2450, 2550 REPAIR MANUAL

CONTENTS

SECTION 1
ELECTRICAL

CONTENTS

GENERAL ELECTRICAL

INTRODUCTION

The electrical system has been divided into the following areas:

General Electrical

Electronic Instrument Cluster

Air Conditioning Electrical System

Light Electrical Systems

Engine Electrical Systems

Charging Electrical System

Electrohydraulic Electrical Systems

Wiring Diagrams

Each section has a description of the electrical circuit, a schematic of the circuit, and diagnostic test procedures based on the symptom(s) that a system demonstrates.

In some cases, the failure you experience may be intermittent. When experiencing these type of symptoms, find the test procedure that deals with the symptom that you are experiencing and says "Does Not Function."

All test procedures assume that all mechanical items such as filters, oil pressures, etc., have been checked and verified and the problem is electrical.

Read all the introductory information before starting any test procedure. Next look through the test procedures and locate the symptom being experienced. Use that test procedure to locate and correct the problem. Follow the steps as instructed. Do not skip steps unless instructed to do so in the test procedures.

Prepare the machine for the test by following the pretest instructions. Perform the test and observe the results. Perform the indicated corrective action. Continue through the test procedure until the problem is corrected, then return the system to an operational condition (replace shields, etc.).

DEFINITION OF TERMS

ALTERNATING CURRENT (A.C.) - A flow of electrons which reverses its direction of flow at regular intervals in a conductor. An alternating current is usually accompanied by an alternating voltage.

ALTERNATOR - An electrical device which is similar to a (Direct Current) generator but produces an alternating current and voltage. An alternator requires an electrical component (usually a rectifier device) to change its A.C. output to the D.C. power used in most farm implement applications.

AMMETER - An instrument that measures the flow of electrical current in amperes. Ammeters are connected in series with the circuit to be tested.

AMPERE (AMP) - A unit of measure of the flow of current in a circuit. The ampere is used to measure the electrical current flow in a circuit similar to measuring the flow rate in a hydraulic system by using "gallons per minute."

CIRCUIT - A defined path through various electrical components through which electrical current can flow from a higher voltage potential, through the various components, to a lower voltage potential.

CIRCUIT BREAKER - A device to protect an electrical component from current overloads.

COLD RATING (CCA) - A measure of a battery's current output at low temperature, usually 0° F (17.78° C). This output is often measured in Cold Cranking Amps (CCA).

CONTINUITY - Unbroken path through an electrical component through which electrical current can flow.

CURRENT - The flow of electricity through an electrical component. Current is measured in amperes.

DIODE - An electrical device that will allow current to pass through itself in one direction only, similar to the function of a check valve in a hydraulic system.

DIRECT CURRENT (D.C.) - A flow of electrons moving in the same direction along a conductor from a point of high voltage potential to one of lower voltage potential.

FUSE - A device used to protect electrical components from excessive current flow.

OHM - The standard unit for measuring the resistance to the flow of an electrical current.

OHMMETER - An instrument for measuring the electrical resistance in an electrical component or circuit. Ohmmeters should not be connected to components/circuits that have a voltage potential present.

OPEN CIRCUIT - An open circuit occurs when a circuit is broken interrupting the flow of current through the circuit.

RELAY - An electrical device which can open or close its electrical contacts when the relay's control coil is electrically activated or deactivated. Relays have "control" and "load" circuits which may be separated or interconnected.

RESISTANCE - The resistance to the flow of current in an electrical component. Resistance is measured in ohms.

SHORT CIRCUIT - A path in an electrical circuit/component which allows the current to be diverted to a lower voltage potential before the current has completed its intended path through the electrical circuit/component. This can occur when a part comes in contact with another part that is at a different voltage potential. This can occur either in the same circuit/component, another circuit/component, or a part that is a common circuit/component for many circuits, such as the frame of a vehicle (which is the lower voltage potential circuit, or "ground" circuit of most of the circuits).

SOLENOID - An electrical coil used to produce a magnetic field to attract or repel an iron armature usually to actuate a device.

SPECIFIC GRAVITY - Used to measure the percentage of sulfuric acid (relative to the percentage of water) in a battery cell. Measuring the specific gravity in a battery will help measure the amount of electrical charge in the cell. Specific gravity can be measured using a hydrometer.

SWITCH - An electrical device used to open, close, or change the path of an electrical circuit.

VOLT - A unit used to define the amount of electrical potential. A voltage potential difference is necessary to produce a flow of current in an electrical circuit/component. The amount of voltage potential in an electrical circuit/component is similar to the amount of pressure in a hydraulic system.

VOLTMETER - An instrument for measuring the electrical potential difference that is present across two points of an electrical circuit/component. Voltmeters are connected to points that are electrically (in) parallel to the circuit/component where the voltage potential difference is to be measured.

ELECTRICAL SYSTEM COMPONENTS

MOMENTARY SWITCHES

Momentary switches are used to direct power to circuits. These switches will return to the neutral position when released. Power flows through the switch as shown.

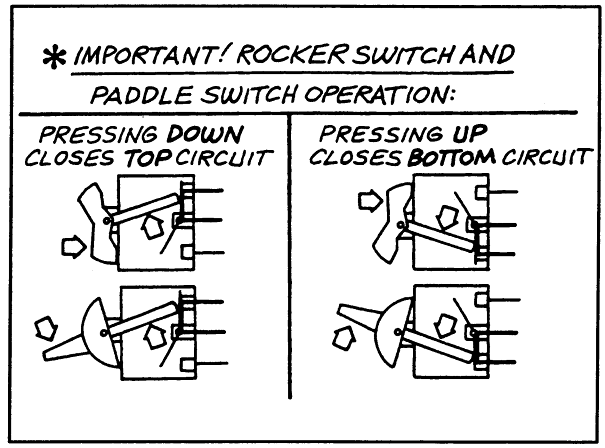


Figure 1-1

CIRCUIT BREAKERS

Circuit breakers are used to protect wires and electrical parts from overload caused by short circuits or circuit overload.

Several types and ratings of circuit breakers are used on the 2450/2550 windrowers. These circuit breakers, 3, Figure 1-2, are located in the compartments near the fuse panel, 2, or on the left-hand frame rail near the engine, 1, Figure 1-3.

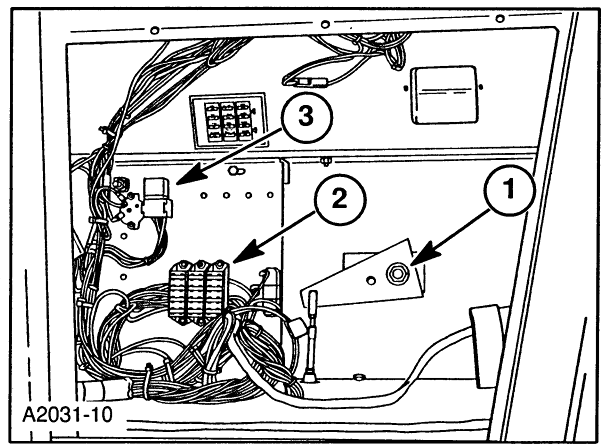


Figure 1-2

Two of the circuit breakers, 3 and 4, are manual reset-type breakers. If one of these breakers trips, find the cause of the overload, correct the problem, and reset the circuit breaker by depressing the button. Circuit breaker, 3, is for the light circuit, and breaker, 4, is for the engine circuit.

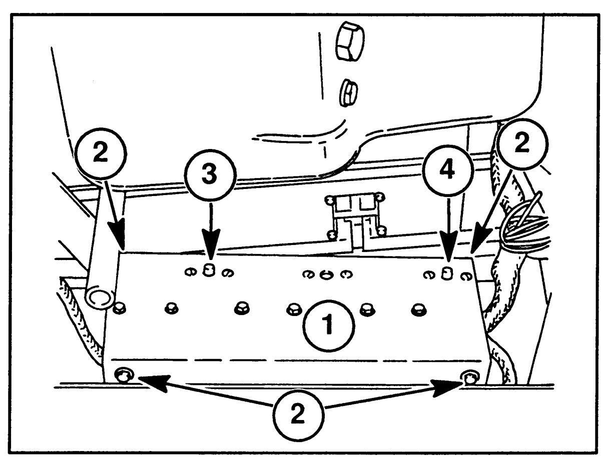


Figure 1-3

FUSES

Fuses protect electrical parts from overload. Use the correct size fuse, as specified, for the circuits. Use of higher rated or slow-blow fuses could cause damage to components.

A fuse panel is located in a compartment on the right-hand side of the windrower cab. To gain access to the fuse panel, remove the three cap screws, 1, and remove access panel, 2.

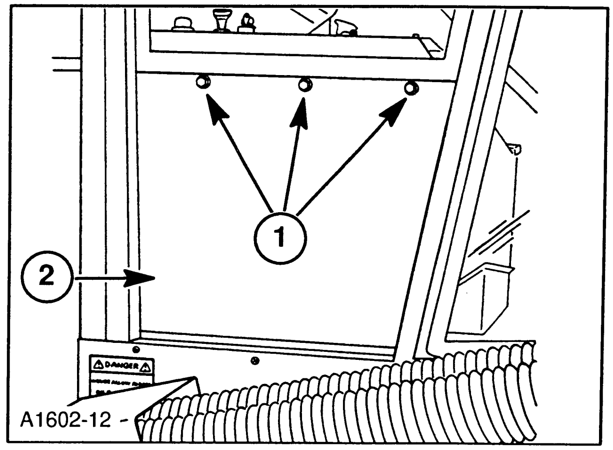


Figure 1-4

The fuse panel is located at 1.

The fuses used are SAE automotive-type fuses. Purchase replacement fuses from the New Holland Parts System to be sure the correct type of fuse is used.

