SERVICE MANUAL

Guardian™ SP.240R
Guardian™ SP.275R
Tier 3
Sprayer

PIN YDYM00602 and above

Part number 47657030
1st edition English
April 2014

MidWestTech | New Holland Guardian SP.240R, SP.275R Tier 3 Sprayer Service Manual | Publication 47657030

Order the manual at mid-west-tech.com >

Contents

INTRODUCTION

Engine 10

[10.001] Engine and crankcase 10.1

[10.202] Air cleaners and lines 10.2

[10.206] Fuel filters 10.3

[10.210] Lift pump and lines 10.4

[10.216] Fuel tanks 10.5

[10.254] Intake and exhaust manifolds and muffler 10.6

[10.400] Engine cooling system 10.7

[10.414] Fan and drive 10.8

Transmission 21

[21.112] Power shuttle transmission 21.1

[21.145] Gearbox internal components 21.2

[21.200] Dropbox 21.3

Front axle system 25

[25.100] Powered front axle 25.1

[25.400] Non-powered front axle 25.2

Rear axle system 27

[27.100] Powered rear axle 27.1

[27.106] Rear bevel gear set and differential 27.2

Brakes and controls 33

[33.202] Hydraulic service brakes 33.1

[33.110] Parking brake or parking lock 33.2

Hydraulic systems 35

[35.000] Hydraulic systems 35.1

[35.106] Variable displacement pump 35.2

MidWestTech | New Holland Guardian SP.240R, SP.275R Tier 3 Sprayer Service Manu... Order the manual at mid-west-tech.com >

[35.300] Reservoir, cooler, and filters 35.3

Pneumatic system 36

[36.100] Pneumatic system 36.1

[36.200] Pneumatic operated components 36.2

Frames and ballasting 39

[39.100] Frame 39.1

Steering 41

[41.200] Hydraulic control components 41.1

[41.206] Pump 41.2

[41.216] Cylinders 41.3

Wheels 44

[44.511] Front wheels 44.1

[44.520] Rear wheels 44.2

Cab climate control 50

[50.100] Heating 50.1

[50.200] Air conditioning 50.2

Electrical systems 55

[55.015] Engine control system 55.1

[55.100] Harnesses and connectors 55.2

[55.050] Heating, Ventilation, and Air-Conditioning (HVAC) control system 55.3

[55.201] Engine starting system 55.4

[55.301] Alternator 55.5

[55.302] Battery 55.6

[55.521] Cab sprayer controls 55.7

[55.000] Electrical system 55.8

[55.640] Electronic modules 55.9

Spraying 78

[78.110] Chemical spraying 78.1

MidWestTech | New Holland Guardian SP.240R, SP.275R Tier 3 Sprayer Service Manu... Order the manual at mid-west-tech.com >

[78.111] Spraying pump 78.2
[78.120] Foam marking system 78.3
Accessories 88
[88.100] Accessories 88.1
Platform, cab, bodywork, and decals 90
[90.105] Machine shields and guards 90.1
[90.124] Pneumatically-adjusted operator seat 90.2
[90.150] Cab 90.3
[90.151] Cab interior 90.4

MidWestTech | New Holland Guardian SP.240R, SP.275R Tier 3 Sprayer Service Manu... Order the manual at mid-west-tech.com >

Wheel Motor Troubleshooting

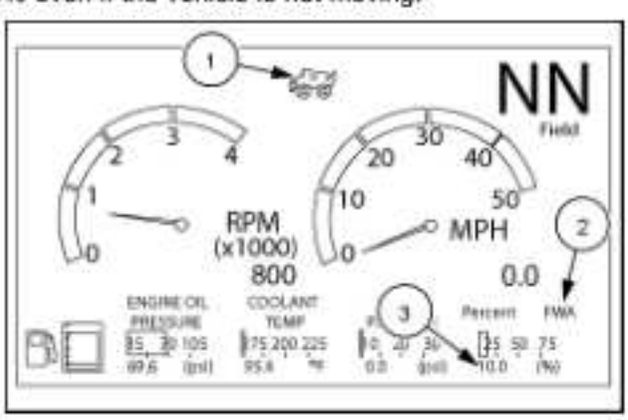
Additional troubleshooting of the FWA system can be performed by checking the hydraulic motors themselves. The following table has a representation of symptoms and corrective actions that can be undertaken to correct certain wheel motor issues.

