AXIAL-FLOW® 7230
AXIAL-FLOW® 8230
AXIAL-FLOW® 9230

Combine

from PIN YDG218533 and above

SERVICE MANUAL

Part number 47548079

1st edition English

May 2013

CASE IH AGRICULTURE

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Contents

INTRODUCTION

Engine 10

[10.001] Engine and crankcase 10.1

[10.202] Air cleaners and lines 10.2

[10.216] Fuel tanks 10.3

[10.210] Lift pump and lines 10.4

[10.310] Aftercooler 10.5

[10.400] Engine cooling system 10.6

[10.414] Fan and drive 10.7

[10.418] Rotary screen 10.8

[10.450] Engine air compressor 10.9

[10.500] Selective Catalytic Reduction (SCR) exhaust treatment 10.10

Main gearbox and drive 14

[14.100] Main gearbox and drive 14.1

Transmission 21

[21.100] Mechanical transmission lubrication system 21.1

[21.114] Mechanical transmission 21.2

[21.130] Mechanical transmission external controls 21.3

[21.145] Gearbox internal components 21.4

[21.182] Differential 21.5

Front axle system 25

[25.100] Powered front axle 25.1

[25.108] Final drive hub, steering knuckles, and shafts 25.2

[25.310] Final drives 25.3

Rear axle system 27

[27.100] Powered rear axle 27.1

MidWestTech | Case Axial Flow 7230, 8230, 9230 Combine Service Manual | Publicati... Order the manual at mid-west-tech.com >

[27.124] Final drive hub, steering knuckles, and shafts 27.2

Hydrostatic drive 29

[29.100] Transmission and steering hydrostatic control 29.1

[29.202] Hydrostatic transmission 29.2

[29.218] Pump and motor components 29.3

[29.300] Rear hydrostatic transmission 29.4

Power Take-Off (PTO) 31

[31.146] Front Power Take-Off (PTO) 31.1

Brakes and controls 33

[33.110] Parking brake or parking lock 33.1

[33.202] Hydraulic service brakes 33.2

Hydraulic systems 35

[35.000] Hydraulic systems 35.1

[35.102] Pump control valves 35.2

[35.106] Variable displacement pump 35.3

[35.220] Auxiliary hydraulic pump and lines 35.4

[35.300] Reservoir, cooler, and filters 35.5

[35.350] Safety and main relief valves 35.6

[35.359] Main control valve 35.7

[35.410] Header or attachment height system 35.8

[35.415] Header or attachment tilting system 35.9

[35.440] Grain tank unload system 35.10

[35.536] Crop processor system 35.11

Steering 41

[41.101] Steering control 41.1

[41.200] Hydraulic control components 41.2

[41.216] Cylinders 41.3

Wheels 44

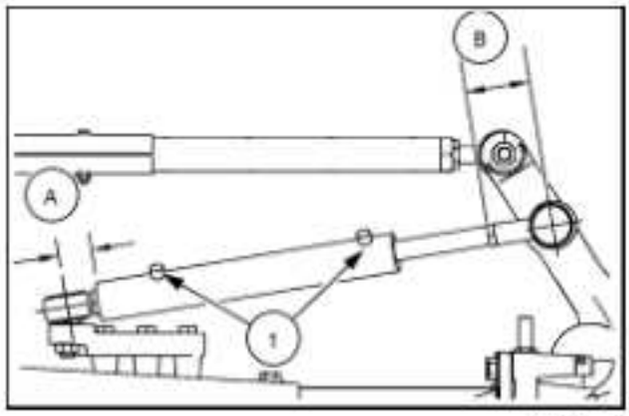
MidWestTech | Case Axial Flow 7230, 8230, 9230 Combine Service Manual | Publicati... Order the manual at mid-west-tech.com >

[44.511] Front wheels 44.1
[44.520] Rear wheels 44.2
Tracks and track suspension 48
[48.100] Tracks 48.1
[48.130] Track frame and driving wheels 48.2
[48.134] Track tension units 48.3
[48.138] Track rollers 48.4
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
[55.010] Fuel injection system 55.2
[55.011] Fuel tank system 55.3
[55.012] Engine cooling system 55.4
[55.013] Engine oil system 55.5
[55.014] Engine intake and exhaust system 55.6
[55.015] Engine control system 55.7
[55.023] Transmission position sensors 55.8
[55.050] Heating, Ventilation, and Air-Conditioning (HVAC) control system 55.9
[55.100] Harnesses and connectors 55.10
[55.201] Engine starting system 55.11
[55.202] Cold start aid 55.12
[55.301] Alternator 55.13
[55.302] Battery 55.14
[55.421] Feeding control system 55.15
[55.426] Harvest material flow control system 55.16
[55.640] Electronic modules 55.17

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Ball Joint Adjustment

15. While adjusting the overall collapsed length of the steering cylinders, the following criteria must also be met:
HDASA - Dimension **(A)** must be **50 - 80 mm** (**2.0 - 3.1 in**). Dimension **(B)** must be **120 mm** (**4.7 in**) maximum. No minimum value is specified.
PRA - Dimension **(A)** must be between **70 - 80 mm** (**2.8 - 3.1 in**). The length of dimension **(B)** must be no longer than **120 mm** (**4.7 in**).



