ELECTRICAL SYSTEM INFORMATION FOR LAWN & GARDEN PRODUCT

20 & 22" BATTERY INFORMATION

GENERAL INFORMATION (COURTESY OF HAWKER ENERGY PRODUCTS INC.)

The battery used on the 20 & 22 inch walk–behind is a Sealed–Lead Battery which utilizes cells made of a pure lead–tin material. These types of batteries are classified as "non–spillable wet electric storage batteries" and may be shipped as such. (Figure 13)

Overcharging and undercharging can both decrease battery life. Undercharging is more detrimental to a battery and decreases battery life more quickly than overcharging. When using the charger supplied with the battery, charge for 12–16 hours **after every mowing** to maintain optimum battery performance.

A Constant Volt Charger is recommended for Hawker Batteries.

As a general rule of thumb, charge the battery to 105–110% of the capacity used on the discharge. To guarantee a complete and adequate recharge, 1.05–1.10 ampere–hours (Ah) should be returned to the battery for every 1 Ah that is discharged.

Heat is the major cause of battery deterioration. For every 13–18^0 F increase above 77^0 F ambient temperature, the expected life of the battery goes down by 50%. As the temperature rises, electrochemical activity within the battery increases and the life is shortened.

Rechargeable sealed–lead batteries are recyclable. Spent batteries of this type **must be recycled** in accordance with local recycling rules.

PRECAUTIONS

Anytime the battery's Open–Circuit Voltage drops to 12.00 Volts or below, it should be charged. If the Open–Circuit Voltage is allowed to drop to between 11.58 and 10.8 V, permanent damage may occur to the battery. If the voltage drops below 10.8 V, then the battery may not be able to be recharged.

These types of batteries use a gas recombination principle. During the charging cycle, Oxygen and Hydrogen are formed. The Oxygen, up to a point, is recombined to form water at the negative electrode.

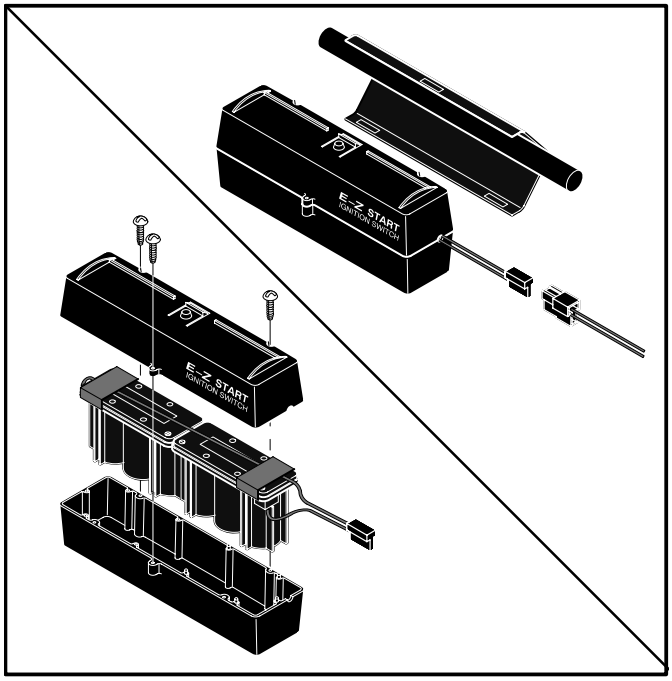


FIGURE 13: *BATTERY FOR 20 & 22"*

Hydrogen gas generation is reduced by the use of the pure lead–tin material. But, some Hydrogen will escape, especially in an overcharge situation. So, **DO NOT CHARGE** in a closed container. Our battery cover is not considered a sealed container.

If the terminals of the battery are short circuited, an extremely high instantaneous current will be generated. These large currents will cause serious injury or damage. **DO NOT SHORT CIRCUIT THE BATTERIES ACROSS THE NEGATIVE AND POSITIVE TERMINALS**.

Batteries of different capacities, age, or make should not be mixed within the same system.

STORAGE

The battery should be charged prior to storage and charged again before being put back into use. The battery may be stored with the unit. These batteries are rated to –40^0 F and at that temperature it will retain its charge much better than at room temperature.

20 & 22" BATTERY INFORMATION – continued

REMOVAL/NORMAL RECHARGING

1. Disconnect wiring harness. (Figure 14)
2. Push quick release and remove battery case.
3. Attach charger to battery. (Figure 15)
4. Plug charger to an electrical outlet.
5. Charge for 12–16 hours.
6. Disconnect charger from outlet and wall.
7. Attach battery case to handle.
8. Connect wiring harness to battery.

NOTE: Do Not leave the charger connected to the battery if the charger is not plugged to a wall outlet. The charger will drain the battery.

BATTERY TEST PROCEDURE (COURTESY OF HAWKER ENERGY PRODUCTS INC.)

Procedure:

1. Disconnect **battery** from **charger**, **wire harness**, or any other circuit. If **battery** has just been charged, voltage may be artificially inflated and should be allowed to "rest" for at least 4 hours in order for voltage to stabilize.
2. Check open circuit voltage (OVC) at the **connector**. A fully charged **battery** should have a minimum OVC of 12.84 volts. If reading falls below this number, charge overnight with a **known reliable charger. (See NOTE below)**
3. Repeat Step #1 above, then re–check OVC. If voltage has not recovered at all from original reading, replace **battery**. If voltage has increased, try to start the mower. An older **battery** may not reach 12.84 volts, but still may start the mower with no problem**.**
4. Whether the **battery** is placed back into service or replaced, advise the end–user that the **battery** should always be charged after use. Although it may still start the mower, the energy used to start it needs to be replenished to keep the **battery** at a high state of **charge**.

NOTE ON "Known reliable Charger": This refers to any charger that has a minimum 1.5 amps available and charges at a constant voltage of between 14.7 and 15.0 volts. If the charger's output is less than 13.5 volts, it will not fully recharge the battery. For constant volt chargers, there is no current limit. A 6–amp or 10–amp charger or even more is acceptable to use, but a minimum of 1–amp is required if the battery is discharged quite a bit.

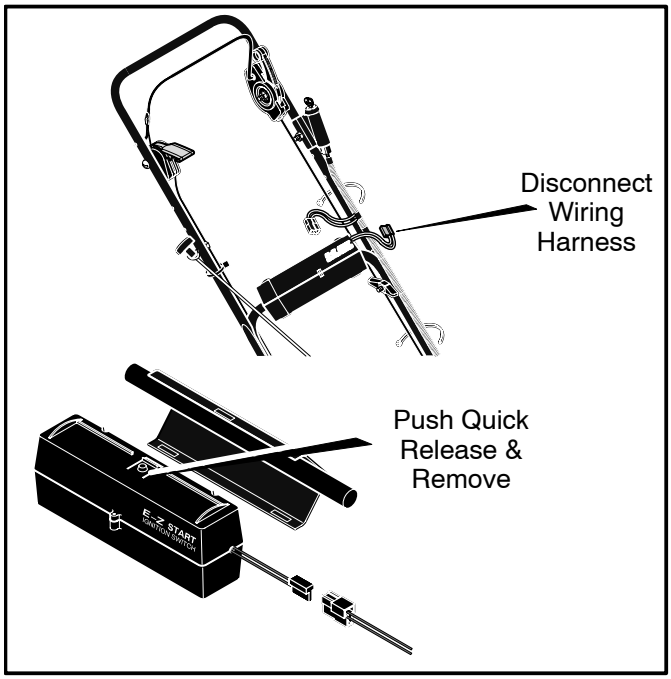


FIGURE 14: *BATTERY REMOVAL & INSTALLATION*

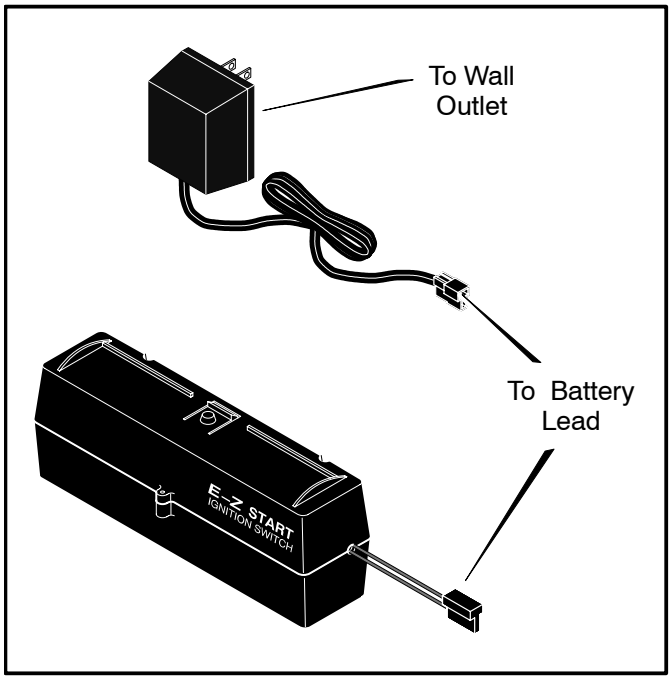


FIGURE 15: *BATTERY CHARGING*

FOR MORE INFORMATION ON BATTERIES, CONTACT:

HAWKER ENERGY PRODUCTS INC.
617 North Ridgeview Drive
Warrensburg, MO 64093–9301, USA
Telephone: (660) 429–2165
Fax: (660) 429–6397
Website: www.hepi.com

TRACTOR BATTERY INFORMATION

GENERAL INFORMATION

WARNING: Batteries produce explosive gases. Keep cigarettes, flames and sparks away from batteries at all times. Protect your eyes at all times. Never lean over a battery when jump starting or performing other maintenance.

