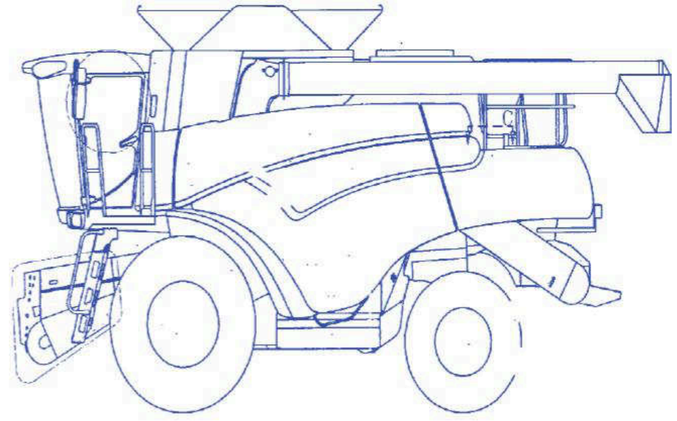


NEW HOLLAND

CR920 CR940
CR960 CR970

REPAIR MANUAL

NEW HOLLAND

SERVICE

MidWestTech | New Holland CR920, CR940, CR960, CR970 Combine Service Manual | Publication 87600552

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

CR920, CR940, CR960, CR970
REPAIR MANUAL
COMPLETE CONTENTS

SECTION 00 - GENERAL INFORMATION 2

SECTION 10 - ENGINE 4

SECTION 14 - LIVE PTO 13

SECTION 21 - TRANSMISSION 15

SECTION 25 - FRONT MECHANICAL DRIVE 16

SECTION 29 - HYDROSTATIC SYSTEM 19

SECTION 33 - BRAKES AND CONTROLS 25

SECTION 35 - HYDRAULIC SYSTEMS 26

SECTION 41 - STEERING AXLE 31

SECTION 50 - CLIMATE CONTROL 34

SECTION 55 - ELECTRICAL SYSTEMS 41

SECTION 60 - PRODUCT FEEDING 79

SECTION 66 - THRESHING 84

SECTION 72 - DISCHARGE BEATER 87

SECTION 74 - CLEANING SYSTEMS 87

SECTION 80 - GRAIN STORAGE 93

SECTION 88 - ACCESSORIES 95

SECTION 90 - PLATFORM, CAB, BODYWORK, DECALS 98

The following pages are the collation of the contents pages from each section and chapter of the CR920, CR940, CR960, and CR970 Repair manual. Complete Repair part # 87600552.

The sections used through out all New Holland product Repair manuals may not be used for each product. Each Repair manual will be made up of one or several books. Each book will be labeled as to which sections are in the overall Repair manual and which sections are in each book.

The sections listed above are the sections utilized for the CR920, CR940, CR960, and CR970 Combines.

© 2006 CNH America LLC
Printed in U.S.A.

87600570 10/06
Replaces 87036612

MidWestTech | New Holland CR920, CR940, CR960, CR970 Combine Service Manual | Pu... Order the manual at mid-west-tech.com >

SECTION 00 - GENERAL INFORMATION

BOOK 1 - 87600553

Chapter 1 - General Information

CONTENTS

Section	Description	Page
	Foreword	3
	About Improvements	3
	Part and Accessories	3
	Precautionary Statements	4
	Personal Safety	4
	Machine Safety	4
	Information	4
	Safety Precautions	4
	Personal Considerations	4
	Equipment Considerations	5
	General Considerations	6
	Operational Considerations	6
	Health and Safety Precautions	7
	Acids and Alkalis	7
	Adhesives and Sealers	7
	Antifreeze	8
	Battery Acids	8
	Brake and Clutch Linings and Pads	8
	Brazing	8
	Chemical Materials – General	8
	Clutch Linings and Pads	9
	Corrosion Protection Materials	9
	Cutting	9
	Dewaxing	9
	Do's	9
	Don'ts	9
	Dusts	9
	Electric Shock	9
	Exhaust Fumes	10
	Fiber Insulation	10
	Fire	10
	First Aid	10
	Foams- Polyurethane	10
	Fuels	10