6307D040 7

16. When the adjustments are complete, expand or collapse the cylinders without changing the adjustments made. Set the cylinders into place in the hub castings with the threaded ends pointing down. Install the slotted nuts, check to confirm the maximum steering angle can be achieved. Steering stop bolts must contact the HDASA arm or PRA motor frame, as equipped, during maximum LH and RH turns.

17. If the steering cylinders limit turning, adjust the cylinder ball joints until the steering stop bolts limit turning. Reference Operator's Manual -- Section 4 -- Lubrication and Maintenance -- Steering Axle -- Setting Steering Stops for additional information.

18. Torque to **250 - 280 Nm** (**184 - 207 lb ft**) ensuring alignment of the cotter pin hole and nuts slot within the torque range. Install cotter pins to secure the slotted nuts in place. Tighten all hydraulic lines that have been loosened.

NOTE: *Install steering cylinder with ports* ***(1)*** *facing forward and rotated to* ***15 - 35 °*** *above the horizontal plane.*

19. Install the tires onto the combine noting the direction of travel as marked on the tire.
For HDASA units, install lug nuts and torque to **410 - 492 Nm** (**302 - 363 lb ft**).
For PRA units, install spacers and bolts, then torque to **550 - 610 Nm** (**406 - 450 lb ft**).
Reference the Operator's Manual -- Section 4 -- Lubrication and Maintenance -- Steering Axle for additional torque procedure guidance.

20. Remove the jack stands from under the combine and lower it to the ground.

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E0187-04- Voltage 8V5REF_OUT - Shorted to low source

AXIAL-FLOW 7230 [YDG218533 -] NA, AXIAL-FLOW 8230 [YDG218533 -] NA, AXIAL-FLOW 9230 [YDG218533 -] NA

Control Module : UCM1

Context:

Cause:
UCM1 is sensing a voltage level less than **7.2 V** in the 8V5REF_OUT voltage circuit.

Possible failure modes:

1. Faulty voltage circuit wiring shorted to low source.
2. Faulty control module.

Solution:

1. Verify that the fault is present and active. Use the display monitor diagnostic capability to view parameter status to check the voltage level. For additional information about the monitor diagnostic capability, see **Instrument cluster - Detailed view (55.408)**.
   A. If the voltage reading is less than **7.2 V**, continue to Step **2**.
   B. If the voltage reading is greater than **7.2 V**, the fault may intermittent and not currently active. Continue to Step **7**.
2. Verify that the sieve loss sensor **B-021** functions properly. Disconnect the sensor from the Lower Frame Rear (LR) harness at connector **X-232**. Use a multimeter to measure the resistance at pins 1 and 2.
   A. If the resistance value is nominal, leave connector **X-232** disconnected and continue to Step **3**.
   B. If the resistance value is **0 Ω** or infinite, the sensor has failed internally.Replace the sensor.
3. Check for a short to low condition. Use a multimeter to check for voltage from the LR harness side of connector **X-232 pin 1** and chassis ground.
   A. If the voltage reading is less than **7.2 V**, continue to Step **4**.
   B. If the voltage reading is greater than **7.2 V**, continue to Step **7**.
4. Check for a short to low condition. Disconnect the Expansion (EX) harness from the LR harness at connector **X-072**. Use a multimeter to check for voltage from the EX side of connector **X-072 pin X** and chassis ground.
   A. If the voltage reading is less than **7.2 V**, continue to Step **5**.
   B. If the voltage reading is greater than **7.2 V**, there is a short to low condition in the LR harness between connector **X-072 pin X** and connector **X-232 pin 1**, wire LR-412 pink. Locate and repair the shorted conductor.
5. Check for a short to low condition. Disconnect the Cab Main (CM) harness from the EX harness at connector **X-006**. Use a multimeter to check for voltage from the CM side of connector **X-006 pin 42** and chassis ground.
   A. If the voltage reading is less than **7.2 V**, continue to Step **5**.
   B. If the voltage reading is greater than **7.2 V**, there is a short to low condition in theEX harness between connector **X-006 pin 42** and connector **X-072 pin X**, wire EX-412 pink. Locate and repair the shorted conductor.
6. Check for a short to low condition. Disconnect the CM harness from the **UCM1** at connector **X-012A**. Use a multimeter to check for voltage at connector **X-012A pin 6** and chassis ground.
   A. If the voltage reading is less than **7.2 V**, the **UCM1** has failed internally. Load the appropriate module software. If the fault re-occurs, replace the module.
   B. If the voltage reading is greater than **7.2 V**, there is a short to low condition in the CM harness between connector **X-012A pin 6** and connector **X-006 pin 42**, wire CM-412 pink. Locate and repair the shorted conductor.