Remove and replace any battery that has evidence of cracks in the case or cover. If the battery is leaking, place the battery in a plastic bag and take to a proper recycling plant.

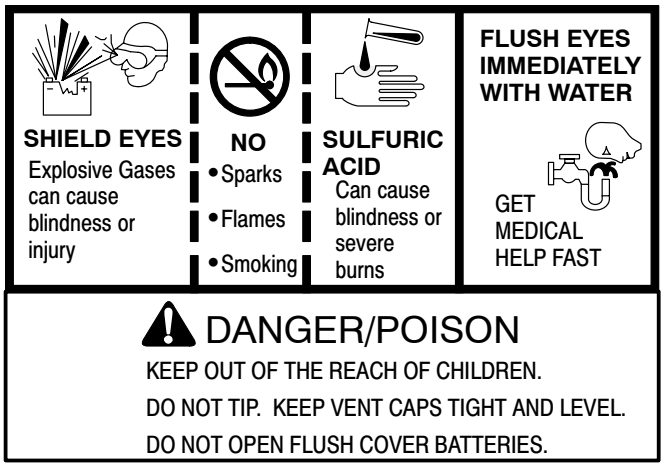


FIGURE 16: *DANGERS OF A BATTERY*

Check the Batteries Charging State

There are two (2) types of "wet–cell" batteries. **(1) Maintenance Free** and **(2) Serviceable Batteries** which have removable vent caps.

(1) Maintenance Free Batteries are only free from servicing in that you do not need to add water. Yet, the amount of acid or electrolyte may deplete due to excessive heat or improper regulator settings. Use a Voltmeter to check the Charging Status of the battery. Re–charge if necessary. Never open these types of batteries.

(2) Serviceable Batteries require maintenance service each year. To check to see if this type of battery is good, measure the Open Circuit Voltage with a Voltmeter or take a Specific Gravity reading of the Electrolyte with a Hydrometer. If the circuit reading is below 12.4 volts or the Specific Gravity reading is below 1.225 SG, charge the battery. If the electrolyte levels are too low for a Hydrometer reading add water to the cells.

NOTE: If water is added to a battery, make sure you run the engine to charge the battery so the acid and water will mix. This is especially important in cold weather as the water in the battery can freeze.

Fill the battery cells with clear, odorless drinking water. Distilled water is preferred, especially if the water in your area has a high iron content. Fill each cell until the level is to the bottom of the vent well in (Figure 17). DO NOT OVERFILL. Overfilling a battery will cause the acid to bubble out the vent caps corrode the metal part and damage the belts.

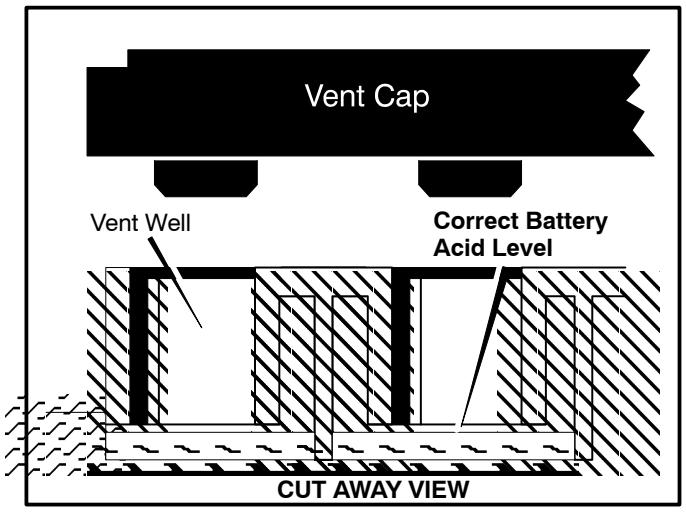


FIGURE 17: *CHECK FLUID LEVEL IN BATTERY*

Load Testing The Battery

Follow–up the hydrometer or open circuit voltage test with an adjustable load test to make sure the battery has enough electrical charge. Follow the instructions on the tester. If the battery keeps a minimum voltage of 9.6 for 30 seconds while under load, the battery is in good condition. If not, recharge and test again. If it fails a second time replace the battery.

TRACTOR BATTERY INFORMATION – continued

Battery Charging Tips

- Charge the battery if the circuit reading is below 12.4 volts or the Specific Gravity reading from a hydrometer is below 1.225 SG or the load test is below 9.6 volts.
- Keep vent caps in place when charging battery.
- DO NOT CHARGE FOR MORE THAN 48 HOURS.
- If the hydrometer readings or voltage readings have not improved after two hours, stop charging the battery. Any further charging will damage the battery.
- If a battery will not come to full charge (1.260 SG or 12.6 Volts), replace the battery.
- If the battery case feels hot, reduce or temporarily stop the charging process.
- NEVER try to charge a frozen battery. Let the battery warm–up to room temperature first.
- NEVER trickle–charge a battery for more than 48 hours.

Jump Starting The Battery

Accidents happen! Always shield your eyes and face when working around batteries. Make sure the vent caps are pushed in completely and cover with a damp cloth. Use a good quality set of booster cables and proceed as follows:

1. Connect the RED cable to the positive (+) post of the weak battery.
2. Connect the other end of the same red cable to the positive (+) post of a good battery.
3. Connect the BLACK cable to the negative (–) post of the good battery.
4. Next, connect the other end of the BLACK cable to a GROUNDED metal part of the engine of tractor frame.
5. Start both engines and remove the cables in reverse order from above. Remove and discard the damp cloths from each battery.

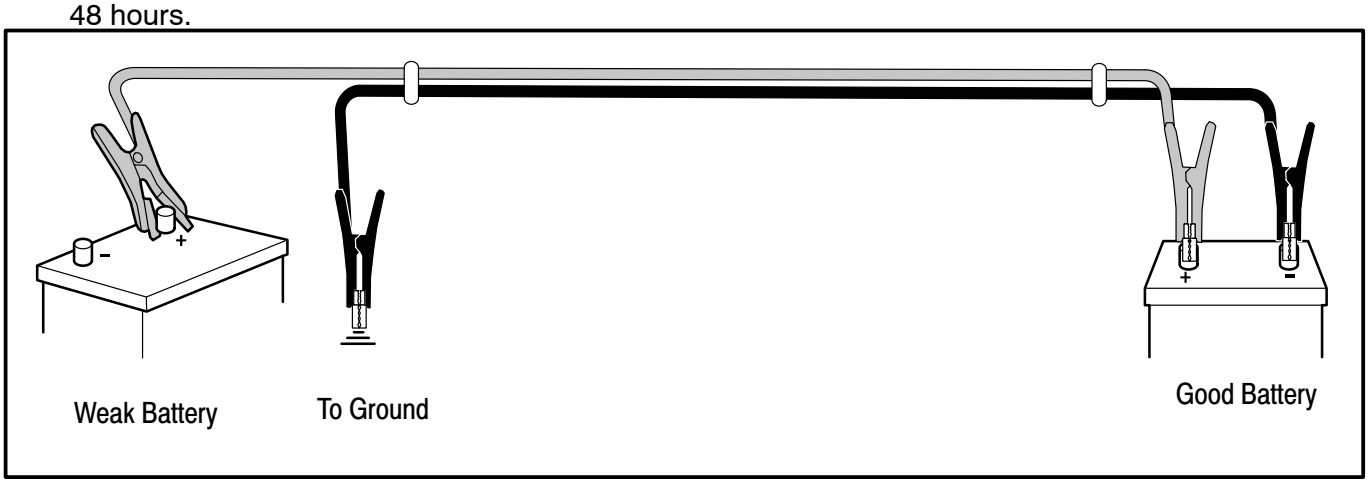


FIGURE 18: *JUMP STARTING HOOK–UP*

BATTERY VOLTAGE	STATE OF CHARGE
12.6	100%
12.4	75%
12.2	50%
12.0	25%
11.8	0%

TESTING THE SOLENOID

When the engine of a riding mower will not turn over, there are a few possible reasons for this outside of the engine itself. One reason is the battery does not have sufficient charge (refer to pages 54–55 for charging information). Another reason is a problem with the Wiring Harness/Operator Presence System (refer to pages 56–64 for troubleshooting information). Finally, the last possible reason is a bad solenoid. The test procedure below will determine if the solenoid is good or bad.

