SERVICE MANUAL

Speedrower® 200
Speedrower® 240
Self-Propelled Windrower

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1st edition English
April 2014

MidWestTech | New Holland Speedrower 200, 240 Self Propelled Windrower Service Manual | Publication 47698329
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Contents

INTRODUCTION

Engine 10

[10.001] Engine and crankcase 10.1

[10.206] Fuel filters 10.2

[10.218] Fuel injection system 10.3

[10.202] Air cleaners and lines 10.4

[10.254] Intake and exhaust manifolds and muffler 10.5

[10.400] Engine cooling system 10.6

Front axle system 25

[25.310] Final drives 25.1

Rear axle system 27

[27.550] Non-powered rear axle 27.1

Hydrostatic drive 29

[29.100] Transmission and steering hydrostatic control 29.1

[29.218] Pump and motor components 29.2

[29.202] Hydrostatic transmission 29.3

Power Take-Off (PTO) 31

[31.226] Hydraulic pump drive 31.1

Brakes and controls 33

[33.110] Parking brake or parking lock 33.1

Hydraulic systems 35

[35.000] Hydraulic systems 35.1

[35.100] Main lift system 35.2

[35.102] Pump control valves 35.3

[35.104] Fixed displacement pump 35.4

[35.105] Charge pump 35.5

MidWestTech | New Holland Speedrower 200, 240 Self Propelled Windrower Service M... Order the manual at mid-west-tech.com >

[35.300] Reservoir, cooler, and filters 35.6
[35.565] Cutter control circuit 35.7
[35.910] Head and header hydraulic drive 35.8
Steering 41
[41.101] Steering control 41.1
Cab climate control 50
[50.100] Heating 50.1
[50.104] Ventilation 50.2
[50.200] Air conditioning 50.3
Electrical systems 55
[55.000] Electrical system 55.1
[55.019] Hydrostatic drive control system 55.2
[55.050] Heating, Ventilation, and Air-Conditioning (HVAC) control system 55.3
[55.100] Harnesses and connectors 55.4
[55.408] Warning indicators, alarms, and instruments 55.5
[55.512] Cab controls 55.6
[55.DTC] FAULT CODES 55.7
Attachments/Headers 58
[58.130] Attachment/Header frame 58.1
[58.110] Attachment/Header cutting mechanism 58.2
[58.900] Belt feeding 58.3
Platform, cab, bodywork, and decals 90
[90.124] Pneumatically-adjusted operator seat 90.1
[90.150] Cab 90.2
[90.151] Cab interior 90.3
[90.154] Cab doors and hatches 90.4

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Contents

INTRODUCTION

Foreword - Important notice regarding equipment servicing 3
Foreword - Note to the dealer 4
Safety rules (*) 5
Safety rules (*) 6
Safety rules - Ecology and the environment 14
Personal safety - Safety signs 15
Personal safety - Do not operate tag 33
Torque - Minimum tightening torques for normal assembly (*) 34
Torque - Standard torque data for hydraulics 38
Basic instructions - Shop and assembly 40
Hydraulic contamination 42
Capacities - Capacities 43
Product identification - Product Identification Number (PIN) (*) 44
Part identification - Engine serial number (*) 45

(*) See content for specific models

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3. Shorts	Engine Control Module connector **X-035 pin 23**	Engine Control Module connector **X-035 pin 19**	Open Circuit

A. If both electrical tests are successful, proceed to step **7**.

B. If harness wiring continuity/shorts test was not successful, find and repair the damaged section(s) of the wiring harness.

C. If the voltage test was not successful and the continuity/shorts test was successful, proceed to step **5**.

5. Operation: Crankshaft Speed sensor Alignment.
Vehicle Status: Key Off Engine Off.

Use the technical information in the Iveco Tier 3 Engine Maintenance and Repair Manual to check proper mechanical alignment and tooth spacing of the Crankshaft Speed sensor. The spacing between the trigger teeth and the sensor is critical for proper voltage output. Make sure that the sensor is seated properly (flush with mounting flange). After the sensor alignment is complete, check to see if this fault code has cleared.

A. If this fault code is still present and has not cleared, proceed to step **6**.

6. Operation: Replace Crankshaft Speed sensor **B-011**.
Vehicle Status: Key Off Engine Off.

If needed, use the technical information in the Iveco Tier 3 Engine Maintenance and Repair Manual to replace the Crankshaft Speed sensor. Make sure that the proper mechanical alignment and tooth spacing is correct. The spacing between the trigger teeth and the sensor is critical for proper voltage output. Make sure that the sensor is seated properly (flush with mounting flange). After the sensor alignment is complete, check to see if this fault code has cleared.