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7. Check the voltage circuit for an open condition. Disconnect the Cab Main (CM) harness from the LM harness at connector **X-004**. Use a multimeter to check for voltage from the CM harness side of connector **X-004 pin 5** and the chassis ground.

   A. If there is no voltage **5.8 V**, continue to Step **8**.

   B. If there is voltage, there is an open condition in the LM harness between connector **X-004 pin 5** and the harness splice (SP-459), wire LM-459 pink. Locate and repair the open conductor.

8. Check the voltage circuit for an open condition. Disconnect the CM harness from the Universal Control Module (**UCM2**) at connector **X-016A**. Use a multimeter to check for voltage at connector **X-016A pin 8** and the chassis ground.

   A. If there is no voltage, the **UCM2** has failed internally. Load the appropriate module software. If the fault re-occurs, replace the module.

   B. If there is voltage, there is an open condition in the CM harness between connector **X-016A pin 8** and connector **X-004 pin 5**, wire CM-459 pink. Locate and repair the open conductor.

9. Visually inspect the relevant harnesses and connectors for damage, bent or dislocated pins, corroded terminals, or broken wires. Verify that the connectors are fully installed. Flex the harnesses involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then erase the fault code and continue operation.

Wire harnesses - Electrical schematic frame 10 (55.100.DP-C.20.E.10)
Wire harnesses - Electrical schematic frame 27 (55.100.DP-C.20.E.27)

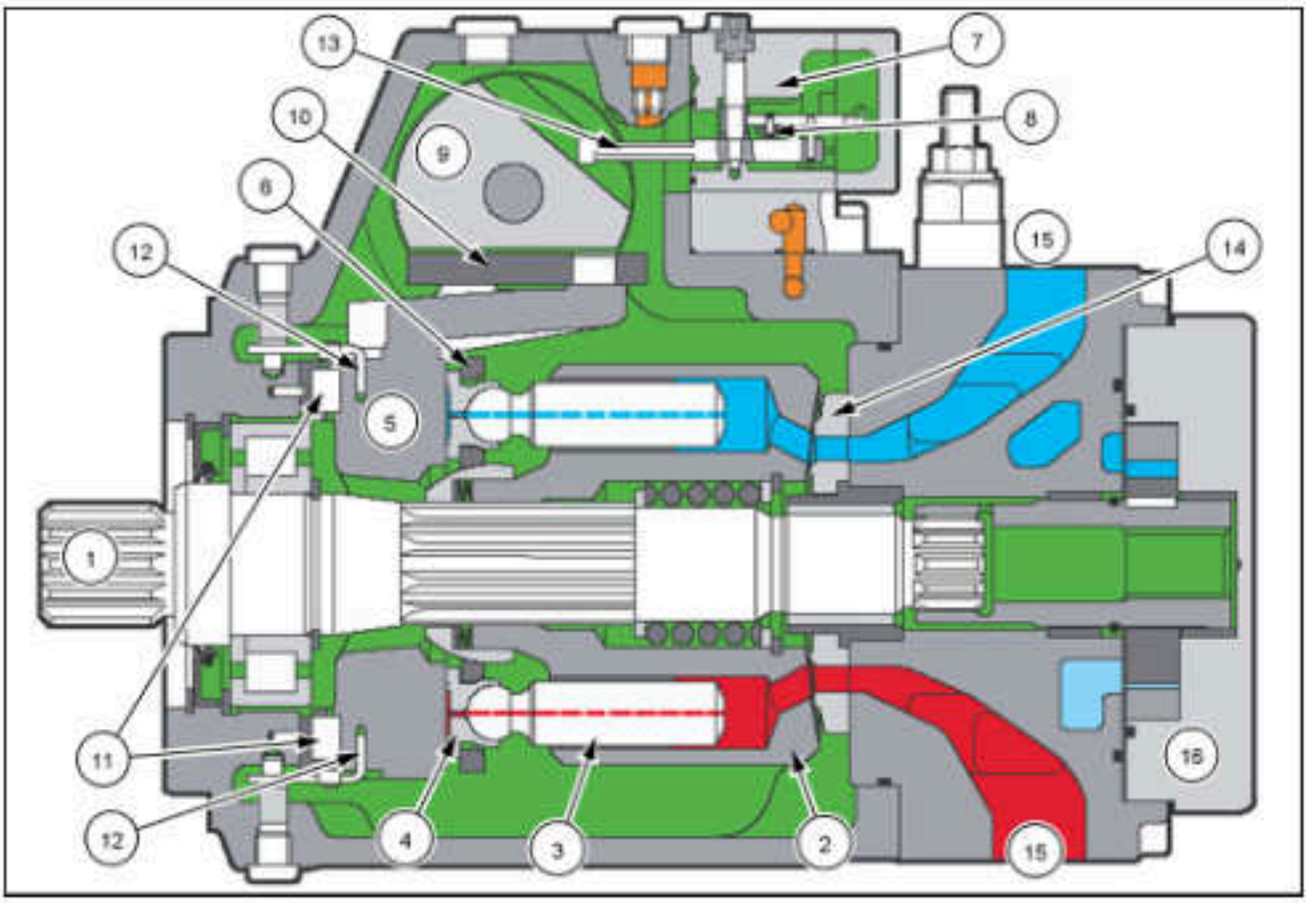
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Pump - Dynamic description - Hydrostatic Ground Drive