1. At the solenoid, disconnect the cable lead that runs from the solenoid to the starter.
2. With a mutli–meter, check the battery for sufficient charge. It should read between 12.6 and 12.4 open circuit voltage. If the reading is less than 12.4, then charge the battery before proceeding. For the solenoid to work properly, it needs a minimum of 8.5VDC during cranking.
3. If the battery has sufficient charge, then check the solenoid's coil resistance. To check the resistance, disconnect the lead that goes to the primary terminal. Check the resistance between the primary terminal and the base of the solenoid. If there is no resistance between those two points, then the coil of the solenoid is either burnt or one or both coil leads are broken. At this point, the solenoid should be replaced.
4. If there is resistance between the coils, then see if the solenoid will click. Using a lead wire with clips, connect one end of the lead wire to the positive post of the battery and the other end of the lead to the solenoid primary terminal. (Figure 20)
5. If the solenoid does not click, then check the ground between the solenoid and the frame. with the first lead wire still connected, attach another test lead to the negative post of the battery and attach it to the base of the solenoid. If the solenoid clicks, then there is a grounding problem. Remove the solenoid and sand away any rust or paint build–up that may be interfering with the ground. If the solenoid still does not click, then it is safe to assume that the solenoid is bad. Remove and replace with a good solenoid. (Figure 20)
6. If the ground is good and the solenoid clicks, it does not necessarily mean that the solenoid is good. A continuity check must be made across the top two terminals while the solenoid is energized. (Figure 20)
7. If the solenoid has continuity across the terminals, then the solenoid is good. If there is no continuity across the terminals, then the solenoid is bad. Remove and replace with a good solenoid.

NOTE: Coil resistance should be approximately between 3.46–3.96 Ohms.

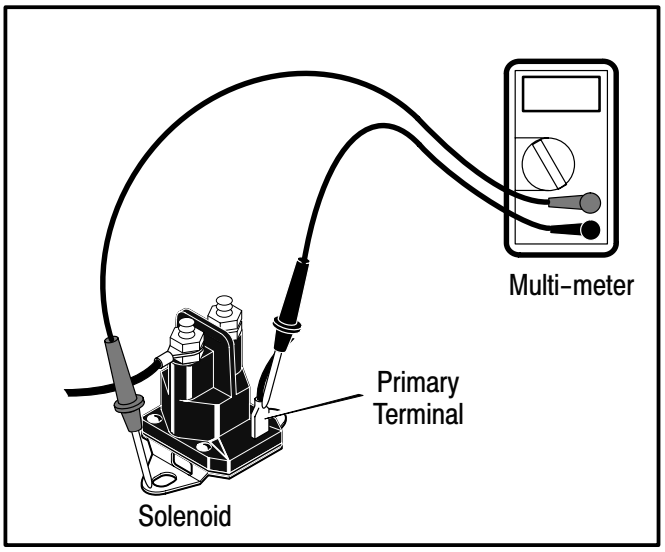


FIGURE 19: *CHECK COIL RESISTANCE*

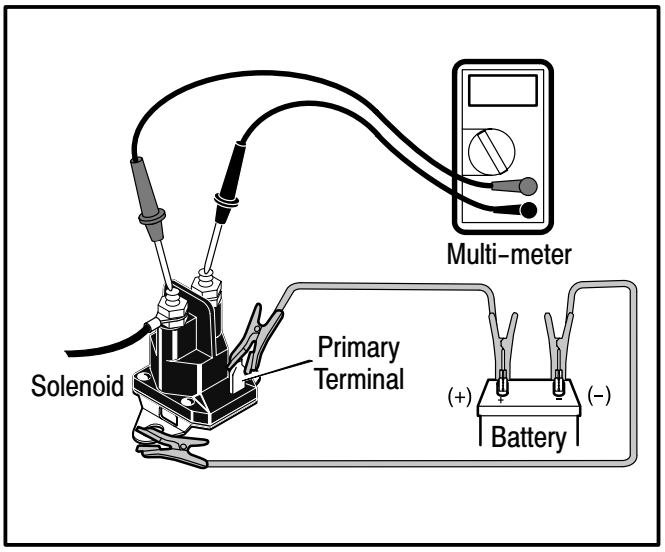


FIGURE 20: *CHECK GROUND & CONTINUITY BETWEEN THE TERMINALS*

INTRODUCTION

The four DIAGNOSTIC CHARTS contained in this section are intended to assist the technician in diagnosing electrical issues with MURRAY riding mowers. Most of the wiring and components described in the charts are common to riding mowers MURRAY has produced since 1970. However, the seat switches and double pole switches utilized in the operator presence circuits apply to products produced since 1987.

The charts begin with instructing the technician to conduct a thorough visual check. Next, the three most common electrical issues are diagnosed step by step. The charts are titled as follows:

1. **THE VISUAL CHECK**

2. **THE BLOWN FUSE**

3. **GOOD FUSE / NO CRANK**

4. **ENGINE CRANKS / NO START**

Please note that the term “NO CRANK” describes a situation where the engine starter will not engage. The term “NO START” describes a situation where the starter is engaged and turning the engine flywheel; however, the engine will not start and run.

This information was first intended to be used with the MURRAY ELECTRICAL VIDEO VOLUME II. This video is available under Part Number S–4005. In the video, there are screen dialogue boxes which appear that will refer you to a chart number and section in the DIAGNOSTIC CHARTS from this book to follow along.

Finally, notice on the charts that you are occasionally referred to numbers at certain points (e.g., DIAGNOSTIC CHART 2, Section A, “SEE 3”). The details of the twelve number references on the charts are described on the next two pages.

We hope that this section helps you to diagnose, troubleshoot, and repair any electrical system problems that you are attempting to solve.

REFERENCE NUMBERS

At selected points in the DIAGNOSTIC CHARTS, you will be instructed to “See” a particular number. Listed below are details of the twelve numbers referenced in the charts.

1. FUSE

1. Never install a fuse with a higher than recommended amperage rating.
2. Make certain the fuse is fully inserted into the holder.

2. WIRING HARNESS

1. Inspect all wires for breaks, damaged insulation, loose and/or corroded connections.
2. Using the wiring schematic, check the routing of wires to components and connectors.
3. Repair or replace the wiring harness if damaged or defective.

3. KEY SWITCH

1. Although they are sometimes very similar in appearance externally, the internal circuitry does differ between different part numbers of key switches.
2. Always refer to the Illustrated Parts Lists (IPL) for the correct part number.
3. Refer to the wiring schematic for information on the routing of wires to and from the key switch.

4. ALTERNATOR

Always refer to the engine manufacturer’s servicing information for alternator testing procedures.

5. FUEL SOLENOID

1. This electrically actuated component controls fuel flow in the injection pump.
2. An interruption of power supplied to the solenoid will shut off the fuel supply.
3. Always refer to the specific engine manufacturer’s servicing information for fuel solenoid testing procedures.

REFERENCE NUMBERS

6. BATTERY

1. Make sure the ground cable of the battery is firmly attached to the frame of the riding mower and the electrical connection is free of paint and corrosion.
2. Check the OPEN CIRCUIT VOLTAGE of the battery. Use the chart below to determine the state of charge of the battery.

BATTERY VOLTAGE	STATE OF CHARGE
12.6	100%
12.4	75%
12.2	50%
12.0	25%
11.8	0%

3. Charge the battery per the recommendations on the battery labeling.
4. Always follow the OPEN CIRCUIT VOLTAGE test with an adjustable load test to determine if the battery has adequate electrical performance.

7. STARTER

1. Paint and dirt between the base of the engine and the frame will result in a poor grounding of the starter.
2. Always refer to the engine manufacturer's servicing information for starter testing procedures.

8. SOLENOID

* CAUTION !*

When testing the solenoid, always make certain that the blades are disengaged and the motion drive is in neutral. In addition, thoroughly inspect the mower for debris and / or fuel that could be ignited by electrical sparks.

When performing the test described in (b.) below, the engine starter and battery terminals must be disconnected from the solenoid. Failure to do so will damage your continuity tester or VOM.

1. Paint and dirt between the metal base of the solenoid and the frame will result in a poor grounding of the solenoid.
2. The solenoid is energized through current flow in the primary wire. The solenoid can be tested by jumping a wire from the positive post of the battery to the primary post on the solenoid. A clicking noise indicates that the solenoid has engaged. A continuity check across the engine starter and battery terminals on the solenoid with the solenoid energized will confirm this assumption. However, the performance of the solenoid under starter load conditions could remain in question. Refer to the solenoid test procedure found elsewhere in this section.

REFERENCE NUMBERS

9. PTO SWITCH

1. All PTO switches (since 1987) are double pole single throw (DPST).
2. The normally open (NO) set of poles are utilized in the solenoid primary circuit.
3. The normally closed (NC) set of poles are utilized in the operator presence circuit.

10. CLUTCH SWITCH

1. Depending on the application, this switch could be a DPST or a single pole single throw (SPST). For example, the year 2000 rail frame tractor utilizes a DPST while the same year rear engine rider is equipped with a SPST clutch switch.
2. The NO set of poles are utilized in the solenoid primary circuit.
3. If so equipped, the NC set of poles are utilized in the operator presence circuit.