Hydraulic Motor Troubleshooting Table

Symptom	Probable cause	Corrective action
Motor is noisy without load	Regular rumbling : worn bearing support	Replace the bearing support
	Vibrations : mountings and/or hydraulic piping become loose	Tighten to torque
Motor is noisy under load	Clattering : boost pressure too low	Set the counterpressure valve
	Cavitation: excessive internal leaks	Replace the cylinders block and valving assembly
The motor does not revolve	No flow to the motor	Check the pump drive and pump inlet
	The circuit does not reach working pressure	Check the safety valve condition (regulator)
	Excessive internal leaks	Replace the cylinders block and valving assembly
	The brake reminds engaged	Check the brake pilot circuit
The motor does not revolve at its normal speed under load	Pump flow is too low	Check the pump drive speed
	Working pressure is too low	Check the safety valve setting pressure (regulator)
	Bad working of the replenishing circuit	Check the replenishing circuit
	Excessive internal leaks	Replace the cylinders block and valving assembly
The motor revolves irregularly	Pump flow is irregular	Check the pump flow
	Excessive internal leaks	Replace the cylinders block and valving assembly
The motor leaks	The housing pressure is too high	Check the drain circuit and filter condition
	The seals are deteriorated	Replace the seals
	The assembly is incorrect	Check tightening of mounting screws, bleed screws and hydraulic fittings

Using the chassis monitor for Front Wheel Assist

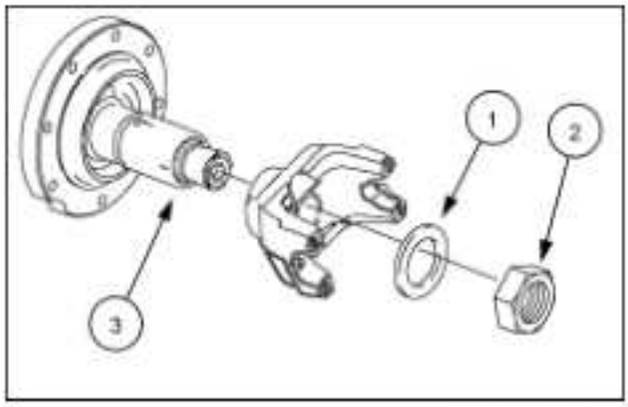
On the home screen, the FWA enable icon **(1)** will appear when the FWA switch is toggled to ON, the FWA controller is powered and communicating on the CAN bus. Also the home screen may be programmed to show FWA percent engagement **(2)**. This shows the percent engagement based on maximum allowed pressure. Readings will appear when the system is ON even though the system may not be driving the front wheels. In this example, the sprayer is in neutral so the front wheels would not be driving yet 10% engagement **(3)** is displayed. This is the charge pressure and a normal value is about 10% even if the vehicle is not moving.



RAIL145P0025IAA 13

MidWestTech | New Holland Guardian SP.240R, SP.275R Tier 3 Sprayer Service Manu... Order the manual at mid-west-tech.com >

4. Install the drive pinion nut **(2)** and washer **(1)** onto the input pinion shaft **(3)** and against the yoke collar.
5. Tighten the nut to **1000 - 1245 N·m** (**738 - 918 lb ft**).