AXIAL-FLOW 7230 NA, AXIAL-FLOW 8230 NA, AXIAL-FLOW 9230 NA

Variable Displacement Pump

The variable displacement pump converts power from the engine into hydraulic power to run the hydrostatic ground drive motor.



2084421 1

Variable Displacement Pump

1. Drive shaft	5. Swash plate	9. Stroke piston	13. Feedback linkage
2. Rotating cylinder	6. Retaining plate	10. Slide ring	14. Lens plate
3. Piston	7. Displacement control	11. Bearing	15. Service line port
4. Slipper pad	8. Control spool	12. Retaining pin	16. Charge pump

The drive shaft **(1)** turns the rotating cylinder assembly **(2)**, which contains the pump's nine pistons **(3)**. A slipper pad **(4)** on the end of each piston rides on the surface of the swash plate **(5)**. The slipper pads are held on and guided along the surface of the swash plate by a retaining plate **(6)**.

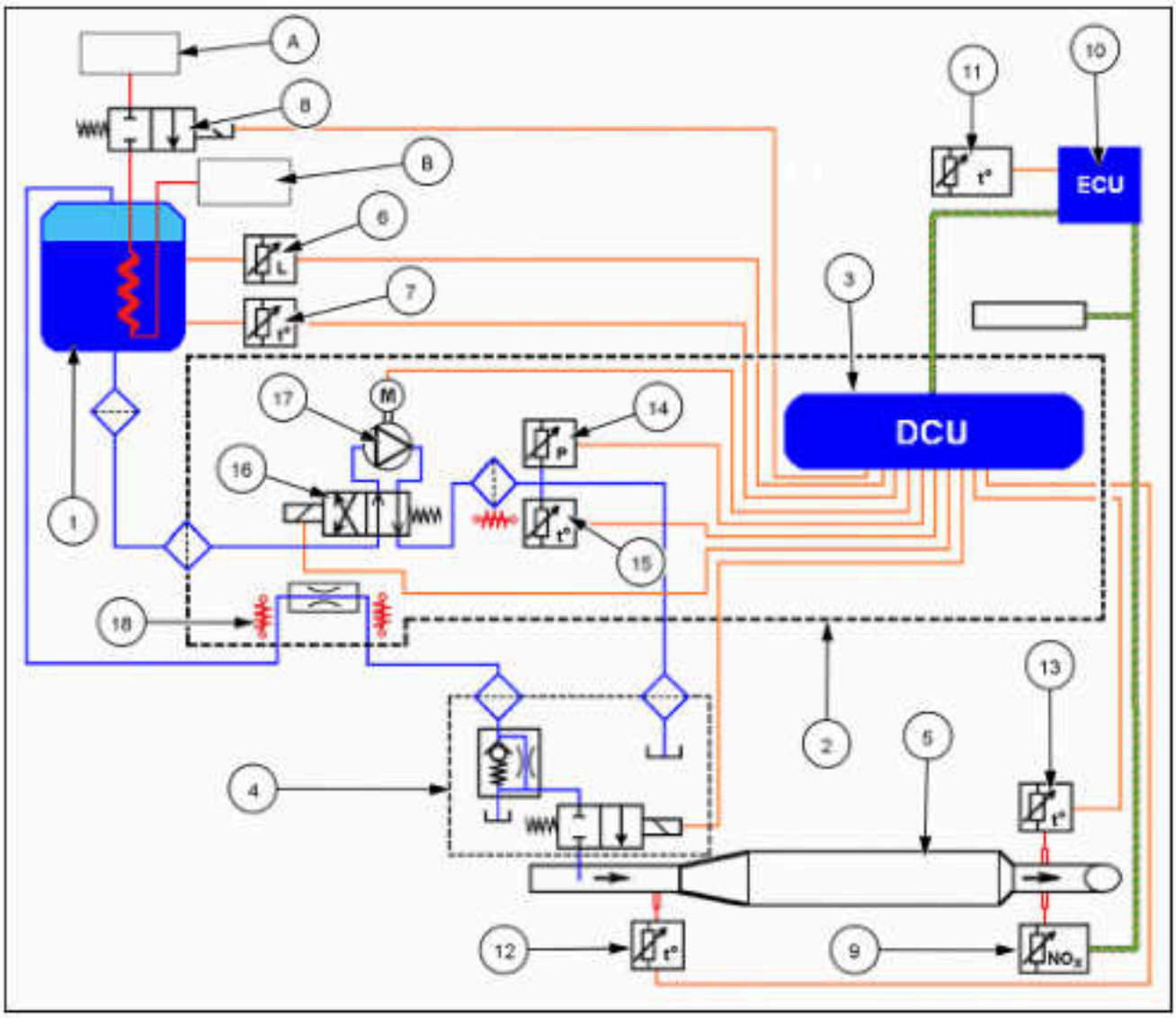
In its neutral position, the swash plate is centered, and is parallel to the rotating pistons. In this state, the pistons do not stroke, since stroking requires that the swash plate describe an angle relative to the face of the rotating cylinder assembly. The angle of the swash plate determines the stoke length of the pistons in their cylinder bores. The greater the angle, the longer the piston stroke and the greater the displacement of oil, resulting in higher motor speed as the angle increases.