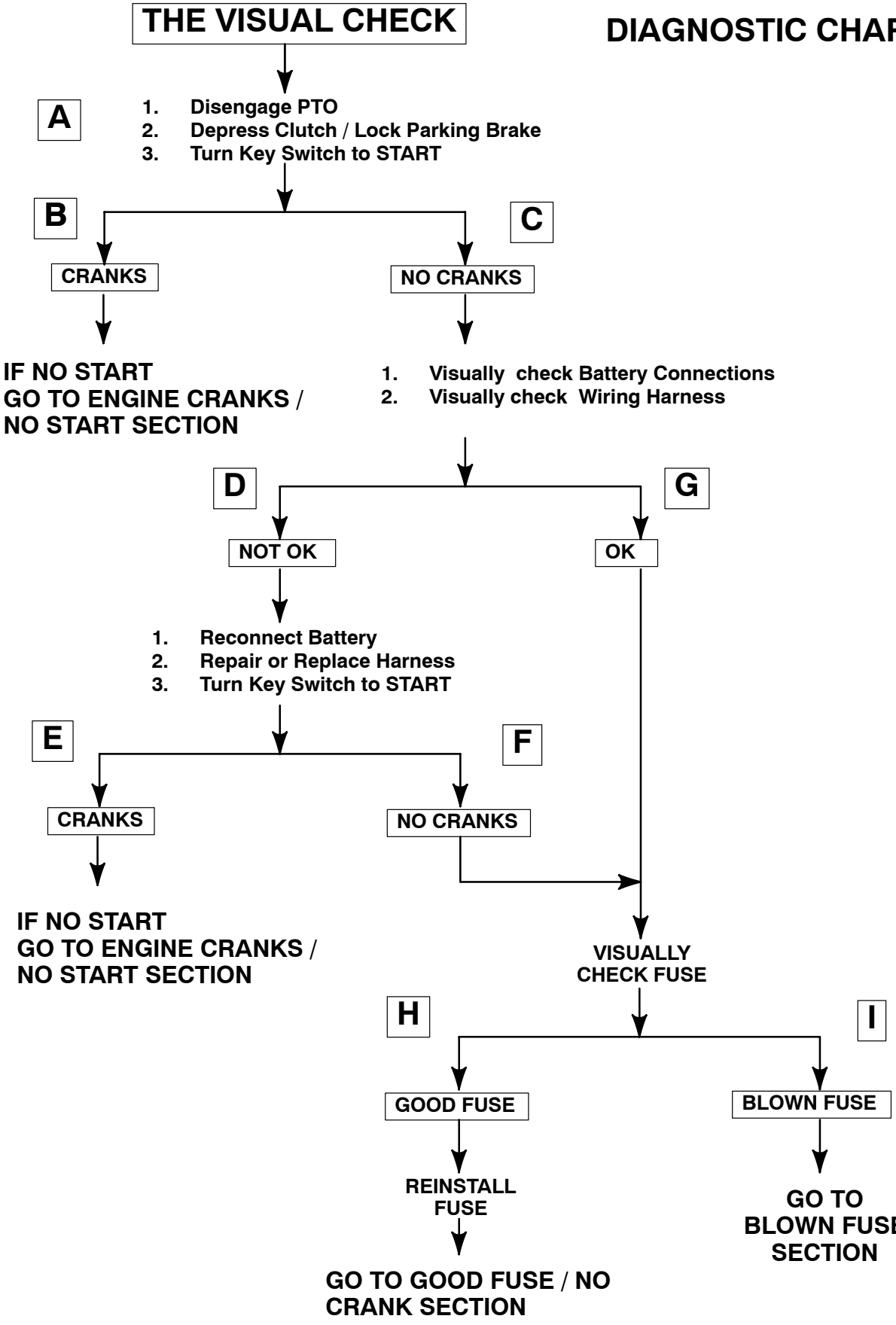
11. IGNITION COIL

Always refer to the engine manufacturer's servicing information for ignition coil testing procedures.

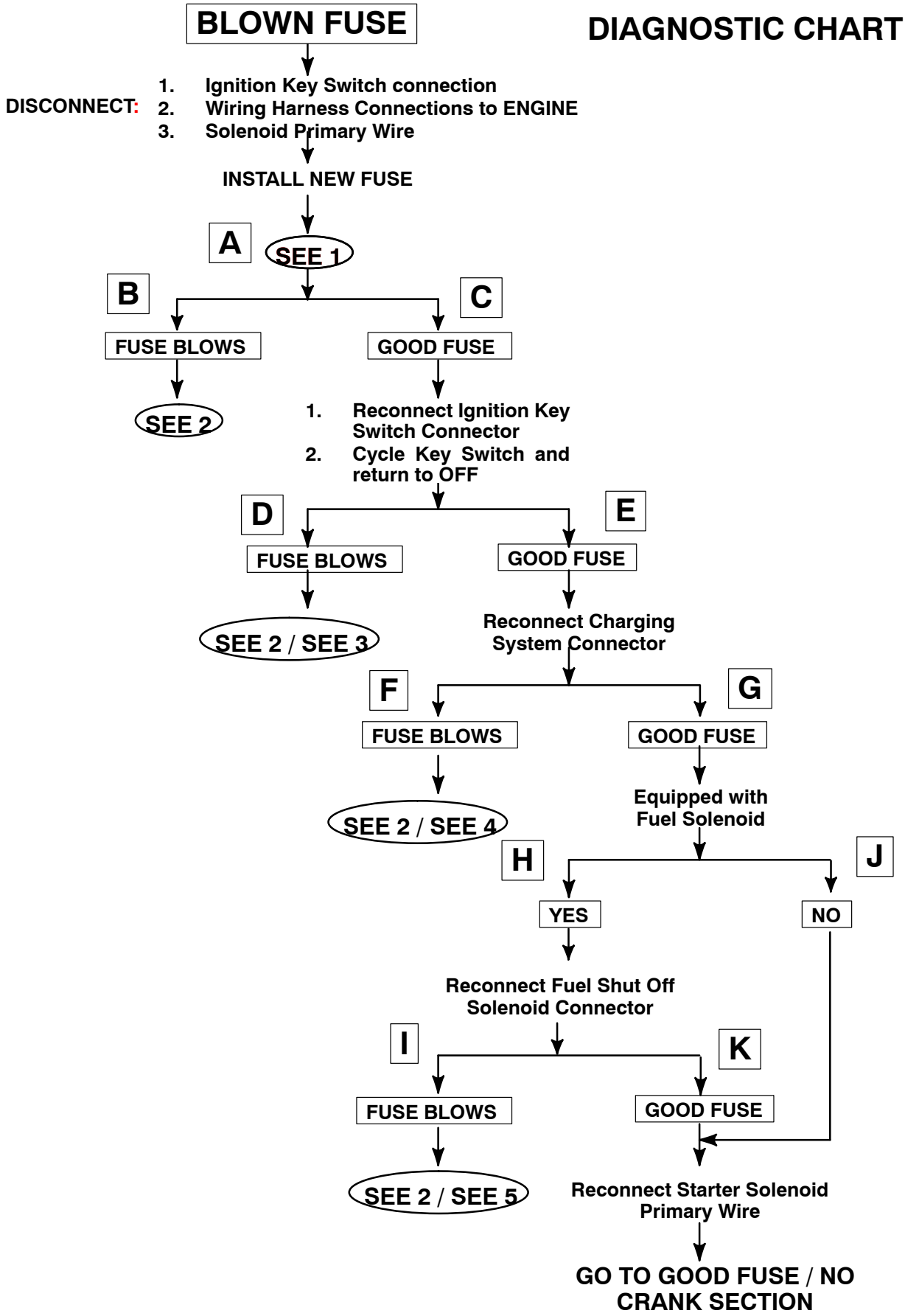
12. SEAT SWITCH

1. This switch is SPST; the poles are NC.
2. The wiring harness connector for this switch is a special terminal connector. The connecting wires inside the terminal connector short circuit internally when disconnected. The short is opened when the connector is installed to the seat switch. By shorting internally when the terminal connector is disconnected the system fails safe should the seat switch be disconnected.