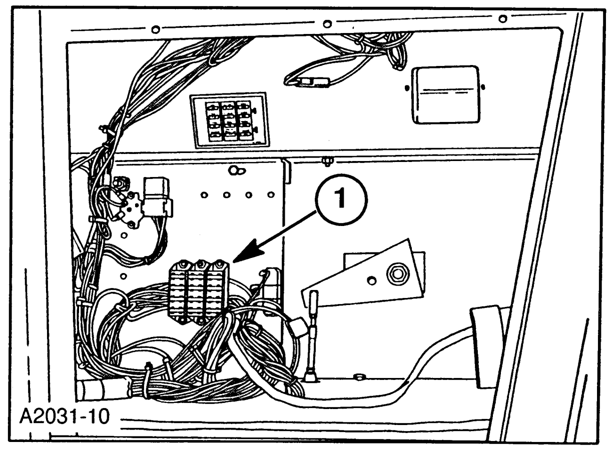


Figure 1-5

DIODES

Diodes permit electrical current to flow in one direction but not the other. Diodes are used in the electrohydraulic system so that one wire can be used with more than one circuit to control a solenoid coil. Diodes also prevent arcing at the contact points of the relays and momentary switches.

Diodes can fail in either an open condition, in which no power passes in either direction, or a closed condition in which power flows in both directions. Failures usually occur due to overload or by short circuits.

IMPORTANT: Do not short wires to ground to determine if power is available (spark test). This will cause diodes to fail.

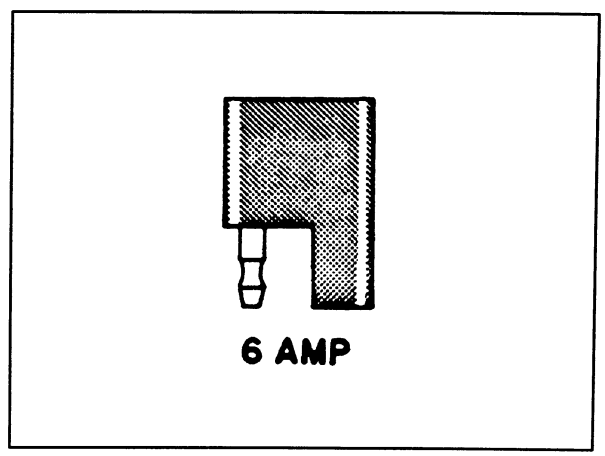


Figure 1-6

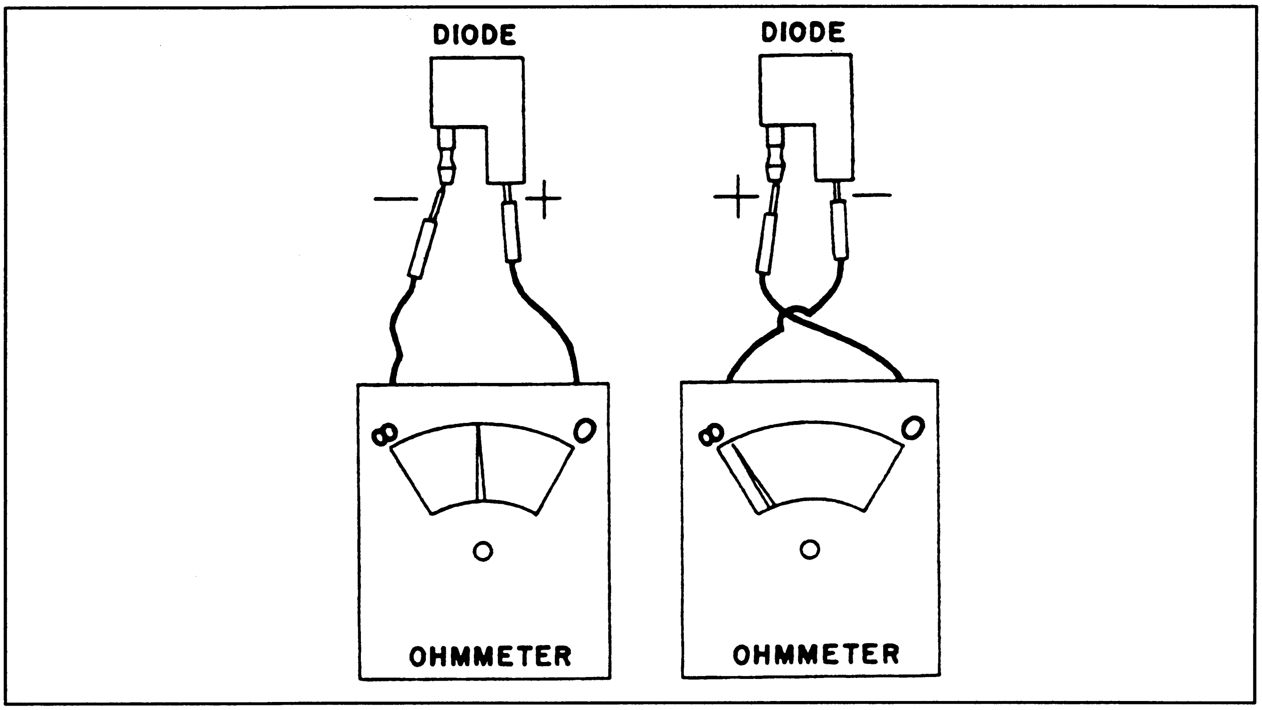


Figure 1-7

DIODE TEST PROCEDURE

To test a diode, use an ohmmeter set to the R X 1 or to the R X 10 scale. Remove the diode and connect the ohmmeter test leads to the ends of the diode. Measure the resistance, then reverse the test leads. In one direction the ohmmeter should show an open circuit (no needle deflection). When the test leads are reversed, the ohmmeter should show about half scale deflection. If the two readings are the same, the diode is defective and should be replaced. A known good diode or one from a working circuit can be substituted for a suspected defective diode if an ohmmeter is not available.

ELECTROHYDRAULIC SOLENOID COILS

Introduction

Two different styles of coils are used to activate the various solenoids used on the windrower.

One style coil is used on the electrohydraulic manifold solenoids.

All the coils used on the hydraulic manifolds are the same and can be interchanged.

A second style coil is used on the header drive manifold.

Operation

Power enters the coil through the terminal and passes through the coil windings. When the coil is energized, an electromagnetic field is created around the solenoid. The electromagnetic field causes the armature inside the solenoid to move. The armature moves a poppet which controls oil flow through the electrohydraulic manifold.

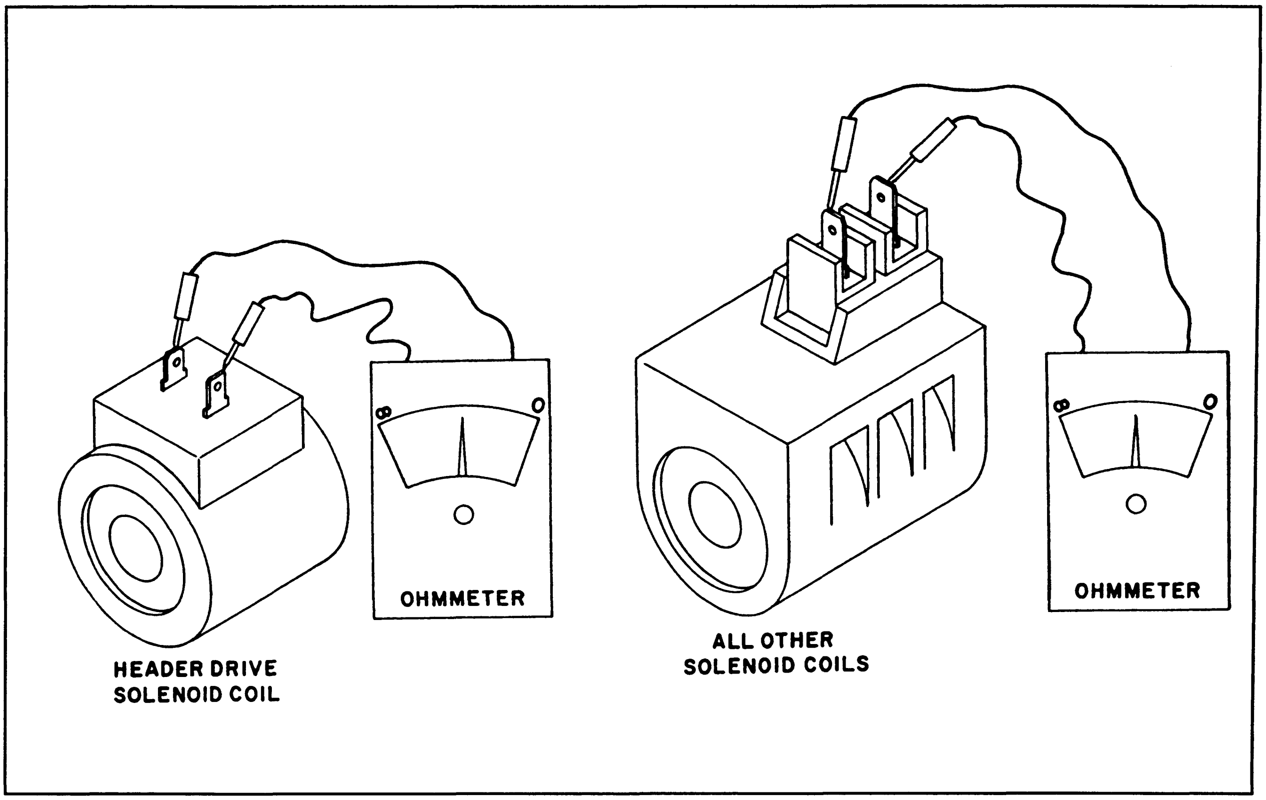


Figure 1-8

ELECTROHYDRAULIC COIL TEST PROCEDURE

To test a coil, remove the wire(s) from the coil and attach an ohmmeter as shown. The coil resistance should measure between 5 and 10 ohms.

