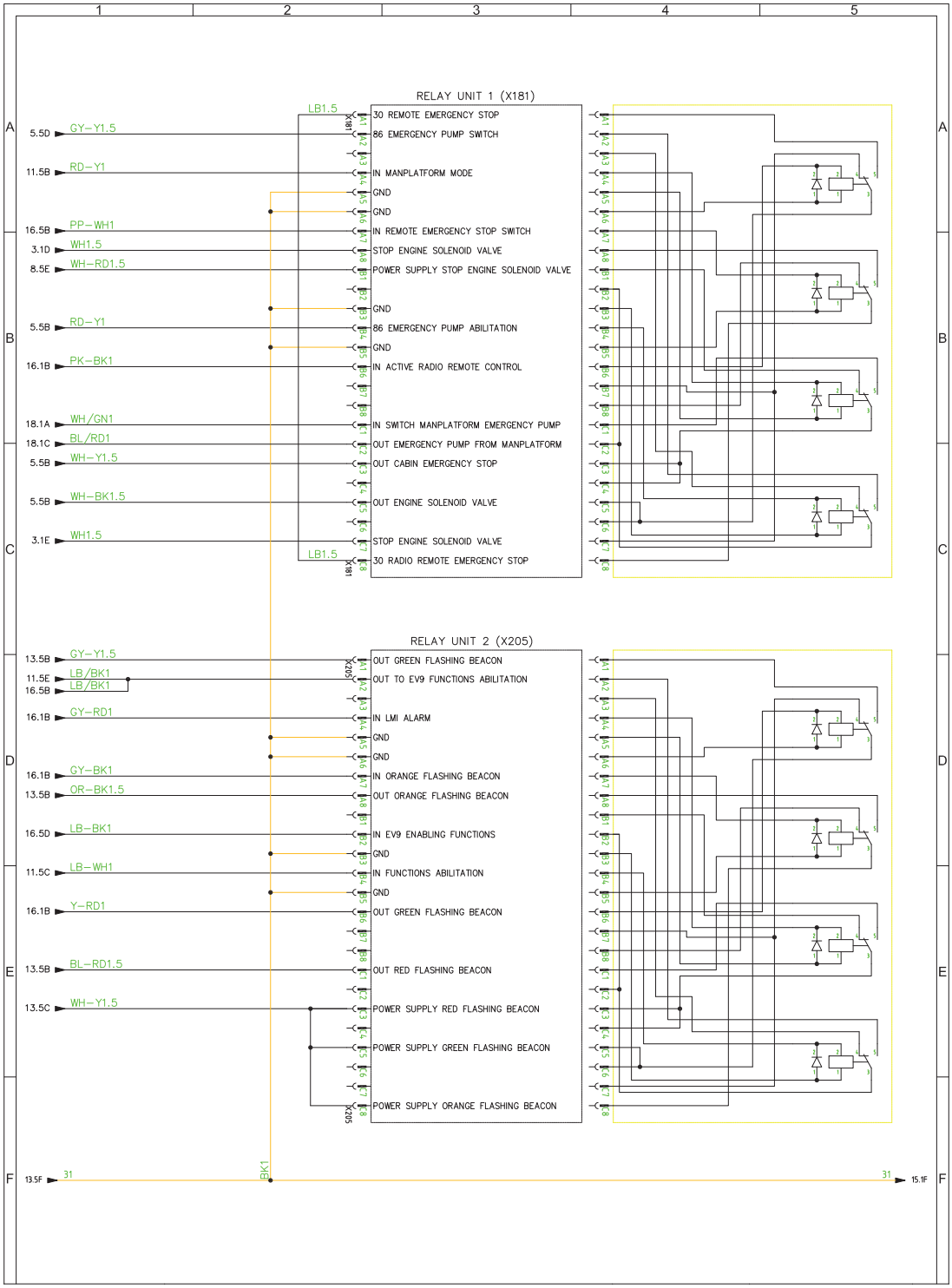
GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129) *Sheet 14 of 20*



ELECTRICAL SCHEMATIC

Sheet 15 of 20

GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129)



ELECTRICAL SCHEMATIC

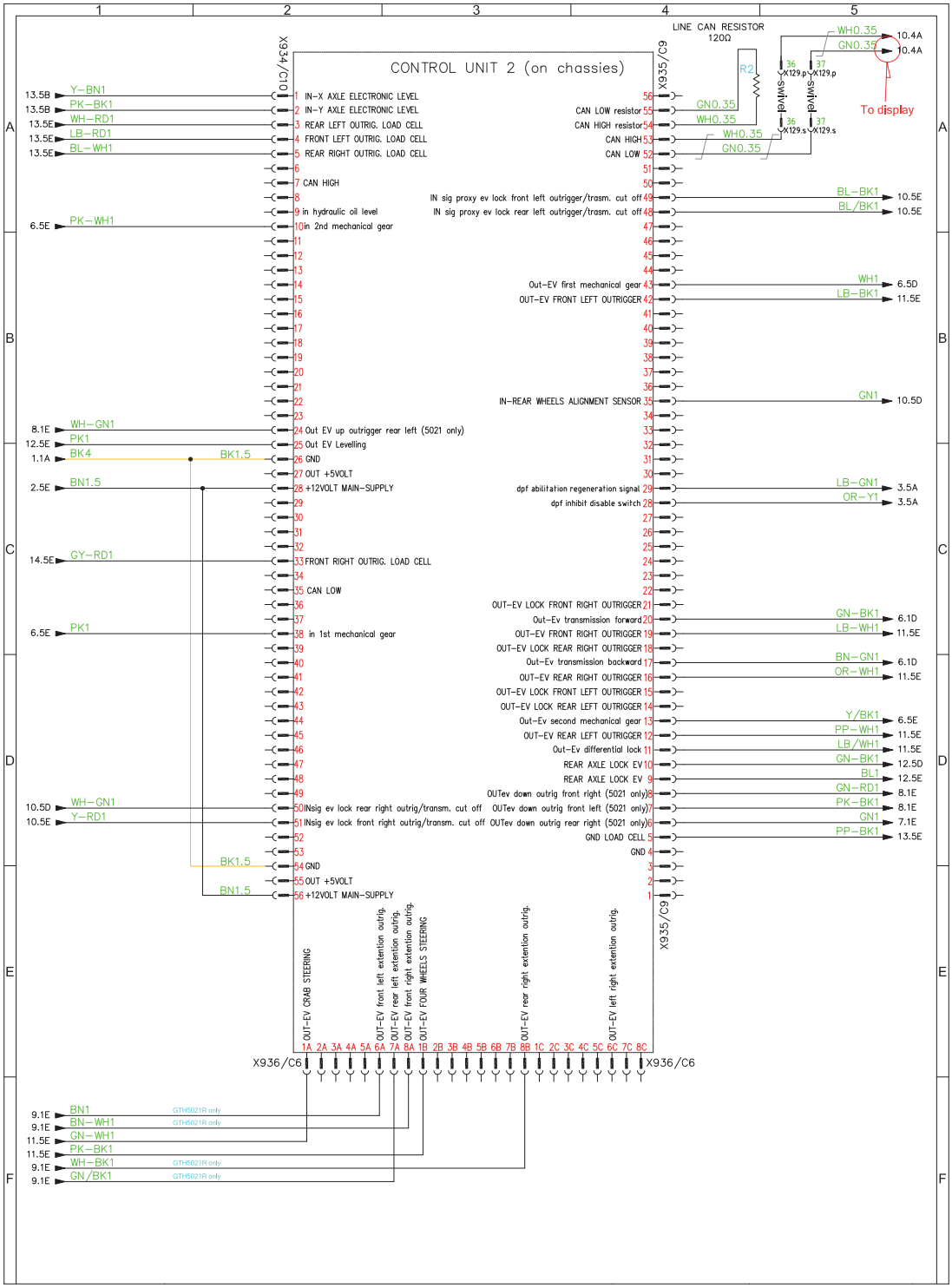
GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129) *Sheet 16 of 20*



ELECTRICAL SCHEMATIC

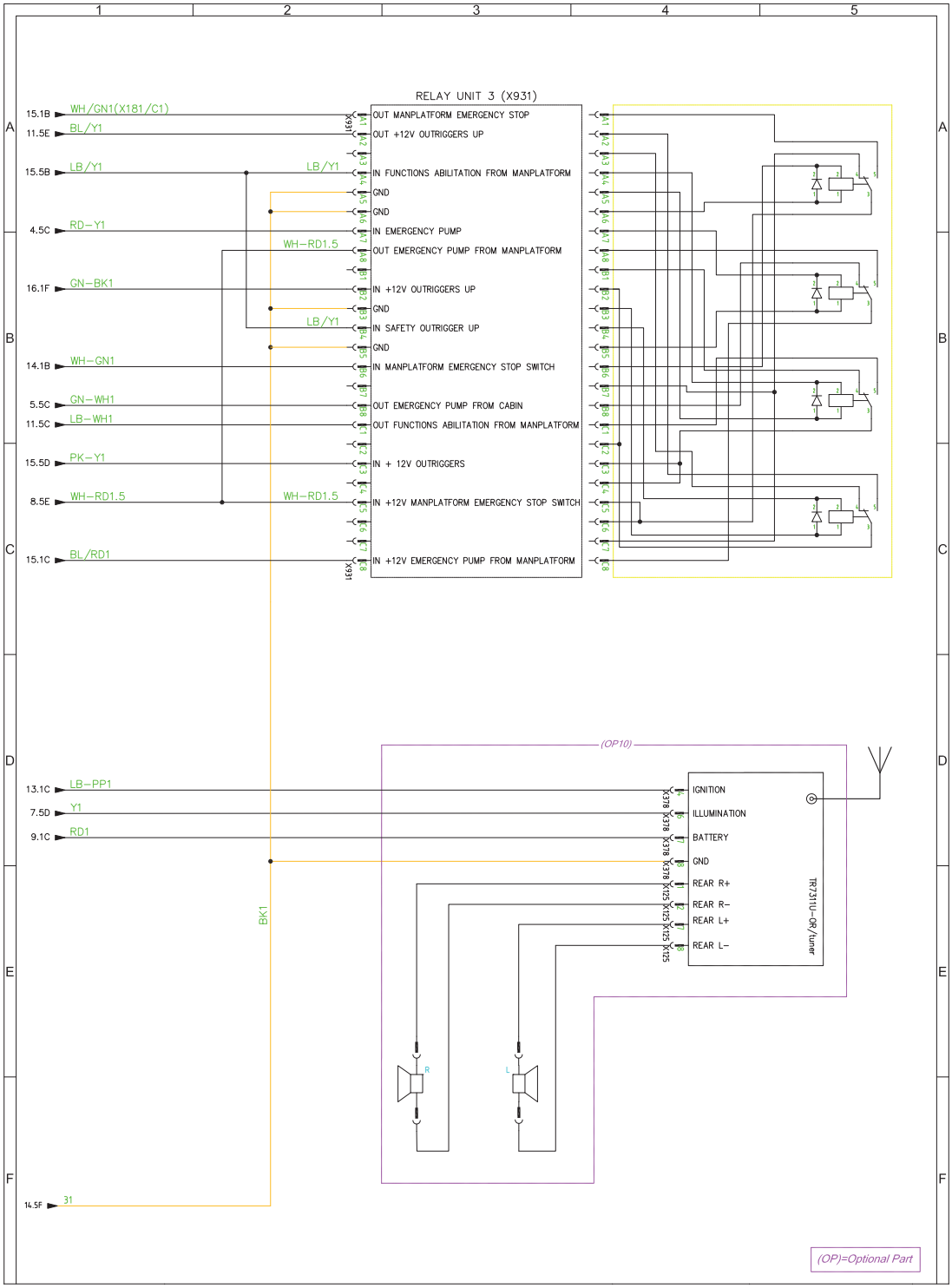
Sheet 17 of 20

GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129)



ELECTRICAL SCHEMATIC

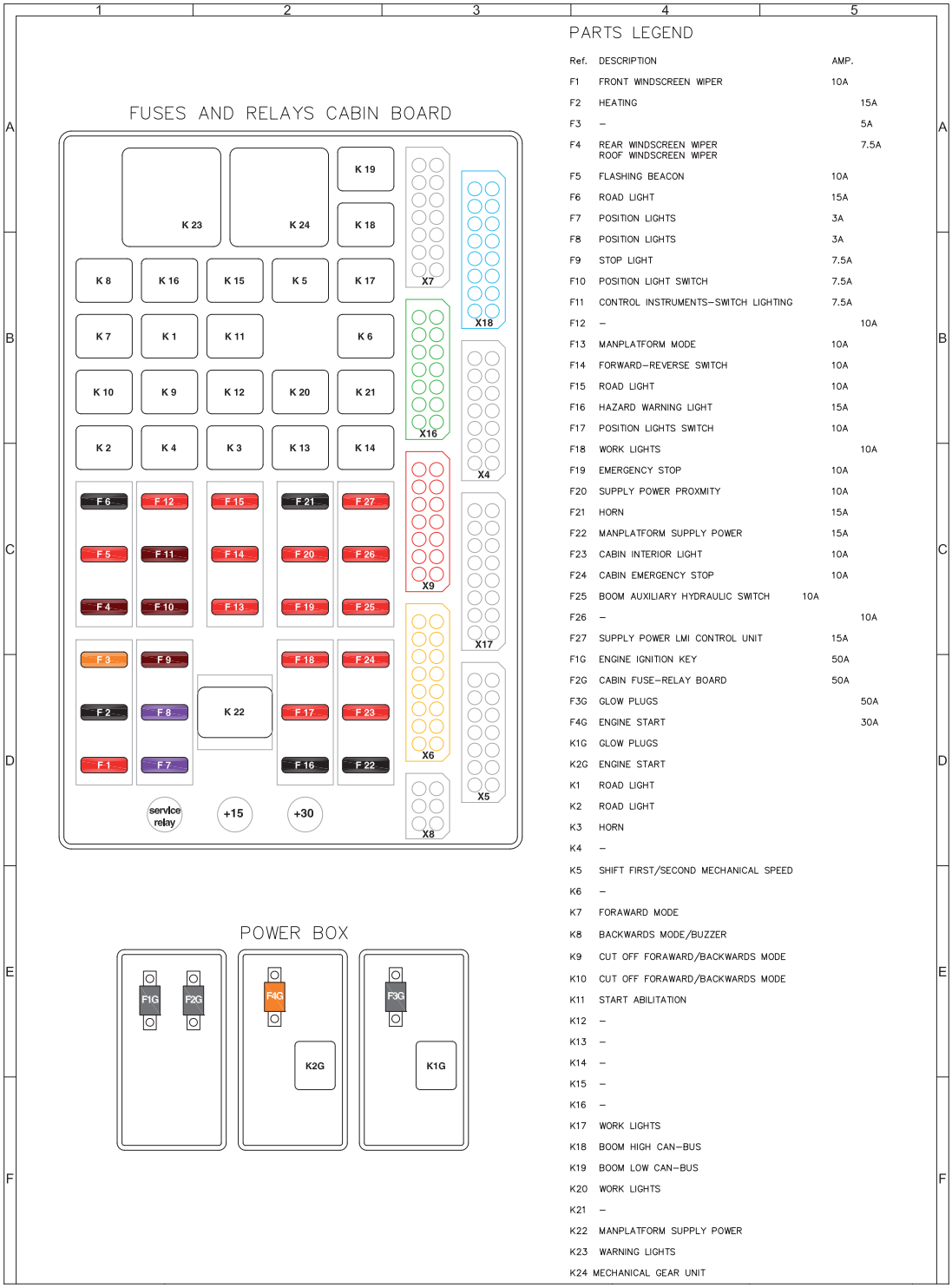
GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129) *Sheet 18 of 20*



ELECTRICAL SCHEMATIC

Sheet 19 of 20

GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129)



PARTS LEGEND

Ref.	DESCRIPTION	AMP.
F1	FRONT WINDSCREEN WIPER	10A
F2	HEATING	15A
F3	–	5A
F4	REAR WINDSCREEN WIPER ROOF WINDSCREEN WIPER	7.5A
F5	FLASHING BEACON	10A
F6	ROAD LIGHT	15A
F7	POSITION LIGHTS	3A
F8	POSITION LIGHTS	3A
F9	STOP LIGHT	7.5A
F10	POSITION LIGHT SWITCH	7.5A
F11	CONTROL INSTRUMENTS–SWITCH LIGHTING	7.5A
F12	–	10A
F13	MANPLATFORM MODE	10A
F14	FORWARD–REVERSE SWITCH	10A
F15	ROAD LIGHT	10A
F16	HAZARD WARNING LIGHT	15A
F17	POSITION LIGHTS SWITCH	10A
F18	WORK LIGHTS	10A
F19	EMERGENCY STOP	10A
F20	SUPPLY POWER PROXMITY	10A
F21	HORN	15A
F22	MANPLATFORM SUPPLY POWER	15A
F23	CABIN INTERIOR LIGHT	10A
F24	CABIN EMERGENCY STOP	10A
F25	BOOM AUXILIARY HYDRAULIC SWITCH	10A
F26	–	10A
F27	SUPPLY POWER LMI CONTROL UNIT	15A
F1G	ENGINE IGNITION KEY	50A
F2G	CABIN FUSE–RELAY BOARD	50A
F3G	GLOW PLUGS	50A
F4G	ENGINE START	30A
K1G	GLOW PLUGS	
K2G	ENGINE START	
K1	ROAD LIGHT	
K2	ROAD LIGHT	
K3	HORN	
K4	–	
K5	SHIFT FIRST/SECOND MECHANICAL SPEED	
K6	–	
K7	FORAWARD MODE	
K8	BACKWARDS MODE/BUZZER	
K9	CUT OFF FORAWARD/BACKWARDS MODE	
K10	CUT OFF FORAWARD/BACKWARDS MODE	
K11	START ABILITATION	
K12	–	
K13	–	
K14	–	
K15	–	
K16	–	
K17	WORK LIGHTS	
K18	BOOM HIGH CAN–BUS	
K19	BOOM LOW CAN–BUS	
K20	WORK LIGHTS	
K21	–	
K22	MANPLATFORM SUPPLY POWER	
K23	WARNING LIGHTS	
K24	MECHANICAL GEAR UNIT	