A. If this fault code is still present and has not cleared, proceed to step **12**.

7. Operation: Check Segment (Camshaft) Speed sensor Output Voltage and Harness Wiring.

Perform both (2) electrical tests defined below:

1) AC output voltage test for Segment (Camshaft) Speed sensor:
Vehicle Status: Key Off Engine Off (test setup)
Vehicle Status: Key On Engine On (during test)

NOTE: When performing this electrical test, use the test lead labeled "Coolant/Fuel Temp Sensor" from the Tier II (NEF) Diagnostic Repair Kit **380040185**.

Remove Segment (Camshaft) Speed sensor connector **X-388** and connect the Coolant/Fuel Temp Sensor test lead in-line with the sensor and the engine wiring harness. Make sure that the signal polarity is not swapped during the connection process. Start the engine and measure the (AC) voltage using a multi-meter across the breakout alligator clips from the Coolant/Fuel Temp Sensor test lead. Use the table below to determine test parameters and the measurement results.

Test Type	From	To	Expected Results
1. Voltage (AC) - In-line connection at low RPM (**1000 - 1100 RPM**)	Segment (Camshaft) Speed sensor connector **X-388 pin A**	Segment (Camshaft) Speed sensor connector **X-388 pin B**	Approx. - **1.5 - 2.8 volts** (AC)
2. Voltage (AC) - In-line connection at high RPM (**2000 - 2200 RPM**)	Segment (Camshaft) Speed sensor connector **X-388 pin A**	Segment (Camshaft) Speed sensor connector **X-388 pin B**	Approx. - **3 - 4.5 volts** (AC)

2) Harness wiring continuity/shorts electrical test (Segment (Camshaft) Speed sensor).
Vehicle Status: Key Off Engine Off.

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D. If the voltages and ground paths are not correct, refer to schematic and determine root cause of power or continuity problem(s).

Wire harnesses - Electrical schematic sheet 16 (55.100.DP-C.20.E.16)
Wire harnesses - Electrical schematic sheet 18 (55.100.DP-C.20.E.18)
Wire harnesses - Electrical schematic sheet 53 (55.100.DP-C.20.E.53)

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E0305-01- Engine coolant sensor - Value below normal

Speedrower® 200	Draper ready - Factory-fitted to accept draper
Speedrower® 240	Draper ready - Factory-fitted to accept draper

Control Module : UCM

Context:
The Engine Control Unit (ECU) supplies the coolant (water) temperature sensor with a **5.0 V** reference and a ground reference signal. As the temperature of the coolant changes the resistance on the signal wire changes accordingly. The sensor resistance is high when coolant temperature is low and the resistance will drop when coolant temperature increases.

Cause:
The ECU is sensing the coolant temperature signal has drifted out of a plausible signal range.

Possible failure modes:

1. The coolant temperature sensor has failed.
2. The wiring harness has failed.
3. The ECU has an internal fault.

Solution:

1. Verify the fault is active.

   A. If the fault code is present, continue with Step **2**.

   B. If the fault is not present, the fault may be intermittent and not currently active. Continue with Step **6**.
2. Verify that the wiring harness and connectors are free of damage.

   Inspect the wiring harness from the ECU to the coolant temperature sensor connector.

   Verify that the wiring harness is free of damage, corrosion, abrasion and incorrect attachment.

   A. The connectors are secure and the wiring harness is free of damage. Continue with Step **3**.

   B. The connectors or the wiring harness has damage. Repair or replace the wiring harness or connectors as required.
3. Check the coolant temperature sensor.

   Disconnect the wiring harness from the sensor.