The electronic displacement control (EDC) **(7)** sets the angle of the swash plate in accordance with the position of the propulsion control lever. The EDC contains a control spool **(8)** which is controlled by two proportional solenoids, one for each direction of travel. The control spool moves to admit control pressure oil to the stroke piston **(9)**. The stroke piston is mechanically linked to the swash plate pivot arm through a slide ring **(10)**. As the stroke piston moves (picture it moving in or out of the page), the swash plate swivels, changing pitch relative to the rotating cylinder assembly **(2)**. The swash plate rides on semicircular cradle bearing sectors **(11)**. Retaining pins **(12)** stabilize the swash plate at its upper and lower pivot points.

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Selective Catalytic Reduction (SCR) exhaust treatment - Overview of SCR components

AXIAL-FLOW 7230 NA, AXIAL-FLOW 8230 NA, AXIAL-FLOW 9230 NA



NHPE13AP00331AA 1

Selective Catalytic Reduction (SCR) Component Layout

(A) From engine cooling system
(B) Return to engine cooling system
(1) Diesel Exhaust Fluid (DEF) Tank
(2) DEF Supply Module
(3) Dosing Control Unit (DCU)
(4) Dosing Module
(5) Catalyst
(6) Tank Level Sensor
(7) Tank Temperature Sensor
(8) DEF Heater Control Valve
(9) NOx Sensor
(11) Air Intake Temperature/Humidity Sensor
(12) Exhaust Temperature Upstream
(13) Exhaust Temperature Downstream
(14) DEF Pressure Sensor
(15) DEF Temperature Sensor
(16) Reverting Valve
(17) Diaphragm Pump
(18) DEF Electric Heater

The main SCR components are a DEF storage tank **(1)** , a DEF Supply Module **(2)** with Dosing Control Unit (DCU) **(3)**, a Dosing Module **(4)** and a Catalyst **(5)**. The storage tank has a DEF level sensor **(6)**, DEF tank temperature sensor **(7)** and an engine coolant heating loop connected to the DEF Heater Control valve **(8)**. The catalyst has two exhaust temperature sensors **(12)**, **(13)** and a NOx sensor **(9)** which is a CAN based device wired into the ECU directly. The ECU also has an Intake Air/Humidity sensor **(11)** in addition to the normal intake boost pressure/temperature sensor.

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AXIAL-FLOW® 7230, AXIAL-FLOW® 8230 and AXIAL-FLOW® 9230 COMBINES

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ELECTRICAL SCHEMATIC

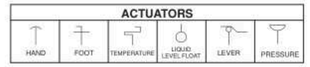
MODEL YEAR 2013 PRODUCTION, PIN YDG218533

