



Service Manual

Serial number range

GTH-4016 R

Stage 3A

Stage 3B

From serial n.: GTH4016R15M-101

GTH-4018 R

Stage 3A

Stage 3B

From serial n.: GTH4018R15M-101

GTH-5021 R

Stage 3A

Stage 3B

From serial n.: GTH5021R14B-101

Part No. 57.4400.9209

Rev A

January 2016

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SPECIFICATIONS

Perkins 854E-E34TA Engine

Displacement	207 cu in 3.4 liters
Number of cylinders	4
Bore and stroke	3.9 x 4.3 inches 99 x 110 mm
Horsepower	100.5 @ 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	1000 rpm
Frequency	100 Hz
High idle	2700 rpm
Frequency	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
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Engine coolant

Capacity	4.9 gallons 18.5 liters
Type	Extended Life

Alternator

Output	120 A, 12V DC
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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.

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 B PROCEDURES

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 D PROCEDURES

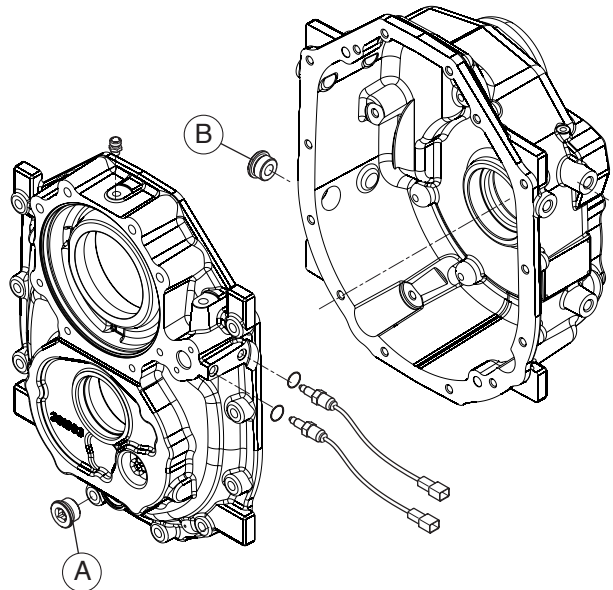
- 9 Inspect the filter assembly to be sure that there are no leaks.
- 10 Clean up any oil that may have spilled during the installation procedure.

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).



BOOM COMPONENTS

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.

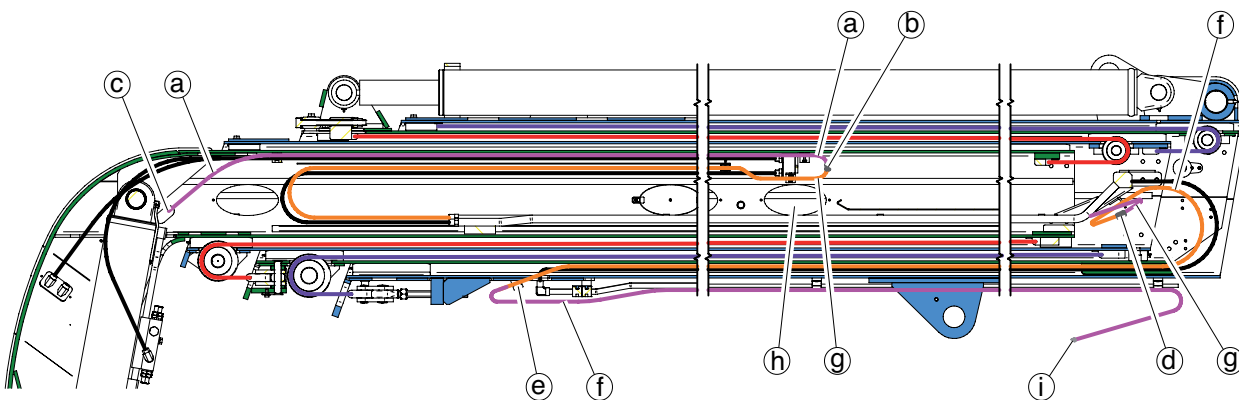
BOOM COMPONENTS

How to 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".



