SERVICE MANUAL

T4.80V / T4.90V / T4.100V / T4.110V
Tier 4A (interim)
Tractor

PIN HLRT410VLHLT07235 and above

Part number 51526023
1st edition English
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Contents

INTRODUCTION

Engine 10

[10.001] Engine and crankcase 10.1

[10.114] Pump drives 10.2

[10.216] Fuel tanks 10.3

[10.206] Fuel filters 10.4

[10.202] Air cleaners and lines 10.5

[10.254] Intake and exhaust manifolds and muffler 10.6

[10.501] Exhaust Gas Recirculation (EGR) exhaust treatment 10.7

[10.400] Engine cooling system 10.8

[10.414] Fan and drive 10.9

[10.310] Aftercooler 10.10

[10.304] Engine lubrication system 10.11

Clutch 18

[18.100] Clutch mechanical release control 18.1

[18.104] Clutch hydraulic release control 18.2

[18.110] Clutch and components 18.3

Transmission 21

[21.114] Mechanical transmission 21.1

[21.130] Mechanical transmission external controls 21.2

[21.100] Mechanical transmission hydraulic components 21.3

[21.140] Mechanical transmission internal components 21.4

[21.112] Power shuttle transmission 21.5

[21.134] Power shuttle transmission external controls 21.6

[21.104] Power shuttle transmission hydraulic components 21.7

[21.154] Power shuttle transmission internal components 21.8

[21.160] Creeper 21.9

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[21.162] Reverser 21.10
[21.168] Hi-Lo unit 21.11
[21.109] Transmission cooler and lines 21.12
[21.118] Transmission/Rear drive 21.13
[21.182] Differential 21.14
Four-Wheel Drive (4WD) system 23
[23.202] Electro-hydraulic control 23.1
[23.304] Four-Wheel Drive (4WD) gearbox 23.2
[23.314] Drive shaft 23.3
Front axle system 25
[25.100] Powered front axle 25.1
[25.102] Front bevel gear set and differential 25.2
[25.108] Final drive hub, steering knuckles, and shafts 25.3
[25.310] Final drives 25.4
[25.400] Non-powered front axle 25.5
Rear axle system 27
[27.100] Powered rear axle 27.1
[27.106] Rear bevel gear set and differential 27.2
[27.120] Planetary and final drives 27.3
[27.126] Spur gear and final drives 27.4
Power Take-Off (PTO) 31
[31.101] Rear mechanical control 31.1
[31.142] Front Power Take-Off (PTO) control 31.2
[31.146] Front Power Take-Off (PTO) 31.3
Brakes and controls 33
[33.202] Hydraulic service brakes 33.1
[33.110] Parking brake or parking lock 33.2

MidWestTech | New Holland T4.80V, T4.90V, T4.100V, T4.110V Tier 4A Tractor Servic... Order the manual at mid-west-tech.com >

[33.220] Trailer brake hydraulic control 33.3

Hydraulic systems 35

[35.000] Hydraulic systems 35.1

[35.104] Fixed displacement pump 35.2

[35.204] Remote control valves 35.3

[35.100] Main lift system 35.4

[35.114] Three-point hitch control valve 35.5

[35.124] Three-point hitch hydraulic adjustment 35.6

[35.160] Front hitch controls and lines 35.7

[35.162] Front hitch cylinders and lines 35.8

Hitches, drawbars, and implement couplings 37

[37.110] Rear three-point hitch 37.1

[37.120] Rear three-point hitch linkage 37.2

[37.162] Front hitch 37.3

[37.166] Front hitch linkage 37.4

[37.130] Mid-mount implement couplings 37.5

Frames and ballasting 39

[39.140] Ballasts and supports 39.1

Steering 41

[41.101] Steering control 41.1

[41.200] Hydraulic control components 41.2

Wheels 44

[44.511] Front wheels 44.1

[44.520] Rear wheels 44.2

Cab climate control 50

[50.100] Heating 50.1

[50.104] Ventilation 50.2

[50.200] Air conditioning 50.3

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Mechanical transmission - General specification