Page 3 of 8

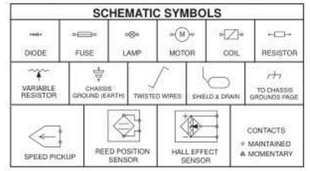
SCHEMATIC SHEET INDEX

Component	Page/Frame	Component	Page/Frame
STARTING	Page 1, Frame 1	CLEANING	Page 4, Frame 28
STARTING	Page 1, Frame 2	CLEANING / RESIDUE	Page 4, Frame 29
POWER DISTRIBUTION / UCM 1	Page 1, Frame 3	CLEANING	Page 4, Frame 30
POWER DISTRIBUTION / UCM 2	Page 1, Frame 4	CLEANING / RESIDUE	Page 4, Frame 31
POWER DISTRIBUTION	Page 1, Frame 5	CLEANING / RESIDUE	Page 4, Frame 32
POWER DISTRIBUTION	Page 1, Frame 6	UNLOADING	Page 4, Frame 33
POWER DISTRIBUTION / H-BRIDGE	Page 1, Frame 7	UNLOADING	Page 4, Frame 34
POWER DISTRIBUTION	Page 1, Frame 8	PRECISION	Page 5, Frame 35
UCM 1	Page 2, Frame 9	AUTOGUIDANCE	Page 5, Frame 36
UCM 2	Page 2, Frame 10	LIGHTING	Page 5, Frame 37
GROUNDS	Page 2, Frame 11	LIGHTING	Page 5, Frame 38
TELEMATICS	Page 2, Frame 12	LIGHTING	Page 5, Frame 39
CAN 1	Page 2, Frame 13	LIGHTING	Page 5, Frame 40
CAN 2 & 3	Page 2, Frame 14	LIGHTING	Page 5, Frame 41
FUEL / ENGINE	Page 2, Frame 15	LIGHTING	Page 5, Frame 42
ENGINE	Page 2, Frame 16	LIGHTING	Page 6, Frame 43
ENGINE	Page 2, Frame 17	LIGHTING	Page 6, Frame 44
DRIVES	Page 3, Frame 18	LIGHTING	Page 6, Frame 45
DRIVES	Page 3, Frame 19	LIGHTING	Page 6, Frame 46
DRIVES	Page 3, Frame 20	ACCESSORY	Page 6, Frame 47
HYDRAULIC	Page 3, Frame 21	ACCESSORY	Page 6, Frame 48
HEADER	Page 3, Frame 22	AUTOGUIDANCE	Page 6, Frame 49
HEADER	Page 3, Frame 23	SEAT CONTROL / SPEAKER	Page 6, Frame 50
HEADER	Page 3, Frame 24	HVAC	Page 6, Frame 51
FEEDER	Page 3, Frame 25	HVAC	Page 7, Frame 52
THRESHER	Page 4, Frame 26	LIGHTING	Page 7, Frame 53
THRESHER	Page 4, Frame 27		

ACTUATORS



SCHEMATIC SYMBOLS



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

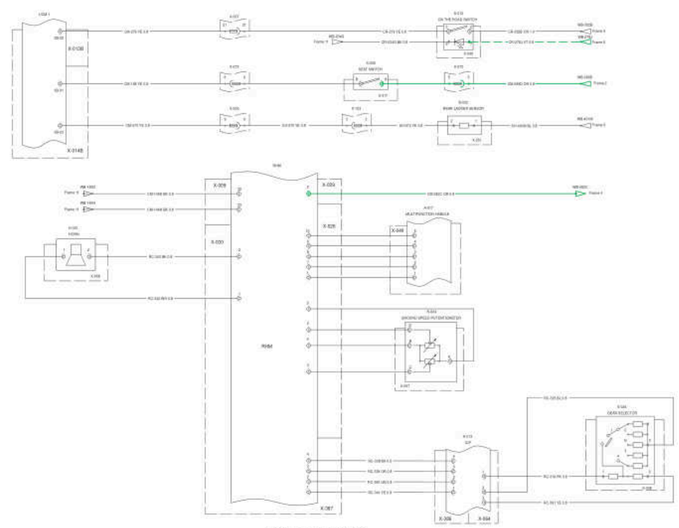
CM-093 WH 0.8
- WIRE SIZE
- WIRE COLOR
- CIRCUIT NUMBER
- HARNESS CODE

CIRCUIT COLOR INDEX

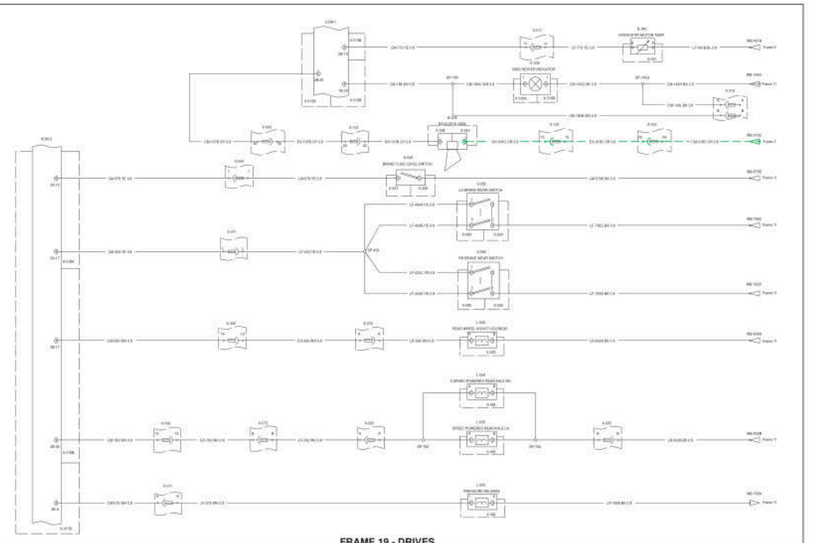
- 12V UNSWITCHED POWER
- 12V UNSWITCHED POWER - AFTER 12V BATTERY DISCONNECT
- 24V UNSWITCHED POWER
- 24V UNSWITCHED POWER - AFTER KEY ON - BATTERY DISCONNECT
- IGNITION KEY ON
- IGNITION KEY ON - AFTER CAB POWER RELAYS*
  - K-007 UCM1 POWER RELAY
  - K-008 UCM2 POWER RELAY
  - K-025 UCM1 POWER RELAY
  - K-027 ACCESSORY RELAY
  - K-028 UCM2 POWER RELAY
  - K-029 SEPARATOR BLOWER RELAY
  - K-032 FUEL PUMP RELAY
- CRANKING