ELECTRICAL SCHEMATIC

GTH-5021R Stage IIIB (Up to sn GTH5021R14B-129) *Sheet 20 of 20*

OPTIONAL LEGEND	
OP1 - MIXING BUCKET	OP7 - LMI FLASHING BEACON
OP2 - ELECTRICAL EMERGENCY PUMP	OP8 - REMOTE RADIO CONTROL
OP3 - BOOM AUXILIARY HYDRAULIC LINE	OP9 - MANPLATFORM (to separate wiring diagram)
OP4 - CABIN/BOOM WORK LIGHT	OP10- TUNER
OP5 - ROOF WINDSCREEN	OP11 - UNLOCK DEVICE
OP6 - AIR CONDITIONING	OP12 - TRANK AND TRACE

WIRE COLOR LEGEND			
LB	LIGHT BLUE	Y	YELLOW
BN	BROWN	PK	PINK
WH	WHITE	GY	GREY
BK	BLACK	GN	GREEN
OR	ORANGE	BL	BLUE
RD	RED	PP	PURPLE

REMARK: Two colorwires are indicated through a combination of the aforesaid initials as follows:
Y/GN= YELLOW/GREEN (crosswise colouring)
Y-GN= YELLOW-GREEN (lengthswise colouring)

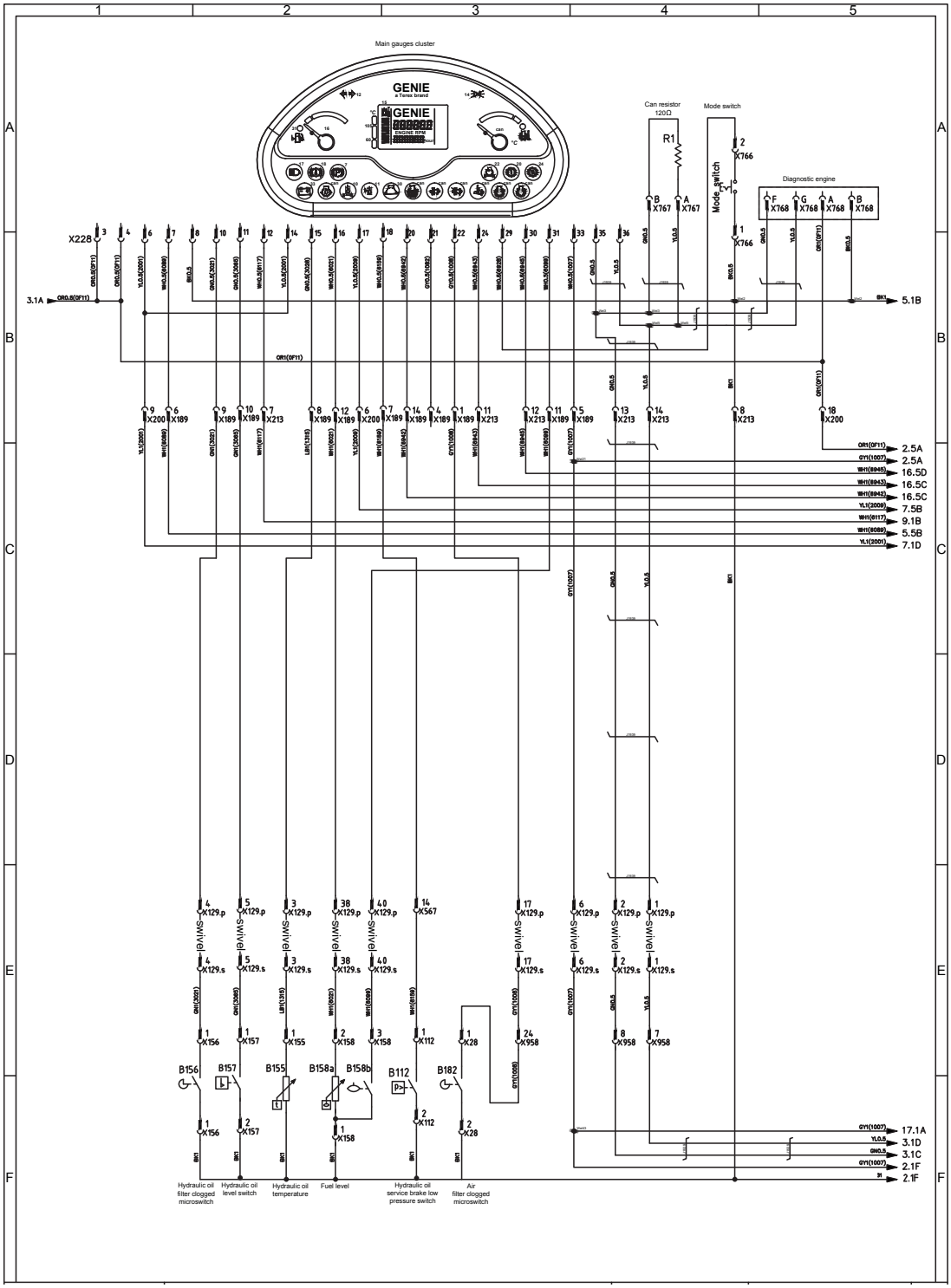
MODIFICATIONS HISTORY

REVISION	DATE	ECN	DESCRIPTION
0	22/04/2013		First Release

ELECTRICAL SCHEMATIC

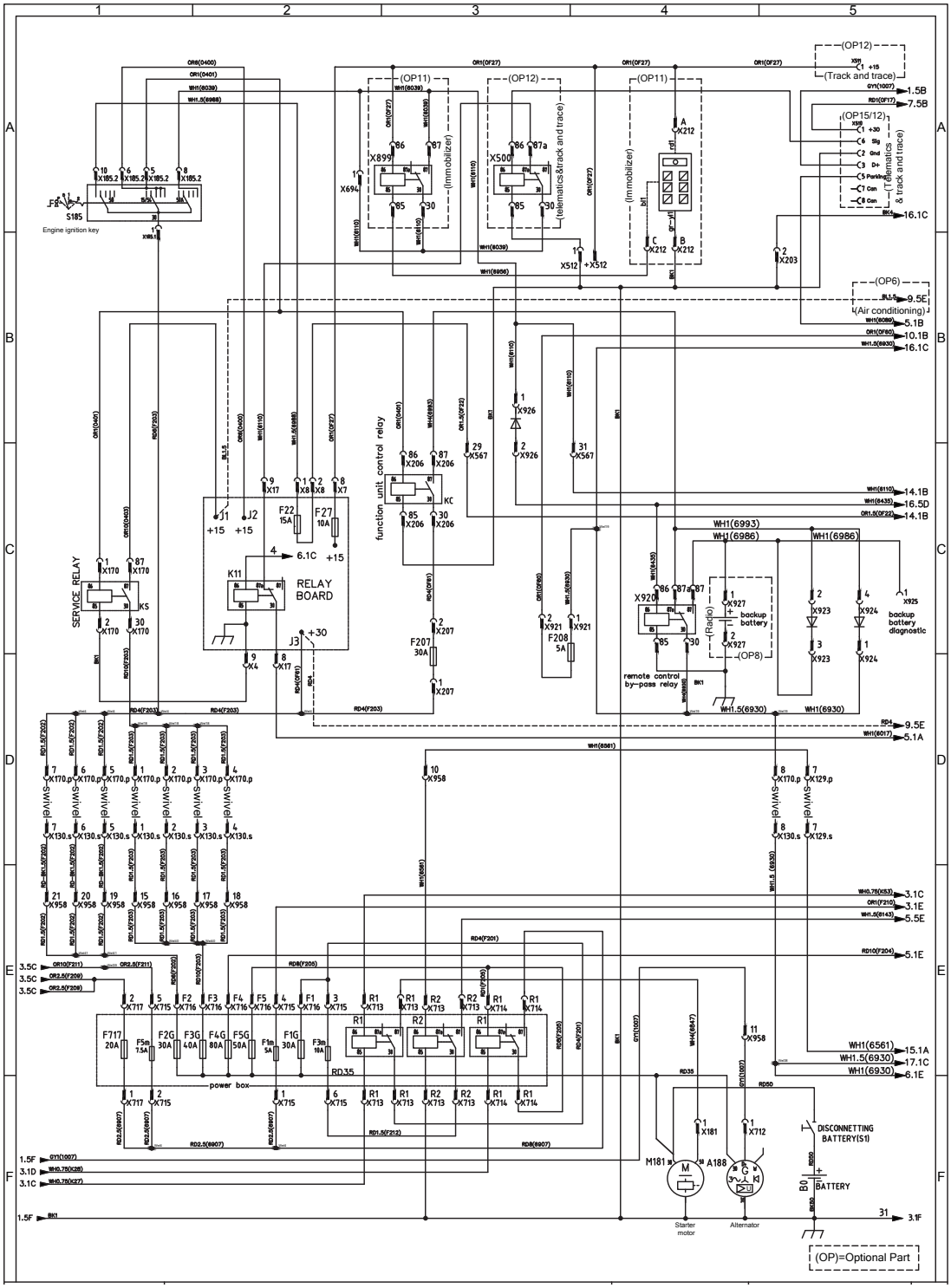
Sheet 1 of 20

GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130)



ELECTRICAL SCHEMATIC

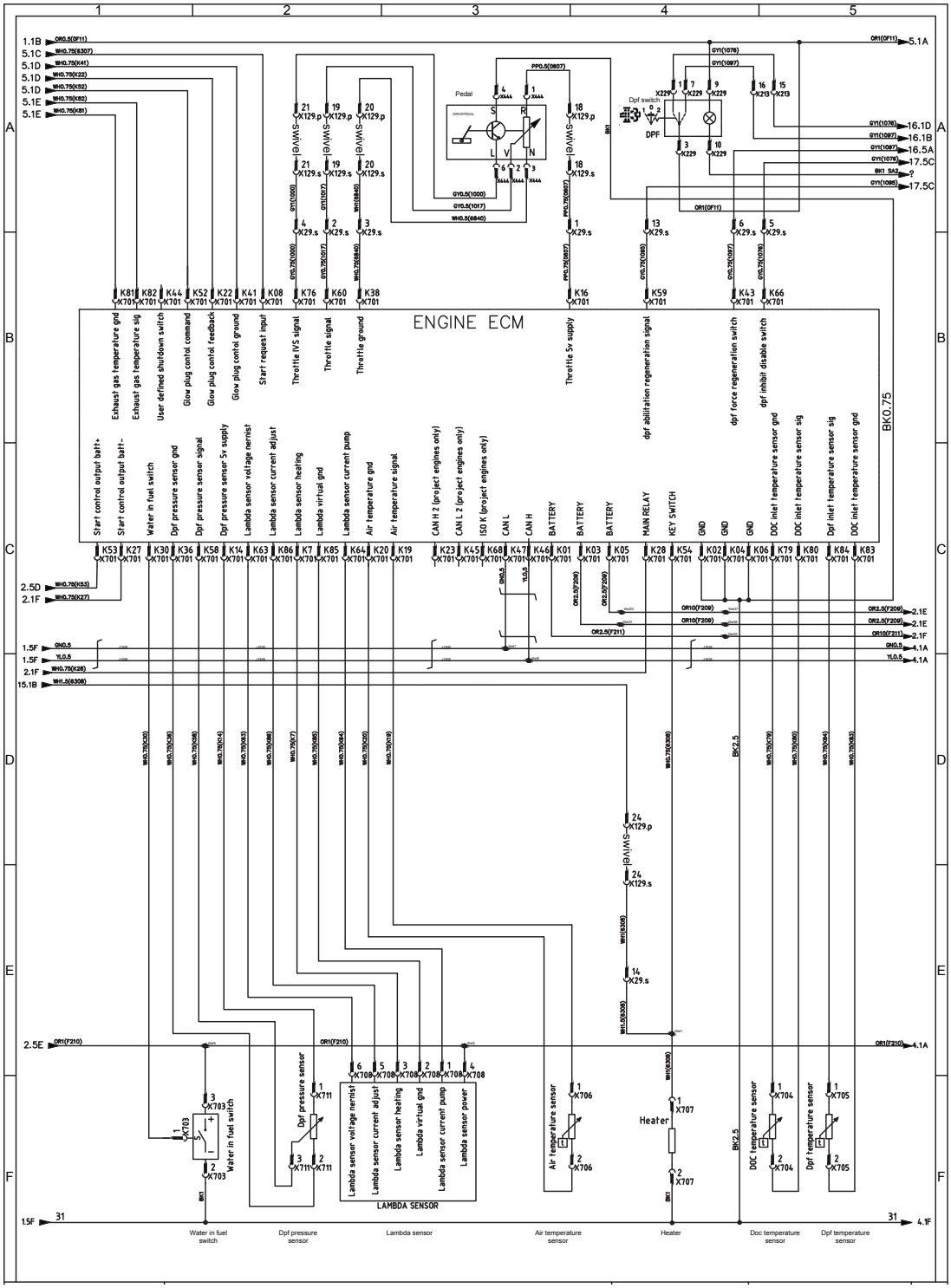
GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130) *Sheet 2 of 20*



ELECTRICAL SCHEMATIC

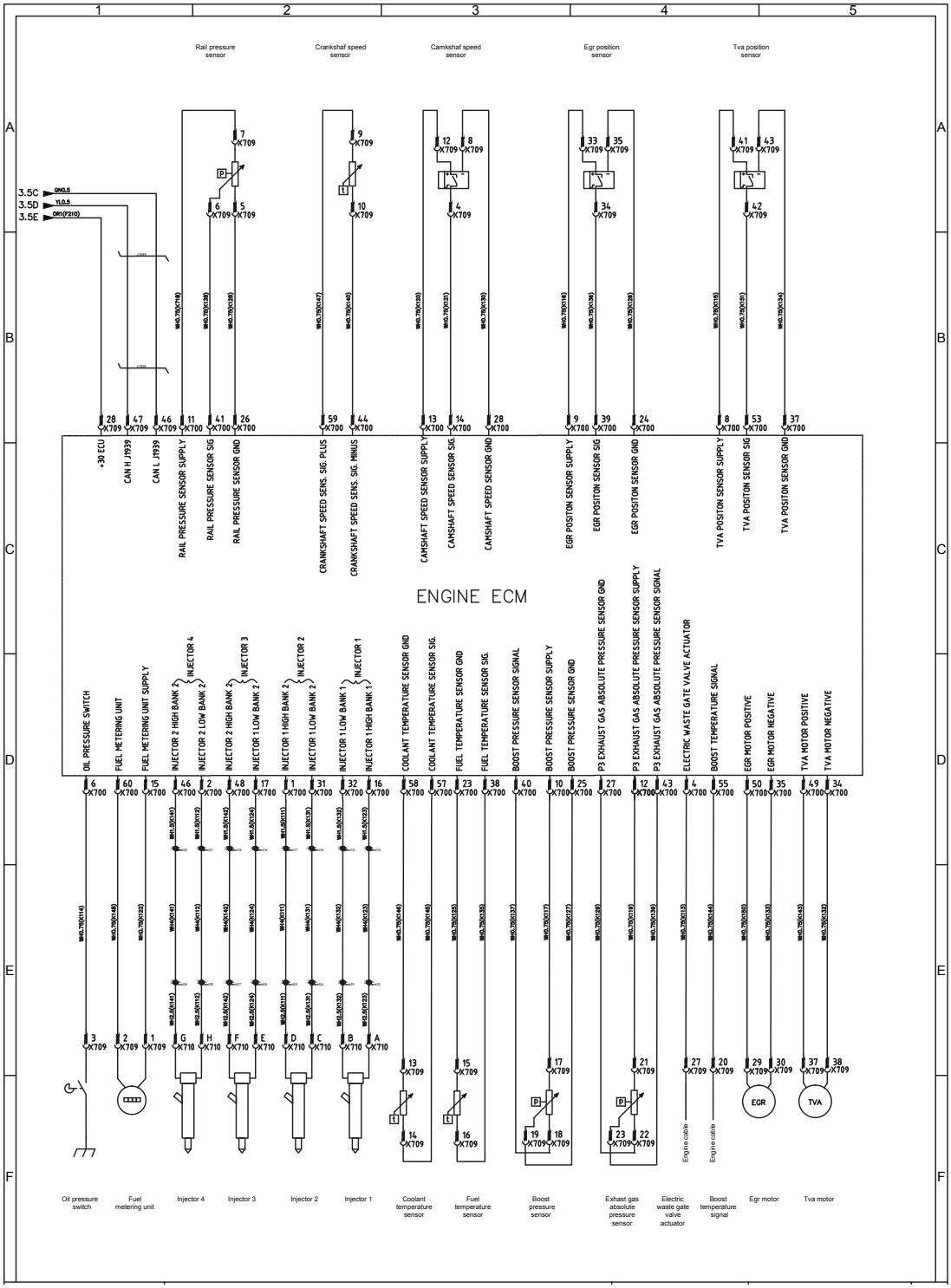
Sheet 3 of 20

GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130)