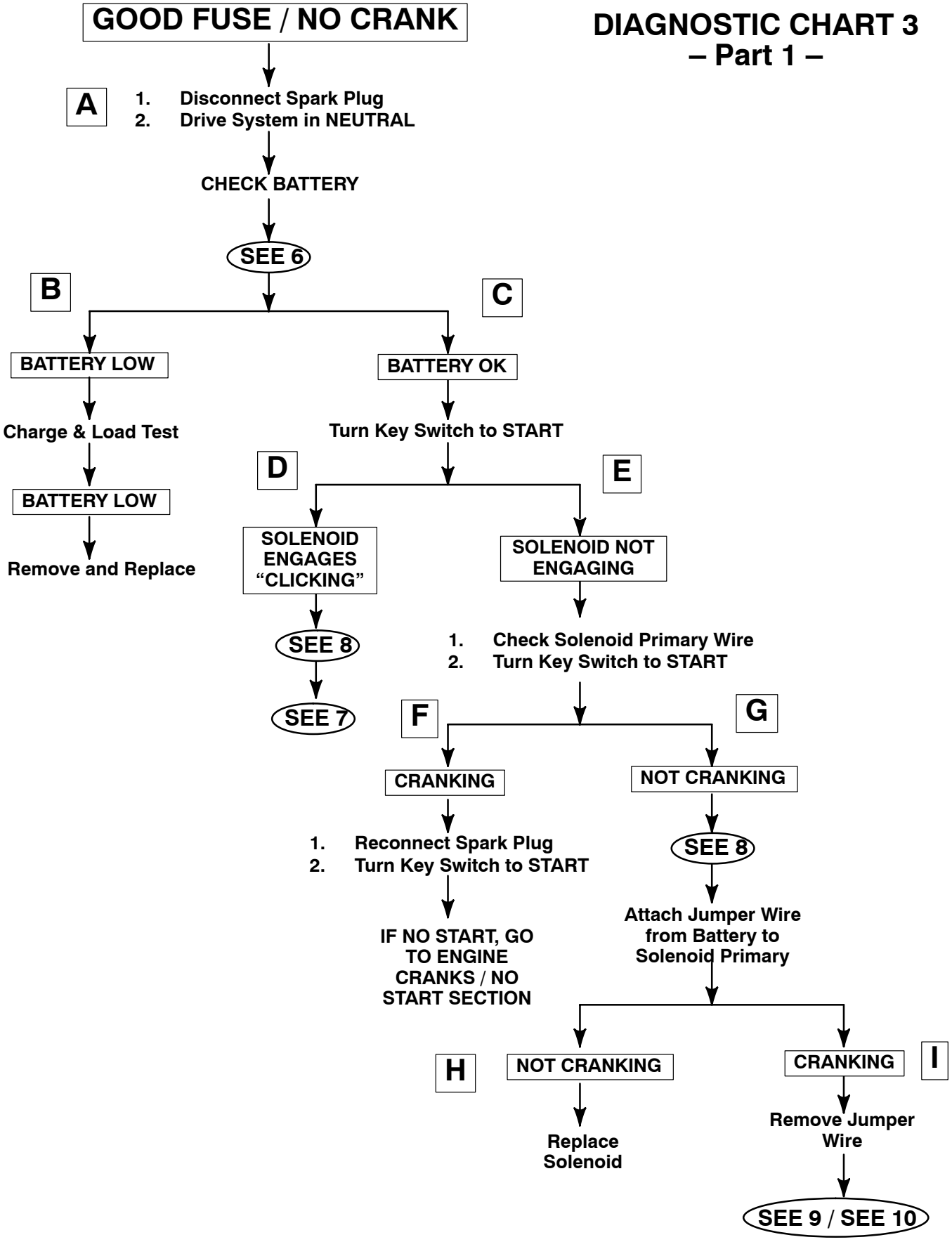
DIAGNOSTIC CHART 1



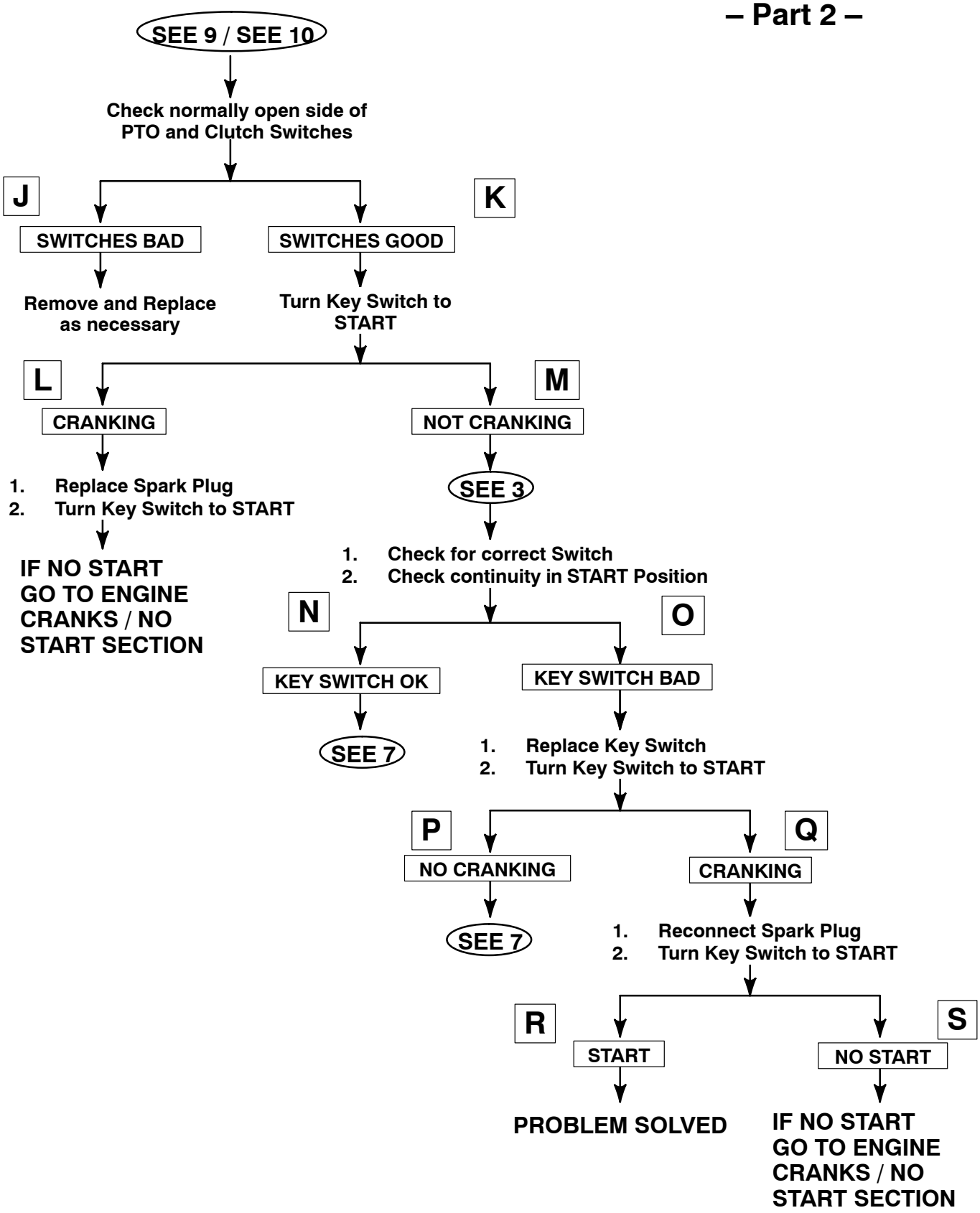
DIAGNOSTIC CHART 2



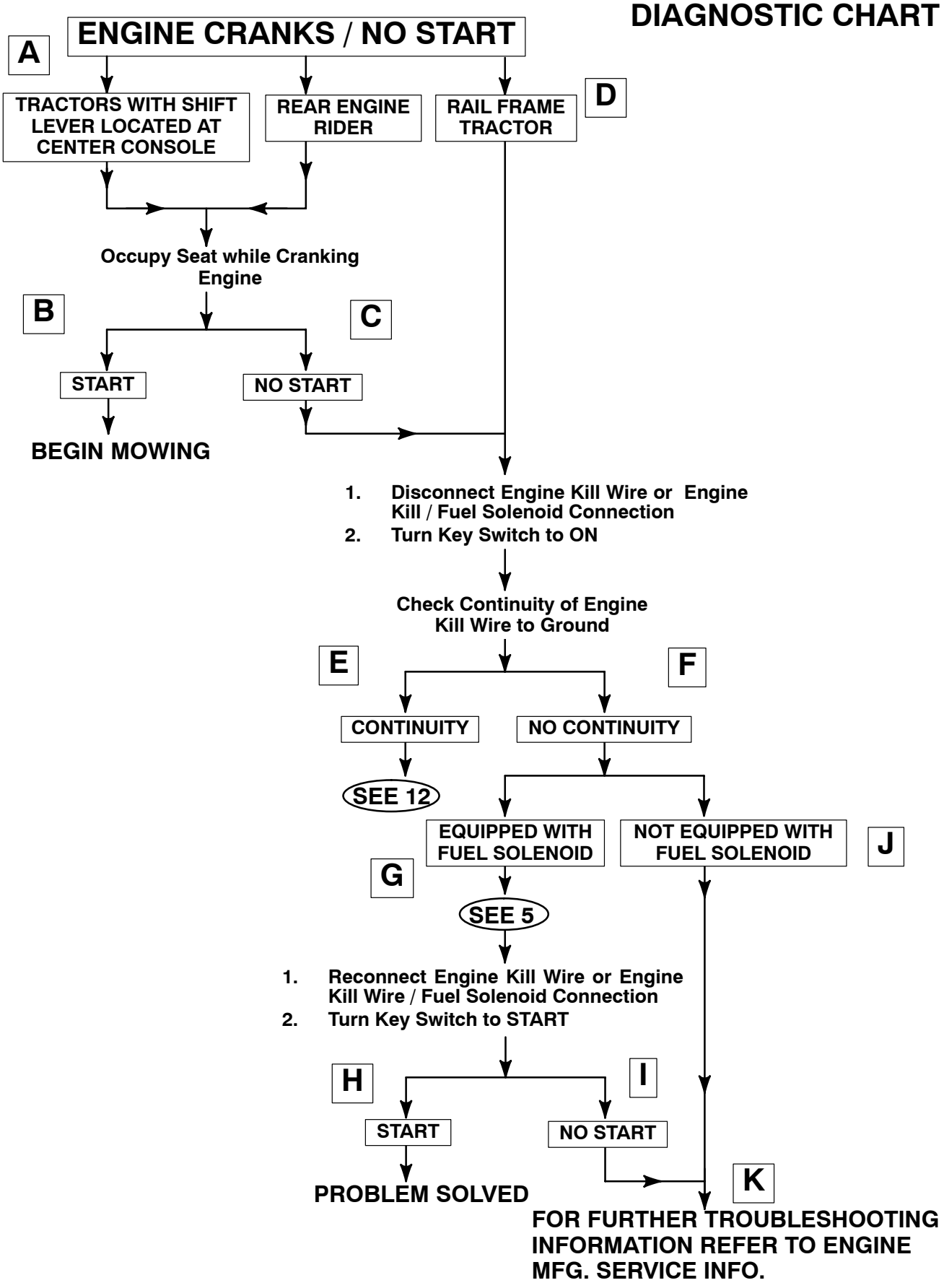
DIAGNOSTIC CHART 3 – Part 1 –



DIAGNOSTIC CHART 3