SOLENOID VALVE OPERATION

An easy way to check if a solenoid valve is being energized is to place an iron object at the solenoid coil cover and activate the solenoid valve by pressing the appropriate switch. If the solenoid receives power, the solenoid valve will become magnetic and attract the iron object.

If the proper solenoid(s) valve(s) are being energized when a circuit is activated, the problem is in the solenoid valve or hydraulic manifold.

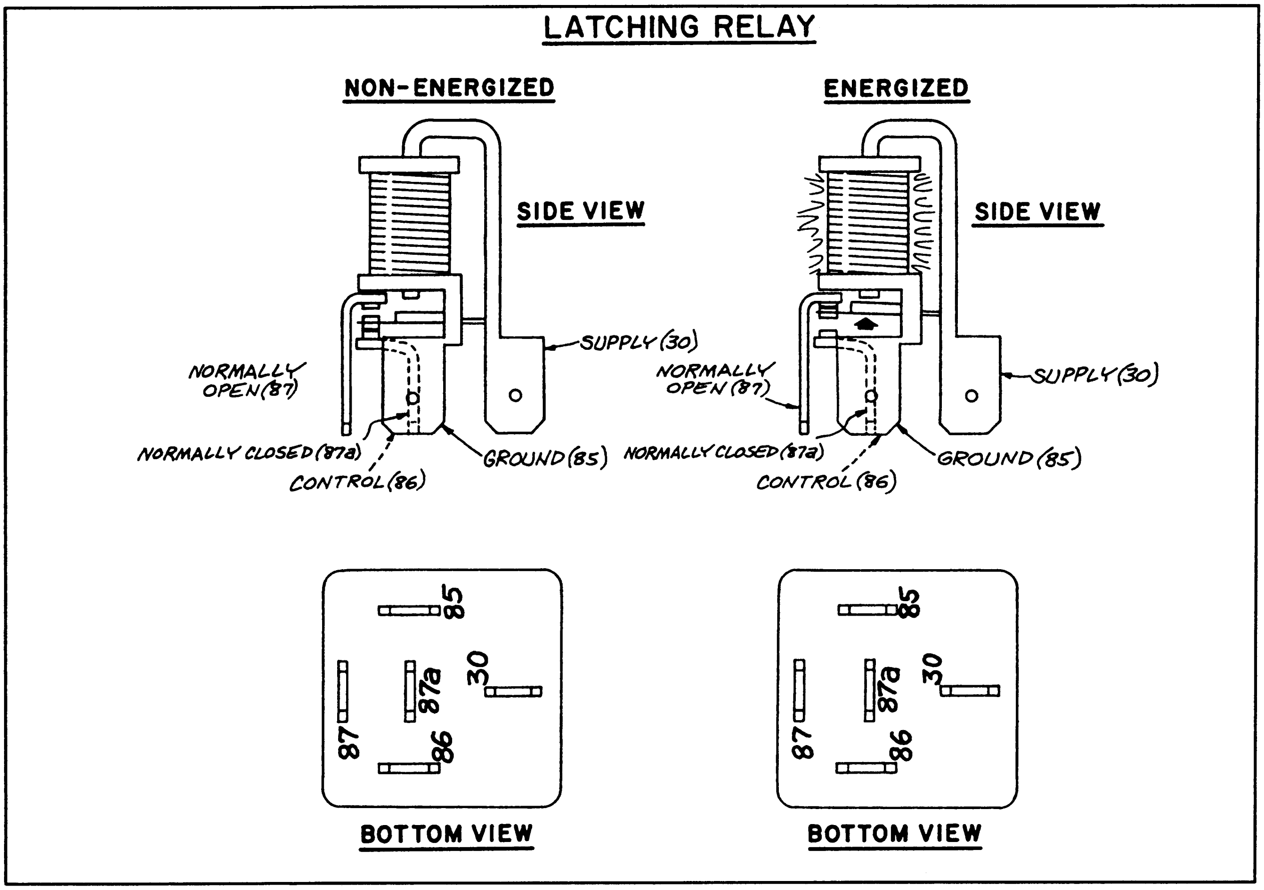


Figure 1-9

RELAYS

Relays are used to control the flow of power to various electrical circuits. A relay can control two different circuits by directing power to one circuit when the relay is not energized. When the relay is energized, power to the first circuit will be discontinued and power will be directed to a second circuit.

The relay controls power flow by activating or not activating the five external terminals on the relay base. Terminal #30 is the common input for electrical current to either terminal #87 or terminal #87A. Terminals #86 and #85 are connected to a coil in the relay. The coil determines whether current flows from terminal #30 to #87 or from #30 to #87A. When there is no current flow to the coil, the circuit between terminal #30 and #87A is complete. They are the “normally closed” contacts.

When current is available at terminal #86, power goes through the coil to ground at the #85 terminal, and the coil is energized. The energized coil pulls the latch up opening the #30 and #87A circuit while the circuit between terminals #30 and #87 is completed. The #30 to #87 circuit is the “normally open” circuit. Current will only flow between terminals #30 and #87 or terminals #30 and #87A, but never through both at the same time.

To remove a relay, pull it from the relay base.

Before installing the relay in the relay base, check the terminals on the relay to be sure they are not bent. A bent terminal may not make contact with the relay base and the circuit will not work.

RELAY TEST PROCEDURE

To check a relay, use an ohmmeter and:

1. Check for continuity between terminals #30 and #87A.
2. Supply 12 volts to the #86 terminal and ground the #85 terminal. The coil should energize.
3. Check for continuity between the #30 and #87 terminals with the coil energized. If the relay does not meet the test criteria, it should be replaced.

The electrical system uses two different types of relays.

A relay from a working circuit can be substituted for a suspected defective relay if an ohmmeter is not available.

WELDING ON THE MACHINE

WARNING: IF WELDING MUST BE PERFORMED ON THE UNIT, EITHER ON THE TRACTOR OR THE ATTACHED HEADER, THE BATTERY GROUND STRAP, 1, MUST BE DISCONNECTED OR DAMAGE MAY RESULT IN THE ELECTRONIC INSTRUMENT CLUSTER MONITORING SYSTEM.

REINSTALL THE BATTERY GROUND STRAP WHEN WELDING IS COMPLETE.

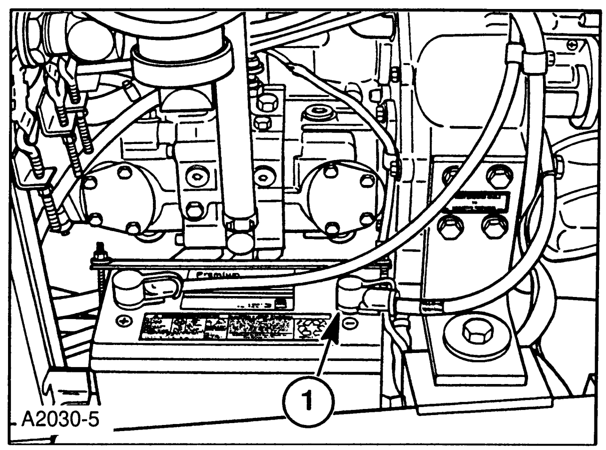


Figure 1-10

ELECTRONIC INSTRUMENT CLUSTER

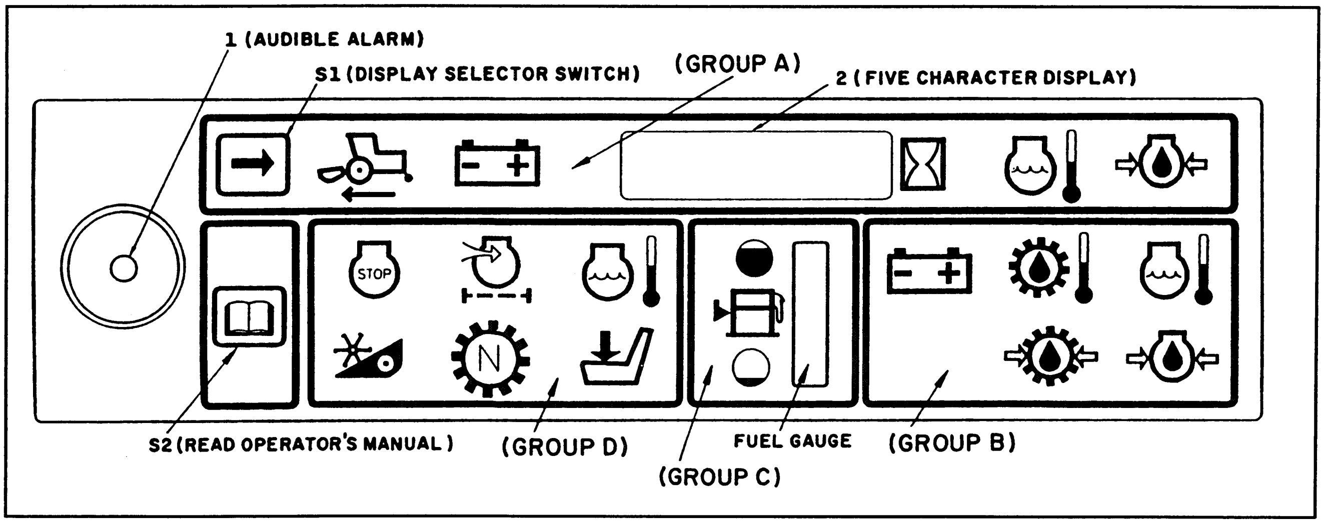


Figure 1-11

INTRODUCTION

This section covers the Electronic Instrument Cluster (EIC) portion of the electrical system.

The individual circuits that comprise the EIC system are shown in schematic drawings. An explanation of the current flow is provided for each schematic.