ELECTRICAL SCHEMATIC

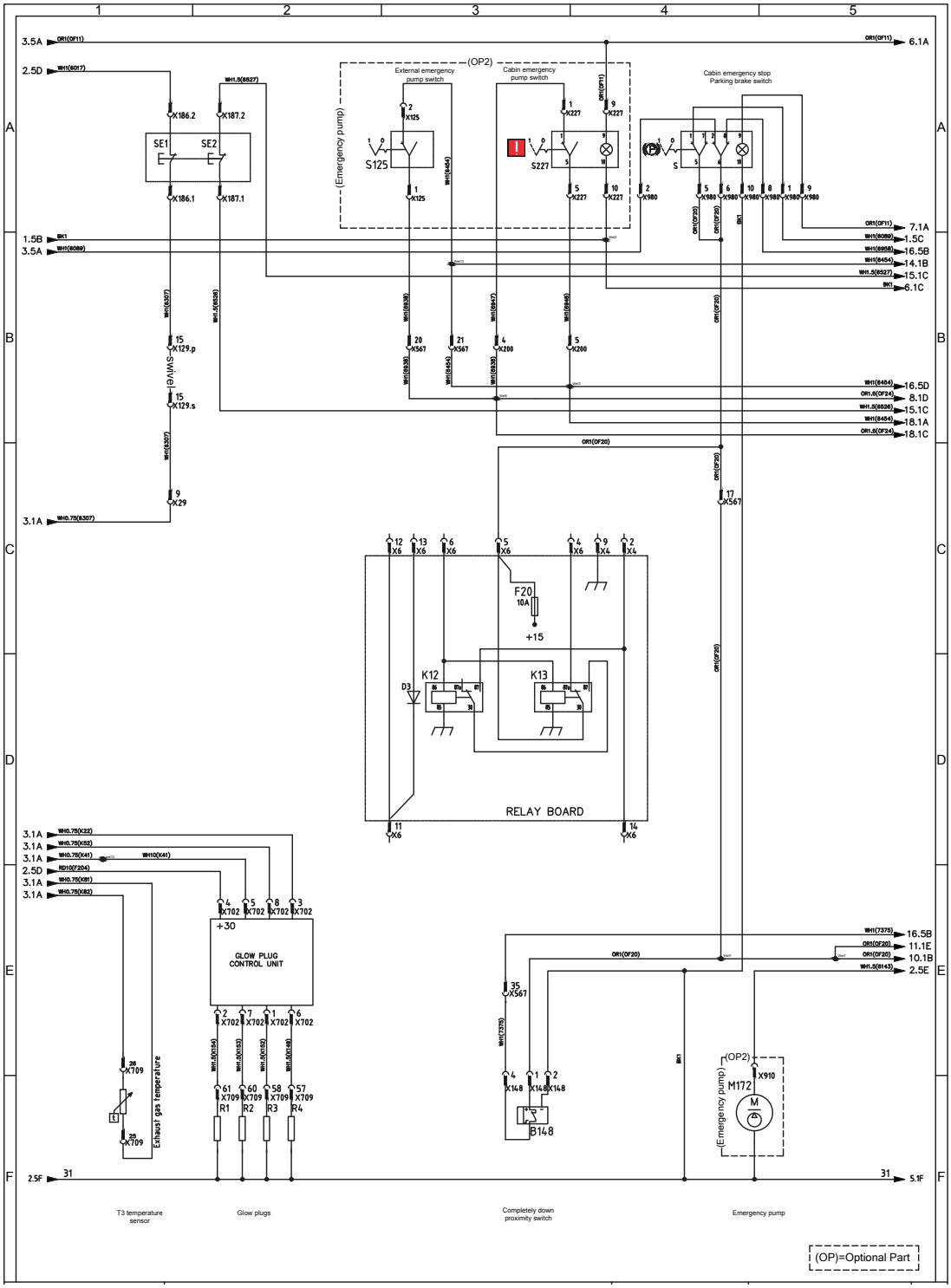
GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130) *Sheet 4 of 20*



ELECTRICAL SCHEMATIC

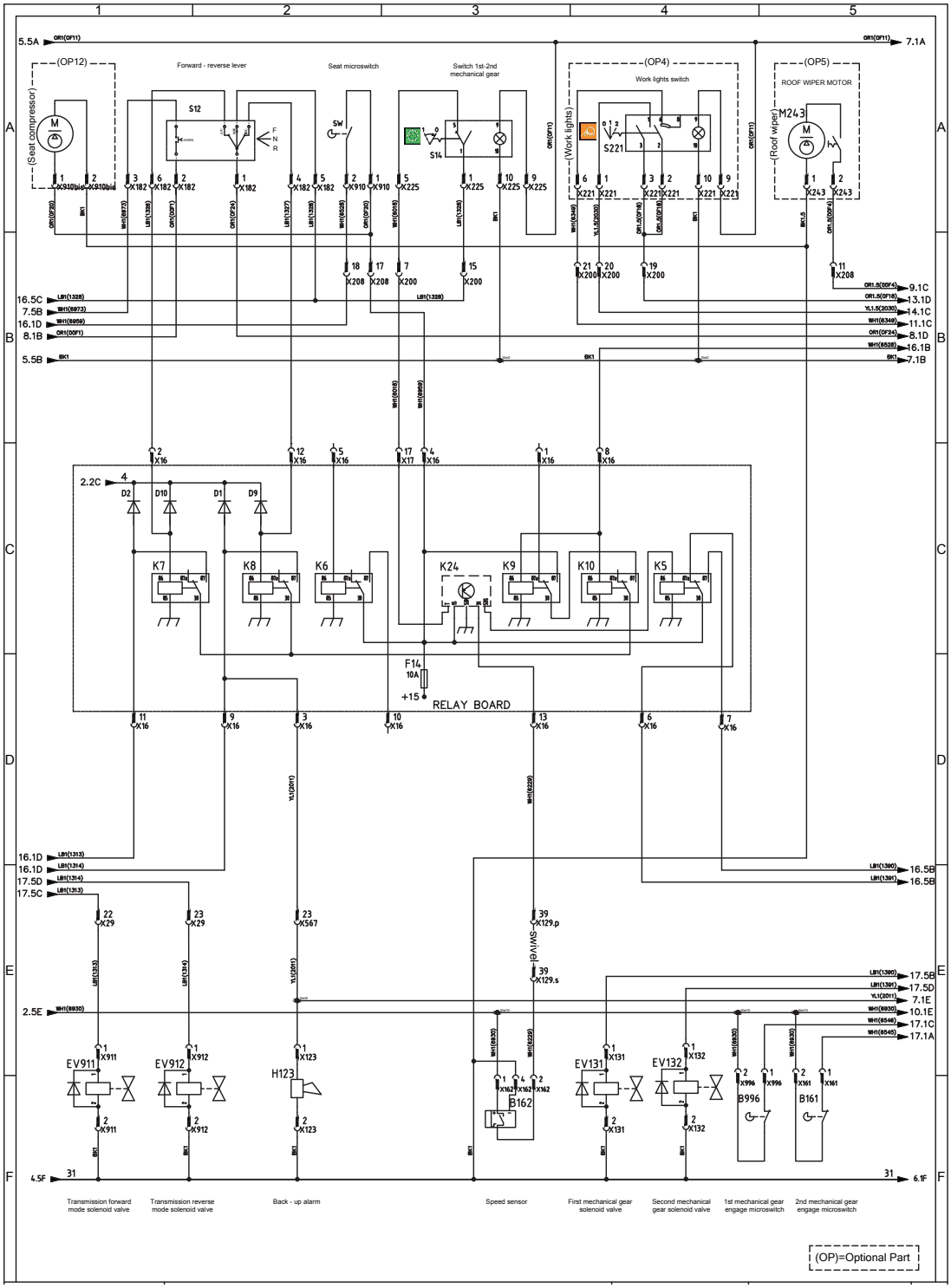
Sheet 5 of 20

GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130)



ELECTRICAL SCHEMATIC

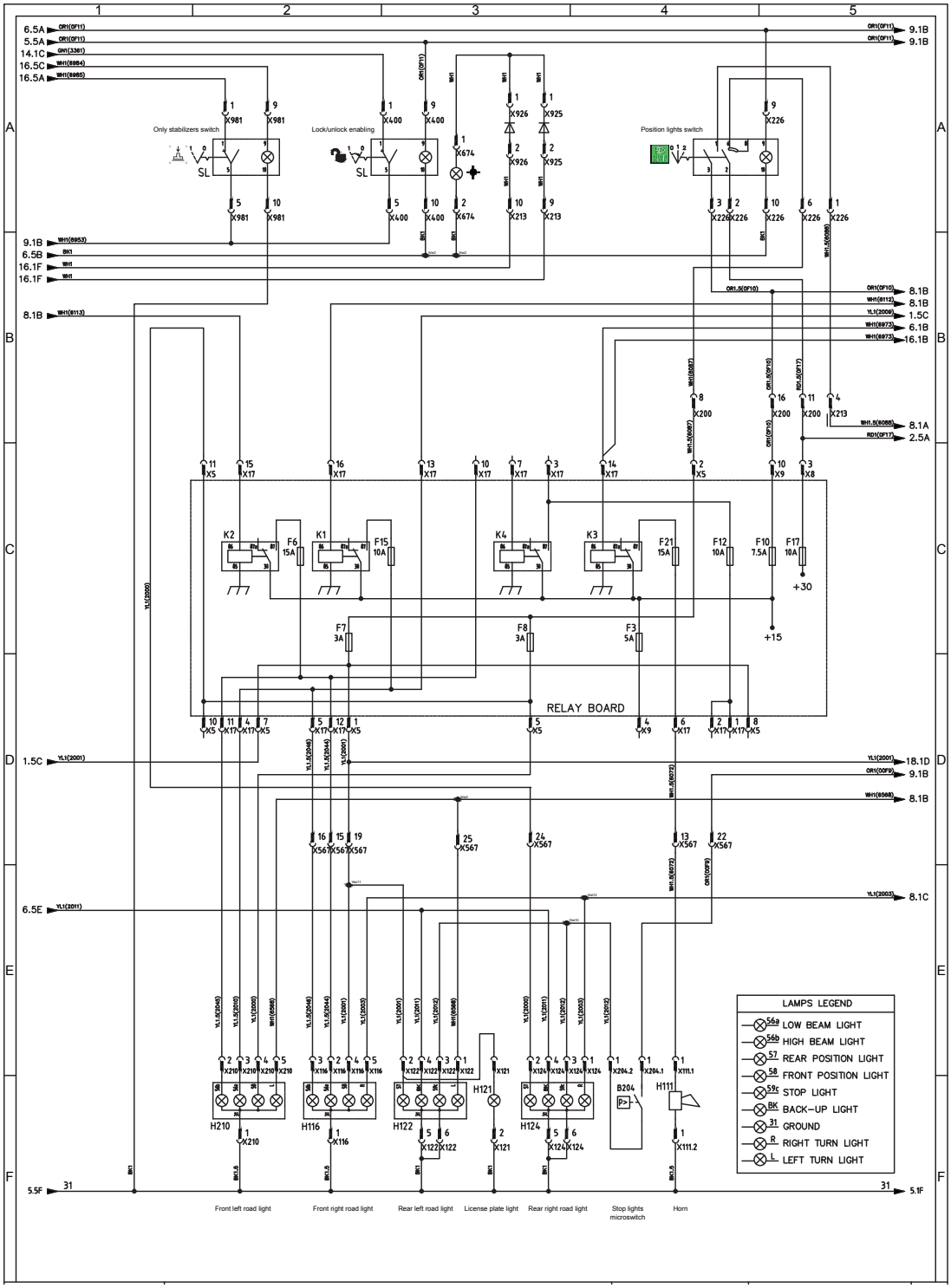
GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130) *Sheet 6 of 20*



ELECTRICAL SCHEMATIC

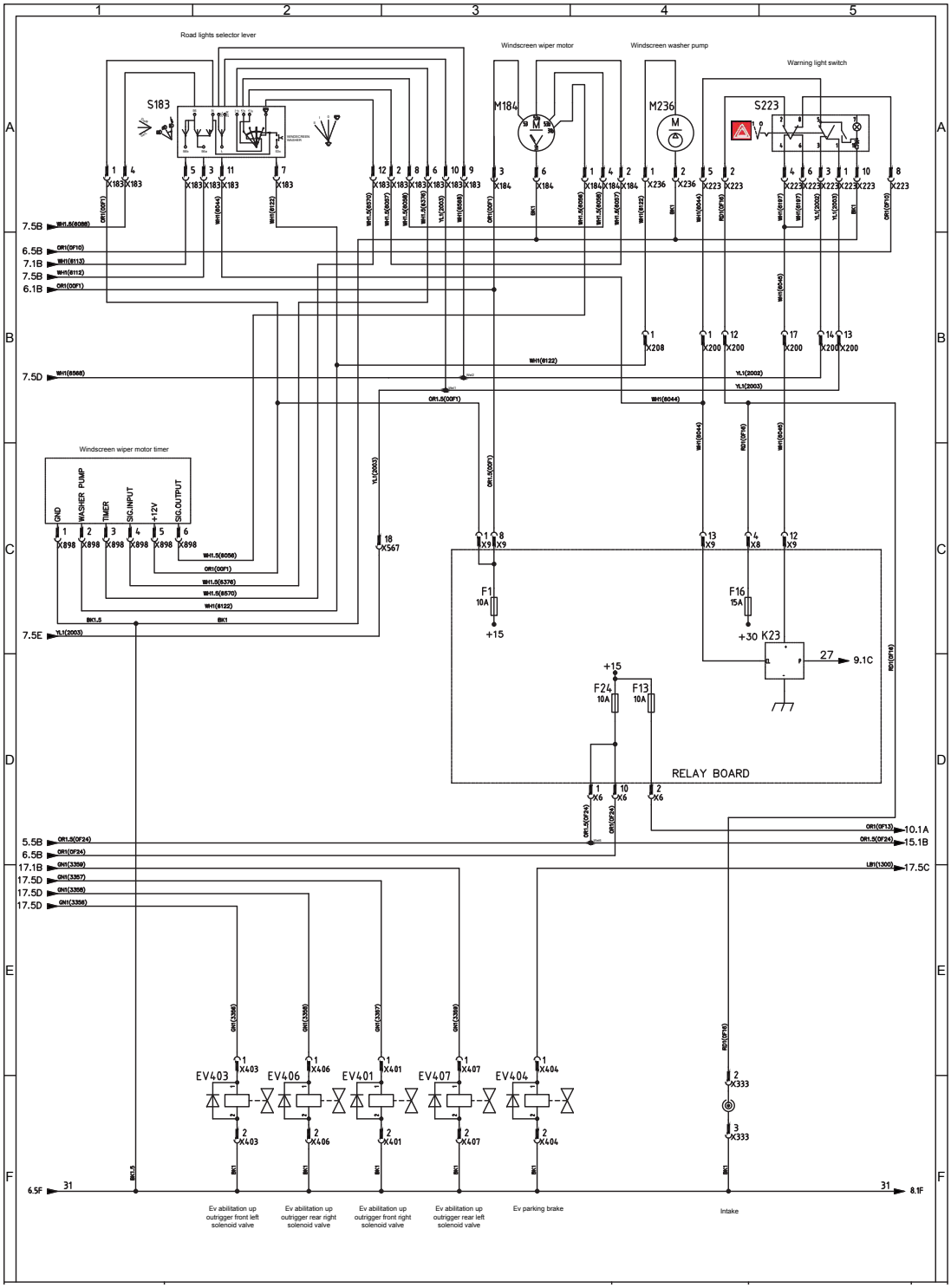
Sheet 7 of 20

GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130)



ELECTRICAL SCHEMATIC

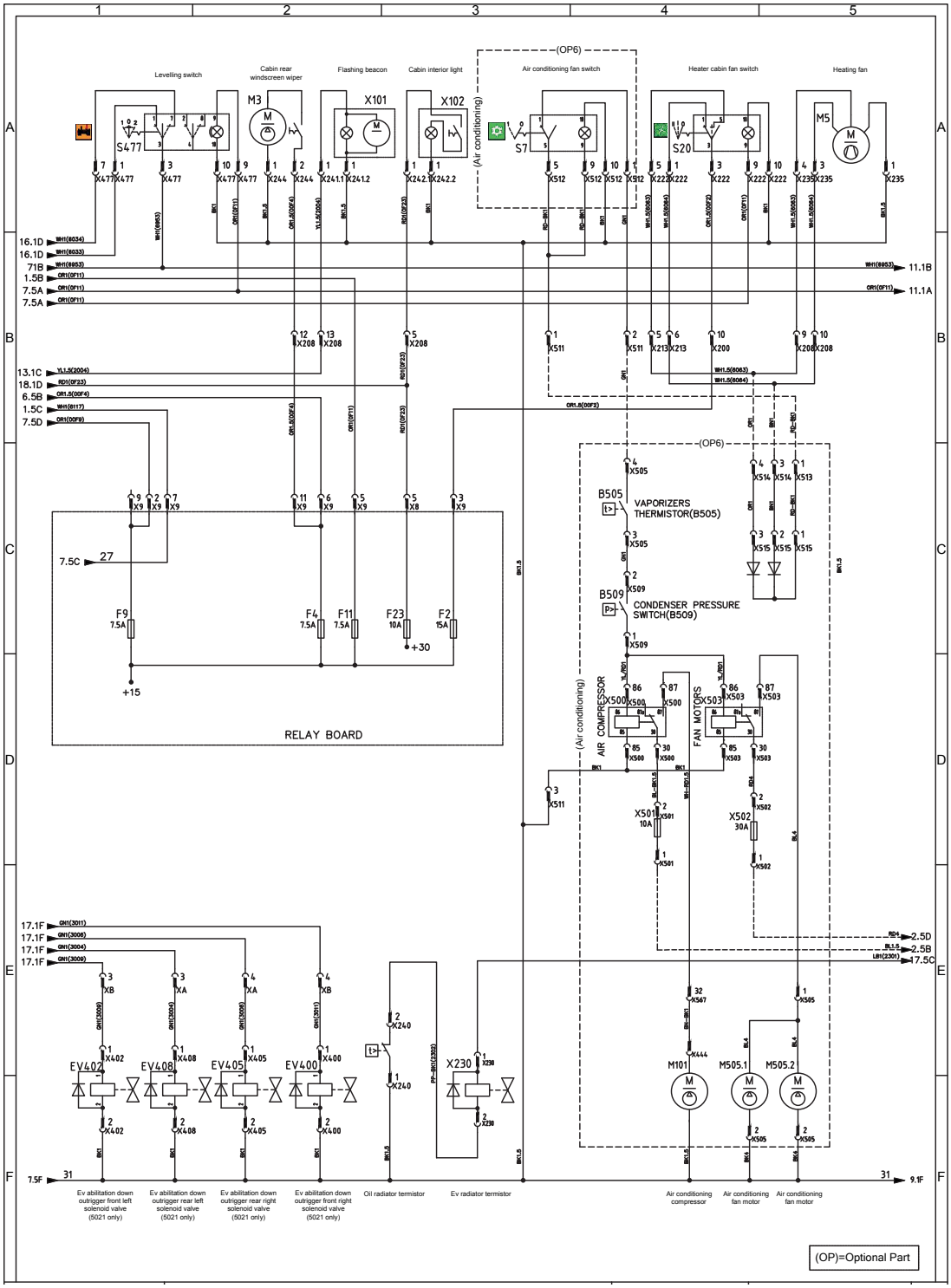
GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130) *Sheet 8 of 20*