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.

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.

HYDRAULIC PUMPS

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 an 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*.

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OUTRIGGERS

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.

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.

FAULT CODES

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).

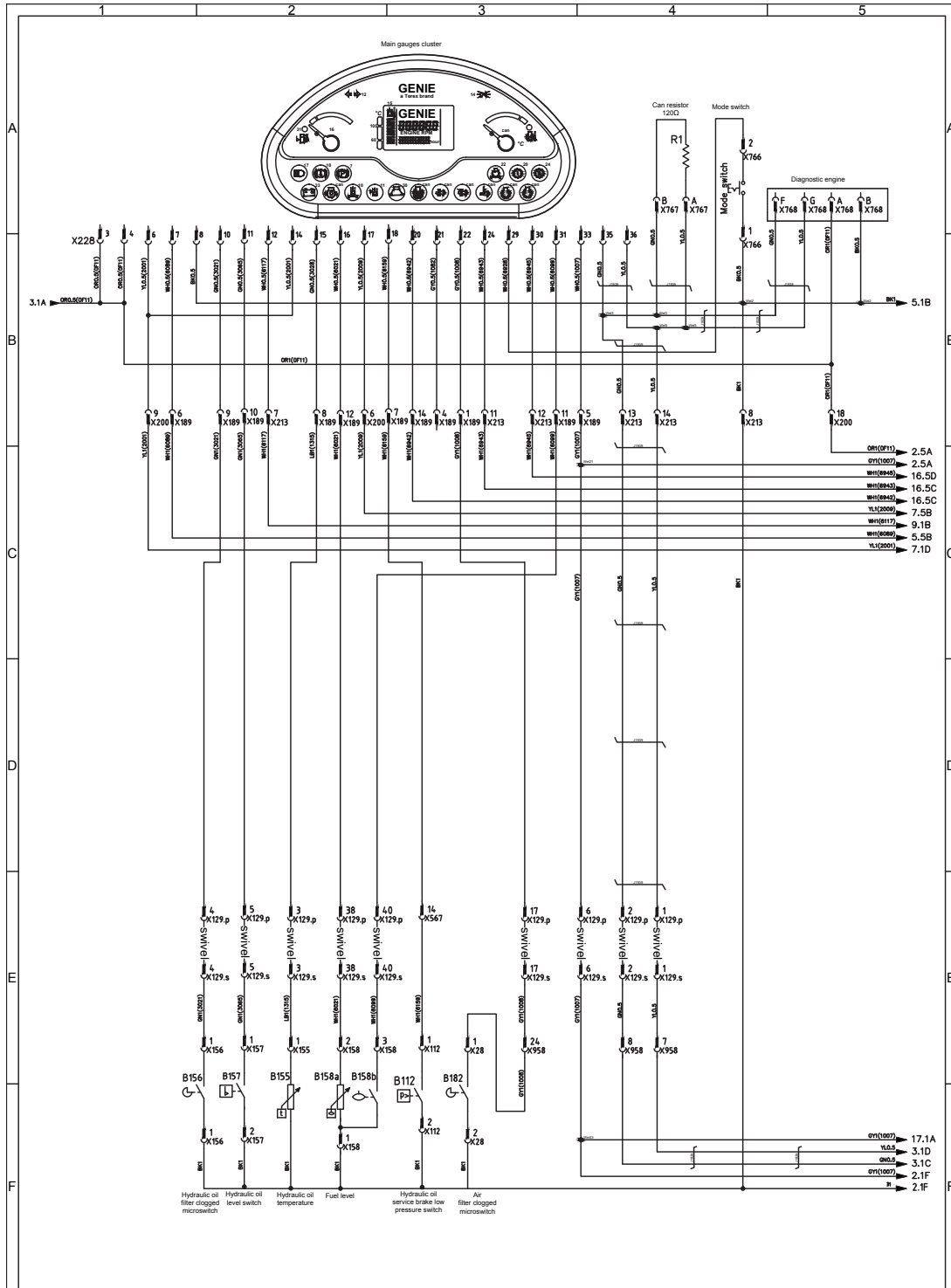
Perkins 854E Troubleshooting Manual

Genie part number	57.4700.0016
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Electrical Schematic