MidWestTech | New Holland CR920, CR940, CR960, CR970 Combine Service Manual | Pu... Order the manual at mid-west-tech.com >

SECTION 00 - GENERAL INFORMATION

BOOK 1 - 87600553

Chapter 1 - General Information (Continued)

CONTENTS

Section	Description	Page
	Gas Cylinders	11
	Gases	11
	Gas Shielding Welding	11
	Gas Welding	11
	General Workshop Tools and Equipment	11
	Glues	12
	High-pressure Air, Lubrication and Oil Test Equipment	12
	Legal Aspects	12
	Lubricants and Greases	12
	Noise Insulation Material	12
	Paints	12
	Paint Thinners	12
	Pressurized Equipment	12
	Resistance Welding	12
	Sealers	12
	Solder	12
	Welding	12
	Service Techniques	13
	General	13
	Hoses and Tubes	13
	Product Identification	14
	Base Unit	14
	Engine	14
	Straw Chopper (If Equipped)	16
	Powered Rear Axle Wheel Motors (If Equipped)	16
	Minimum Hardware Tightening Torques	17
	Recommended Lubricants And Coolants (North America Only)	21

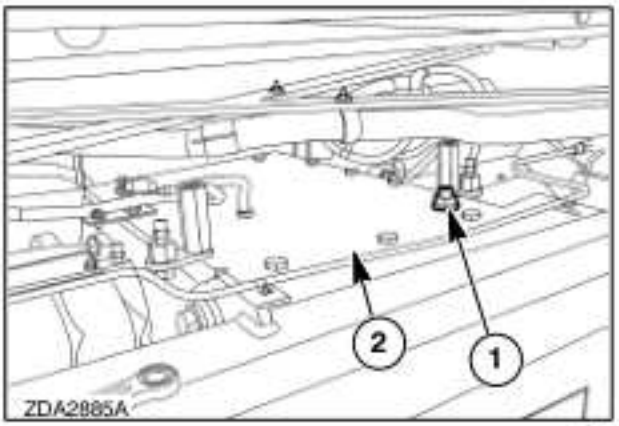
MidWestTech | New Holland CR920, CR940, CR960, CR970 Combine Service Manual | Pu... Order the manual at mid-west-tech.com >

12. Remove the filler/breather plug, 1, from the transmission cover, 2.

    Fill the transmission with 19 L (5 U.S. gal) of NH AMBRA HYPOID 90 or oil with an SAE 80W90 EP API GL5 specification.

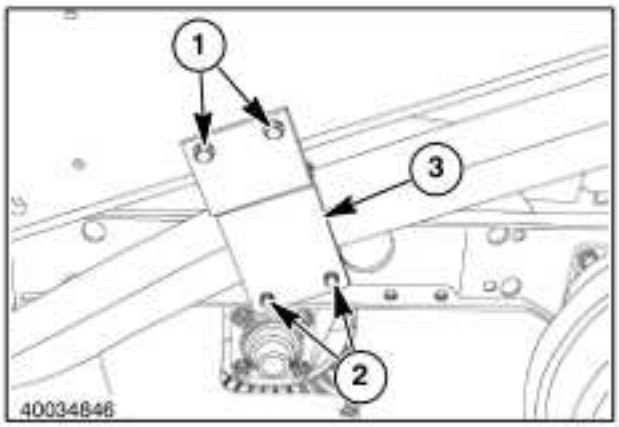
    Install the filler/breather plug, 1.

    Torque filler/breather plug to 90 - 110 N·m (66 - 81 ft-lb).