ELECTRICAL SCHEMATIC

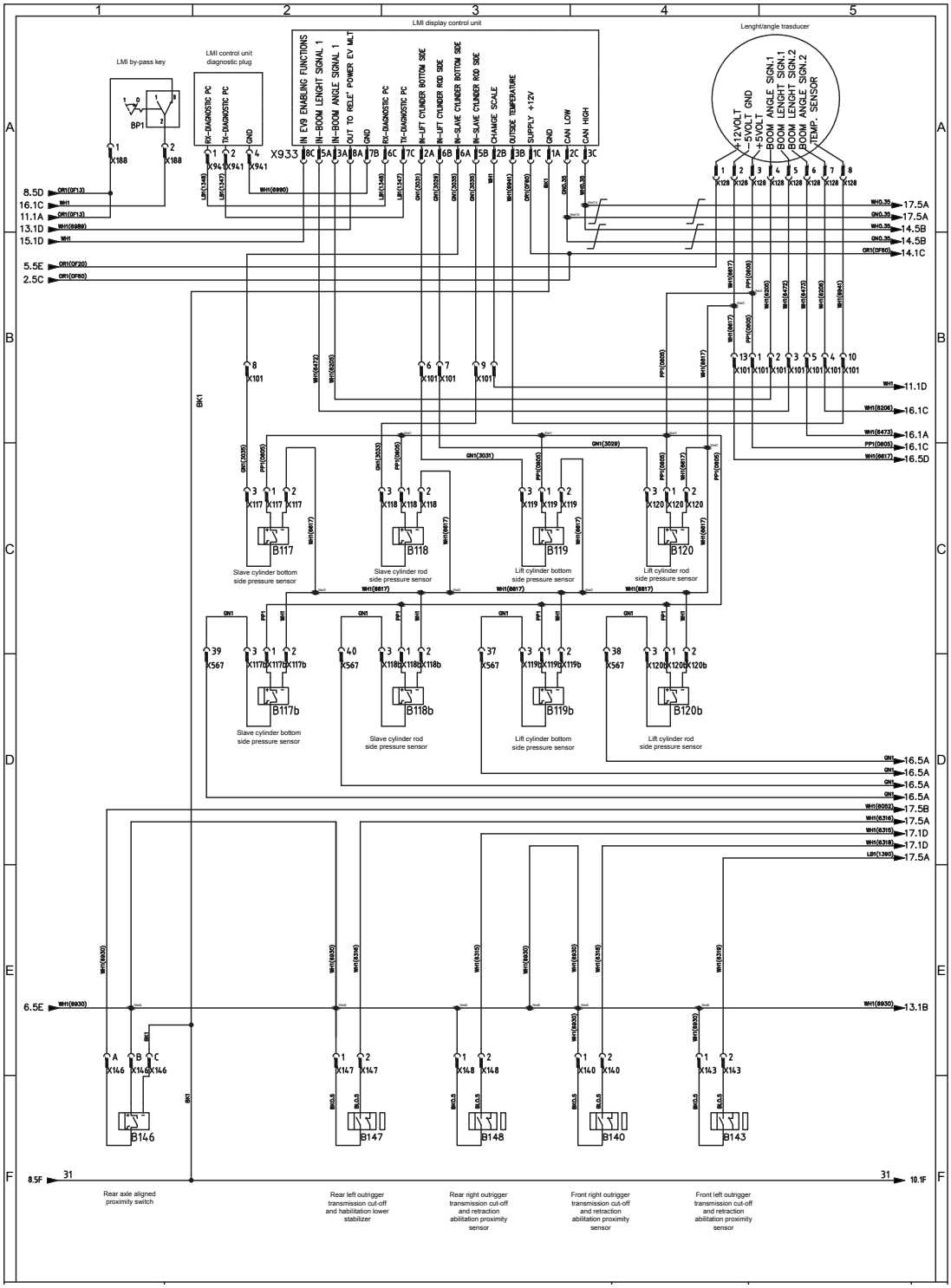
Sheet 9 of 20

GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130)



ELECTRICAL SCHEMATIC

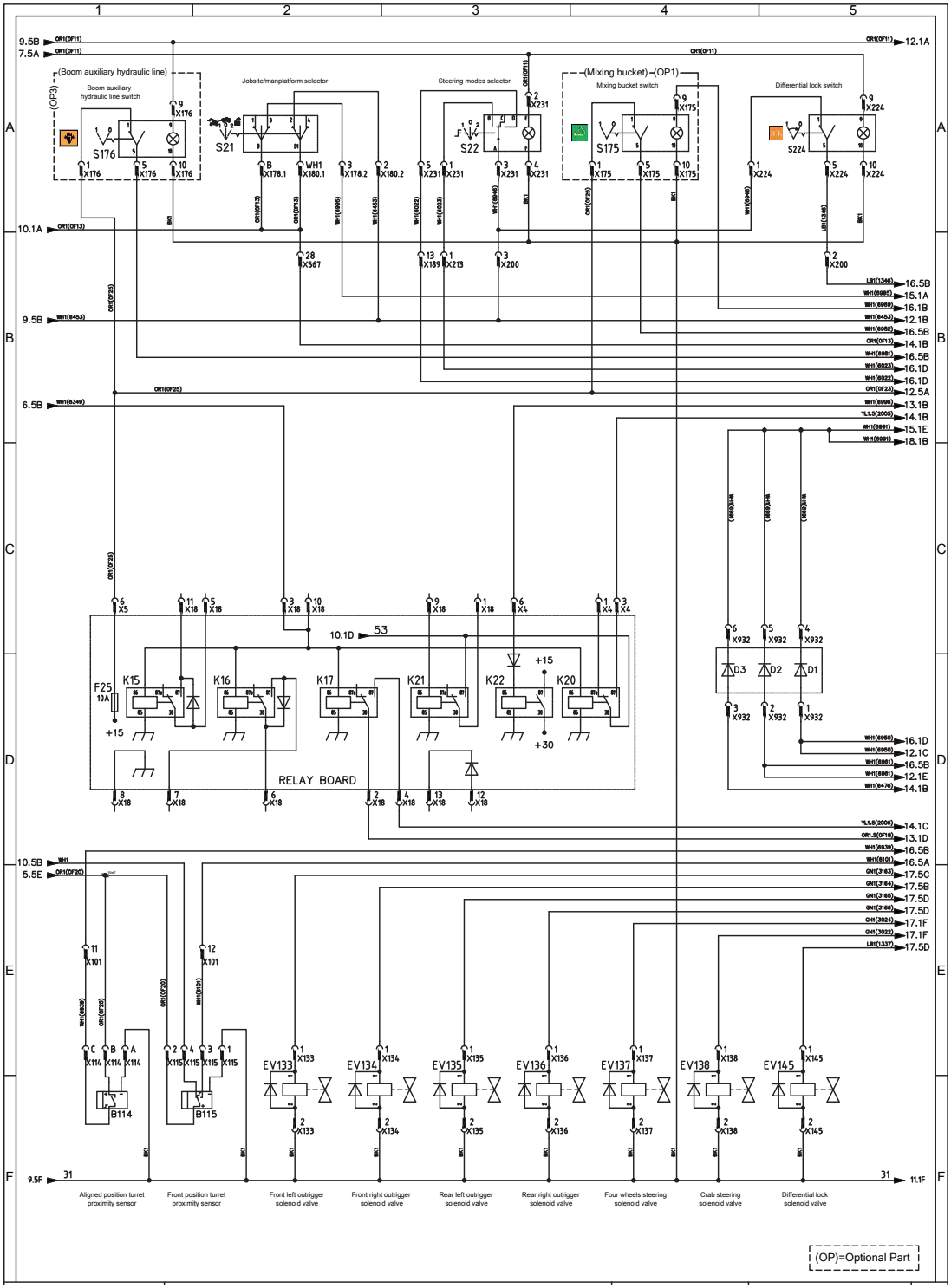
GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130) *Sheet 10 of 20*



ELECTRICAL SCHEMATIC

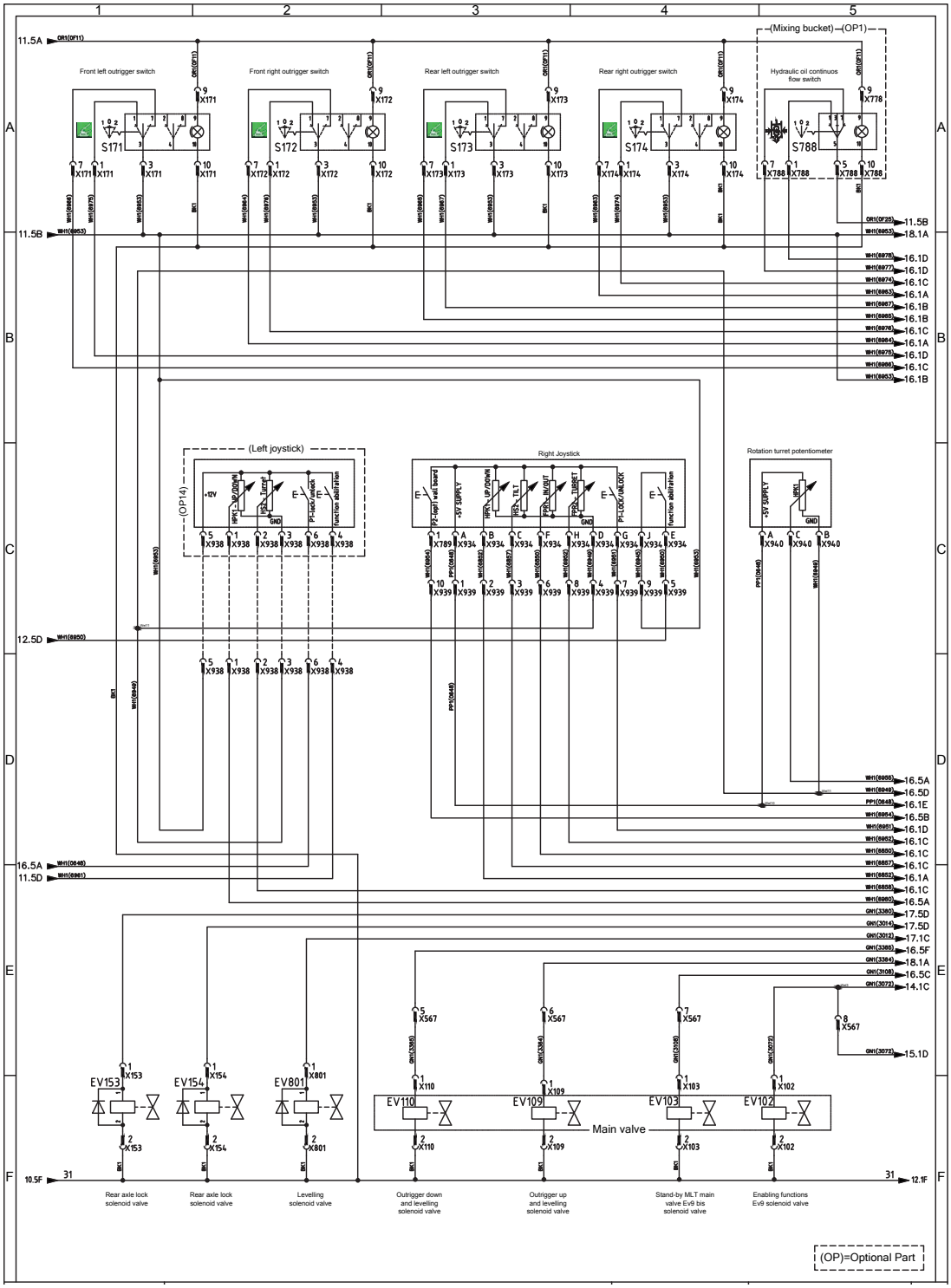
Sheet 11 of 20

GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130)



ELECTRICAL SCHEMATIC

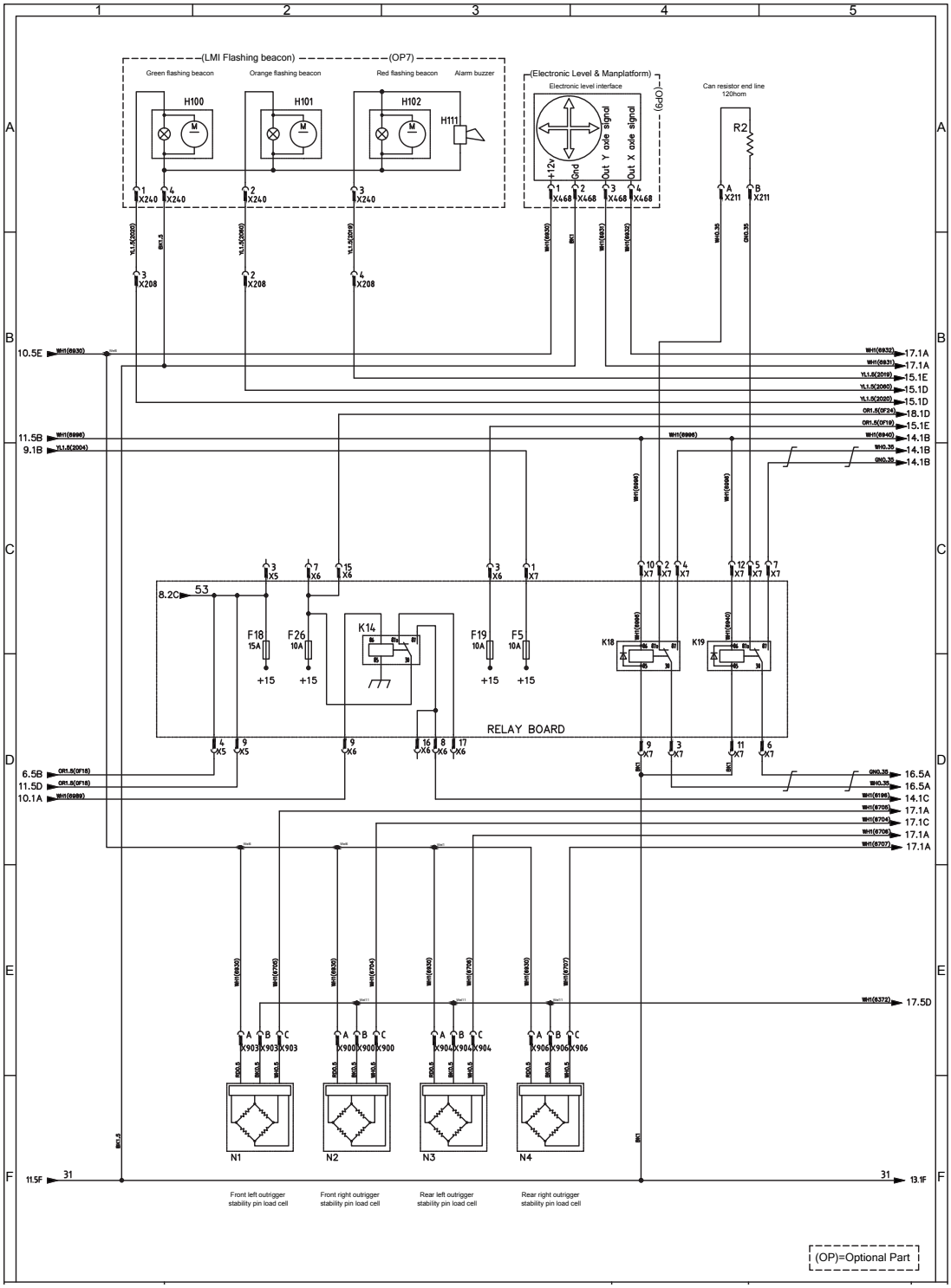
GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130) *Sheet 12 of 20*