ELECTRONIC INSTRUMENT CLUSTER

The ELECTRONIC INSTRUMENT CLUSTER (EIC) is located in the upper right corner of the cab. The instrument cluster monitors critical engine data, provides safety interlocks in the starting and hydraulic system, warns the operator of a problem, and lets the operator choose which function to monitor.

The instrument cluster has three kinds of visual displays. It uses backlighting of symbols, an LED character display, and a segmented bar graph.

The front panel of the instrument cluster has several components and display areas. (Refer To Figure 1-11)

The audible alarm, 1, will sound if there is an unusual condition in any of the monitored areas.

The character display, 2, will display the item that the operator has chosen to monitor.

Switch, S1,(covered with an arrow symbol) and the button on the FNR lever handle are used to change the function that the operator chooses to monitor

Switch, S2, (covered with an open book symbol), has several functional and diagnostic uses that will be covered later.

Switches S1 and S2 pushed and held simultaneously when the key is turned to the on position places the instrument cluster in the configuration mode. While in this mode, the owner or service technician can choose either metric or US for the display. The display will show a “C” (Metric) or an “F” (US); switch S2 can be pushed to change back and forth.

The display is divided into four functional groups, A through D.

Group A contains (from left to right) the S1 selector switch explained earlier and five symbols which are backlit in white when that function is being monitored. The corresponding information for that function will be displayed in the character display 2.

The symbols associated with group A are:

1 Windrower ground speed in MPH/KPH

2 Battery condition in volts

3 Engine hours

4 Engine coolant temperature in C/F

5 Engine oil pressure

The character display is capable of showing only one item at a time. While the windrower is being started, the display will display engine oil pressure; after the engine has started, the monitor will display the last item viewed at power off.

Group B contains 5 symbols which are backlit in red. They are a warning to the operator that there is an unusual condition in that area. The audible alarm will sound with any of these conditions.

The symbols associated with display group B are:

1 Battery condition

2 Hydrostatic oil temperature

3 Engine coolant temperature alarm (104° C/220° F)

4 Engine oil pressure

5 Hydrostatic charge pressure

Group C contains a fuel gauge symbol and a vertical 10-segmented LED bar graph. All segments will be lighted when the fuel tank is full. When the fuel level gets down to the single-bar level, the alarm will sound for 5 seconds and a single-bar display will alternately flash with a 10-bar display. They will continue to flash until fuel is added or the ignition key is turned off.

Group D contains the following symbols which are backlit in yellow.

The symbols associated with display group D are:

1 Stop

2 Engine air filter clogged

3 Water temperature warning (99° C/210° F)

4 Header PTO switch

5 Neutral switch

6 Seat switch

PROGRAMMING THE EIC FOR FINAL DRIVE RATIO AND HEADER FLOAT/ POSITION

The Electronic Instrument Cluster (EIC) used in Model 2450 windrowers above serial number 566044 and Model 2550 windrowers above serial number 563615 is capable of being programmed for the final drive ratio, as well as header float/position control. If a prior EIC is replaced, use the following steps to be sure the EIC is properly programmed for that unit:

1. Enter the configuration mode by pressing and holding switches S1 and S2, Figure 1-11, while turning the ignition key to the “ON” position. When a “C” appears in the left corner of the display, you are in the configuration mode and switches S1 and S2 may be released.
2. In the configuration mode, a “C” or “F” will appear in the right side of the display. The “C” indicates metric (KPH, centigrade, etc.) and the “F” indicates US (MPH, Fahrenheit, etc.). To change the display from US to metric or vice versa, press switch S2 (open book symbol switch).
3. In the configuration mode a number will be displayed on the right side of the display. This number is used to set the final drive ratio. This number is changed by pressing switch S1.
4. To set the final drive ratio while in the configuration mode, press switch S1 (arrow symbol switch) until a 0 is displayed, which indicates a 28:1 ratio, or a 1 is displayed which indicates a 32:1 ratio. After the proper digit is displayed (0 or 1), turn the key off. This will change the EIC programming to the final drive ratio that you selected.

NOTE: 2450 windrowers above serial number 566044 and 2550 windrowers above serial number 563615 have a 32:1 final drive ratio. Units below these serial numbers have a 28:1 ratio.

5. To set the proper header lift mode, enter the configuration mode. Using switch S1 (arrow symbol switch), press the switch until a 2 is displayed on the right side of the display. Turn the key off. This will place the header lift valve in the float mode which is required for all 2200 or 2300 Series auger headers. If a 3 was displayed when the key was turned off, the header lift valve will be taken out of the float mode. This configuration is for use with draper headers and should not be used with 2200 or 2300 Series auger headers.

OPERATION

Starting the Windrower

The engine can be started normally by turning the key to the starting position, if the transmission is in the neutral position (FNR lever in the park position and the steering wheel locked). If the transmission is not in neutral, when the key is turned to the start position, the neutral light on the EIC will flash and the engine will not start. When the problem is corrected, the operator can start the windrower normally.

Whenever the system senses any unusual condition in a monitored area, the associated lamp will flash behind the appropriate symbol. In the case of engine air filter and battery voltage, the audible alarm will also sound for about 5 seconds. In the case of engine coolant temperature, hydraulic charge pressure, and engine oil pressure, the alarm will sound continually. Also the stop symbol will be flashing. The numeric value of the problem area will also be displayed in the character display.

Engine Shutdown

If either the engine oil pressure, hydraulic charge pressure, or engine coolant temperature exceeds or falls below certain limits, the electronic instrument cluster will stop the engine after 30 seconds by removing power from the fuel solenoid. The operator may restart the engine if the header is turned off, the steering wheel is centered, and the FNR lever is returned to neutral to engage the neutral start switch. Should the problem still exist, power will again be removed from the fuel solenoid after another 30 seconds.

When the engine water temperature reaches 99° C (210° F) the yellow warning light will come on. At 104° C (220° F), the red light, stop light and alarm buzzer will come on and 30 seconds later the engine will shut down.

Seat Switch/Header Shutdown

If the operator leaves the seat with the unit running, the seat symbol will light; four seconds later the header will stop and the header symbol will light. When the operator returns to the seat, the seat symbol will go out but the header symbol will remain on and the header will not operate until the operator turns the header drive switch off and back on.

If the operator tries to start the unit when the FNR lever is not in neutral, the neutral symbol will light.

NOTE: The S1 switch may be pushed at any time to mute the alarm if a fault occurs.

Engine Oil Pressure

If the engine oil pressure falls below 0.827 - 1.034 bar (12 - 15 PSI), in addition to engine shutdown, the following items will not function:

1. Header lower
2. Header raise
3. Header tilt
4. Header flotation trim

Memory

A memory in the EIC holds information, even when the EIC is disconnected from the windrower power supply. The information that will not be lost is:

1. Engine hours
2. Unit conversion (Metric or US)
3. Engine type
4. Operating information critical to the operation of the EIC.

Diagnostics

A software diagnostic tool is integrated within the EIC to test selected power input circuits, output circuits, and switches. In addition, error codes will be displayed for a failure of selected circuits. To check a potential circuit failure or retrieve stored error codes, you will need to enter the diagnostic mode.

Enter the diagnostic mode by using the following sequence:

1. Turn the ignition key to the off position.
2. Depress and hold switch S2 (open book symbol).
3. Turn the ignition key to the on position.
4. After the display goes out and the software revision level is displayed, example (R01.00), release switch S2 (open book symbol).

The EIC is now in the diagnostic mode, and the following circuits can be checked: (Refer to individual circuits test procedures in the following sections of this manual for specific checks of these circuits).

"ELECTRONIC INSTRUMENT CLUSTER ELECTRICAL SYSTEM"

Ground Speed Circuit

Display Scroll

"ENGINE ELECTRICAL SYSTEMS"

Air Filter Switch

Fuel Level Gauge Sender

Engine Coolant Sender

Engine Oil Pressure Sender

Not in Neutral Circuit

"ELECTROHYDRAULIC ELECTRICAL SYSTEMS"

Hydrostatic Pressure Switch

Seat Switch

Header Raise

Header Lower

Header Tilt Up

Header Drive Engage

The following outputs (power from the EIC to function) are checked. If the output circuit is faulty, an error code will be displayed on the EIC readout when that function is activated. The circuits that are checked are:

1. Fuel Solenoid Circuit
2. Header Drive Circuit
3. Hydraulic Master Valve Circuit
4. Header Lower Circuit
5. Header Raise Circuit

The error code will be displayed whenever a function is activated that has a fault. (Example: If there was a fault in the header raise output circuit, error would be displayed when the header raise switch was activated, but not displayed when the switch was not activated.) When this error code was displayed, it would also be stored in memory.

To retrieve stored error codes from memory, place the EIC in the diagnostic mode. If a fault has occurred, an error code will be displayed. Consult the following chart to determine which circuit has had a fault, and consult the troubleshooting charts in the “Engine Electrical Systems” or “Electrohydraulic Electrical Systems” sections of this manual for detailed troubleshooting procedures.

The error code will be erased from memory when the EIC is taken out of diagnostics and powered up. There will be no error codes in memory until a function with a fault is again activated.

The error codes are as follows:

ERR01 Memory Storage Error (Engine hours may not be valid).

ERR02 Fuel Solenoid Circuit

ERR03 Header Drive Circuit

ERR04 Hydraulic Master Valve

ERR05 Header Lower Circuit

ERR06 Header Raise Circuit

GENERAL TROUBLESHOOTING INFORMATION

Review the “General Electrical” portion of this section which explains the operation of the electrical components found in many circuits. A test procedure is provided for the components.