RAS.133P041615AA 24

Main differential and ring gear assembly

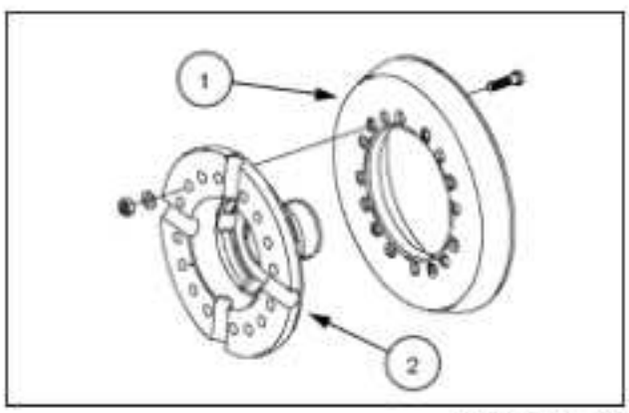
1. Heat the ring gear in a tank of water to a temperature of **71 - 82 °C** (**160 - 180 °F**) for ten to fifteen minutes.

NOTICE: *Do not press a cold ring gear onto the flange case half. A cold ring gear will damage the case half due to the tightness of the fit.*

2. Using an appropriate lifting device, lift the ring gear out of the tank of water.
3. Install the ring gear on the flange case half immediately after the gear is heated.

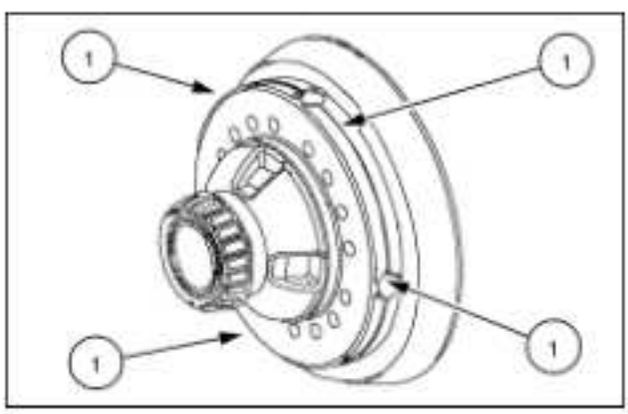
NOTE: *If the ring gear does not fit easily on the case half, reheat the gear to the proper temperature and try reinstalling the gear.*

4. Align the ring gear **(1)** and the flange case half **(2)**.
5. Secure the ring gear to the flange case half using the bolts, washers, and nuts inserted form the gear side. Tighten the nuts and bolts to a torque of **90 - 110 N·m** (**66 - 81 lb ft**).



RAS.133P041680AA 25

7. Check for gaps between the back surface of the ring gear and the case flange:
   A. Use a **0.080 mm** (**0.003 in**) feeler gauge to check for gaps at four points **(1)** around the assembly.
   B. Use a **0.080 mm** (**0.003 in**) feeler gauge to check for gaps at four points around the assembly.
   C. If the gaps exceed the specifications, repeat the ring gear installation.