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

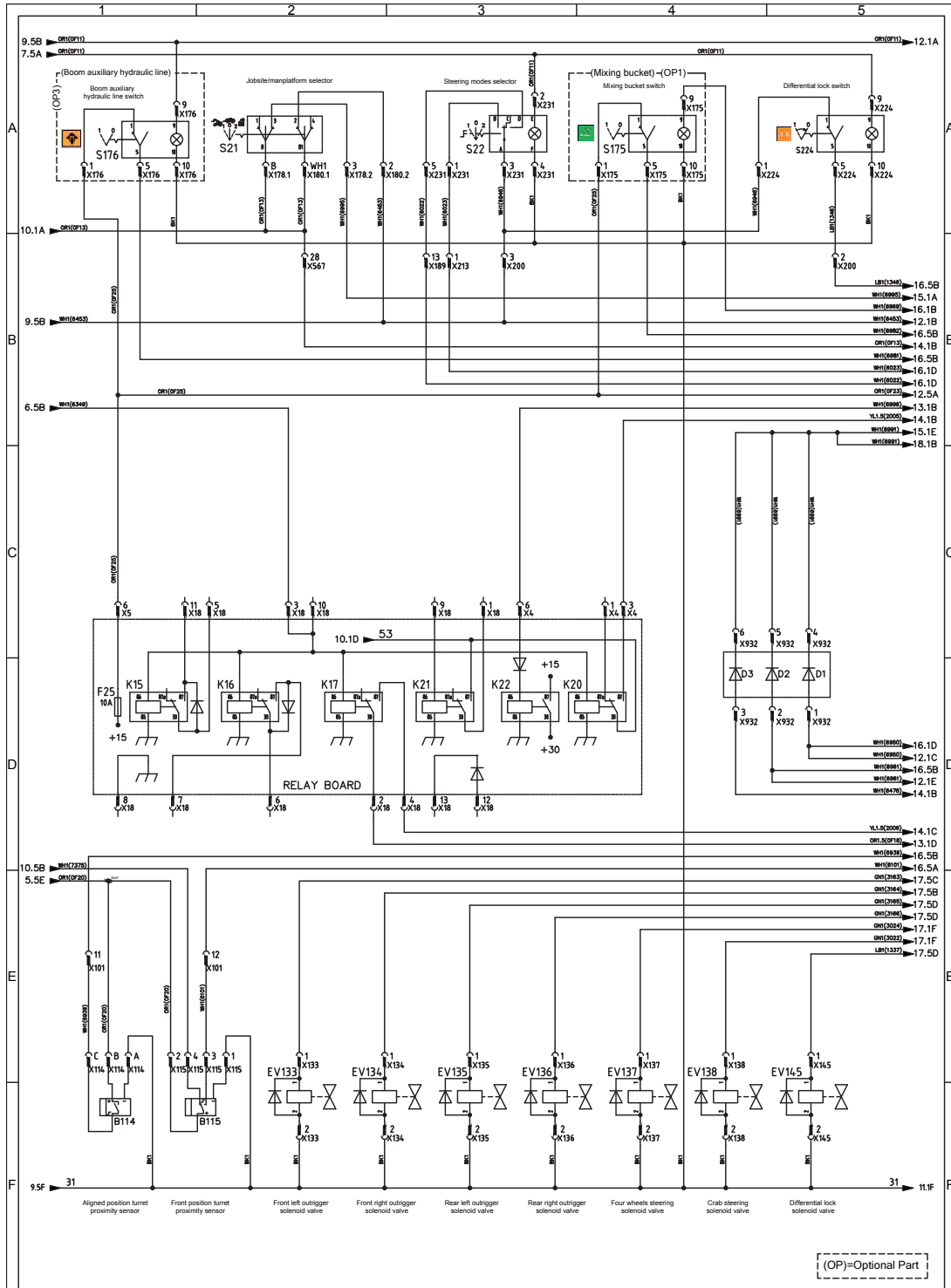
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ELECTRICAL SCHEMATIC