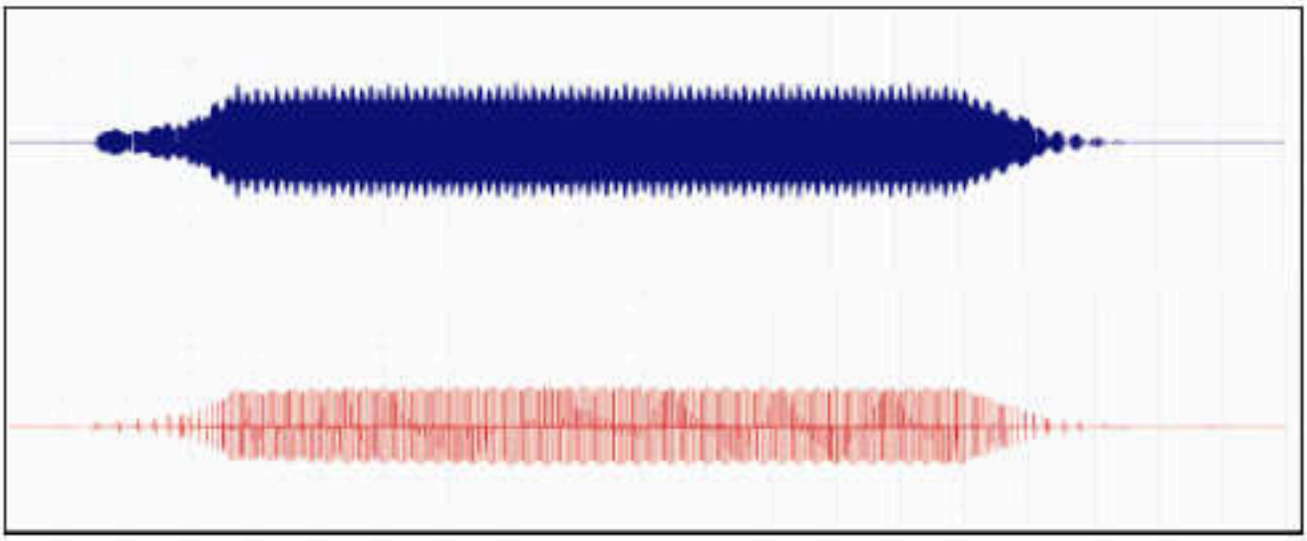
   Use a multimeter to measure the resistance of the temperature sensor from pin 1 to pin 2.

Coolant Temperature	Resistance Value
-20 °C (-4 °F)	10.5 kOhm
0 °C (32 °F)	7500 ohms
20 °C (68 °F)	4200 ohms
40 °C (104 °F)	980 ohms
60 °C (140 °F)	780 ohms