Transmission and range gear data

Gearbox	4 speed, constant−mesh, with synchronisers on all gears
Gearing type	Helical
Reducer	Ordinary gear train with 4 ranges for a total of 16 speeds.
Gearing type	Spur
Gearbox and range gear controls	Independent, by means of lever located on right−hand side of operator

Mechanical transmission - General specification

Transmission and range gear data

Thickness of gearbox driving shaft adjustment ring **(4) Transmission internal parts - Sectional view (21.140)**	**0.5 mm (0.0196 in) – 0.75 mm (0.0295 in) – 1.0 mm (0.0393 in) – 1.25 mm (0.0492 in) – 1.5 mm (0.0590 in) – 1.75 mm (0.0688 in) – 2.0 mm (0.0787 in) – 2.25 mm (0.0885 in)**
Thickness of gearbox driven shaft adjustment ring **(12) Transmission internal parts - Sectional view (21.140)**	**0.5 mm (0.0196 in) – 0.75 mm (0.0295 in) – 1.0 mm (0.0393 in) – 1.25 mm (0.0492 in) – 1.5 mm (0.0590 in) – 1.75 mm (0.0688 in) – 2.0 mm (0.0787 in) – 2.25 mm (0.0885 in)**
Springs **(11) Transmission internal parts - Sectional view (21.140) Figure 2** for transmission and range gear poppet balls:	
Spring free length	**42 mm (1.6535 in)**
Spring length under load of **75.5 – 83.3 N (17.0 – 18.7 lb)**	**35 mm (1.3779 in)**
Springs **(1) Transmission internal parts - Sectional view (21.140) Figure 3** for gearbox and range gear control levers:	
Spring free length	**44 mm (1.7322 in)**
Spring length under load of **31.4 – 35.3 N (7.1 – 7.9 lb)**	**35 mm (1.3779 in)**

Mechanical transmission - Torque

Tightening torques

Parts to be tightened	Thread	Tightening torque
Sleeve cover retaining nuts (C_1, **Clutch - Sectional view (18.110)**)	M 8 x 1.25	**20 – 25 N·m (15 – 18 lb ft)**
Gearbox driving and driven shafts bearing cover screws (C_2)	**M10 x 1.25**	**84 – 93 N·m (62 – 69 lb ft)**
Retaining bolts securing creeper clutch casing to rear transmission/gearbox casing (C_3)	**M12 x 1.25**	**117 – 129 N·m (86 – 95 lb ft)**
Driven gear shaft locknut (C_4)	**M32 x 1.5**	**280 – 309 N·m (207 – 228 lb ft)**
Drive gear housing cover retaining screws (C_5)	–	**43 – 51 N·m (32 – 38 lb ft)**
Pressure switches (C_6)	–	**51 – 72 N·m (38 – 53 lb ft)**
Parking brake inspection cover, gearbox and range control relay levers support cover retaining screws (C_7)	**M10 x 1.25**	**43 – 51 N·m (32 – 38 lb ft)**
Bolts or nuts securing creeper clutch casing to the engine (C_8)	**M12 x 1.25**	**117 – 129 N·m (86 – 95 lb ft)**

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3179 (DTC 2B4-02) - Time out of CAN message BC2EDC2

NOTE: *When the cause of the error code has been rectified, clear the error code and test the system for normal operation.*

Cause:
The ECU has detected a timeout for the message CAN BC2EDC2.

Possible failure modes:

1. Wiring faulty
2. Interference on the BUS CAN
3. Faulty control unit

Solution:

1. Before proceeding clear the error code with the approved diagnostic equipment. Run the tractor under normal conditions and retest.
   A. If the error code is not indicated, check that the system is operating correctly.
   B. If the error re-occurs, continue to step **2**
2. Check for other CAN related error codes displayed.
   A. If other error codes are indicated, continue to test for these errors.
   B. If no other error codes are displayed, continue to step **3**
3. Check all power supplies and grounds to the control units on the CAN BUS network.
   A. If a fault is indicated, repair or replace the wiring as required.
   B. If the power supplies and grounds are okay, download the correct levels of control unit software. If the fault is still present, remove and replace the control unit.