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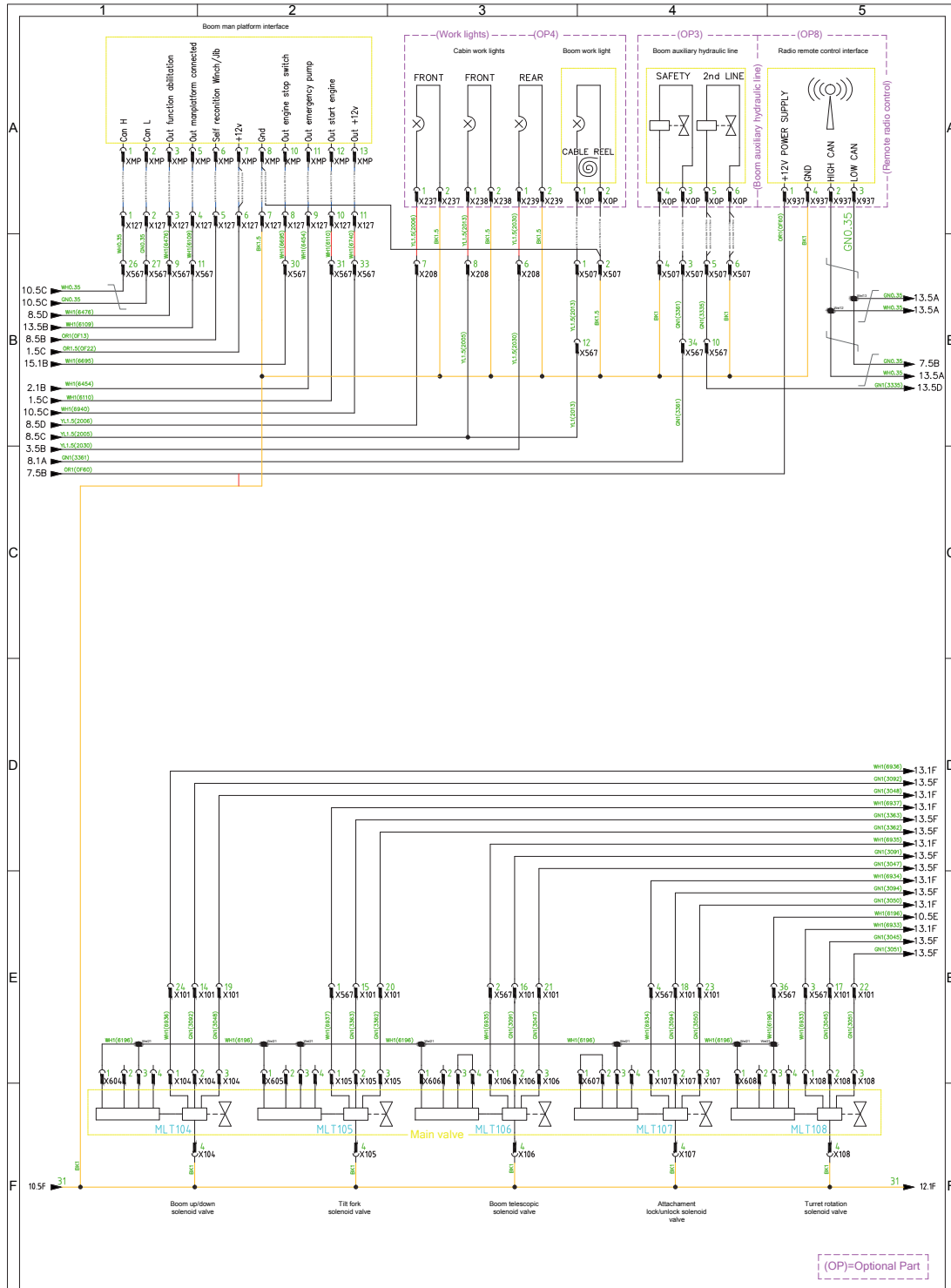
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ELECTRICAL SCHEMATIC