COMPONENT LEGEND

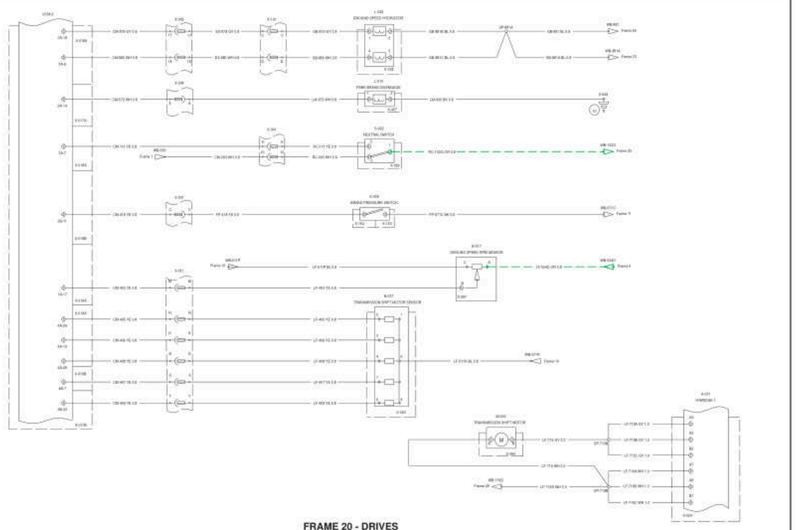
Label Prefix	Component Type
A	Electronics
B	Sensors
D	Diodes
E	Lights
F	Fuses
G	Generators
H	Audio
J	Outlets
K	Relays
M	Motors
Q	Circuit Breakers
R	Resistive
S	Switches
W	Splice Blocks
Y	Solenoids