119

13. Install the hydraulic hose routing clamp, 3, with four bolts, 1 and 2.



120

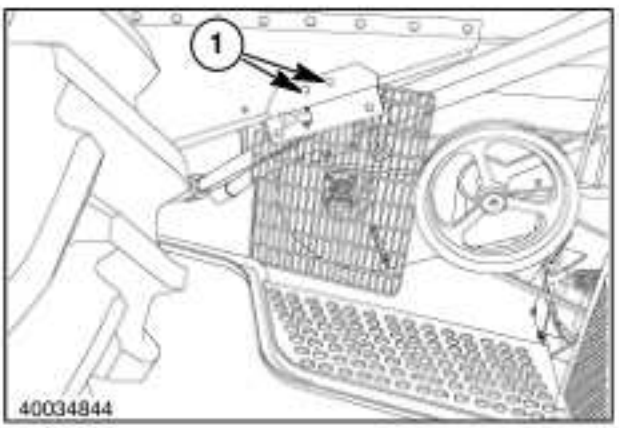
14. Install the shield bracket and shield, 1, back onto the machine.

    Bleed the service brakes. See Section 33 - Chapter 1 - "Brakes and Controls; Bleeding the Brake System".

    Check all lines are secure and tight.

    Remove the blocks or wheel chocks from the unit.

IMPORTANT: *Be sure to check the fluid level of transmission fluid before operation, failure to do so could result in transmission failure.*



121

MidWestTech | New Holland CR920, CR940, CR960, CR970 Combine Service Manual | Pu... Order the manual at mid-west-tech.com >

FAULT CODE – E0143-05 Chopper RPM Sensor Line Disconnected

NOTE: *This troubleshooting chart is for CR combines with serial numbers HAJ10073 and above. The troubleshooting chart for CR combines with serial numbers < HAJ10073 is listed before this chart.*

Cause:
The ***chopper RPM sensor (B-10)*** circuit is open.

Possible failure modes:

1. Sensor supply or ground wiring is open.
2. Controller internal failure (internal regulator failure).

Solution:

1. Enter the Infoview monitor - "Diagnose info" screen.

   Select "Residue" sub menu.

   Select "Chopper RPM sensor" and check voltage range.

   The proper voltage sensor blocked by ferrous metal - 5.6 to 7.3 volts

   The proper voltage sensor unblocked by ferrous metal - 0.5 to 5.6 volts

   The proper voltage sensor disconnected 7.3 to 9.0 volts.

   A. If the voltage reading is high 7.3 to 9.0 volts continue with Step 2.

   B. If the voltage reading is within the proper limits. Continue the troubleshooting at Step 7.

NOTE: *Visually inspect the wiring harness and connectors. Verify that the connector was fully installed. Inspect the terminals and wires at the connector for pushed back or corroded terminals or damaged wires. Flex the harnesses involved to reveal intermittent breaks or shorts in the wiring concerned.*

2. The voltage reading on the Infoview monitor is 7.3 to 9.0 volts. Disconnect the chopper RPM sensor **connector X253**. Use a jumper wire to short the harness end of **connector X253 pin 2** to chassis ground.

   A. If the Infoview monitor drops to 0 to 0.5 volts indicating a ground, the open circuit is not in the supply side of the circuit. Continue with Step 4.

   B. If the Infoview monitor still displays 7.3 to 9.0 volts continue with Step 3.

3. The voltage reading on the Infoview monitor is 7.3 to 9.0 volts. Disconnect the chopper harness from the main frame harness at **connector X382**. Use a jumper wire to short **connector X382 pin 2** to chassis ground.

   A. If the Infoview monitor drops to 0 to 0.5 volts indicating a ground, the open circuit is in the chopper (CH) harness between **connector X382 pin 2** and **connector X253 pin 2** wire 413 yellow. Locate the open and repair.

   B. If the Infoview monitor still displays 7.3 to 9.0 volts, the open circuit is in the main frame (MF) harness between **connector X382 pin 2** and connector **X016 pin J2-38** wire 413 yellow. Locate the open and repair.

MidWestTech | New Holland CR920, CR940, CR960, CR970 Combine Service Manual | Pu... Order the manual at mid-west-tech.com >

FAULT CODE – E0283-03 Moisture Temp Sensor Shorted to High Source

Cause:
The ***moisture sensor (B-12) temperature*** circuit is shorted to a high source.