ELECTRICAL SCHEMATIC

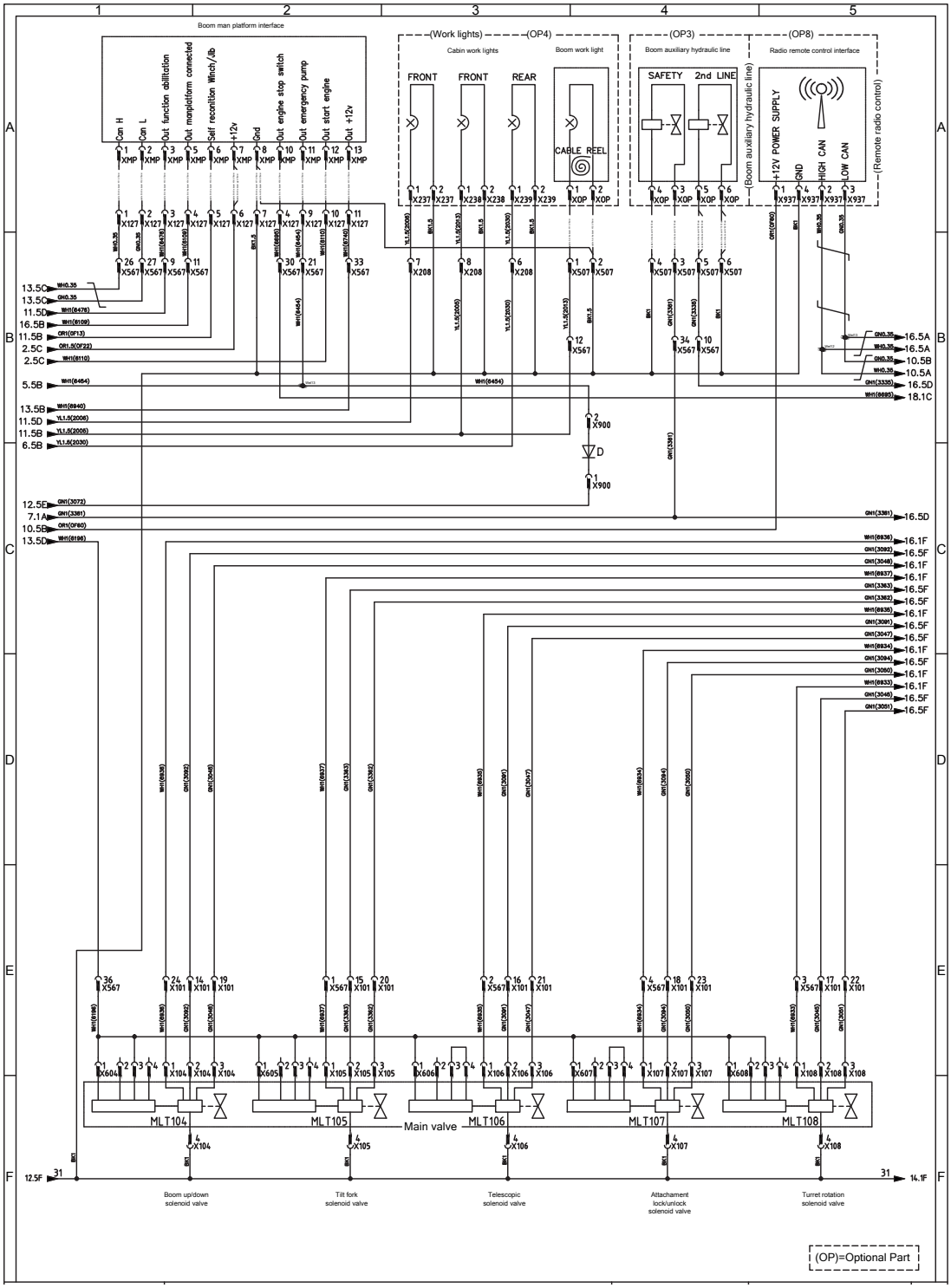
Sheet 13 of 20

GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130)



ELECTRICAL SCHEMATIC

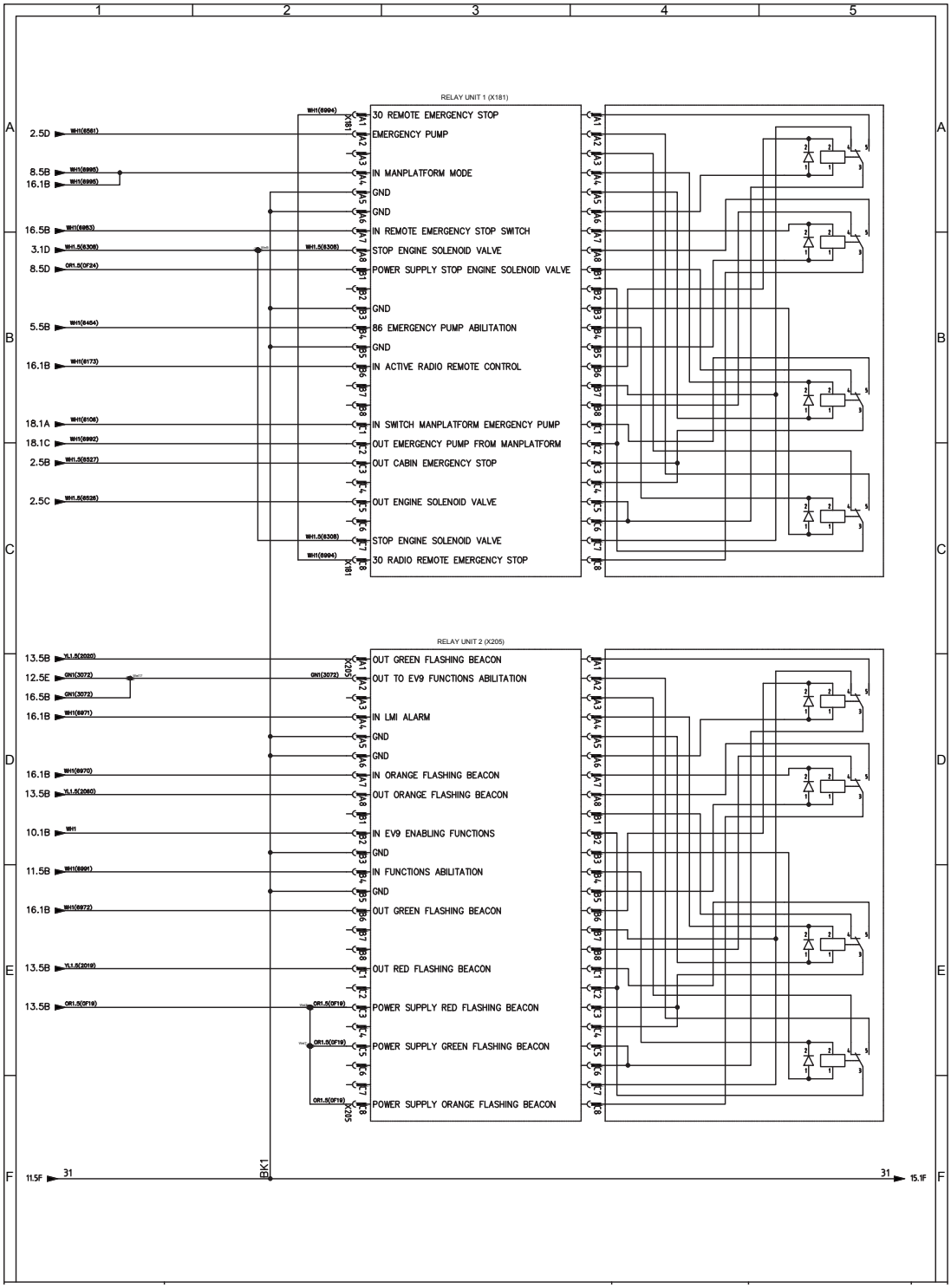
GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130) *Sheet 14 of 20*



ELECTRICAL SCHEMATIC

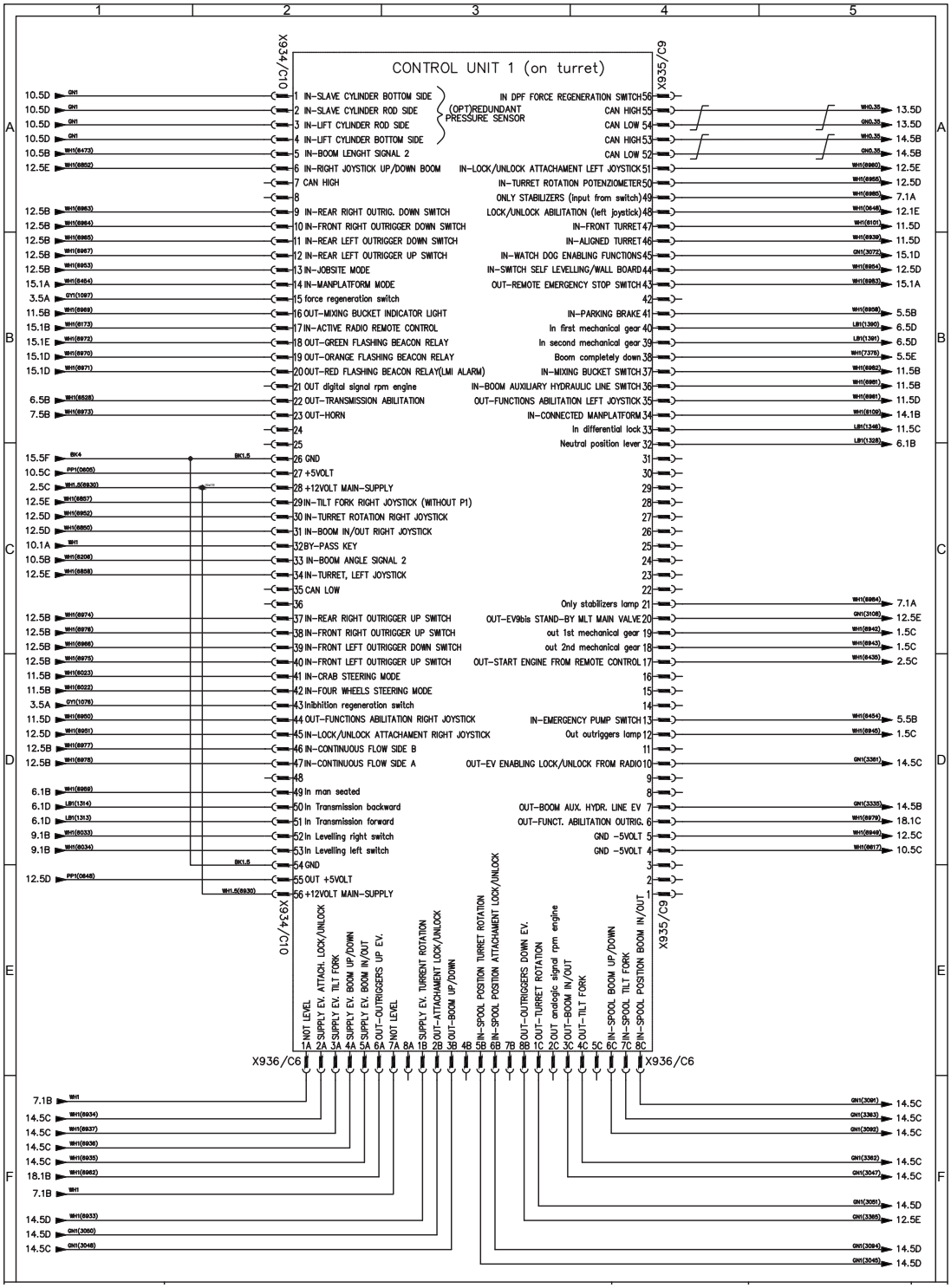
Sheet 15 of 20

GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130)



ELECTRICAL SCHEMATIC

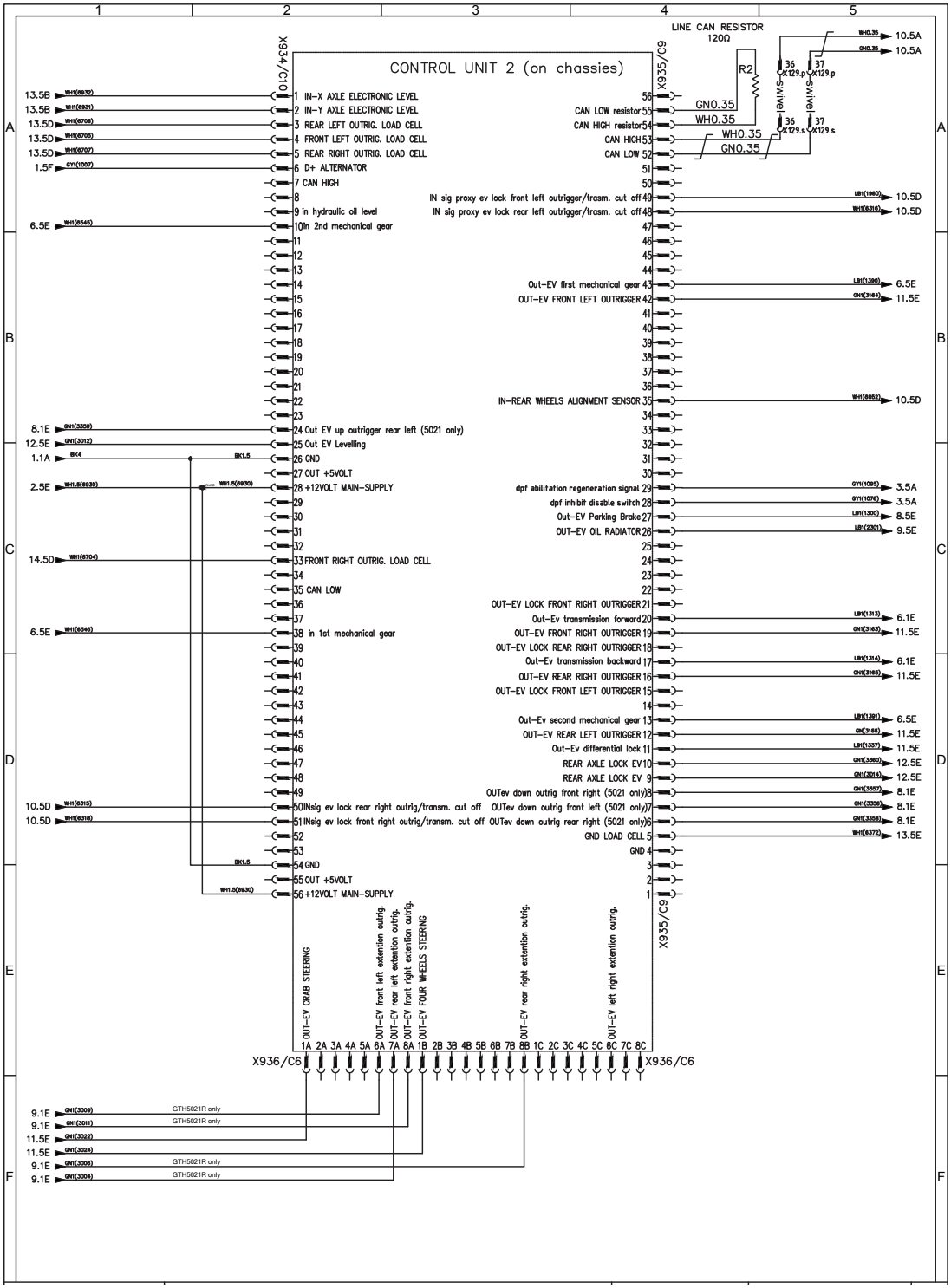
GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130) *Sheet 16 of 20*



ELECTRICAL SCHEMATIC

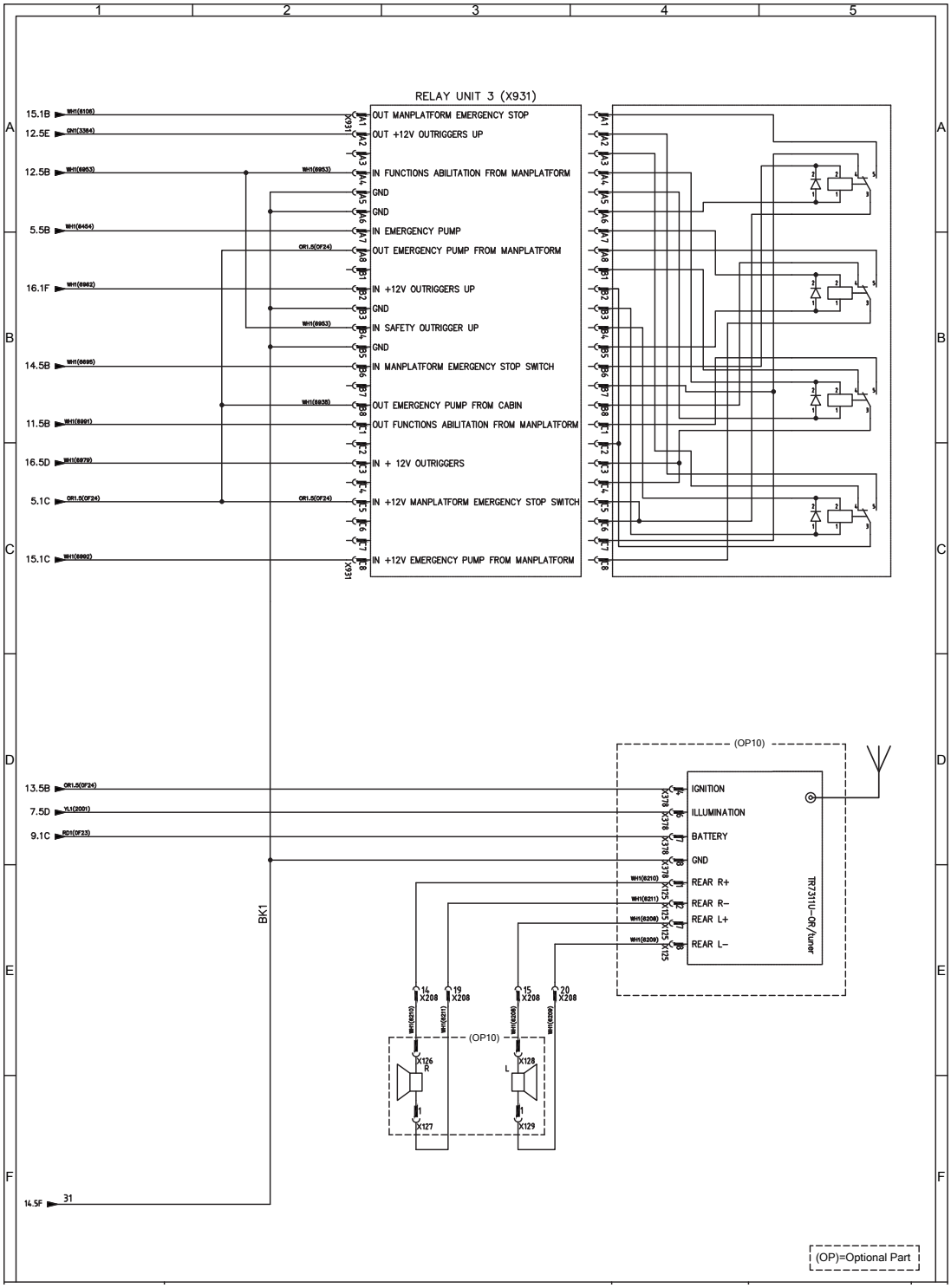
Sheet 17 of 20

GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130)