80 °C (176 °F)	500 ohms
100 °C (212 °F)	280 ohms
120 °C (248 °F)	97 ohms

   A. If the resistance is correct, continue with Step **4**.

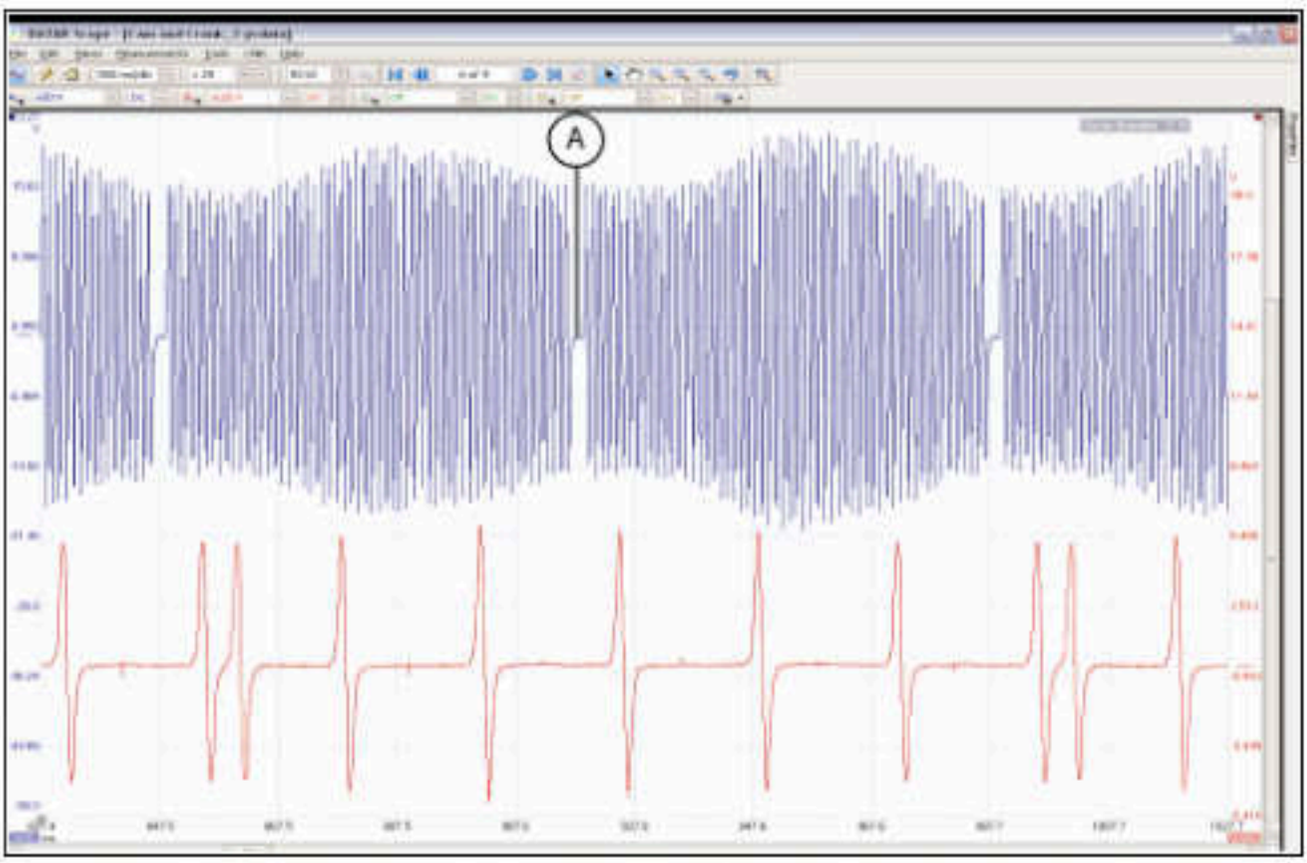
   B. If the resistance is incorrect, replace the sensor.
4. Check the reference circuit.