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

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ELECTRICAL SCHEMATIC

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

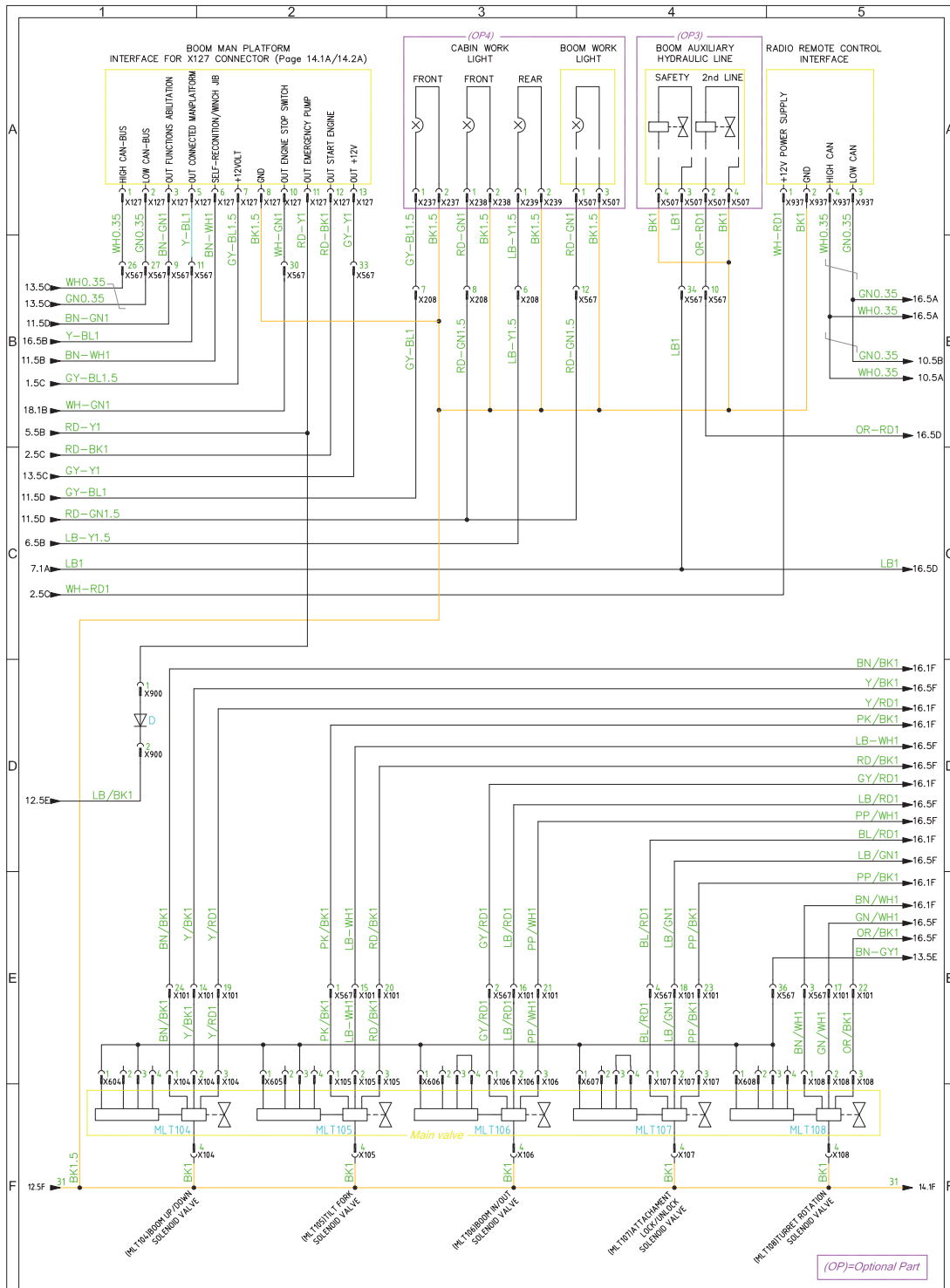
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ELECTRICAL SCHEMATIC