ELECTRICAL SCHEMATIC

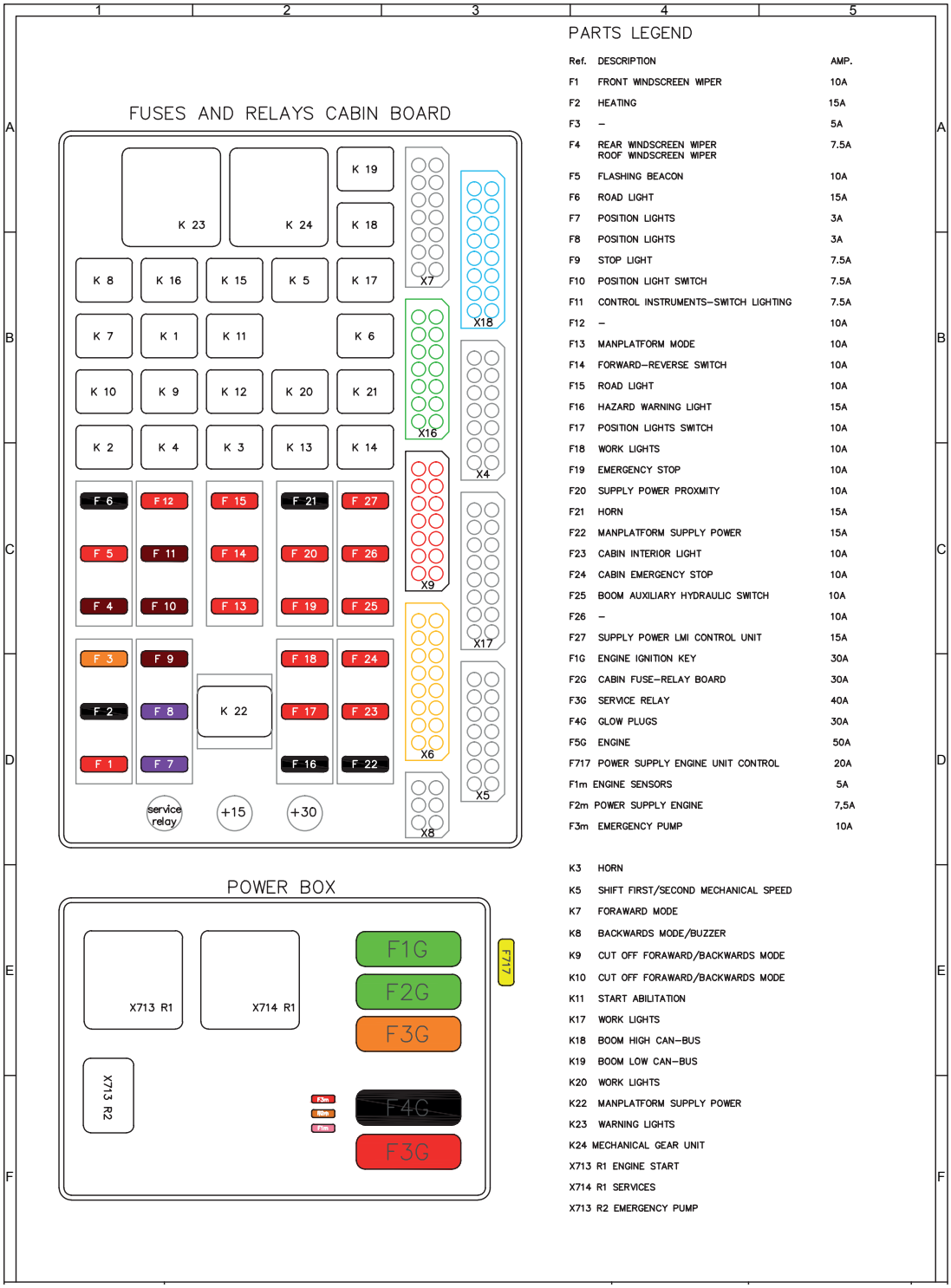
GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130) *Sheet 18 of 20*



ELECTRICAL SCHEMATIC

Sheet 19 of 20

GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130)



ELECTRICAL SCHEMATIC

GTH-5021R Stage IIIB EN280 (from sn GTH5021R14B-130) *Sheet 20 of 20*

OPTIONAL LEGEND

OP1 - MIXING BUCKET	OP8 - REMOTE RADIO CONTROL	OP14 - LEFT JOYSTICK
OP2 - ELECTRICAL EMERGENCY PUMP	OP9 - MANPLATFORM and/or LEVELLING (to separate wiring diagram)	OP15 - TELEMATICS READY
OP3 - BOOM AUXILIARY HYDRAULIC LINE	OP10- TUNER	
OP4 - CABIN/BOOM WORK LIGHT	OP11 - UNLOCK DEVICE	
OP5 - ROOF WINDSCREEN	OP12 - TRACK AND TRACE	
OP6 - AIR CONDITIONING	OP13 - SEAT CONFORT	
OP7 - LMI FLASHING BEACON		

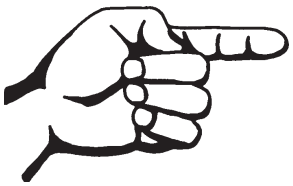
WIRE COLOR LEGEND

LB	LIGHT BLUE	YL	YELLOW
BN	BROWN	PK	PINK
WH	WHITE	GY	GREY
BK	BLACK	GN	GREEN
OR	ORANGE	BL	BLUE
RD	RED	PP	PURPLE

REMARK: Two colorwires are indicated through a combination of the aforesaid initials as follows:
YL/GN= YELLOW/GREEN (crosswise colouring)
YL-GN= YELLOW-GREEN (lengthswise colouring)

MODIFICATIONS HISTORY

REVISION	DATE	ECN	DESCRIPTION
0	11/11/2015	/	First Release



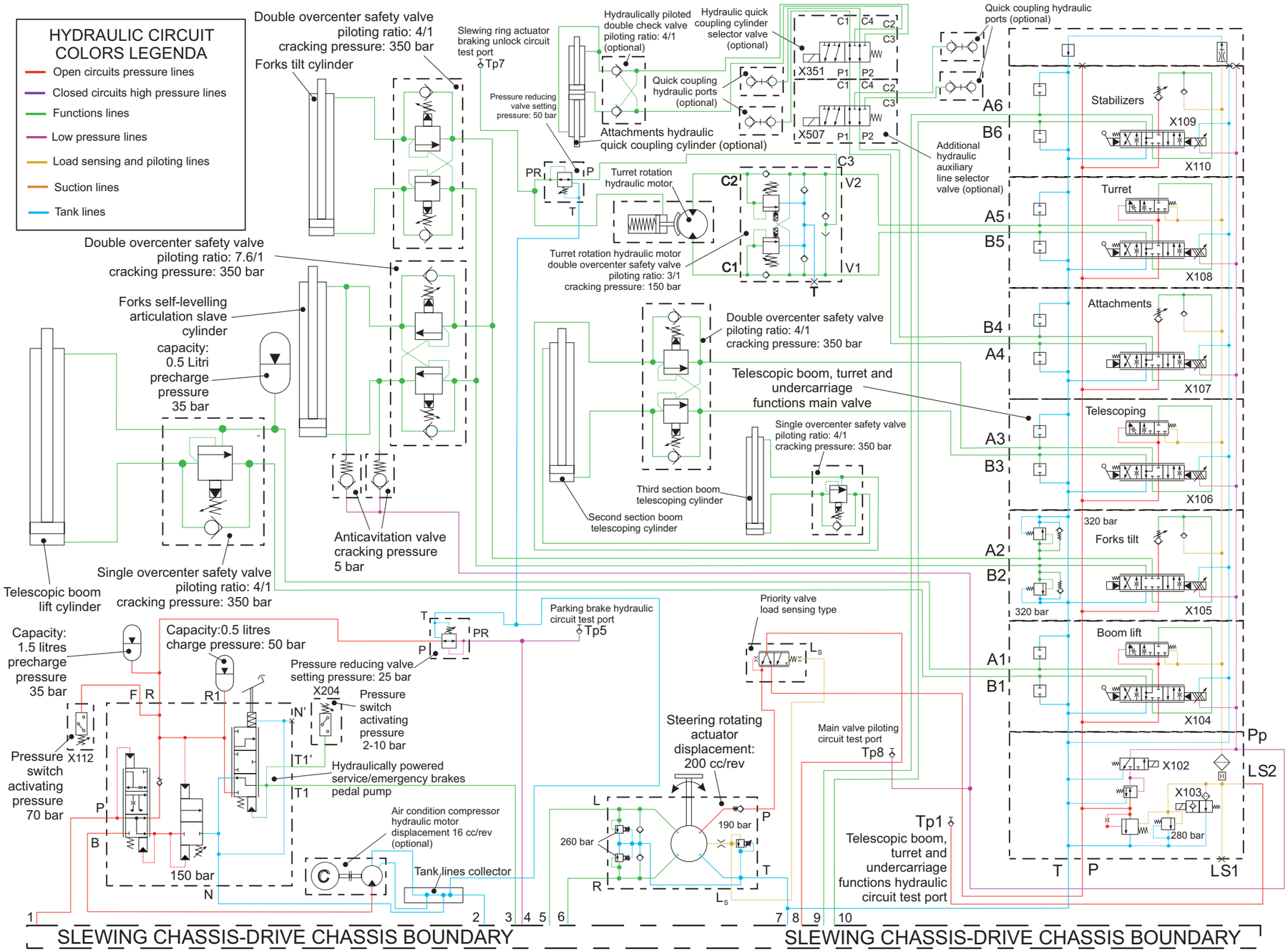
This page intentionally left blank.

Hydraulical Schematic





GTH-4016R Stage IIIA - Rev. C (from sn GTH4016R15M-101) - Page 1 of 2



GTH-4016R Stage IIIA - Rev. C (from sn GTH4016R15M-101) - Page 2 of 2

SLEWING CHASSIS-DRIVE CHASSIS BOUNDARY

SLEWING CHASSIS-DRIVE CHASSIS BOUNDARY

1 Rotating joint

2 3 4 5 6 Rotating joint

Rotating joint 7 8 9 10

Outriggers/chassis leveling selector valve 6 ways/2 positions

Parking brake selector valve

Steering modes selector valve 4 ways / 3 positions

Flow regulator

Differential lock selector valve 3 ways / 2 positions

Rear axle pivoting lockout valves 2 ways/2 positions

Air bleeding valve

Rear axle pivoting cylinder (left)

Hydraulically piloted double check valve piloting ratio: 4/1 (optional)

Parking brake control valve (calibrated restrictor diameter 0.2 mm)

Front left outrigger cylinder

Front right outrigger cylinder

Rear axle

Test port Tp6

Front axle steering cylinder

Rear axle pivoting cylinder (right)

Air bleeding valve

Rear axle steering cylinder

Sway cylinder (optional)

Front axle

Pressure reducing valve setting pressure: 10 bar

Outriggers selector valves block

Hydraulically piloted double check valve piloting ratio: 4/1

Rear left outrigger cylinder

Rear right outrigger cylinder

Rear axle lockout cylinders control valve orifice dia.: 2 mm - cracking pressure: 0.5 bar

Check valve cracking pressure: 0.5 bar (option)

Emergency line test port (optional)

Emergency line max pressure relief valve (optional)

Emergency electrical motor driven pump set 2.6 cc/rev (option)

Pressure switch activating pressure 5 bar

Check valve cracking pressure: 2.5 bar

Shutoff valve

Auxiliary circuit pressure test port Tp4

Hydrostatic transmission high pressure test port Tp2

Heat exchanger

Check valve cracking pressure: 8 bar

Mechanical gear speed selector valve 4 ways/3 positions

Mechanical gear speed selector actuator

Boom functions gear pump displacement: 43 cc/rev

Mechanical gear (2 speeds)

Diesel engine

Auxiliary gear pump brakes circuit displacement: 14 cc/rev

Hydrostatic transmission pump max displacement: 71 cc/rev

Auxiliary circuit max pressure relief valve

Hydrostatic transmission boost pressure test port Tp3

Shutoff valve Suction screen

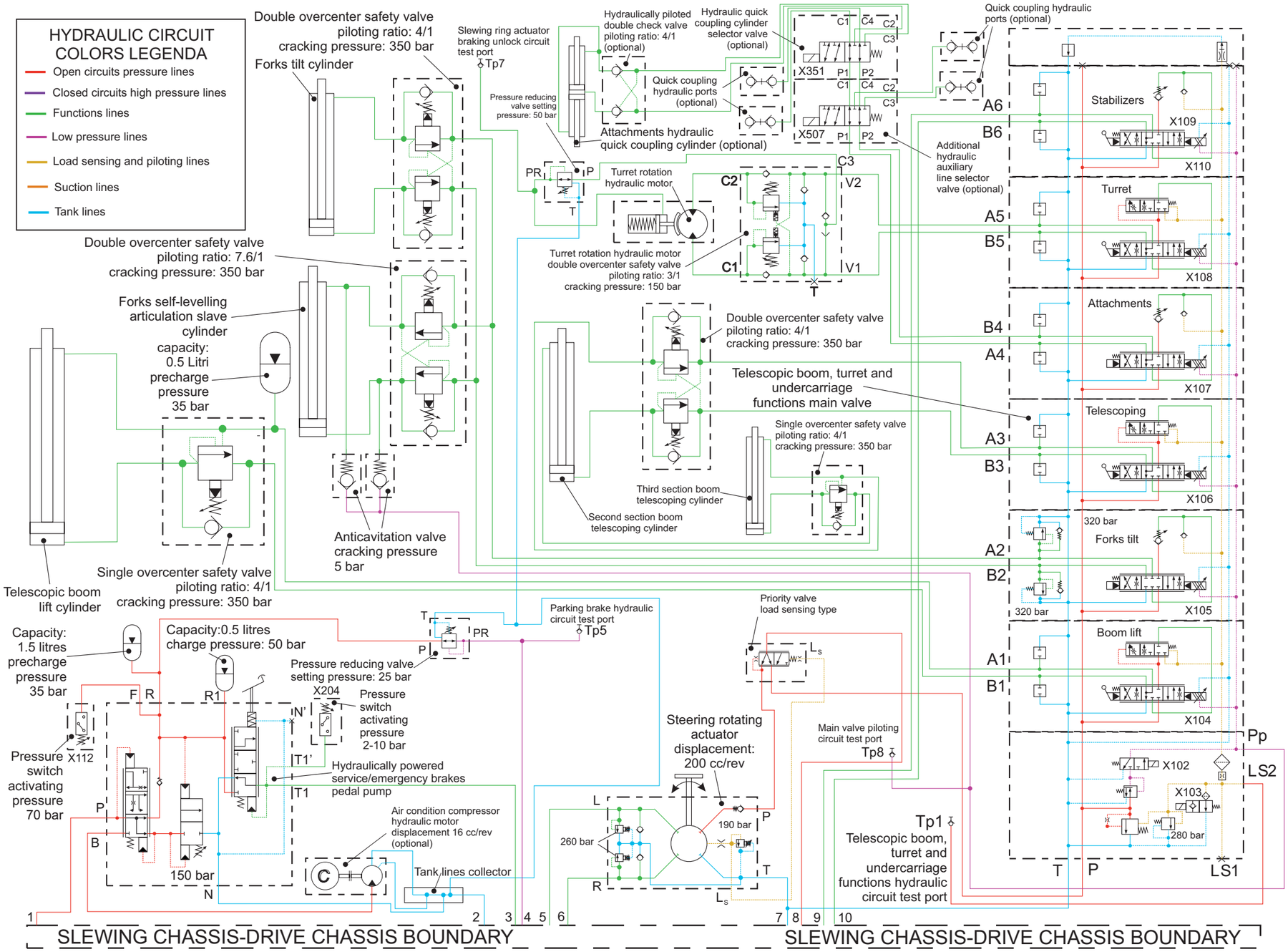
Hydrostatic transmission motor max displacement: 80 cc/rev