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BAL15CVT334FMB 6

5. Figure **6** shows the ideal full signal of the crank and cam position from the point of when the engine is turned on , and until it is turned off.

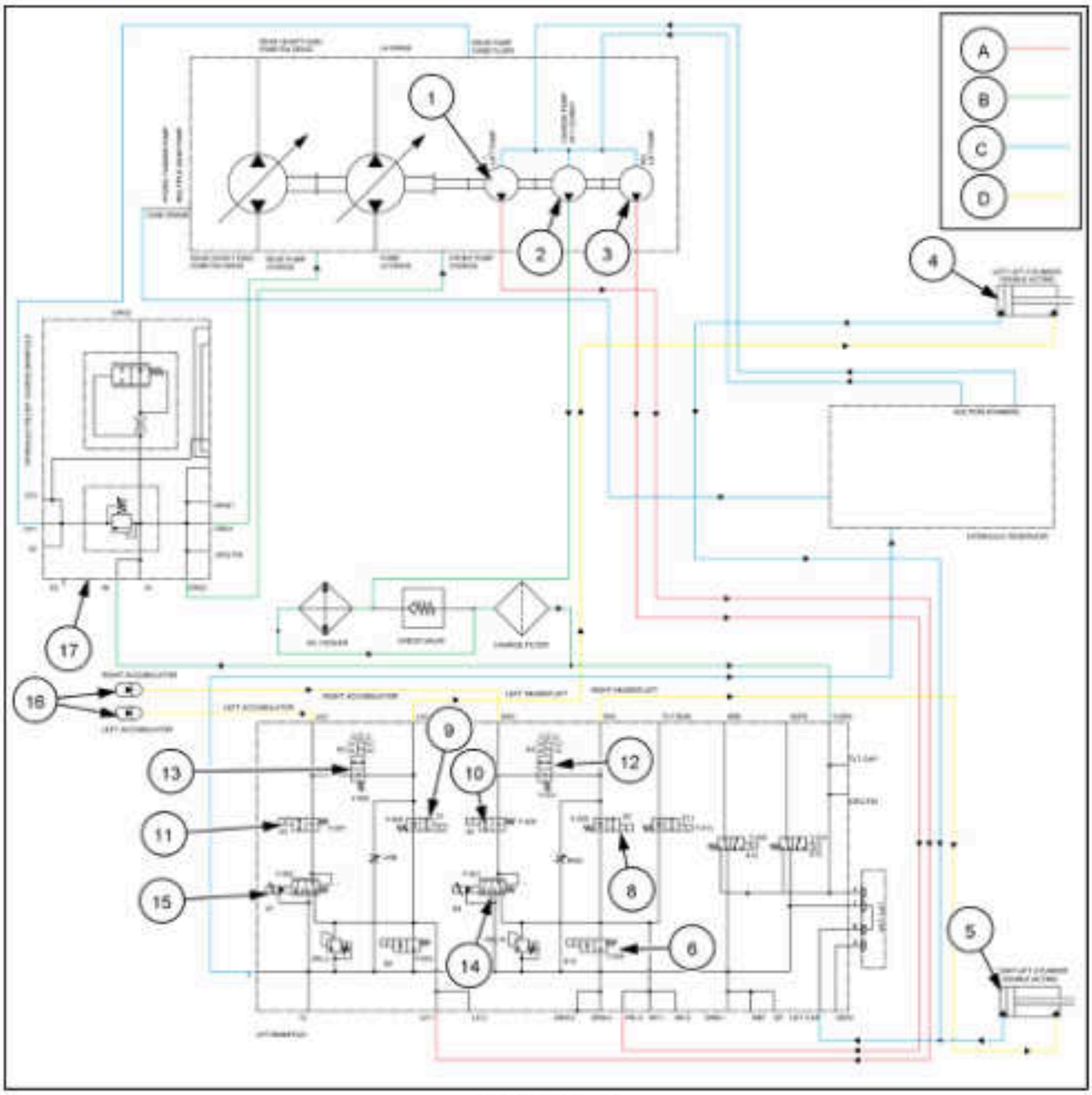


BAL15CVT007FMA 7

(A) = Sync Trigger

6. Figure **7** shows the expected clean signal captured by the **DATAR** scope, each sync trigger in Channel A (Blue) is one crank rotation and each double fluctuation in the channel B (red), is one cam rotation . With two full crank rotations there is one full cam rotation.
The amplitude will increase with the engine speed. This means the voltage can increase from **± 20 - 30 V**

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NHL13WR0080GB 8

Header Float (Approximately 5 seconds after initiation)

Increase/Decrease flotation

When the "Increase Float" or "Decrease Float" switches are depressed the following sequence occurs:

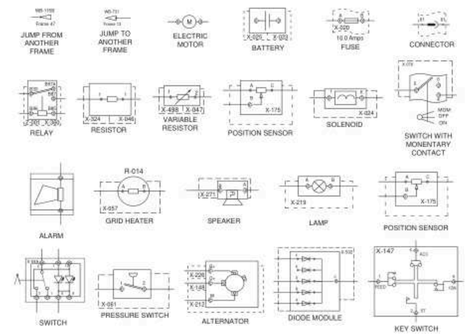
1. Master control valves (Y-004 **(6)** and Y-003 **(7)**) are energized.
2. Pressure reducing valves (Y-001 **(14)** and Y-002 **(15)**) are energized by current control to set the required accumulator pressure.
3. Header lower valves (Y-008 **(10)** and Y-007 **(11)**) are energized.
4. Header float valves (Y-009 **(13)** and Y-010 **(12)**) are energized.
5. Oil flows between the rod end of the lift cylinder and the accumulator.
6. Pressure reducing valve balances the pressure between the accumulator and the rod end of the lift cylinder.
7. Header "floats" at required weight based on operator set-point.
8. Header lower valves (Y-008 **(10)** and Y-007 **(11)**) are turned off. (Approx. 5 seconds after Header Lower button was depressed).

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SPEEDROWER 200® and SPEEDROWER 240®
DRAPER EQUIPPED
SELF-PROPELLED WINDROWERS
47705561
ELECTRICAL SCHEMATIC, NORTH AMERICA
MODEL YEAR 2014 PRODUCTION
Page 7 of 8