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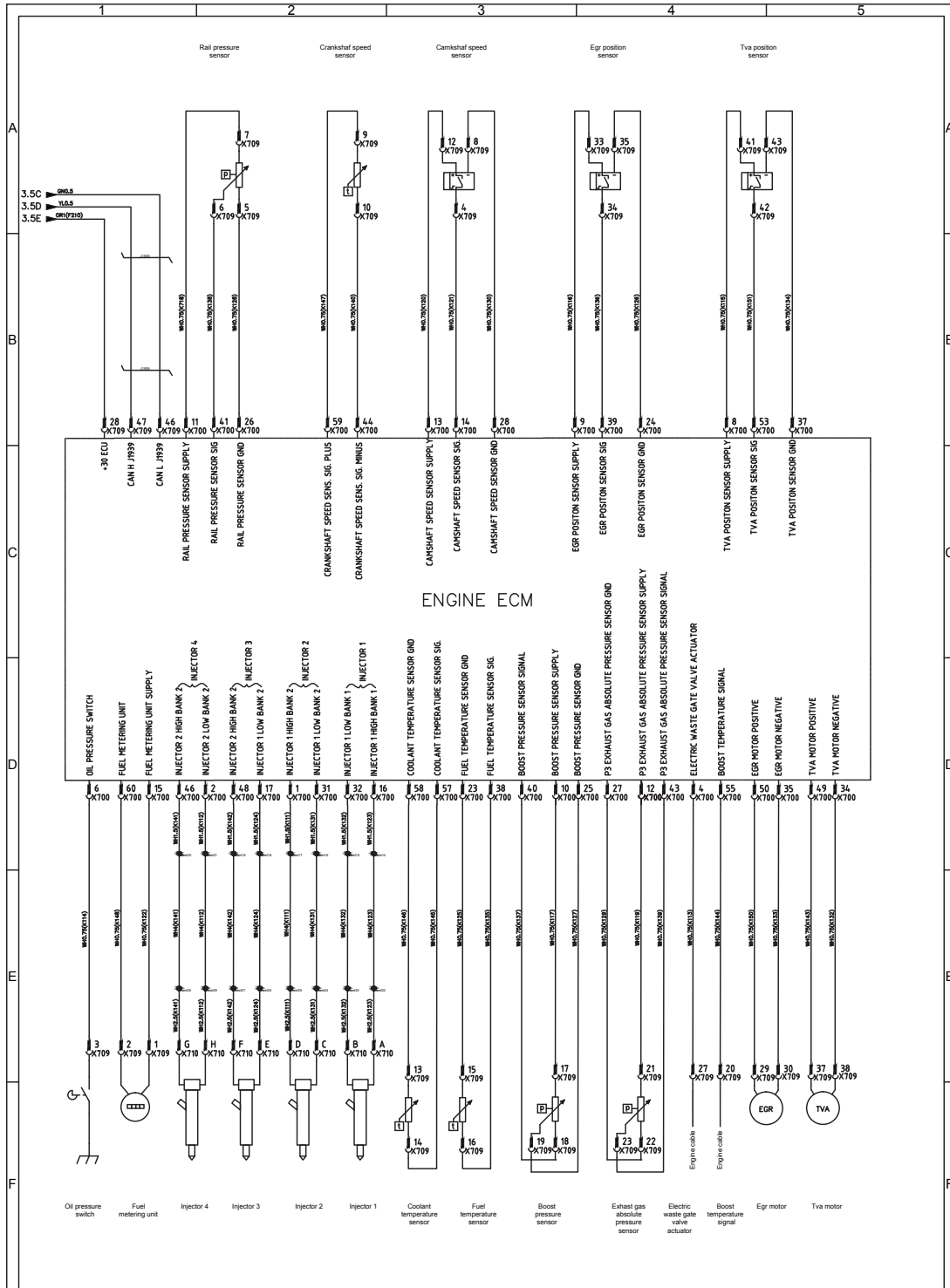