Flushing valve

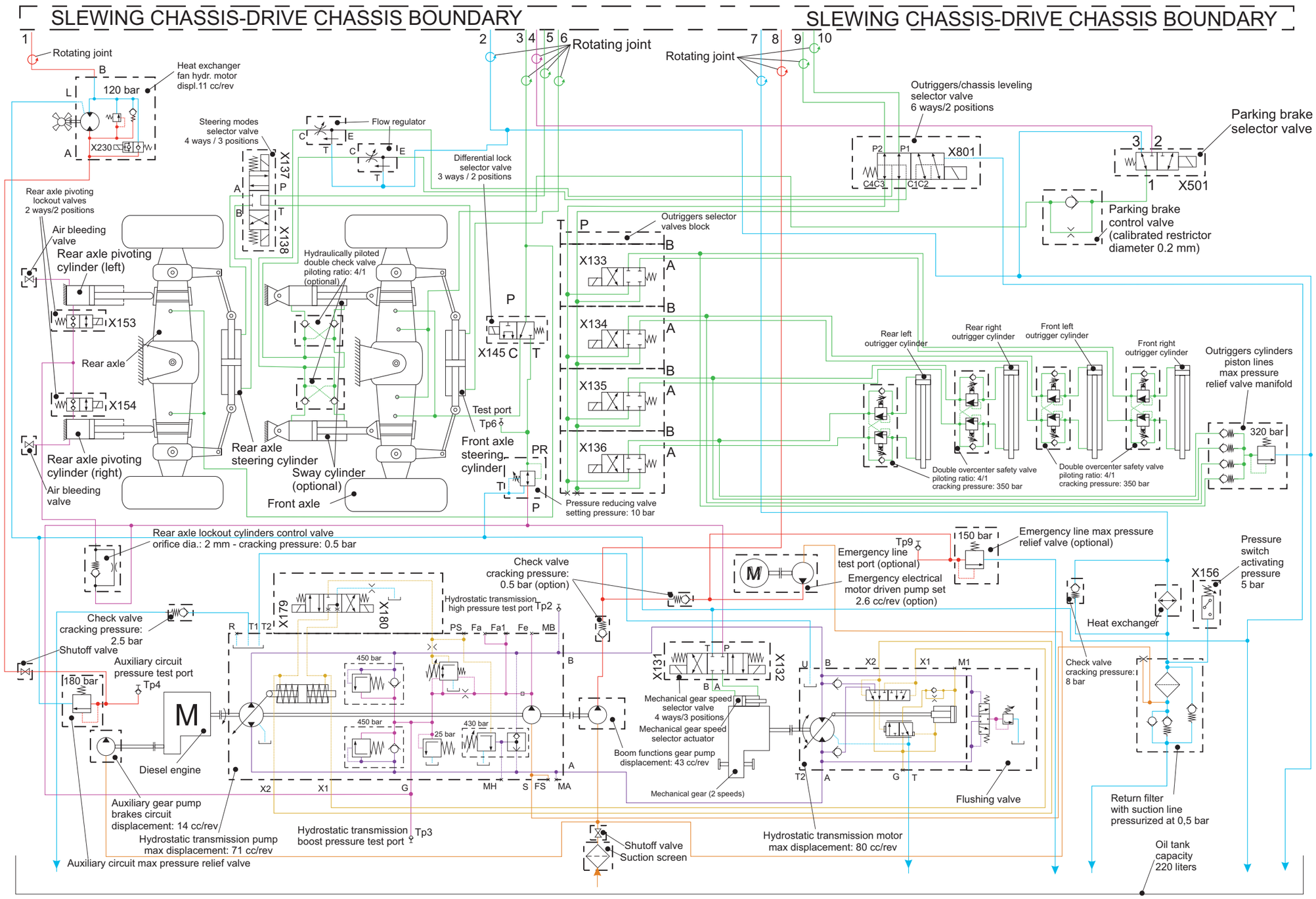
Return filter with suction line pressurized at 0,5 bar

Oil tank capacity 220 liters

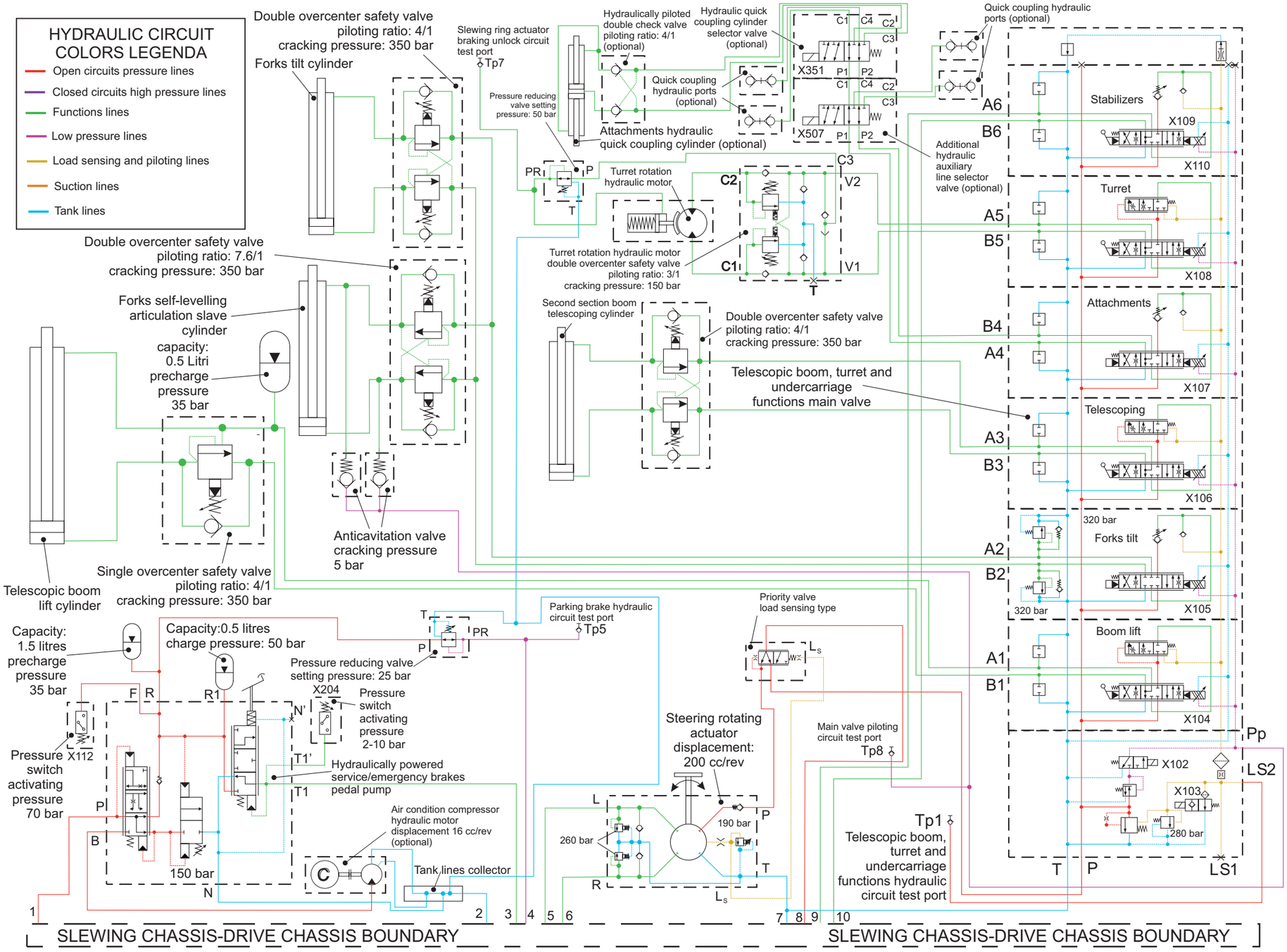
GTH-4016R Stage IIIB - Rev. D (from sn GTH4016R15M-101) - Page 1 of 2



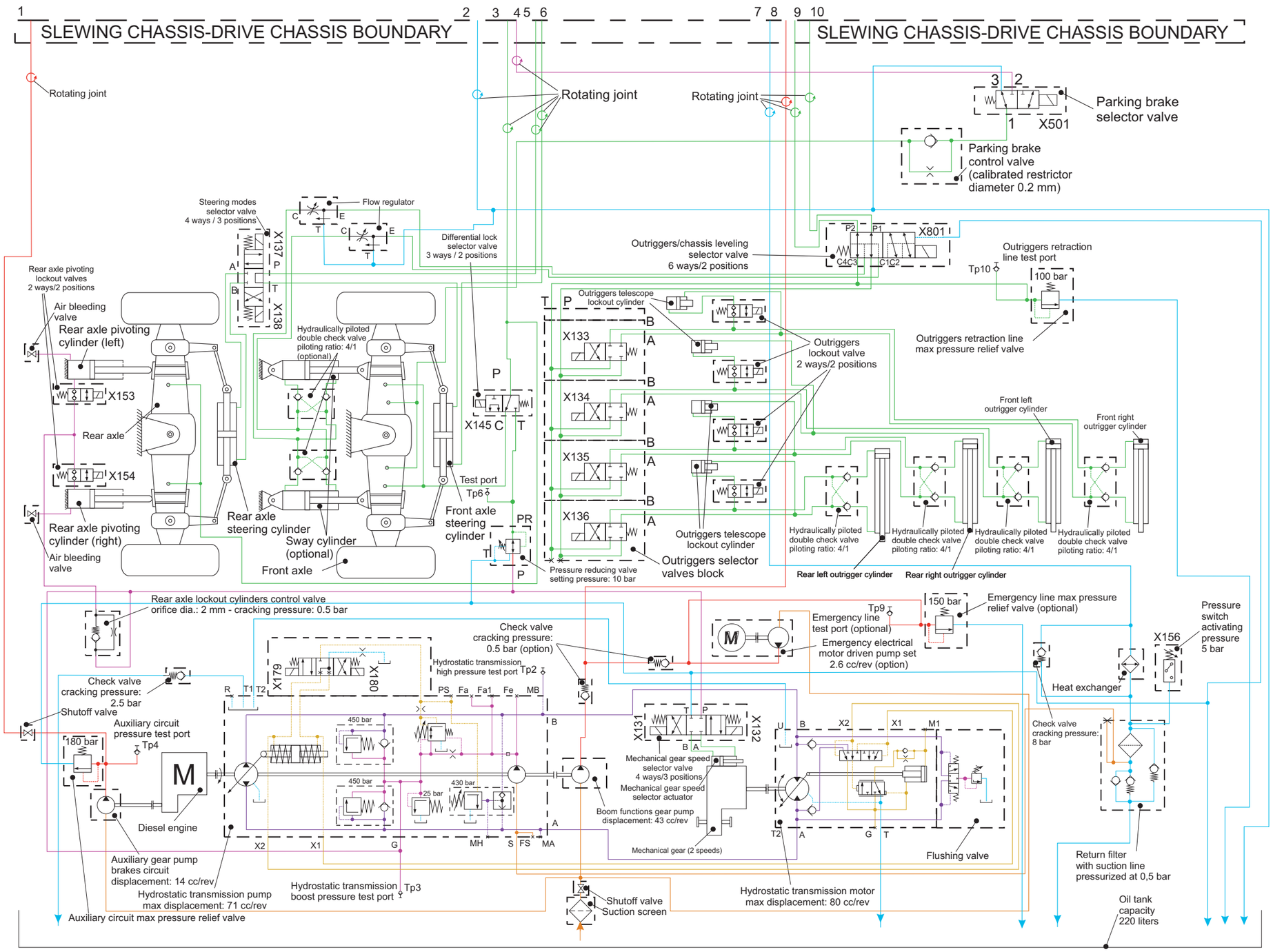
GTH-4016R Stage IIIB - Rev. D (from sn GTH4016R15M-101) - Page 2 of 2



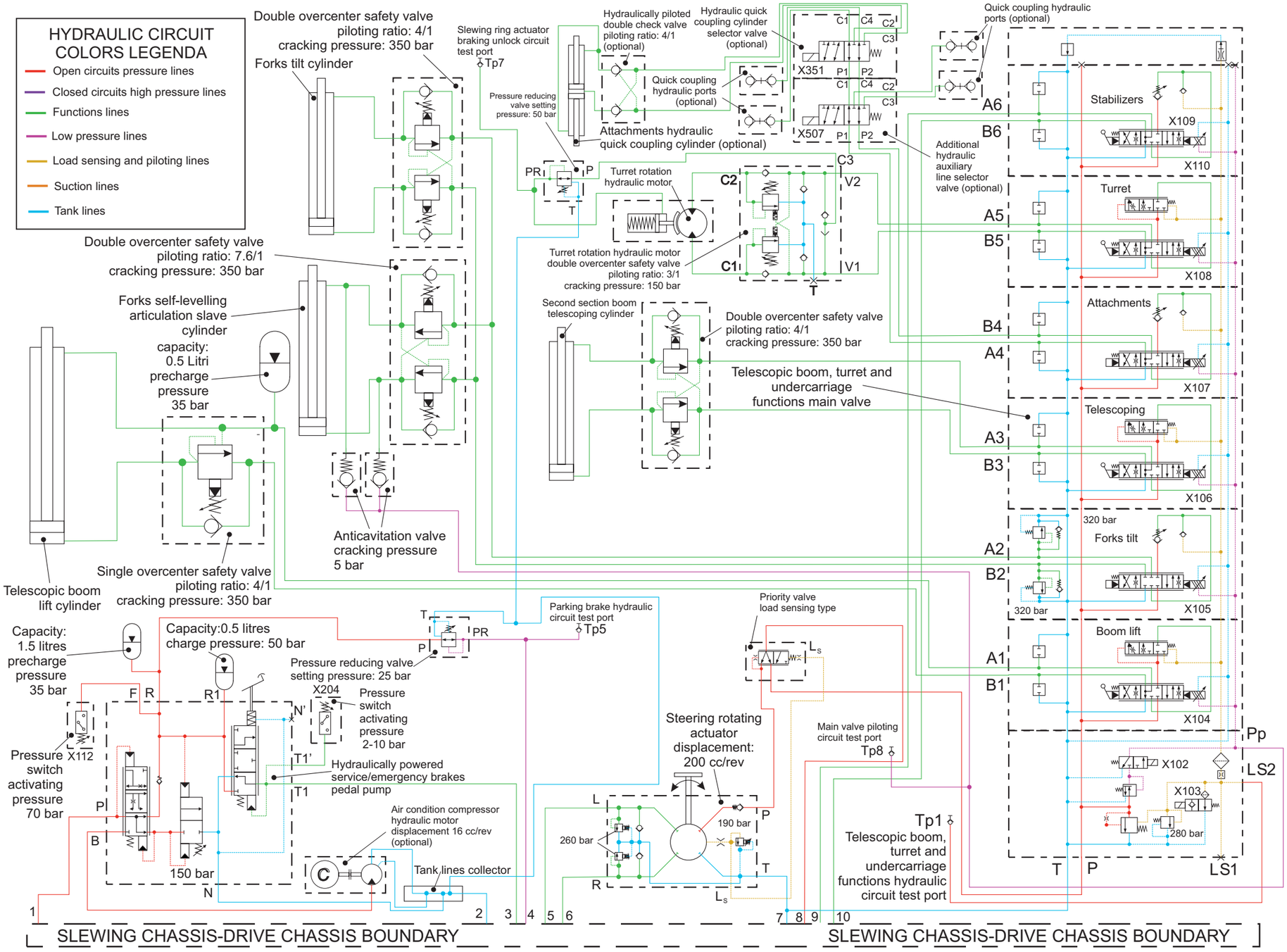
GTH-4018R Stage IIIA - Rev. C (from sn GTH4018R15M-101) - Page 1 of 2



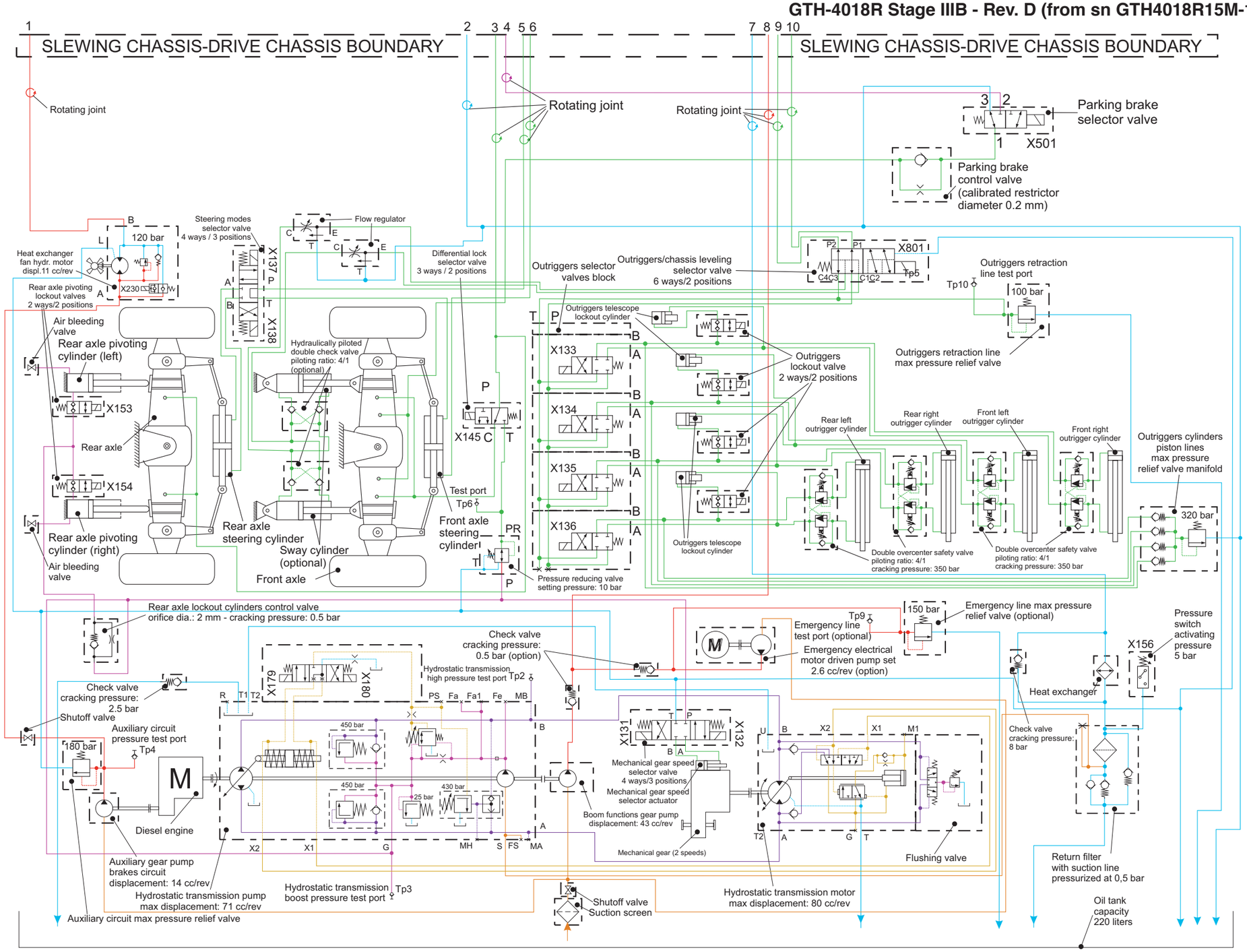
GTH-4018R Stage IIIA - Rev. C (from sn GTH4018R15M-101) - Page 2 of 2