Possible failure modes:

1. Temperature sensor wiring is shorted to high source.
2. Controller internal failure (internal regulator failure).

Solution:

1. Enter the Infoview monitor – "Diagnose info" screen.

   Select "Precision Farming" sub menu.

   Select "Moisture Temp sensor" and check voltage range.

   The proper voltage range is 0.1 to 9.4 volts.

   C. If the voltage reading is high out of range (>9.4 volts), continue with Step 2.

   D. If the voltage reading is within the proper limits, continue the troubleshooting at step 3.

NOTE: *Visually inspect the wiring harness and connectors. Verify that the connector was fully installed. Inspect the terminals and wires at the connector for pushed back or corroded terminals or damaged wires. Flex the harnesses involved to reveal intermittent breaks or shorts in the wiring concerned.*

2. The voltage reading on the Infoview monitor is high out of range. Disconnect the sensor **connector X221.** Use a multimeter to check for voltage on **connector X221 pin 5**.

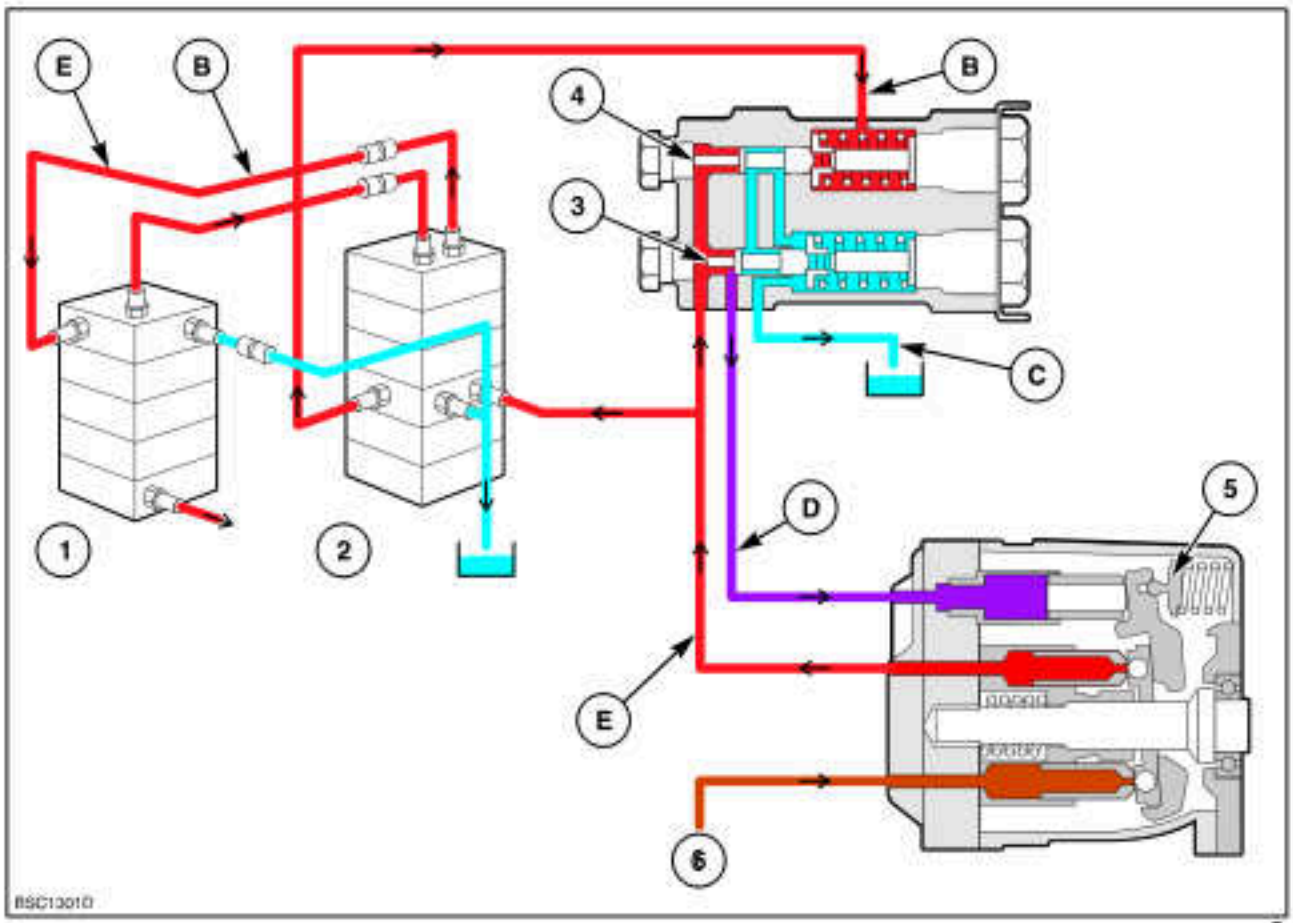
   A. If there is voltage, there is a short to high voltage in the expansion (EX) harness between **connector X221 pin 5** and **connector X014 pin J3-34** wire 595 yellow. Locate short and repair.