Wiring harnesses - Electrical schematic sheet 57 SH-057_CAN 1_cab (55.100.DP-C.20.E.57)
Wiring harnesses - Electrical schematic sheet 58 SH-058_CAN 1_rops (55.100.DP-C.20.E.58)

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B. If there is correct continuity, go to .**3**.

3. Check that the valve is correctly powered at 12V and that it is not damaged.

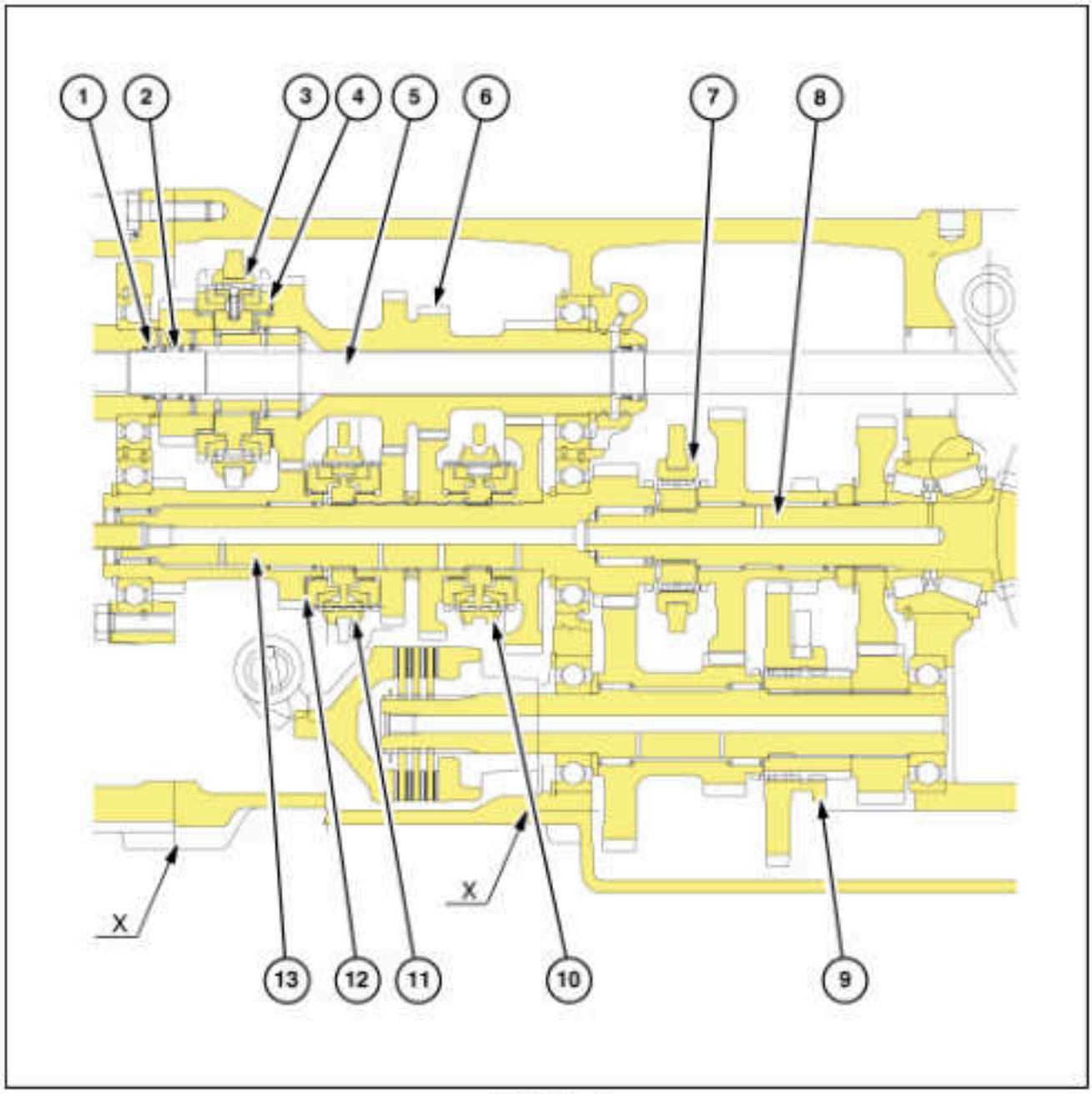
A. If the valve is damaged, replace the disengagement solenoid valve.