RAS.133P041689AA 26

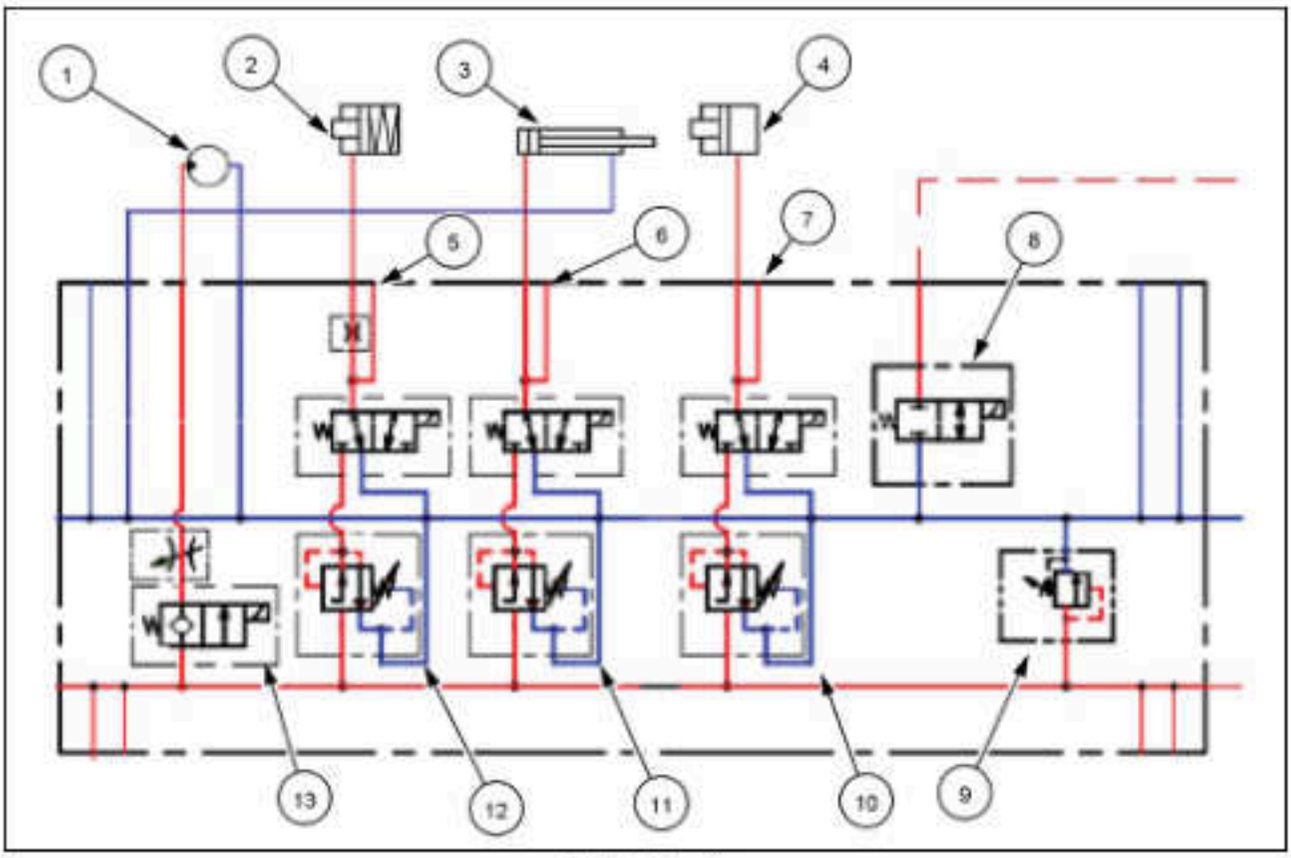
MidWestTech | New Holland Guardian SP.240R, SP.275R Tier 3 Sprayer Service Manu... Order the manual at mid-west-tech.com >

Harnesses and connectors - Electrical schematic sheet 01

MidWestTech | New Holland Guardian SP.240R, SP.275R Tier 3 Sprayer Service Manu... Order the manual at mid-west-tech.com >

Item	Description
1	Product ON/OFF Flow Control
2	Product ON/OFF
3	Relief Valve
4	Park Brake Release Test Port
5	Park Brake Release
6	Park Brake Release Pressure Reducing Valve
7	Ladder Test Port
8	Ladder Raise Valve
9	Ladder Pressure Reducing Valve
10	Differential Lock Test Port
11	Differential Lock Valve
12	Differential Lock Pressure Reducing Valve
13	Pressure Compensator Dump Valve