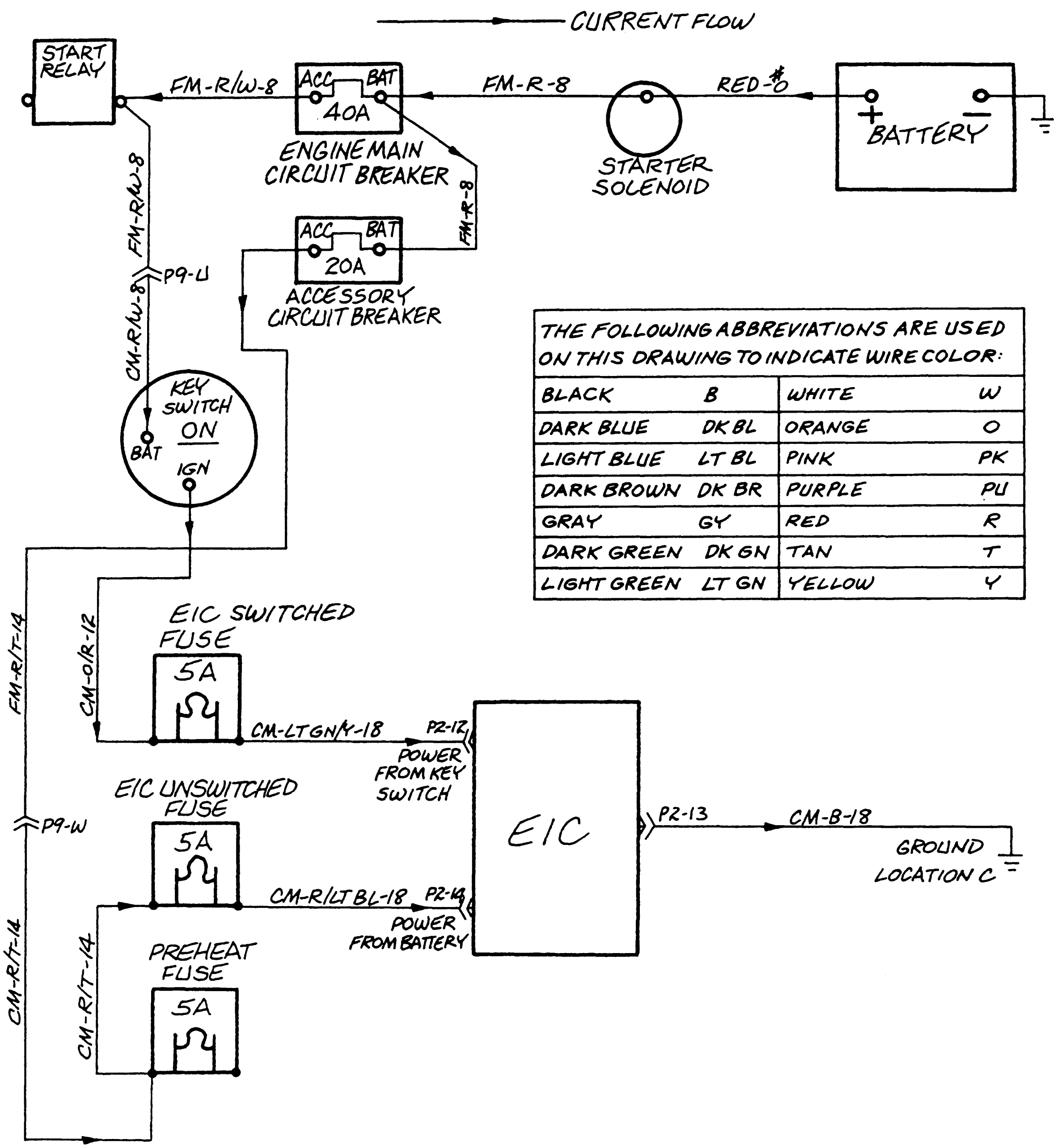
Before attempting to troubleshoot a circuit, familiarize yourself with the electrical schematics, current flow, and the operation of the electrical components in the circuit.

After you are familiar with the operation of the electrical circuit, operate the windrower and observe the symptom(s) of the problem. Match the symptom(s) you observe to the main headings listed in the “Troubleshooting” portion of this section.

When you find the heading that describes the symptom(s) you observed, follow the step-by-step instructions until the problem is corrected.

EIC MAIN POWER CIRCUIT

Model 2450
Model 2550 below serial number 606631

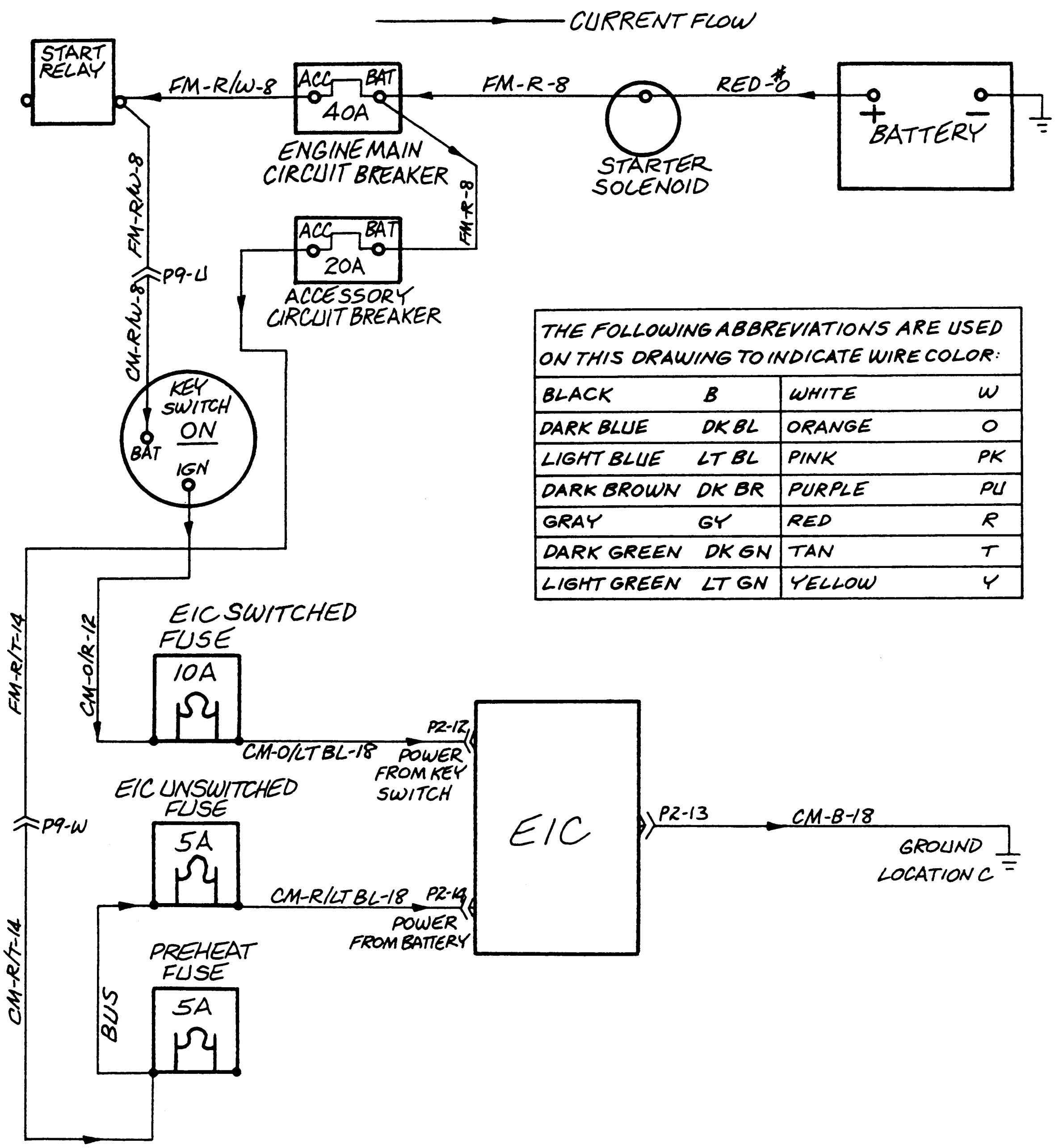


THE FOLLOWING ABBREVIATIONS ARE USED ON THIS DRAWING TO INDICATE WIRE COLOR:			
BLACK	B	WHITE	W
DARK BLUE	DK BL	ORANGE	O
LIGHT BLUE	LT BL	PINK	PK
DARK BROWN	DK BR	PURPLE	PU
GRAY	GY	RED	R
DARK GREEN	DK GN	TAN	T
LIGHT GREEN	LT GN	YELLOW	Y

Figure 1-12

EIC MAIN POWER CIRCUIT

Model 2550 above serial number 606630



THE FOLLOWING ABBREVIATIONS ARE USED ON THIS DRAWING TO INDICATE WIRE COLOR:

BLACK	B	WHITE	W
DARK BLUE	DK BL	ORANGE	O
LIGHT BLUE	LT BL	PINK	PK
DARK BROWN	DK BR	PURPLE	PU
GRAY	GY	RED	R
DARK GREEN	DK GN	TAN	T
LIGHT GREEN	LT GN	YELLOW	Y

Figure 1-13

EIC POWER

The Electronic Instrument Cluster power circuit is shown in Figures 1-12 and 1-13.

Operation

Refer to Figure 1-12 and Figure 1-13.

There are two power sources for the EIC. One source is a switched source that turns on and off with the key switch, and the other source is an unswitched source which does not turn on and off with the key switch.

The unswitched power source provides power for memory retention when the key is off.

Main Power Switched

Power originates at the battery and proceeds through the R battery cable to the starter. From there power continues through the R wire to the 40-amp main engine circuit breaker. From the 40-amp engine main circuit breaker, power continues through a R/W wire in the frame main wire harness to the start relay. From the start relay, power continues through a R/W in the frame main wire harness, to pin U of connector P9. From here power continues through a R/W wire in the cab main wire harness to the key switch "BAT" terminal.

When the key switch is turned on, power from the "IGN" terminal of the key switch follows the O/R wire in the cab main wire harness to the EIC switched fuse.