Wiring harnesses - Electrical schematic sheet 12 SH-12_POWER_DISTRIBUTION_hydraulic (55.100.DP-C.20.E.12)

Wiring harnesses - Electrical schematic sheet 12 (55.100)
Wiring harnesses - Electrical schematic sheet 34 (55.100)
Wiring harnesses - Electrical schematic sheet 04 (55.100)

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Transmission internal parts - Sectional view



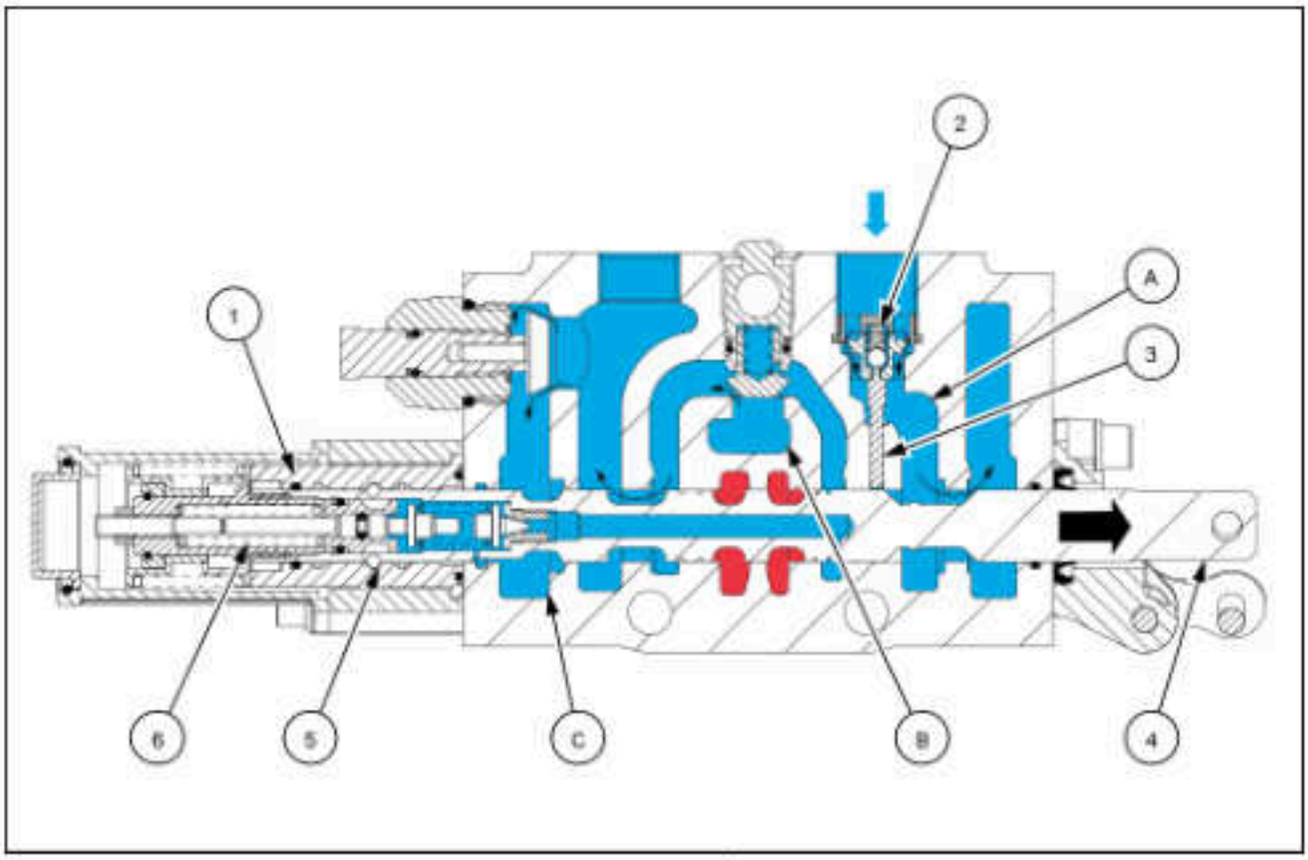
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Longitudinal cross-sectional view of gearbox and gear range