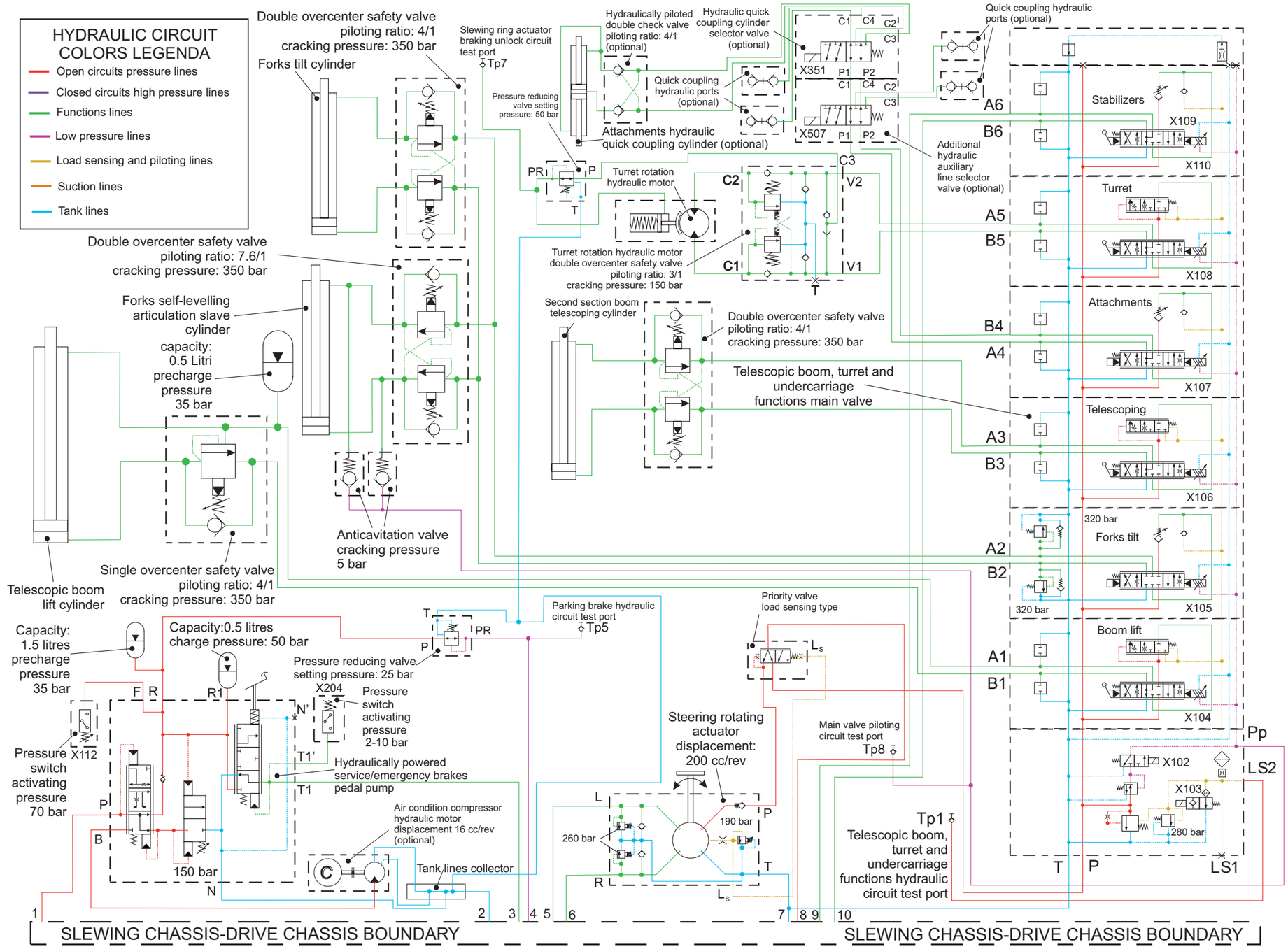
GTH-4018R Stage IIIB - Rev. D (from sn GTH4018R15M-101) - Page 1 of 2



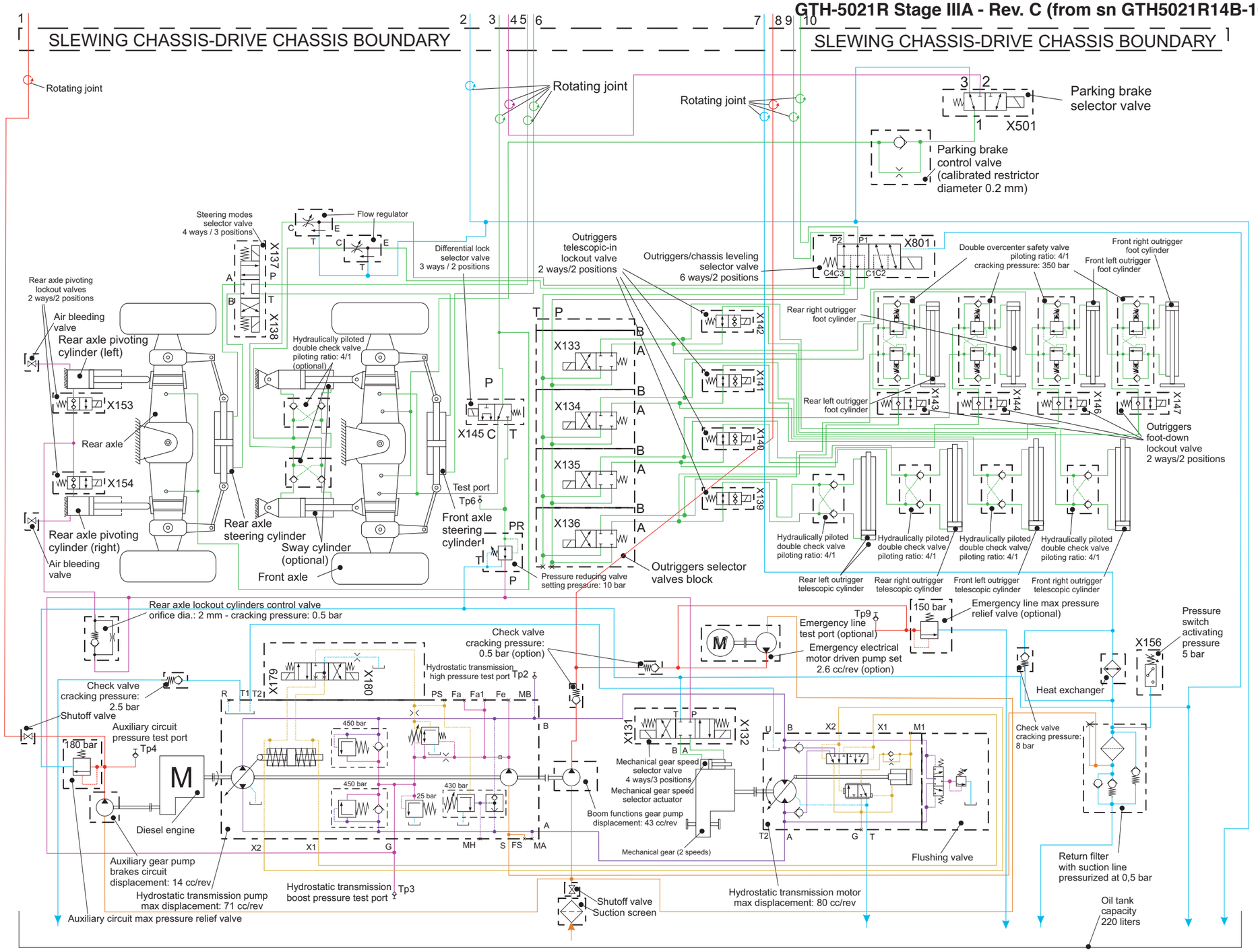
GTH-4018R Stage IIIB - Rev. D (from sn GTH4018R15M-101) - Page 2 of 2



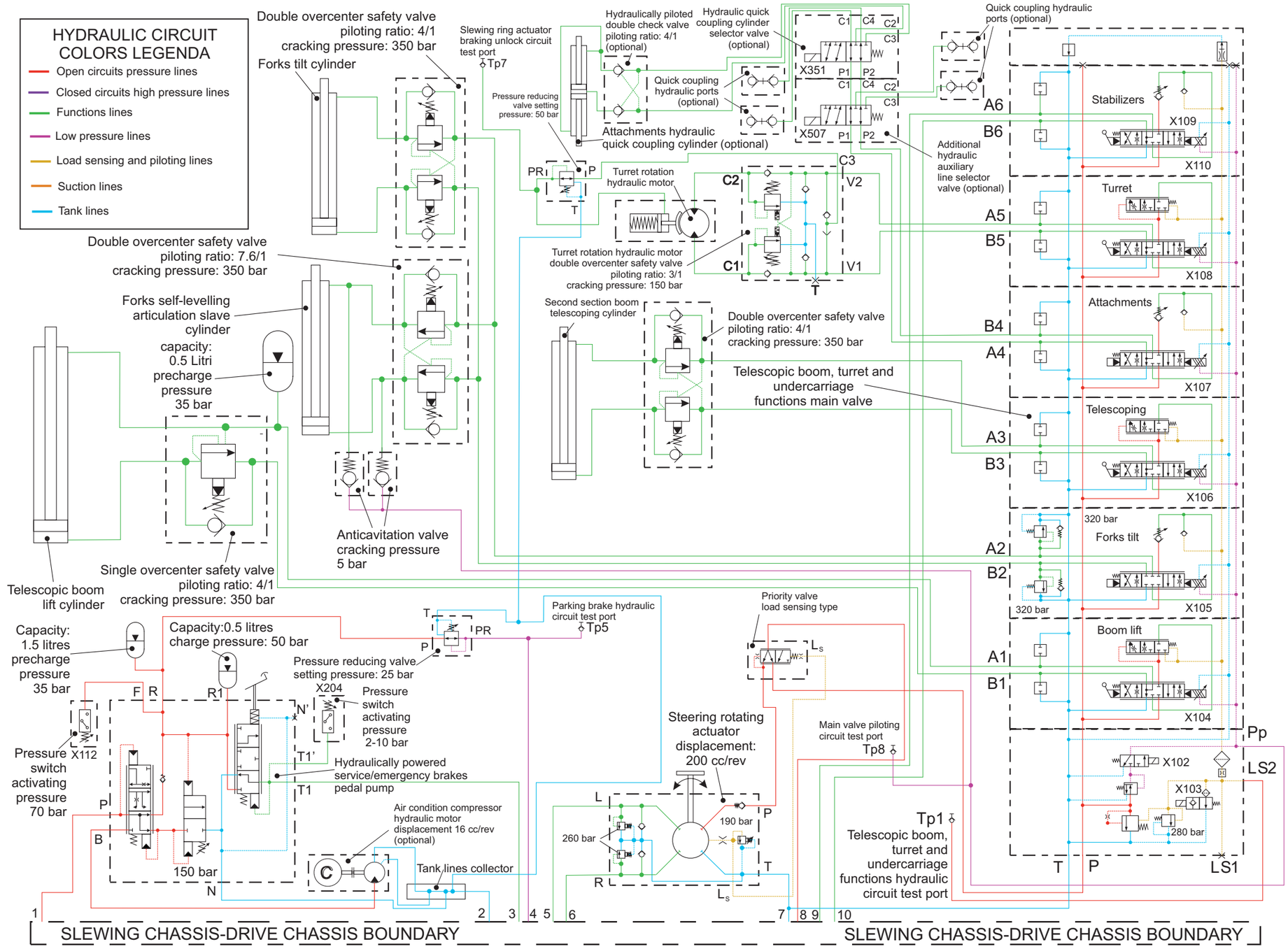
GTH-5021R Stage IIIA - Rev. C (from sn GTH5021R14B-101) - Page 1 of 2



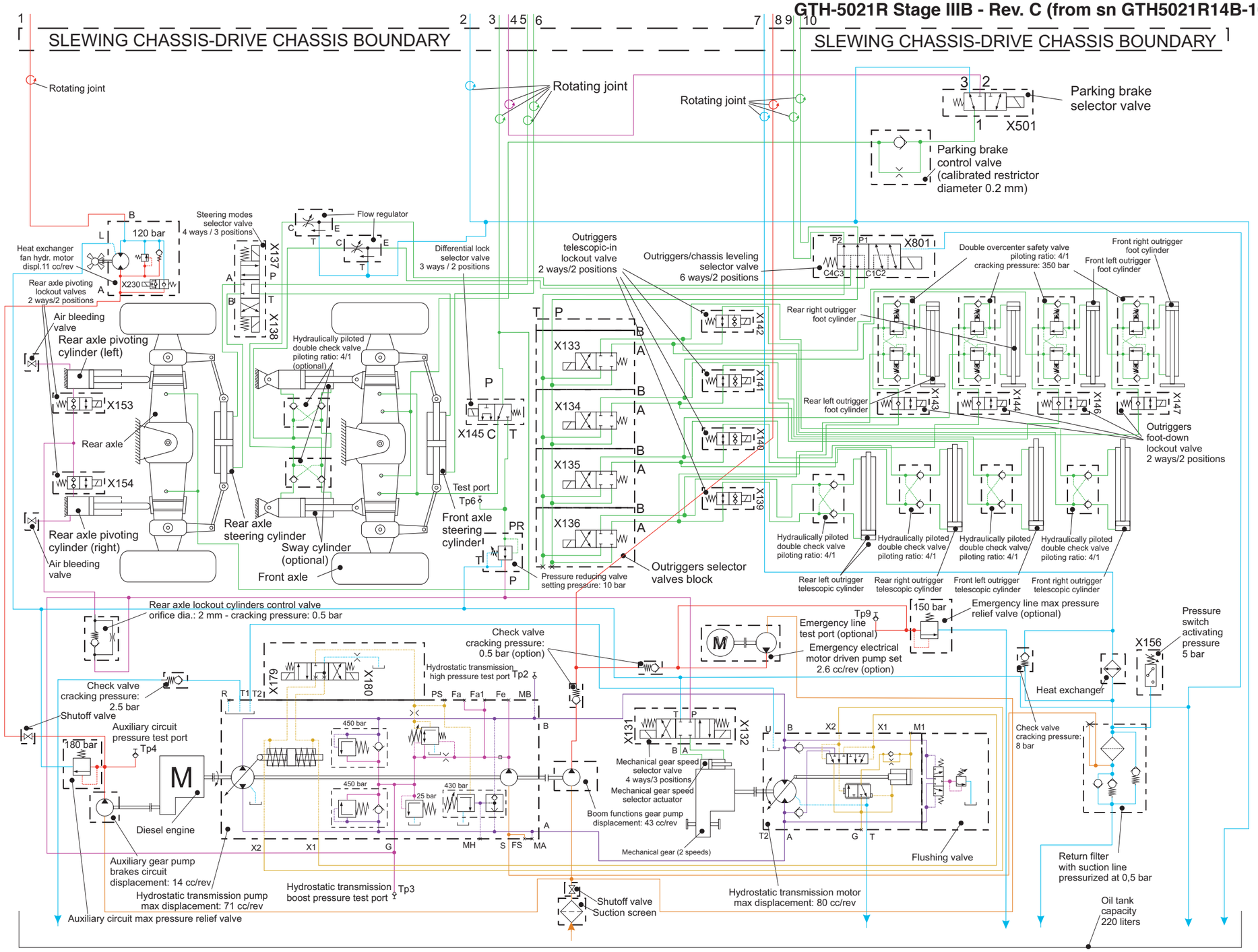
GTH-5021R Stage IIIA - Rev. C (from sn GTH5021R14B-101) - Page 2 of 2



GTH-5021R Stage IIIB - Rev. C (from sn GTH5021R14B-101) - Page 1 of 2



GTH-5021R Stage IIIB - Rev. C (from sn GTH5021R14B-101) - Page 2 of 2





This page intentionally left blank.