On all Model 2450 headers and Model 2550 headers below serial number 606631, the EIC switched fuse is a 5-amp fuse and feeds power to the EIC through a LTGN/Y wire to pin 12 of connector P2 at the EIC.

On Model 2550 headers above serial number 606630, the EIC switched fuse is a 10-amp fuse and feeds power to the EIC through an O/LTBL wire to pin 12 of connector P2 at the EIC.

Main Power Unswitched

Power originates at the battery and proceeds through the R battery cable to the starter. It continues through the R wire to the 40-amp main engine circuit breaker. From the engine main circuit breaker, power follows a R wire in the frame main wire harness to the 20-amp accessory circuit breaker and a R/T wire from this circuit breaker to pin W connector P9. Power then follows a R/T wire in the cab main wire harness to the preheat 5-amp fuse. Here the R/T wire junctions and continues to the 5-amp EIC unswitched fuse. From this fuse, power continues through the R/LTBL wire to pin 14 of connector P2 at the EIC.

Troubleshooting

Before attempting to troubleshoot a problem, review the information under the "General Troubleshooting" heading in this section along with the material in the "General Electrical" portion of this section.

Operate the machine and observe the problem. Match the problem to one of the headings on the following charts. Follow the systematic step-by-step instructions in the chart to locate and correct the problem. Follow all the instructions carefully.

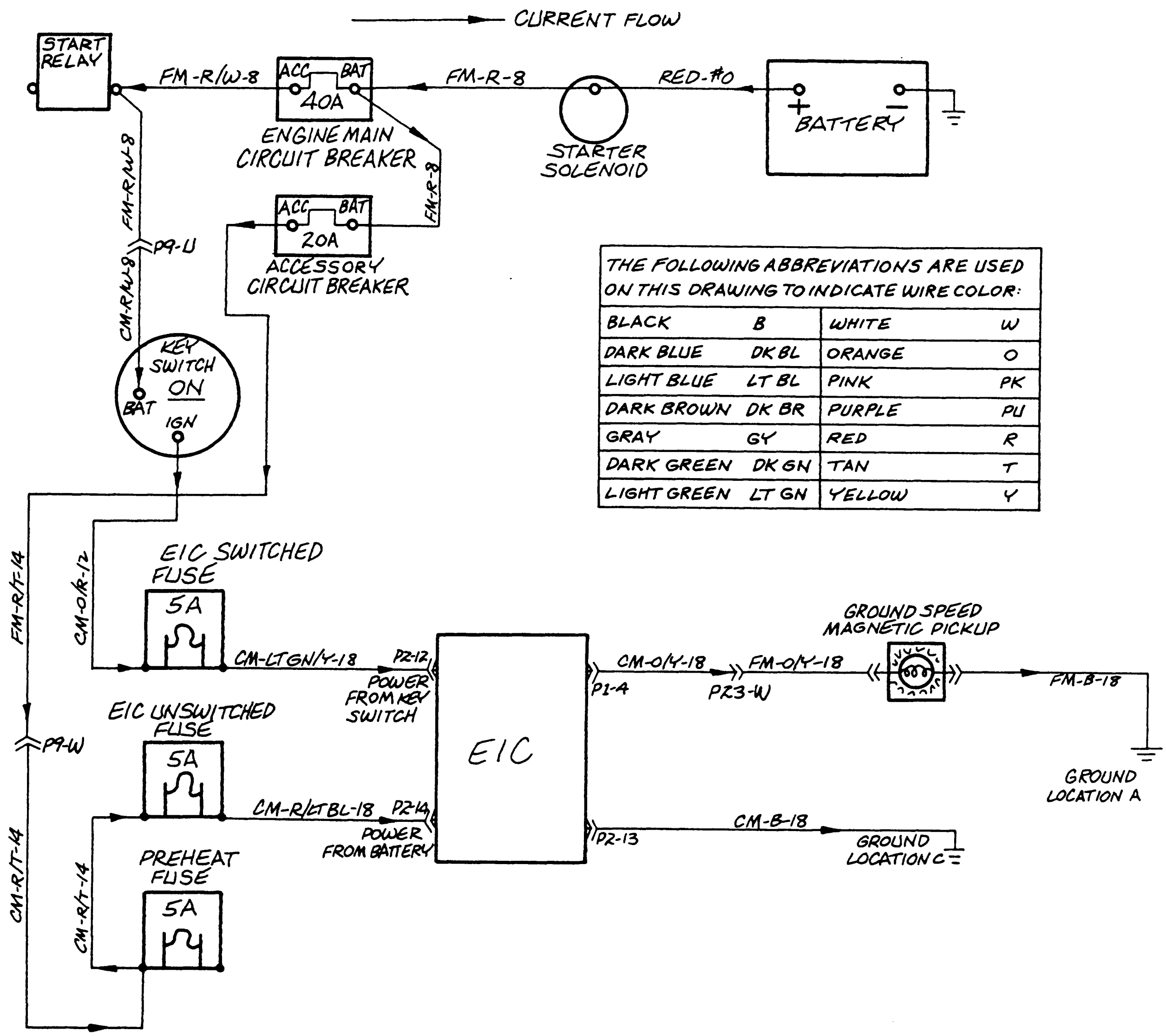
Only EIC Does Not Power Up

STEP	PRETEST INSTRUCTIONS	TEST	RESULT	PROBABLE CAUSE AND CORRECTION
1.	Key switch on.	Check for battery voltage at the LTGN/Y (O/LTBL on Model 2550 above s/n 606630) connection of the EIC switched fuse.	Battery voltage. No or low battery voltage.	Go to step 3. Go to next step.
2.	Key switch on.	Check for battery voltage at the O/R wire of the EIC switched fuse.	Battery voltage. No or low voltage.	Fuse defective. Replace. Open circuit or poor connection in the O/R wire from the key switch to the EIC switched fuse. Repair or replace.
3.	Key switch on, EIC removed.	Check for battery voltage at pin 12 of connector P2 at the EIC.	Battery voltage. No or low battery voltage.	Go to next step. Open circuit or poor connection in the LTGN/Y (O/LTBL on Model 2550 above s/n 606630) wire between the EIC switched fuse and the EIC. Repair or replace.
4.	Key switch off, EIC removed.	Check for battery voltage at pin 14 of connector P2 at the EIC.	Battery voltage. No or low battery voltage.	EIC defective. Replace. Go to next step.
5.	Key switch off.	Check for battery voltage at the R/LTBL wire of the EIC unswitched 5A fuse.	Battery voltage. No or low battery voltage.	Open circuit or poor connection in the R/LTBL wire between the 5-amp EIC unswitched fuse and connector P2. Repair. Go to next step.

STEP	PRETEST INSTRUCTIONS	TEST	RESULT	PROBABLE CAUSE AND CORRECTION
6.	Key switch off.	Check for battery voltage at the R/LTBL wire of the EIC unswitched 5-amp fuse.	Battery voltage.	Fuse defective. Replace.
			No or low battery voltage.	Open circuit or poor connection in the R/T wire (BUS connection on Model 2550 above serial number 606630) between the 5- amp EIC unswitched fuse and the 5-amp preheat fuse. Repair.

GROUND SPEED

Model 2450
Model 2550 below serial number 606631



THE FOLLOWING ABBREVIATIONS ARE USED ON THIS DRAWING TO INDICATE WIRE COLOR:

BLACK	B	WHITE	W
DARK BLUE	DK BL	ORANGE	O
LIGHT BLUE	LT BL	PINK	PK
DARK BROWN	DK BR	PURPLE	PU
GRAY	GY	RED	R
DARK GREEN	DK GN	TAN	T
LIGHT GREEN	LT GN	YELLOW	Y