   B. If there is no voltage, there is a fault in the moisture sensor. Replace the moisture sensor.

3. Operate the machine while monitoring Infoview monitor. If no high out of range readings are indicated, erase the fault code and continue operation.

MidWestTech | New Holland CR920, CR940, CR960, CR970 Combine Service Manual | Pu... Order the manual at mid-west-tech.com >

Controlling Maximum System Pressure



Controlling Maximum System Pressure 9

Standby Pressure @ 190bar (2755 psi)

Return to Reservoir

Control Pressure

Charge Pressure

1. Straw elevator stack valve
2. Main frame stack valve
3. Pressure Compensating Valve
4. Flow Compensating Valve
5. Swash Plate
6. Return oil from hydrostatic motors

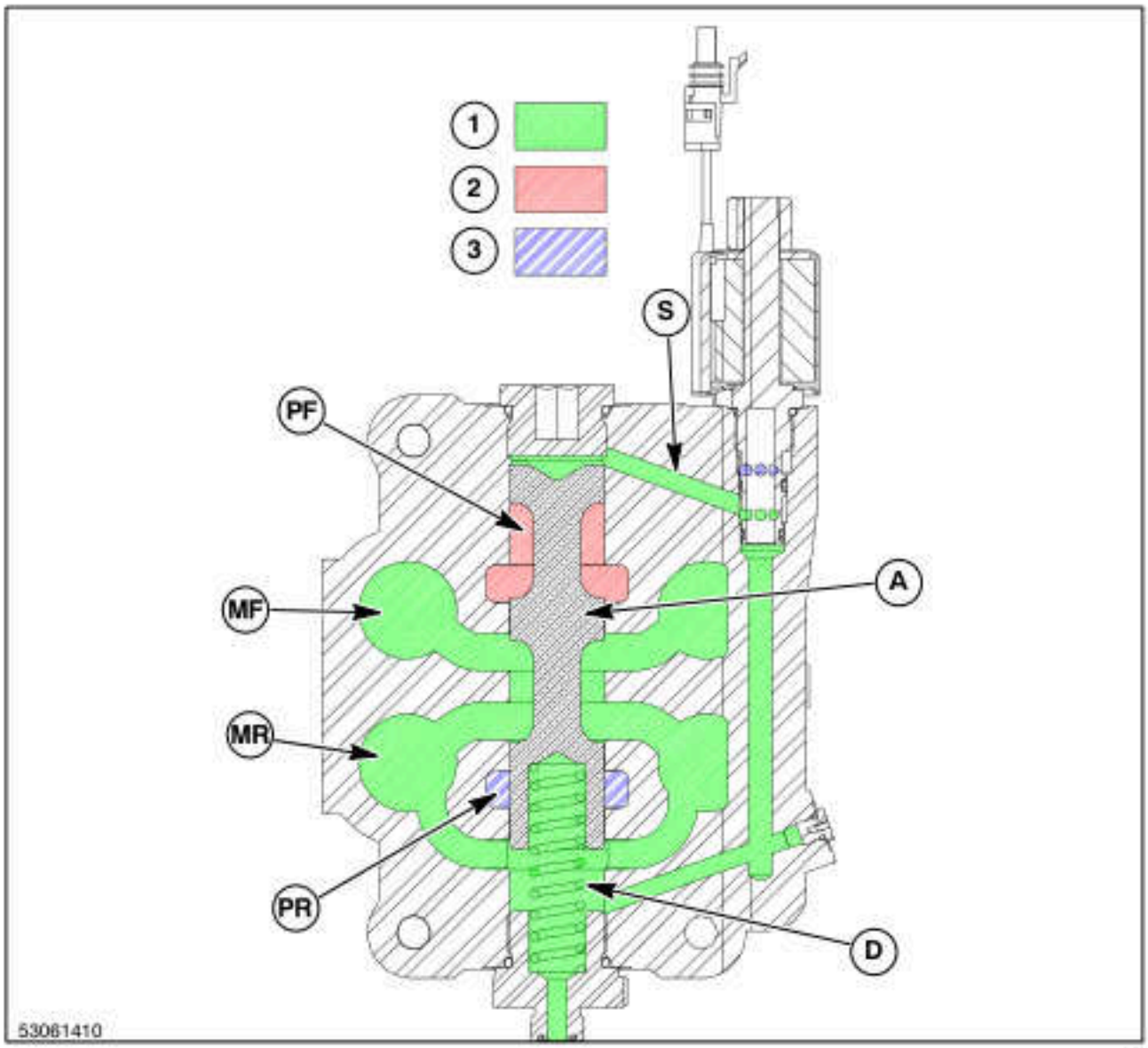
To limit the maximum output pressure of the piston pump and prevent consequential damage that may occur due to excessive pressures, a pressure compensating valve, located adjacent to the flow compensator valve, is incorporated in the swash plate control circuit. This valve limits the pressure to 210 bar (3046 psi) and operates as follows:-

As the pressure in gallery, **E**, increases to 210 bar (3046 psi) the pressure compensator valve spool, 2, moves against the valve return spring and opens gallery, **E**, to gallery, **D**. The pressure in gallery, **D**, is now applied to the servo piston which changes the swash plate angle to reduce pump output to minimum flow. This operating mode is referred to as high pressure standby.