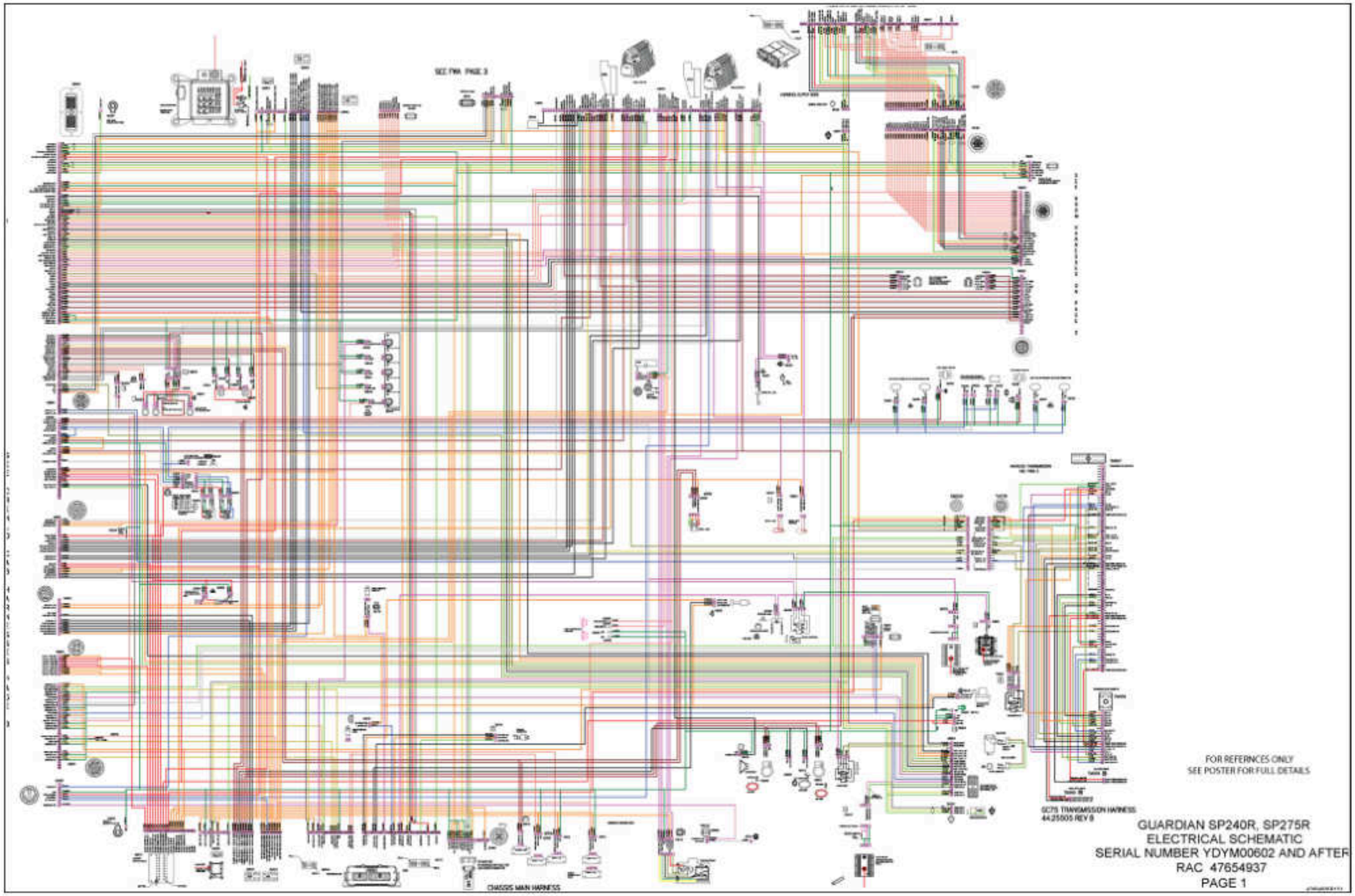
The following illustration is the auxiliary main valve schematic showing the flow paths to the individual components of the hydraulic system. Input oil flow is represented with red flow lines, and return flow is represented with blue lines.



RAIL140PE02EPA 14

Item	Description
1	Product Pump
2	Park Brake
3	Ladder
4	Differential
5	Park Brake Test Port
6	Ladder Test Port
7	Differential Lock Test Port
8	Pressure Compensator Dump Valve
9	Main Relief Valve
10	Differential Lock Pressure Reducing Valve
11	Ladder Pressure Reducing Valve
12	Park Brake Pressure Reducing Valve

MidWestTech | New Holland Guardian SP.240R, SP.275R Tier 3 Sprayer Service Manu... Order the manual at mid-west-tech.com >



MidWestTech | New Holland Guardian SP.240R, SP.275R Tier 3 Sprayer Service Manual | Publication 47657030
Order the manual at mid-west-tech.com >