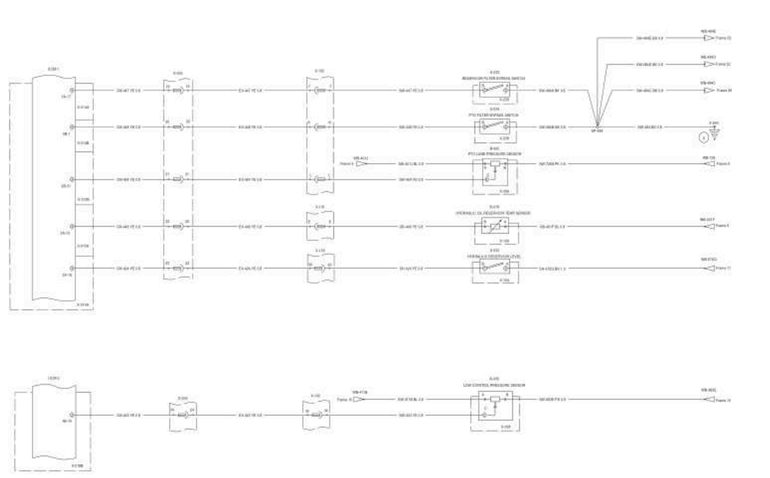
FRAME 18 - DRIVES



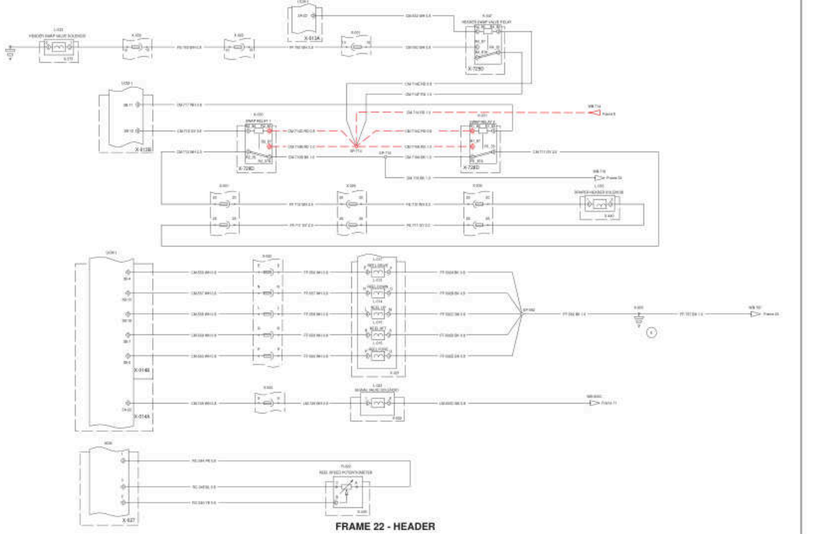
FRAME 19 - DRIVES



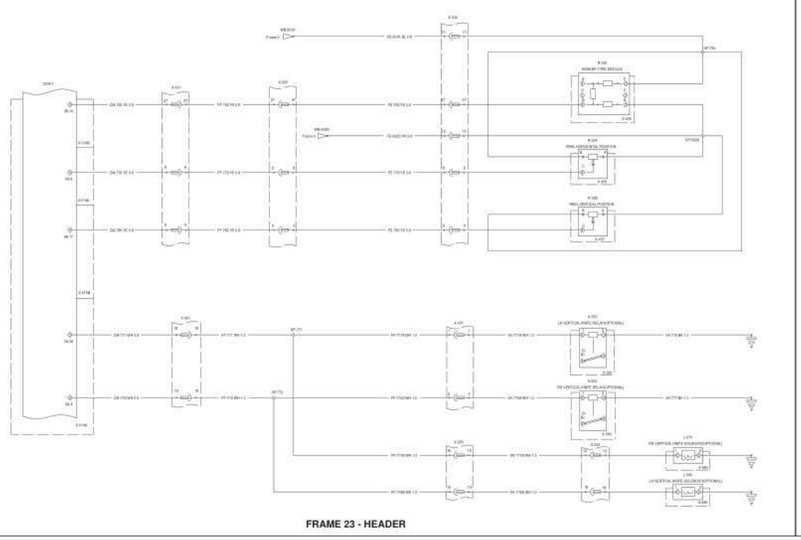
FRAME 20 - DRIVES



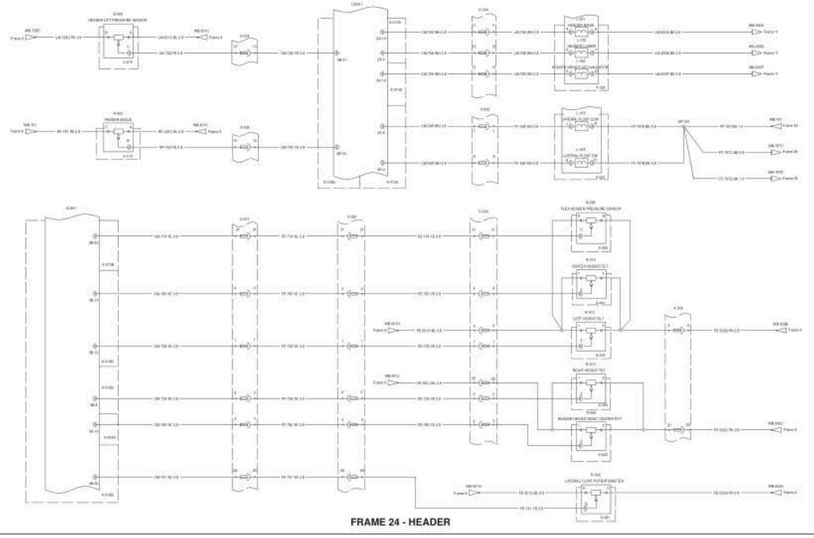
FRAME 21 - HYDRAULIC



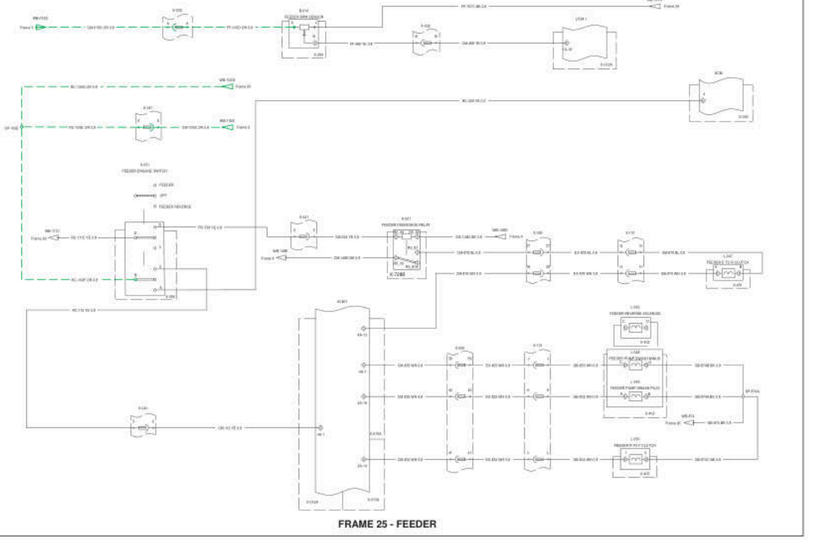
FRAME 22 - HEADER



FRAME 23 - HEADER



FRAME 24 - HEADER



FRAME 25 - FEEDER

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