1. Seal
2. Power take-off shaft support roller bearings
3. Reverser control synchroniser
4. Gearbox driving gear clearance adjusting thickness
5. Power take-off shaft
6. Gearbox driving gear
7. Selector sleeve for high or medium-low speeds
8. Bevel pinion shaft
9. Selector sleeve for low or medium-high speeds
10. Synchroniser for 1st and 2nd speed
11. Synchroniser for 3rd and 4th speed
12. Gearbox driven shaft gear clearance adjusting thickness
13. Gearbox driven shaft

NOTE: *On assembly apply a bead of sealing compound to the surfaces X as indicated on* ***Transmission drive housing - Reseal (21.114)****.*

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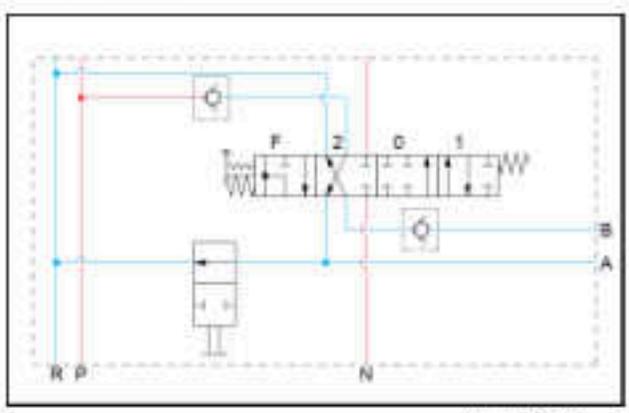
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Control valve phase - Lever in position "2"

Pressurized oil (**190 bar** (**2755 psi**)

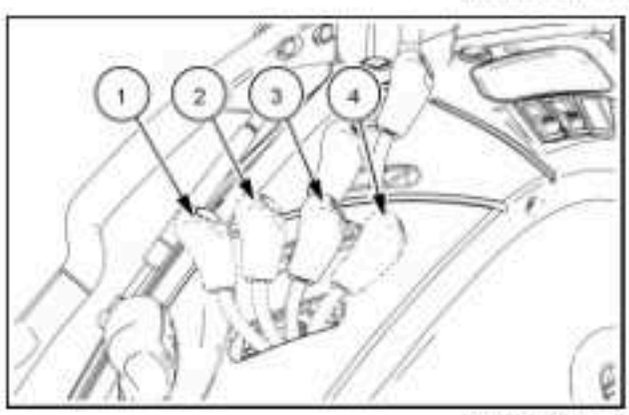
Exhaust oil

Pushing the control lever in the cab the control valve spool **(4)** moves in the direction of the arrow: the locking balls **(5)** enter in the stop point in the support **(1)**, remaining locked by the thrust of the spring **(6)**, and hold the spool. The spool displacement connects the oil supply line **(B)** directly to the exhaust in transmission through the line **(C)**. The pin **(3)**, pressed by the spool **(4)**, keeps the non-return valve **(2)** open, allowing the oil to be exhausted in the transmission through the "+" port and the line **(A)**.
At the end of the operation manually return the spool **(4)** in the neutral position operating on the control lever in the cab.