SCHEMATIC FRAME INDEX

Component	Page/Frame	Component	Page/Frame
POWER DISTRIBUTION	Page 1, Frame 1	CAB DOOR	Page 4, Frame 31
POWER DISTRIBUTION	Page 1, Frame 2	TURN INDICATOR/HAZARD/HORN	Page 4, Frame 32
POWER DISTRIBUTION	Page 1, Frame 3	FLASHING LIGHTS	Page 4, Frame 33
POWER DISTRIBUTION	Page 1, Frame 4	FLASHING LIGHTS	Page 4, Frame 34
POWER DISTRIBUTION	Page 1, Frame 5	WORK LIGHTS	Page 5, Frame 35
POWER DISTRIBUTION	Page 1, Frame 6	WORK LIGHTS/BEACON	Page 5, Frame 36
POWER DISTRIBUTION	Page 1, Frame 7	WINDSHIELD WIPER/MIRROR	Page 5, Frame 37
STARTING/CHARGING	Page 1, Frame 8	POWER JACKS/SEAT	Page 5, Frame 38
STARTING	Page 2, Frame 9	MERGER	Page 5, Frame 39
GROUNDS	Page 2, Frame 10	WINDROW SHIELDS	Page 5, Frame 40
GROUNDS	Page 2, Frame 11	DRAPER HEADER	Page 5, Frame 41
GROUNDS	Page 2, Frame 12	PTO	Page 5, Frame 42
GROUNDS	Page 2, Frame 13	DRAPER HEADER	Page 6, Frame 43
GROUNDS	Page 2, Frame 14	HEADER KNIFE	Page 6, Frame 44
GROUNDS	Page 2, Frame 15	PROPULSION	Page 6, Frame 45
ENGINE CONTROL (6 CYL)	Page 2, Frame 16	HEADER	Page 6, Frame 46
ENGINE CONTROL (6 CYL)	Page 2, Frame 17	HEADER	Page 6, Frame 47
POWER DISTRIBUTION (6 CYL)	Page 3, Frame 18	HEADER TILT	Page 6, Frame 48
ENGINE MONITORING	Page 3, Frame 19	AUTO GUIDANCE	Page 6, Frame 49
PREHEAT/GRID HEATER	Page 3, Frame 20	ATC	Page 6, Frame 50
PROPULSION	Page 3, Frame 21	HVAC	Page 6, Frame 51
PROPULSION	Page 3, Frame 22	HVAC	Page 7, Frame 52
HYDRAULIC	Page 3, Frame 23	HVAC	Page 7, Frame 53
BOOT UP	Page 3, Frame 24	RADIO	Page 7, Frame 54
MULTIFUNCTION HANDLE	Page 3, Frame 25	SCREEN CLEANER	Page 7, Frame 55
SEAT/PTO	Page 4, Frame 26	CAN NETWORK	Page 7, Frame 56
HEADER	Page 4, Frame 27	FRED DISPLAY	Page 7, Frame 57
PROPULSION	Page 4, Frame 28	4-LINE DISPLAY	Page 7, Frame 58
UCM	Page 4, Frame 29	DISC HEADER	Page 7, Frame 63
HEADER	Page 4, Frame 30	DRAPER HEADER	Page 7, Frame 64



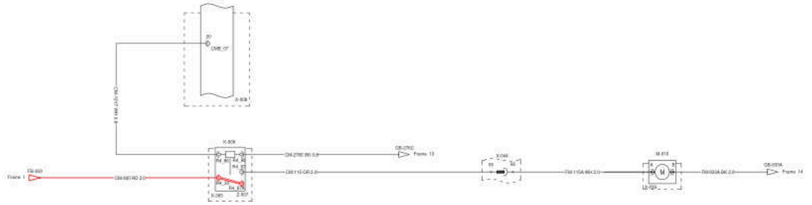
WIRING REFERENCES

Color	Color Code	Function
Black	BK	Ground, Chassis
Blue	BL	Printed Circuit Ground
White	WH	Increasing Actuation
Gray	GY	Decreasing Actuation
Orange	OR	Power After Ignition
Yellow	YE	Signal Wires
Red	RD	Battery Voltage
Violet	VT	Lighting
Pink	PK	Reference Voltage

COMPONENT LEGEND

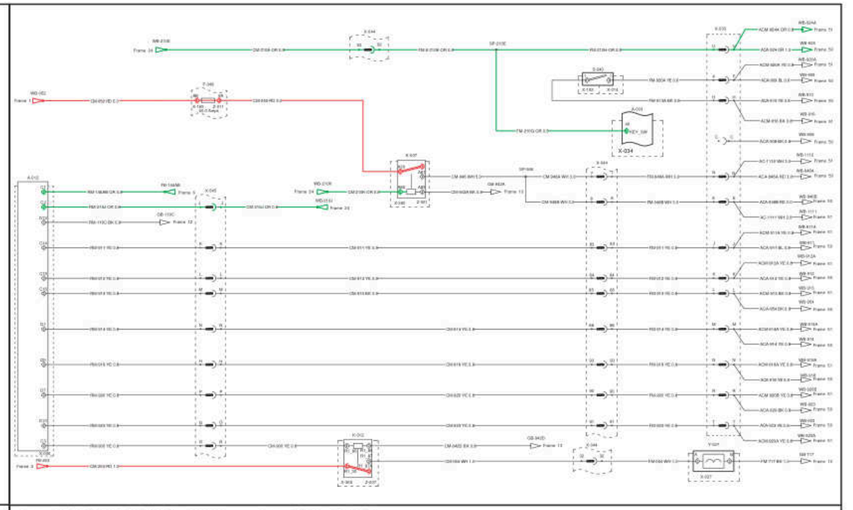
Label Prefix	Component Type
A	Electronics
B	Sensors
D	Diodes
E	Lights
F	Fuses
G	Generators
H	Audio
J	Outlets
K	Relays
M	Motors
Q	Circuit Breakers
R	Resistive
S	Switches
W	Splice Blocks
Y	Solenoids