Functions requiring sensitive control, like the header height, lateral flotation and hydraulic reel drive have an additional pressure compensation valve in their circuit to ensure that the operational speed is constant what ever the pump pressure is (see high pressure circuit diagram).

MidWestTech | New Holland CR920, CR940, CR960, CR970 Combine Service Manual | Pu... Order the manual at mid-west-tech.com >

Selector Spool (OFF Position)



24

Selector Spool - OFF Position

1. Drain
2. System Pressure
3. Charge Pressure

With the powered rear axle system OFF, charge pressure oil in the control valve is blocked at the solenoid valve. Cavity (S) is exposed to tank through the solenoid cartridge. The spring pressure in cavity (D) holds the spool (A) in the OFF position. The spool prevents system pressure oil from entering both the forward or reverse inlet port and the rest of the valve; therefore no high pressure oil is delivered to the wheel motors.

In the off position the spool cavities (PF) and (PR) are closed off from motor cavities (MF) and (MR). Cavities (PF) and (PR) are the forward and reverse pressure inlet cavities; they will always be exposed to either system pressure or return (charge) pressure oil depending on direction of the machine. Cavity (MF) opens an oil flow path to the forward pressure ports of the wheel motors. Cavity (MR) similarly opens an oil flow path to the reverse pressure ports of the motors.

MidWestTech | New Holland CR920, CR940, CR960, CR970 Combine Service Manual | Pu... Order the manual at mid-west-tech.com >