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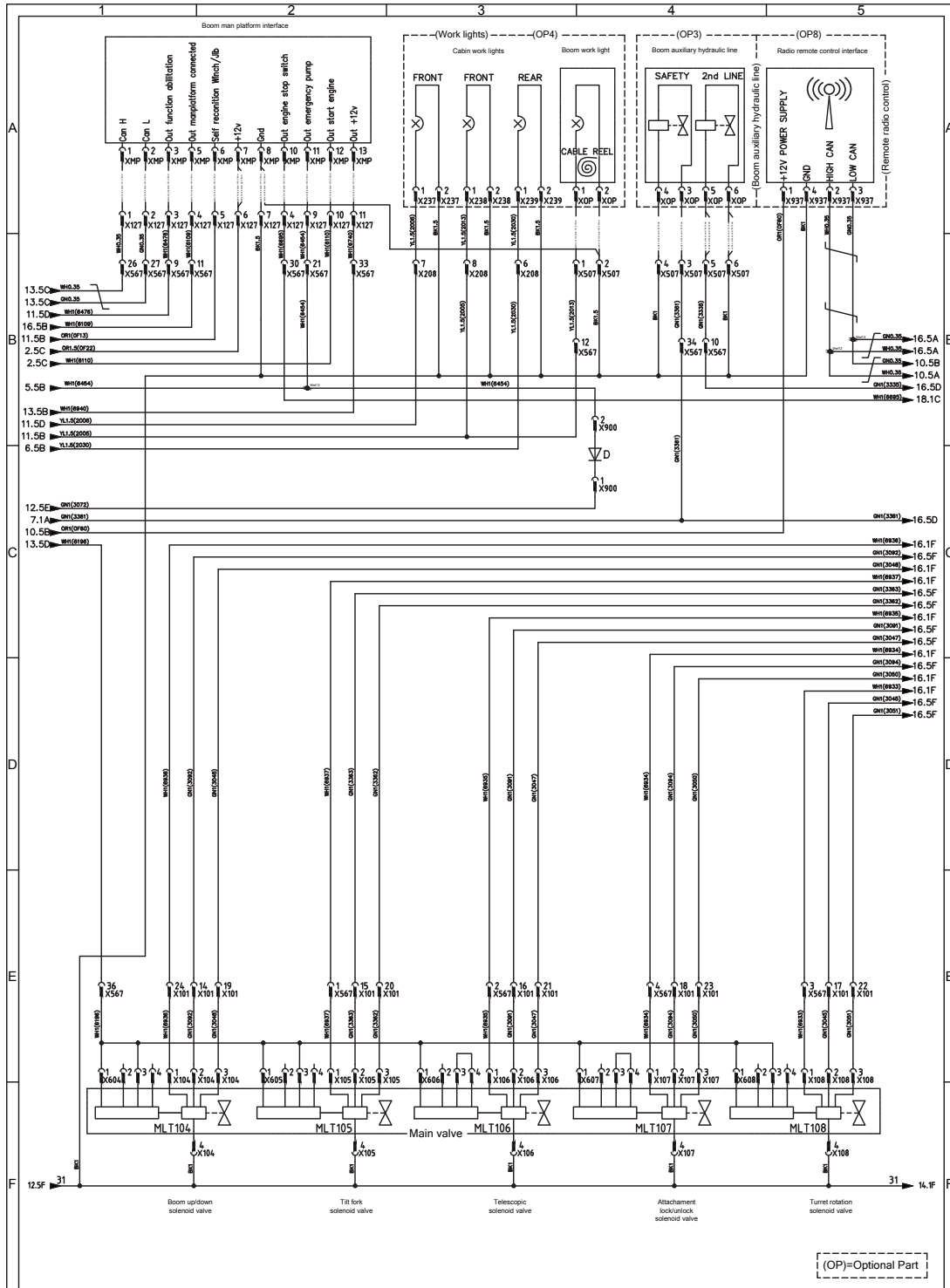
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