LEGEND
UNSWITCHED POWER
SWITCHED POWER
STARTING SEQUENCE



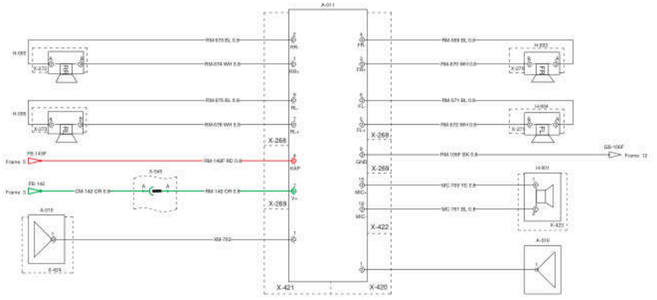
A-001 MODULE, UCM
K-009 RELAY, PRESURIZATION FAN
M-010 MOTOR, INTAKE AIR PRESSURIZATION

FRAME 52 - HVAC



A-012 MODULE, HVAC, AUTOMATIC & MANUAL
F-048 FUSE, HVAC
K-007 RELAY, HVAC
K-012 RELAY, A/C CLUTCH
S-040 SWITCH, PRESSURE, ATC HIGH
Y-027 SWITCH, A/C CLUTCH

FRAME 53 - HVAC



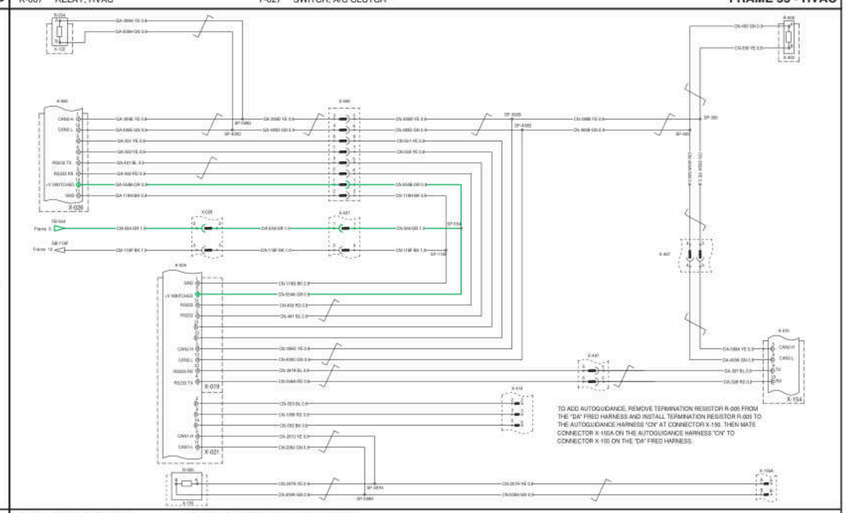
A-011 MODULE, RADIO (DELCO)
H-003 SPEAKER, FRONT RIGHT (SUPER DLX)
H-004 SPEAKER, FRONT LEFT (SUPER DLX)
H-005 SPEAKER, REAR RIGHT (SUPER DLX)
H-006 SPEAKER, REAR LEFT (SUPER DLX)