– Part 2 –



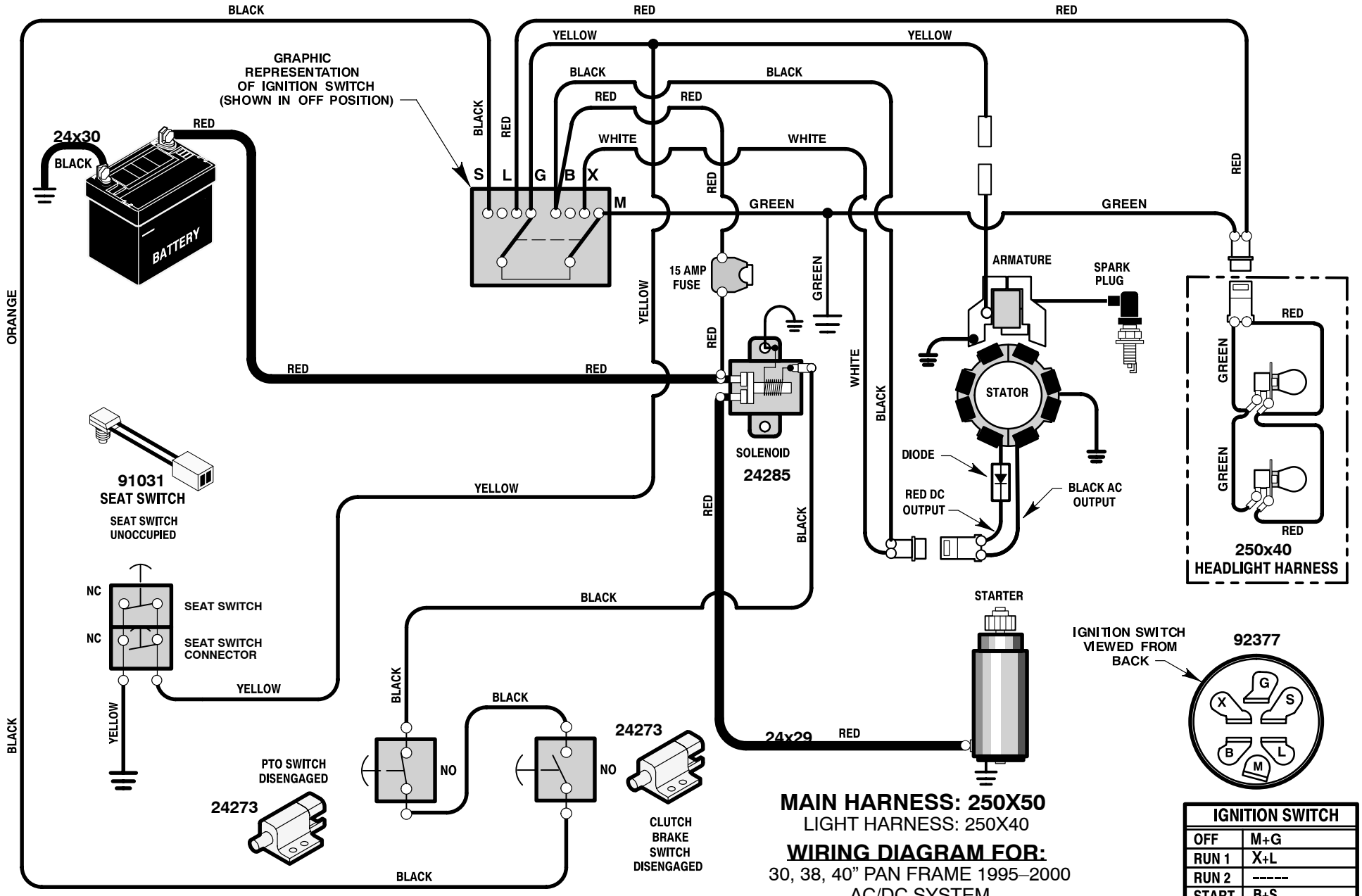
DIAGNOSTIC CHART 4



ELECTRICAL WIRING SCHEMATICS

2002 & PREVIOUS HARNESSES

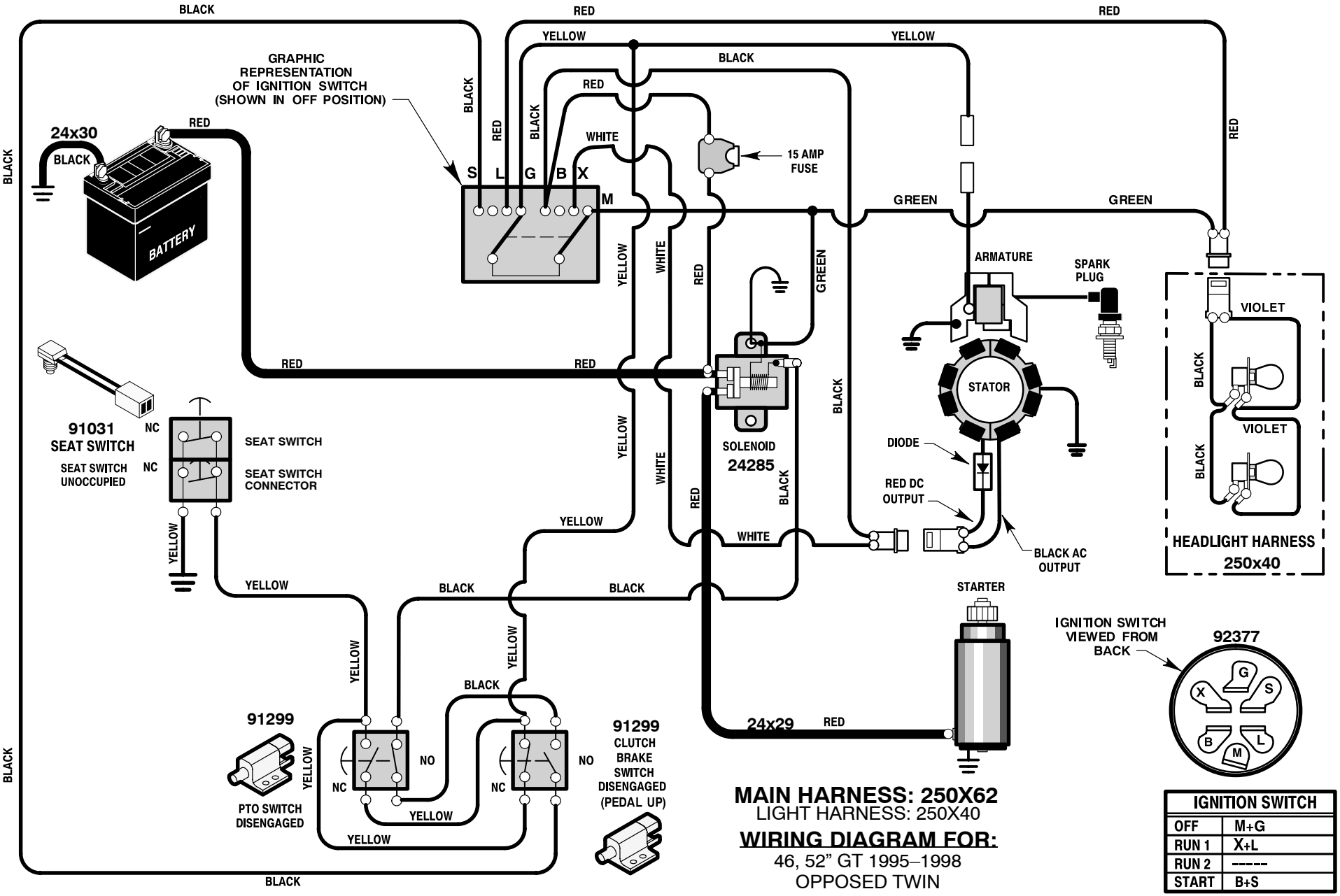
2003 HARNESSES W / 6–PIN ENGINE CONNECTORS