Figure 1-14

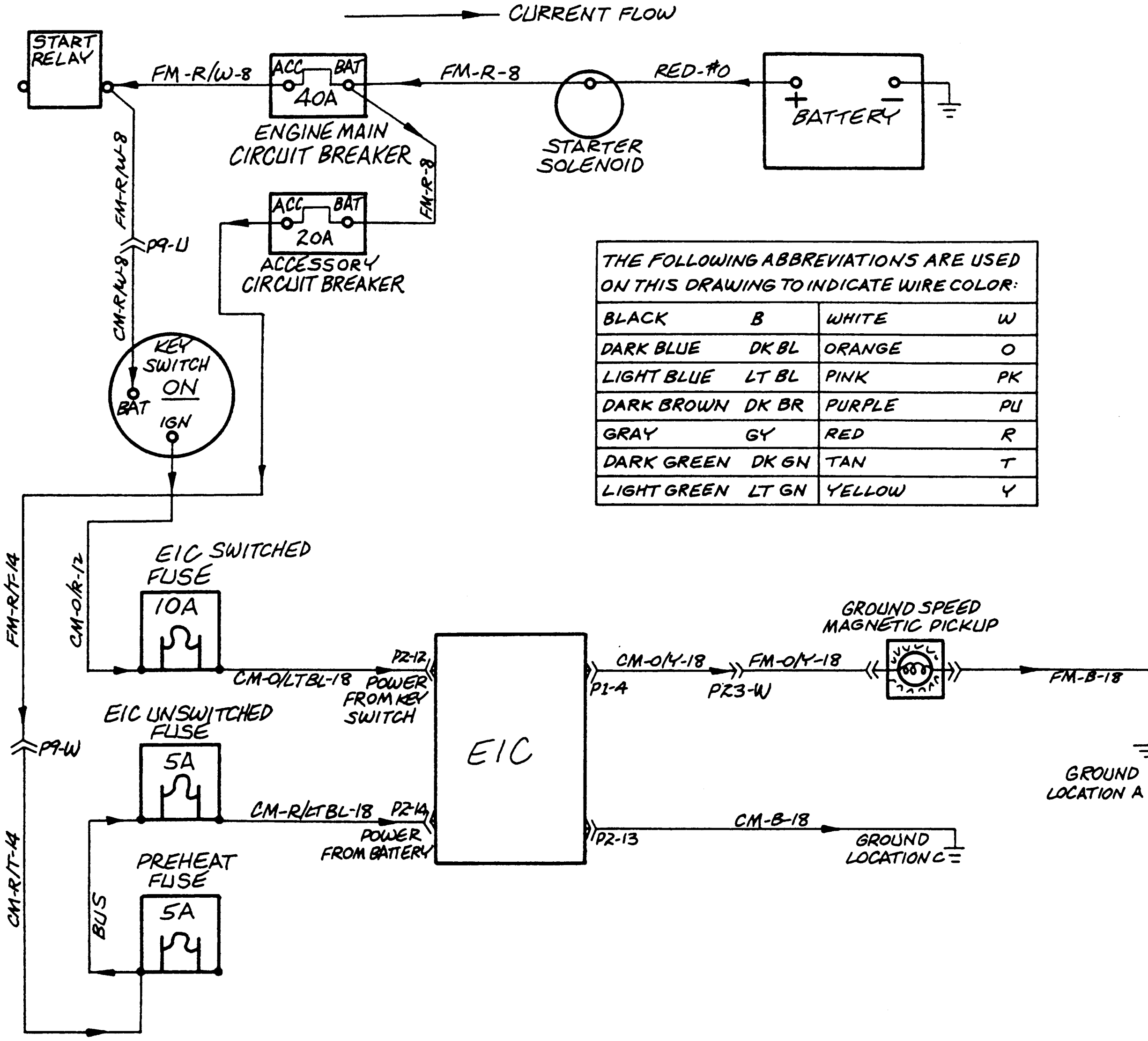
GROUND SPEED CIRCUIT

The ground speed circuit is shown in Figures 1-14 and 1-15. A signal which comes from the magnetic ground speed pickup passes through the O/Y wire in the frame main wire harness, through pin W of connector P23 connector, through the O/Y wire of the cab main wire harness to P1 pin 4 of the EIC. The ground speed magnetic pickup is grounded through the B wire on the frame main wire harness.

The brake disc located in the brake housing has a series of holes which pass by the ground speed magnetic pickup. These holes passing by the magnetic pickup generate a signal which is fed to the EIC, which converts this signal to a reading on the display.

GROUND SPEED

Model 2550 above serial number 606630



THE FOLLOWING ABBREVIATIONS ARE USED ON THIS DRAWING TO INDICATE WIRE COLOR:

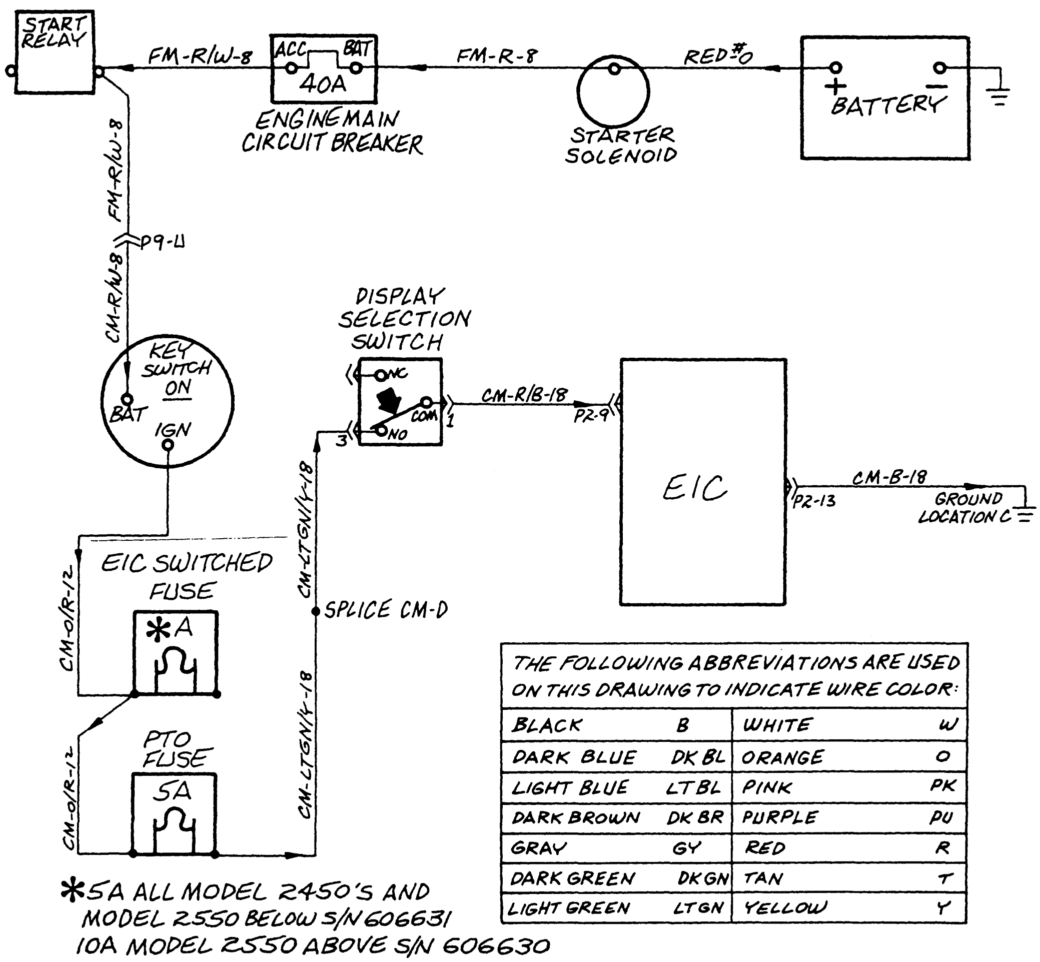
BLACK	B	WHITE	W
DARK BLUE	DK BL	ORANGE	O
LIGHT BLUE	LT BL	PINK	PK
DARK BROWN	DK BR	PURPLE	PU
GRAY	GY	RED	R
DARK GREEN	DK GN	TAN	T
LIGHT GREEN	LT GN	YELLOW	Y

Figure 1-15

Only The Ground Speed Display Circuit Does Not Function

STEP	PRETEST INSTRUCTIONS	TEST	RESULT	PROBABLE CAUSE AND CORRECTION
1.	Disconnect the ground speed magnetic pickup connector.	Check the ohms resistance in the ground speed magnetic pickup.	Ohms are less than 2300 or greater than 2800.	Ground speed magnetic pickup is defective. Replace.
			Ohms resistance is 2300 to 2800.	Go to next step.
2.	Same as step 1.	Check the B wire for continuity to ground.	B wire does not have continuity.	Open circuit or poor connection in the B wire. Repair or replace.
			B wire has continuity.	Go to next step.
3.	Disconnect connector P23.	Check for continuity in the O/Y wire from the ground speed magnetic pickup connector to the socket in connector P23.	O/Y wire does not have continuity.	Open circuit or poor connection in the O/Y wire between the ground speed magnetic connector and connector P23. Repair or replace.
			O/Y wire has continuity.	Go to next step.
4.	Disconnect connector P1. Connector P23 also remains disconnected.	Check for continuity in the O/Y wire from the pin of connector P23 to the socket of connector P1.	O/Y wire does not have continuity.	Open circuit or poor connection in the O/Y wire between connector P23 and connector P1. Repair or replace.
			O/Y wire has continuity.	EIC defective. Replace.

EIC DISPLAY SCROLL MAIN POWER CIRCUIT



THE FOLLOWING ABBREVIATIONS ARE USED ON THIS DRAWING TO INDICATE WIRE COLOR:

BLACK	B	WHITE	W
DARK BLUE	DK BL	ORANGE	O
LIGHT BLUE	LT BL	PINK	PK
DARK BROWN	DK BR	PURPLE	PU
GRAY	GY	RED	R
DARK GREEN	DK GN	TAN	T
LIGHT GREEN	LT GN	YELLOW	Y

Figure 1-16

DISPLAY SCROLL CIRCUIT

The functions on the digital display of the EIC can be changed by two methods. One method is to depress the S1 (arrow) switch on the EIC. The other method is to depress the button located in the center front side of the FNR handle. The following is troubleshooting for the button in the FNR handle.

Power comes from a splice in the LTGN/Y wire of the cab main wire harness, which initially received power from the 5-amp PTO fuse. Power continues on the LTGN/Y wire to the N/O terminal of the Display Selection Switch. When the switch is closed, power continues out of the "COM" terminal of the Display Selector Switch through the R/B wire of the cab main wire harness to connector P2 pin 9 of the EIC. This will in turn change the display of the EIC.

Only The Display Scroll Switch Does Not Function

STEP	PRETEST INSTRUCTIONS	TEST	RESULT	PROBABLE CAUSE AND CORRECTION
1.	Press and hold diagnostic switch on EIC, turn key switch to on position, and release diagnostic switch when R01.00 is displayed.	Press the display selection button on the FNR handle	No beep is heard from EIC.	Go to next step.
			Beep is heard from the EIC.	EIC is defective. Replace.
2.	Key switch on. Display selection switch removed from FNR handle	Check for battery voltage at the "COM", R/B terminal of the display selection switch.	Battery voltage.	Open circuit or poor connection in the R/B wire between the display selection switch and the EIC. Repair or replace.
			No or low battery voltage.	Go to next step.
3.	Same as step 2.	Check for battery voltage at the N/O, LTGN/Y connection of the display selection switch.	Battery voltage.	Display selection switch defective. Replace.
			No or low battery voltage.	Open circuit or poor connection in the LTGN/Y wire from the display selection switch to the splice in the cam main wire harness. Repair.

AIR CONDITIONING ELECTRICAL SYSTEMS

INTRODUCTION

This section covers the electrical portion of the air conditioning system.

The individual circuits that comprise the air conditioning system are shown in schematic drawings. An explanation of the current flow is provided for each schematic.