FRAME 54 - RADIO



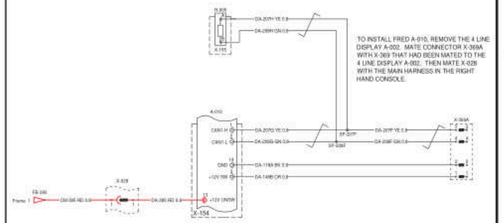
M-009 MOTOR, SCREEN CLEANER

FRAME 55 - SCREEN CLEANER



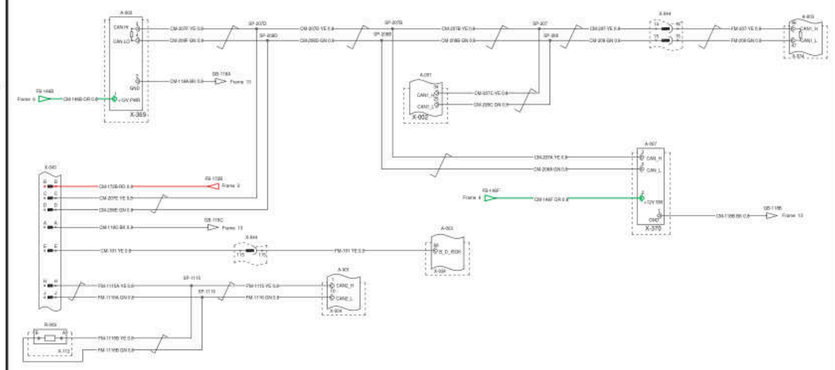
A-008 MODULE, CERES
A-009 MODULE, ANTENNA
A-010 MODULE, FRED DISPLAY
R-004 RESISTOR, CAN TERMINATION
R-005 RESISTOR, CAN TERMINATION
R-008 RESISTOR, CAN TERMINATION

FRAME 56 - CAN NETWORK



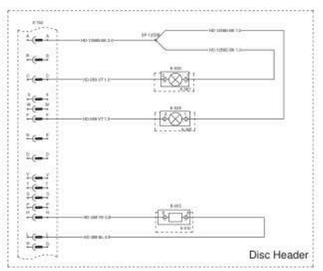
A-010 MODULE, FRED DISPLAY
R-005 RESISTOR, CAN TERMINATION

FRAME 57 - FRED DISPLAY



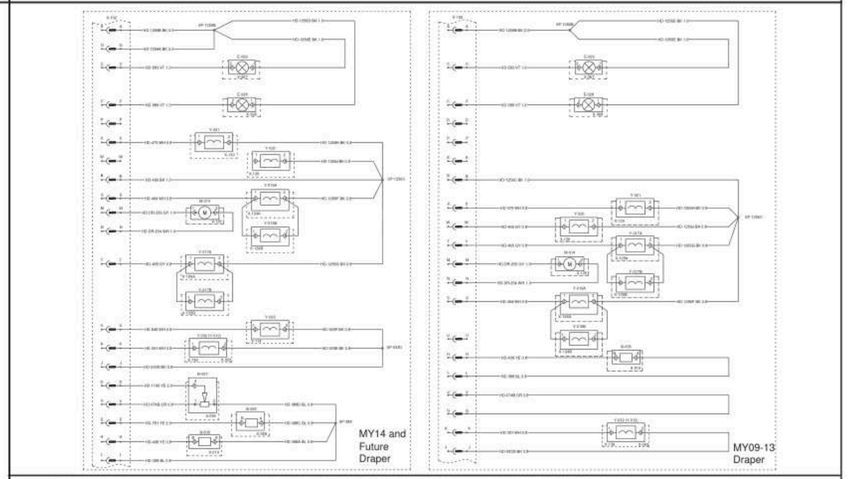
A-001 MODULE, UCM
A-002 MODULE, 4 LINE DISPLAY
A-007 MODULE, A-PILLAR DISPLAY
R-009 RESISTOR, CAN TERMINATION
R-012 RESISTOR, CAN TERMINATION

FRAME 58 - 4-LINE DISPLAY



B-005 SENSOR, HEADER KNIFE SPEED
E-026 LAMP, HEADER, FLASHING, LEFT
E-028 LAMP, HEADER, FLASHING, RIGHT

FRAME 63 - DISC HEADER



B-005 SENSOR, HEADER KNIFE SPEED
B-026 SENSOR, HEADER REEL SPEED
B-027 SENSOR, DRAPER CANVAS SPEED
E-026 LAMP, HEADER, FLASHING, LEFT
E-028 LAMP, HEADER, FLASHING, RIGHT
M-014 MOTOR, DRAPER HEADER CONVEYOR SPEED
Y-012 SOLENOID, HB REEL SPEED
Y-016A LAMP, HEADER, FLASHING, RIGHT
Y-016B MOTOR, DRAPER HEADER CONVEYOR SPEED
Y-017A SOLENOID, DECK SHIFT RIGHT A
Y-017B SOLENOID, DECK SHIFT RIGHT B
Y-020 SOLENOID, DRAPER REEL POSITION, AFT
Y-021 SOLENOID, DRAPER REEL POSITION, FORE
Y-032 SOLENOID, DRAPER CANVAS SPEED

FRAME 64 - DRAPER HEADER

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