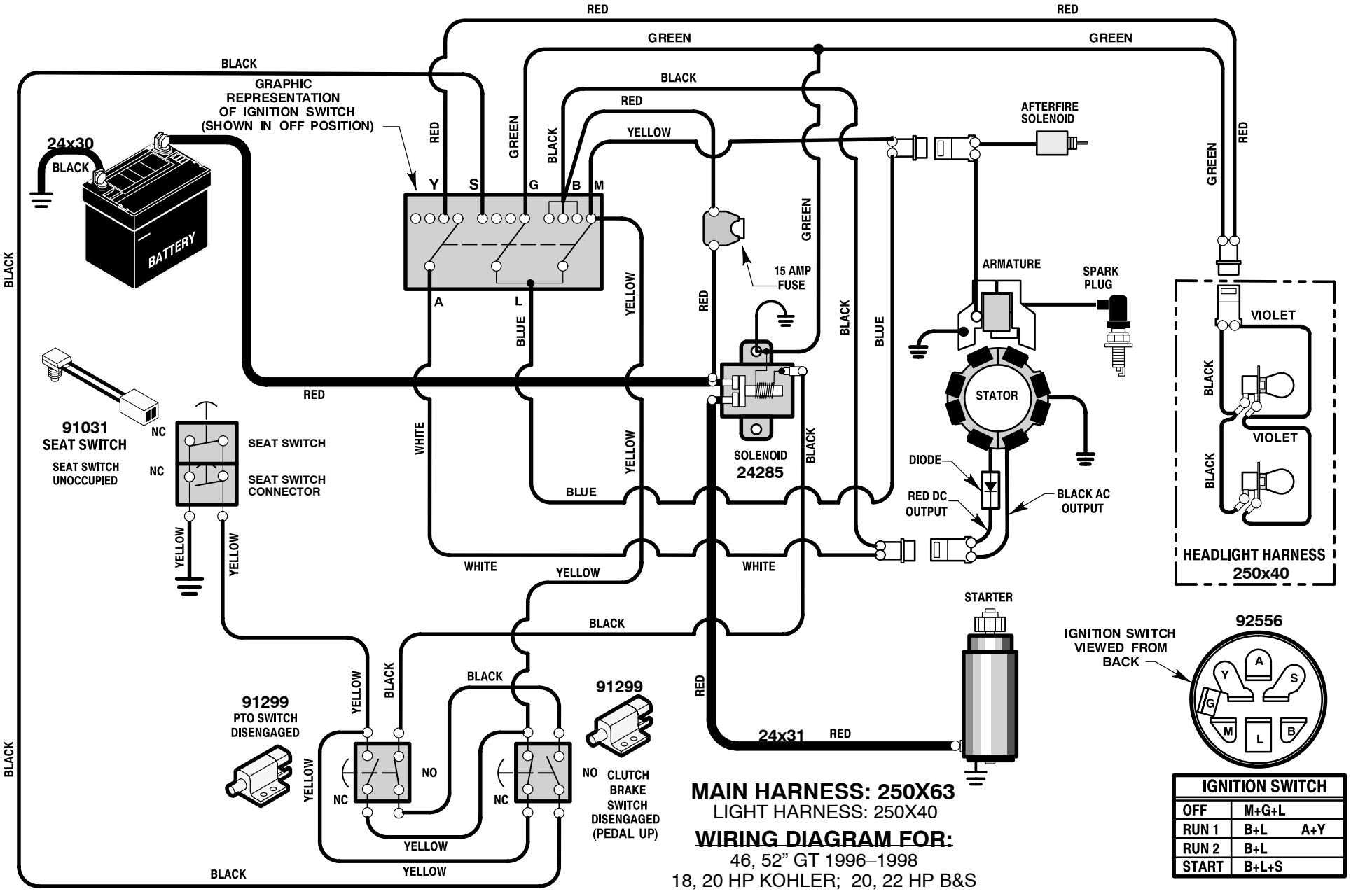


MAIN HARNESS: 250X50
LIGHT HARNESS: 250X40

WIRING DIAGRAM FOR:
30, 38, 40" PAN FRAME 1995–2000
AC/DC SYSTEM

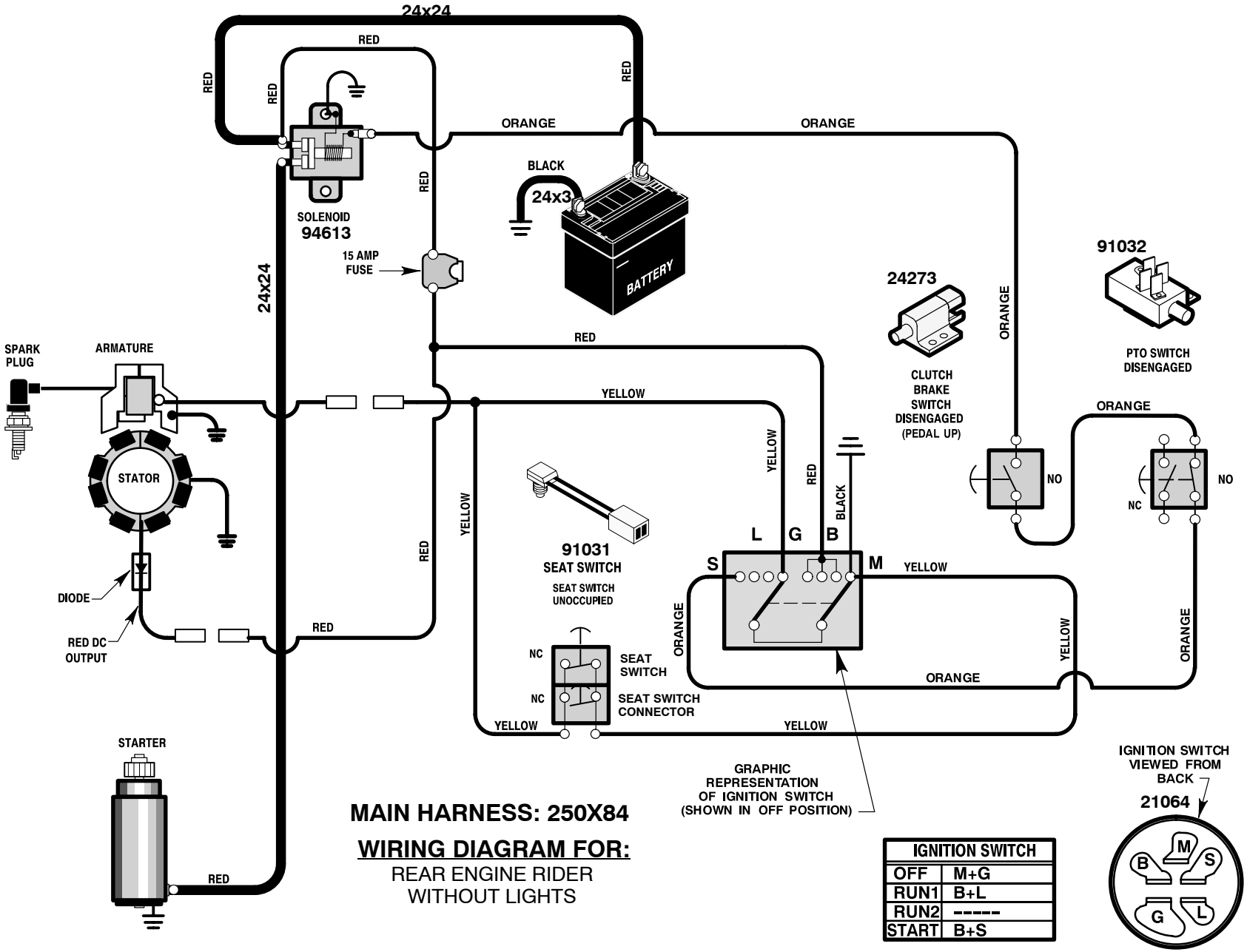
IGNITION SWITCH	
OFF	M+G
RUN 1	X+L
RUN 2	-----
START	B+S


BLACK
RED
YELLOW
GRAPHIC REPRESENTATION OF IGNITION SWITCH (SHOWN IN OFF POSITION)
24x30
BATTERY
S L G B X M
15 AMP FUSE
WHITE
GREEN
ARMATURE
SPARK PLUG
STATOR
DIODE
RED DC OUTPUT
BLACK AC OUTPUT
VIOLET
HEADLIGHT HARNESS 250x40
91031 SEAT SWITCH
SEAT SWITCH UNOCCUPIED
NC
SEAT SWITCH
SEAT SWITCH CONNECTOR
SOLENOID 24285
STARTER
24x29
91299
PTO SWITCH DISENGAGED
NO
91299 CLUTCH BRAKE SWITCH DISENGAGED (PEDAL UP)
IGNITION SWITCH VIEWED FROM BACK
92377
G S X B L M
MAIN HARNESS: 250X62
LIGHT HARNESS: 250X40
WIRING DIAGRAM FOR:
46, 52” GT 1995–1998
OPPOSED TWIN
IGNITION SWITCH
OFF M+G
RUN 1 X+L
RUN 2 -----
START B+S