GENERAL TROUBLESHOOTING INFORMATION

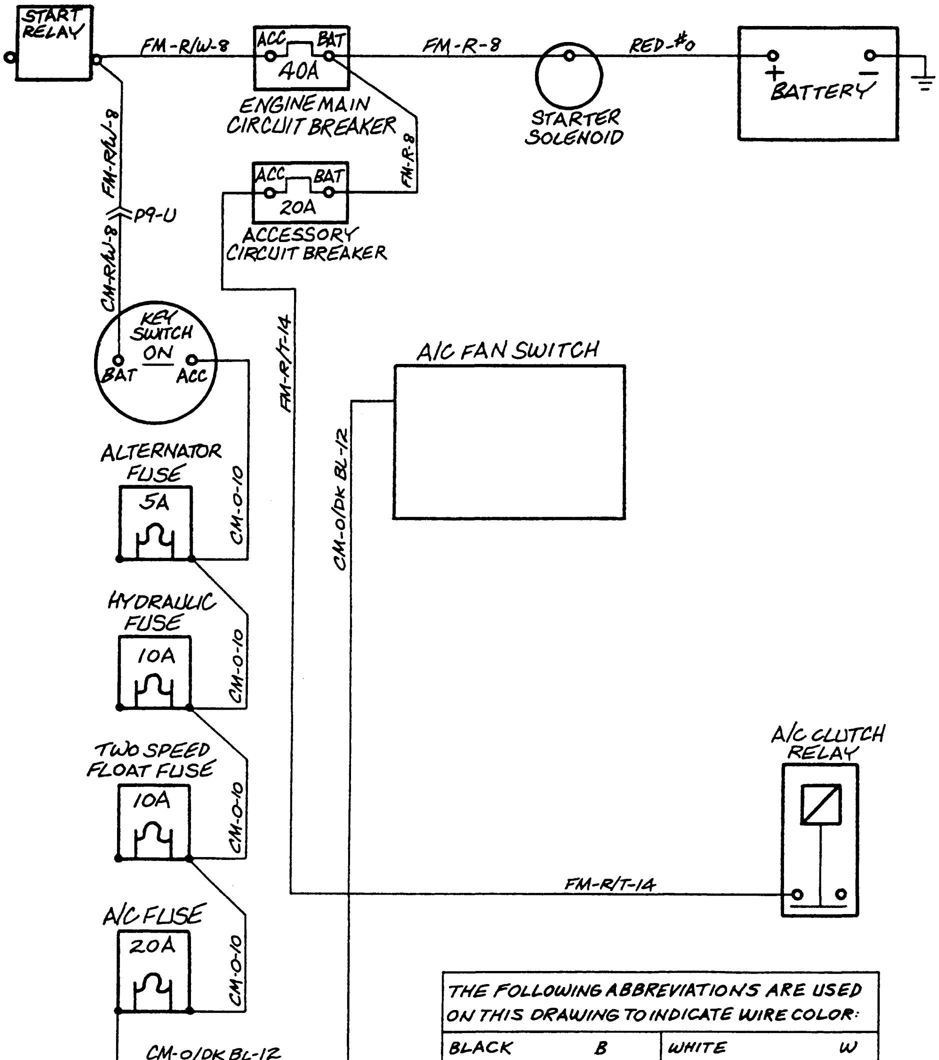
Review the “General Electrical” portion of this section which explains the operation of the electrical components found in many circuits. A test procedure is provided for the components.

Before attempting to troubleshoot a circuit, familiarize yourself with the electrical schematics, current flow, and the operation of the electrical components in the circuit.

After you are familiar with the operation of the electrical circuit, operate the windrower and observe the symptom(s) of the problem. Match the symptom(s) you observe to the main headings listed in the “Troubleshooting” portion of this section.

When you find the heading that describes the symptom(s) you observed, follow the step-by-step instructions until the problem is corrected.

FAN (PRESSURIZER) MAIN POWER CIRCUIT



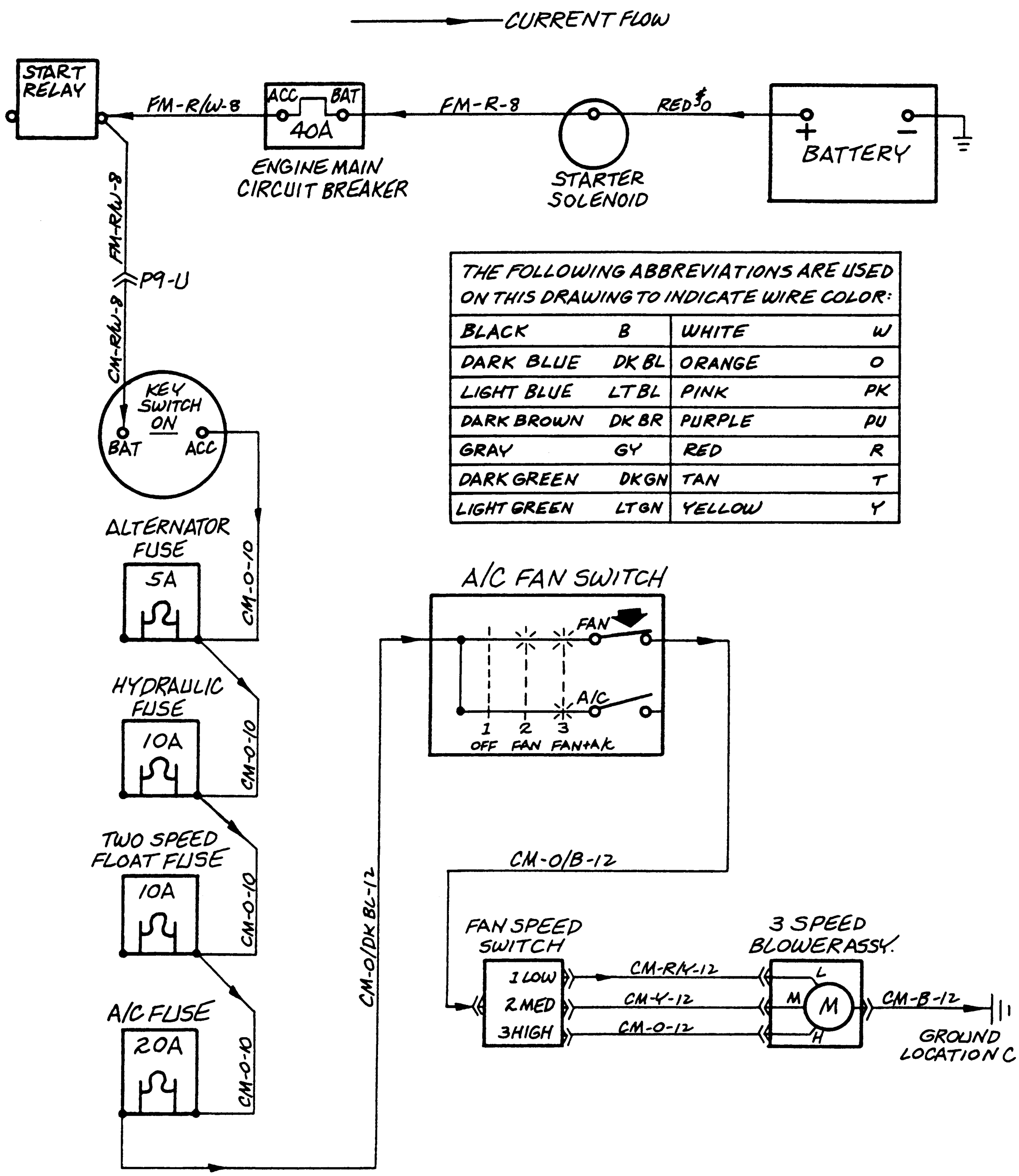
THE FOLLOWING ABBREVIATIONS ARE USED ON THIS DRAWING TO INDICATE WIRE COLOR:			
BLACK	B	WHITE	W
DARK BLUE	DK BL	ORANGE	O
LIGHT BLUE	LT BL	PINK	PK
DARK BROWN	DK BR	PURPLE	PU
GRAY	GY	RED	R
DARK GREEN	DK GN	TAN	T
LIGHT GREEN	LT GN	YELLOW	Y

Figure 1-17

FAN (PRESSURIZER) MAIN POWER CIRCUIT

Power originates at the battery, proceeds through the R battery cable to the starter. From there power continues through the R wire in the frame main wire harness to the 40-amp main engine circuit breaker. From the engine main circuit breaker, power continues through a R/W wire in the frame main wire harness to the start relay. From here power proceeds through a R/W wire, also in the frame main wire harness, through pin U of connector P9, and continues on a R/W wire of the cab main wire harness to the key switch. When the key switch is turned on, power from the "ACC" terminal of the key switch follows the O wire in the cab main wire harness which junctions at the 5-amp alternator fuse, 10-amp hydraulic fuse and 10-amp two-speed fuse. Power continues on the O wire to the 20-amp AC fuse. From here it continues through an O/DK BL wire in the cab main wire harness to the air conditioner fan switch.

FAN (PRESSURIZER) FAN ACTIVATED CIRCUIT



THE FOLLOWING ABBREVIATIONS ARE USED ON THIS DRAWING TO INDICATE WIRE COLOR:

BLACK	B	WHITE	W
DARK BLUE	DK BL	ORANGE	O
LIGHT BLUE	LT BL	PINK	PK
DARK BROWN	DK BR	PURPLE	PU
GRAY	GY	RED	R
DARK GREEN	DK GN	TAN	T
LIGHT GREEN	LT GN	YELLOW	Y

Figure 1-18

FAN (PRESSURIZER) FAN ACTIVATED CIRCUIT

When the air conditioner fan switch is positioned in either the fan or air-conditioning position, power is directed to the fan speed control switch. This switch regulates the fan speed by directing power to the fan motor.