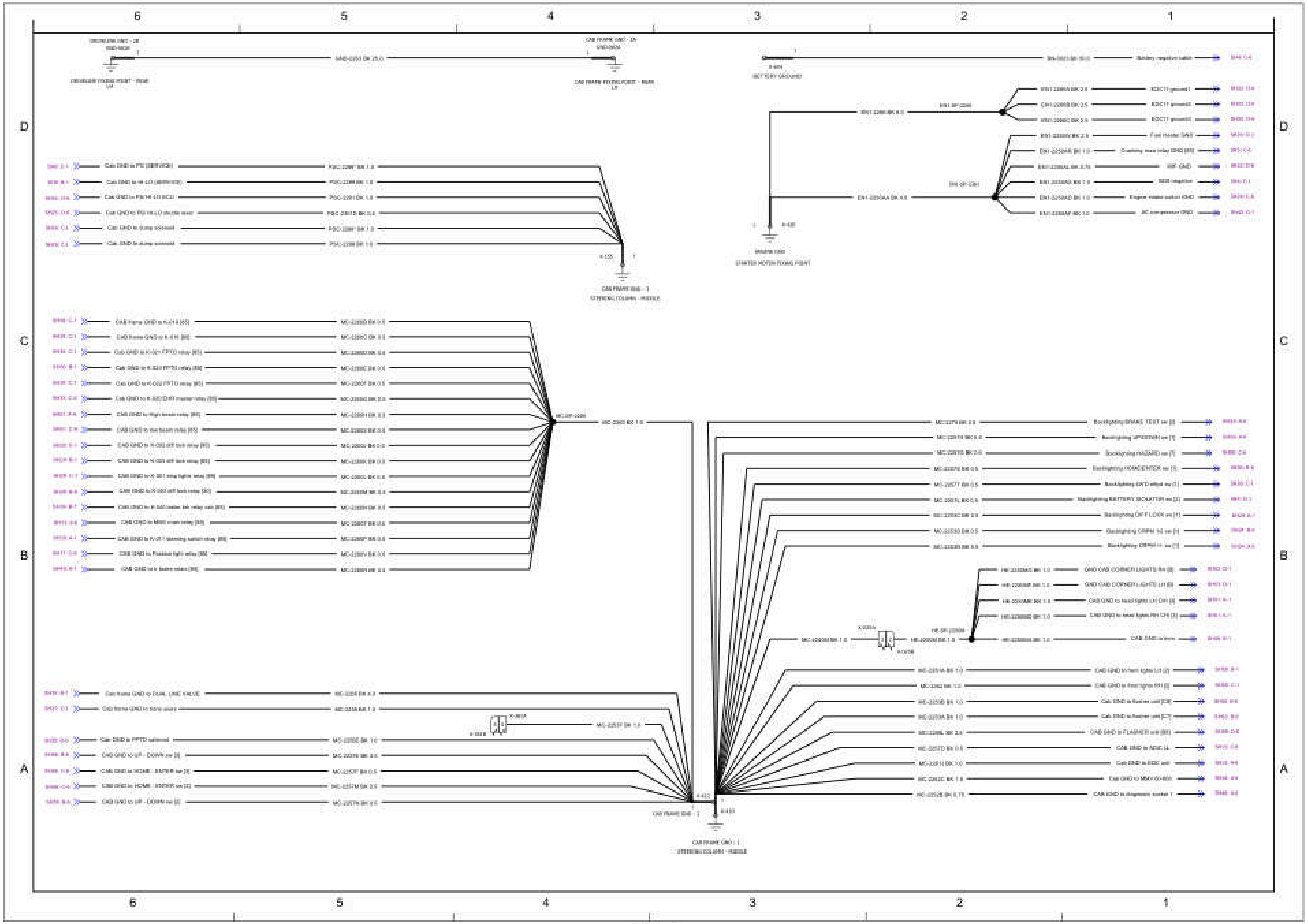
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- Floating position **(1)** (not available with single-acting control valve)
- Lowering or retraction position **(2)**
- Neutral position **(3)**
- Lifting or extension position **(4)**



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