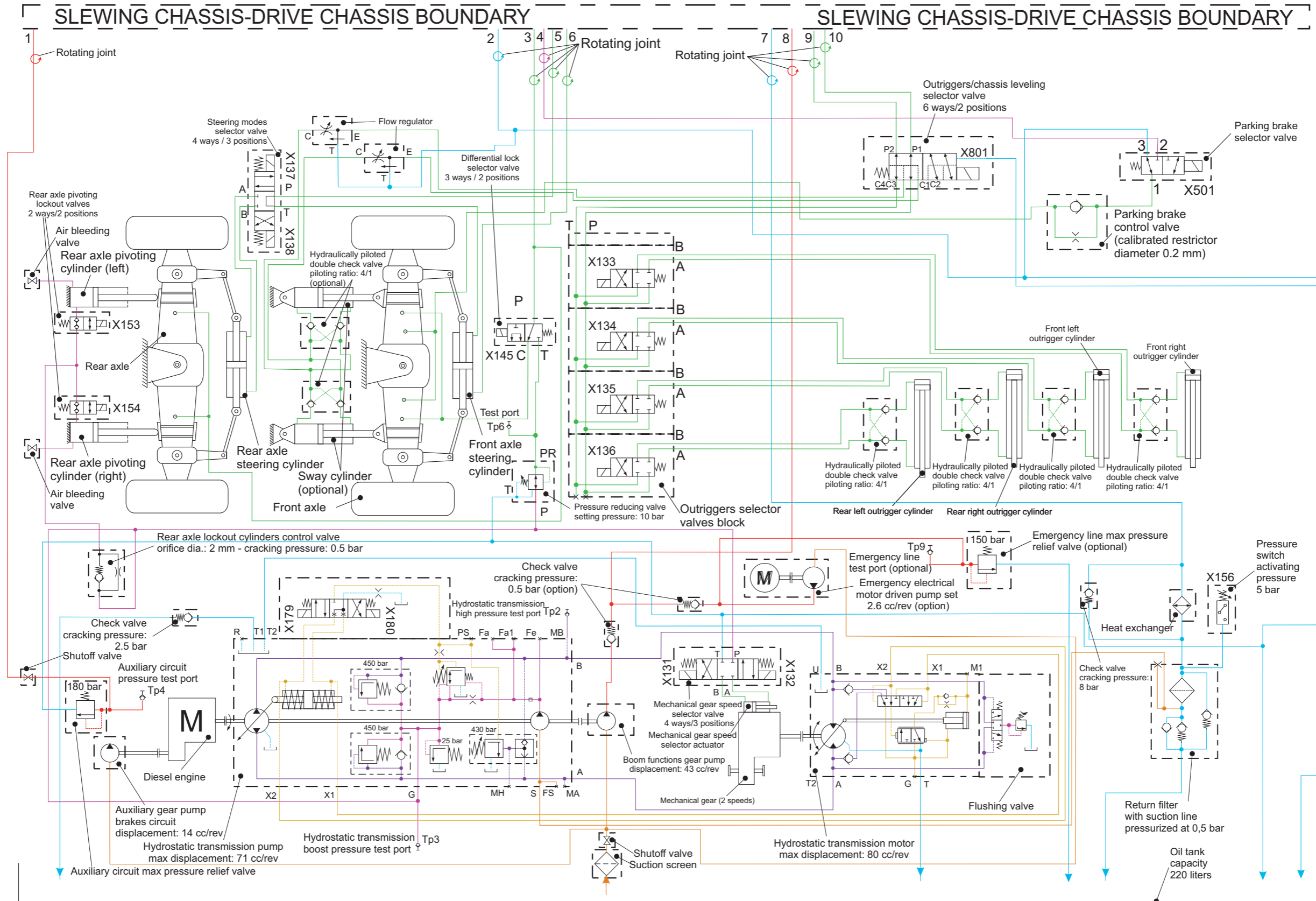


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