MAIN HARNESS: 250X63
LIGHT HARNESS: 250X40

WIRING DIAGRAM FOR:
46, 52" GT 1996–1998
18, 20 HP KOHLER; 20, 22 HP B&S

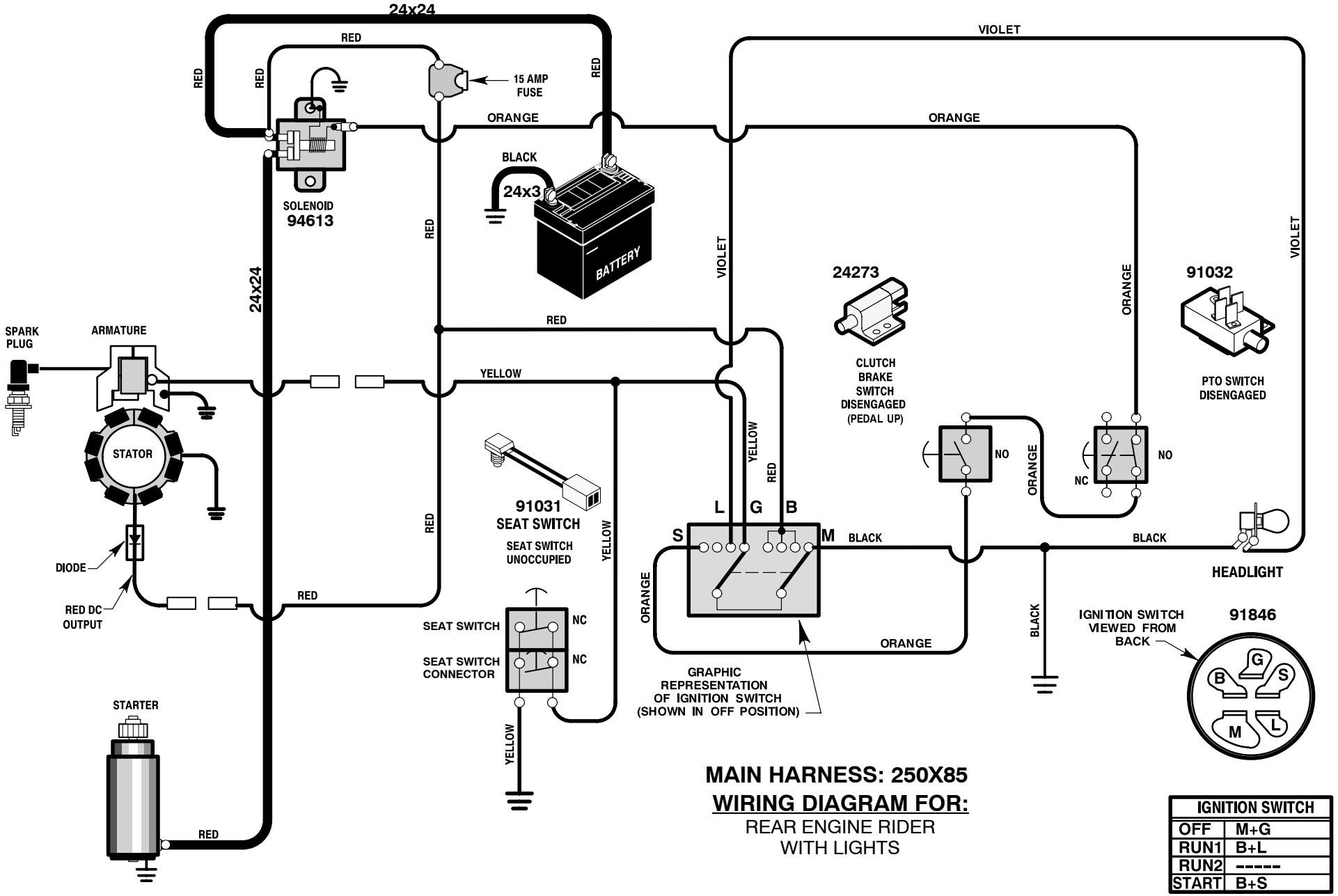


MAIN HARNESS: 250X84

WIRING DIAGRAM FOR:

REAR ENGINE RIDER
WITHOUT LIGHTS

IGNITION SWITCH	
OFF	M+G
RUN1	B+L
RUN2	-----
START	B+S

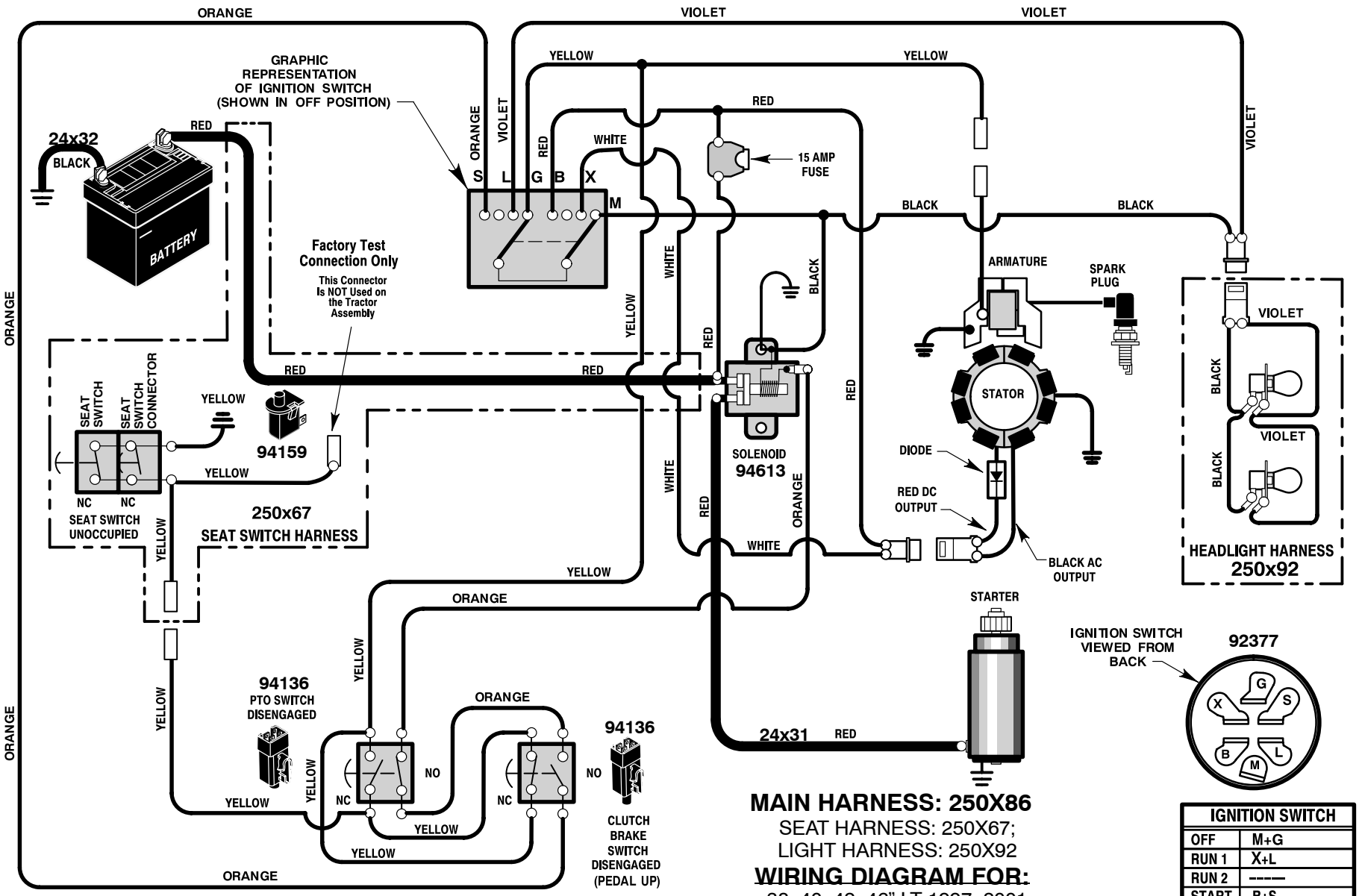


MAIN HARNESS: 250X85

WIRING DIAGRAM FOR:

REAR ENGINE RIDER
WITH LIGHTS

IGNITION SWITCH	
OFF	M+G
RUN1	B+L
RUN2	-----
START	B+S



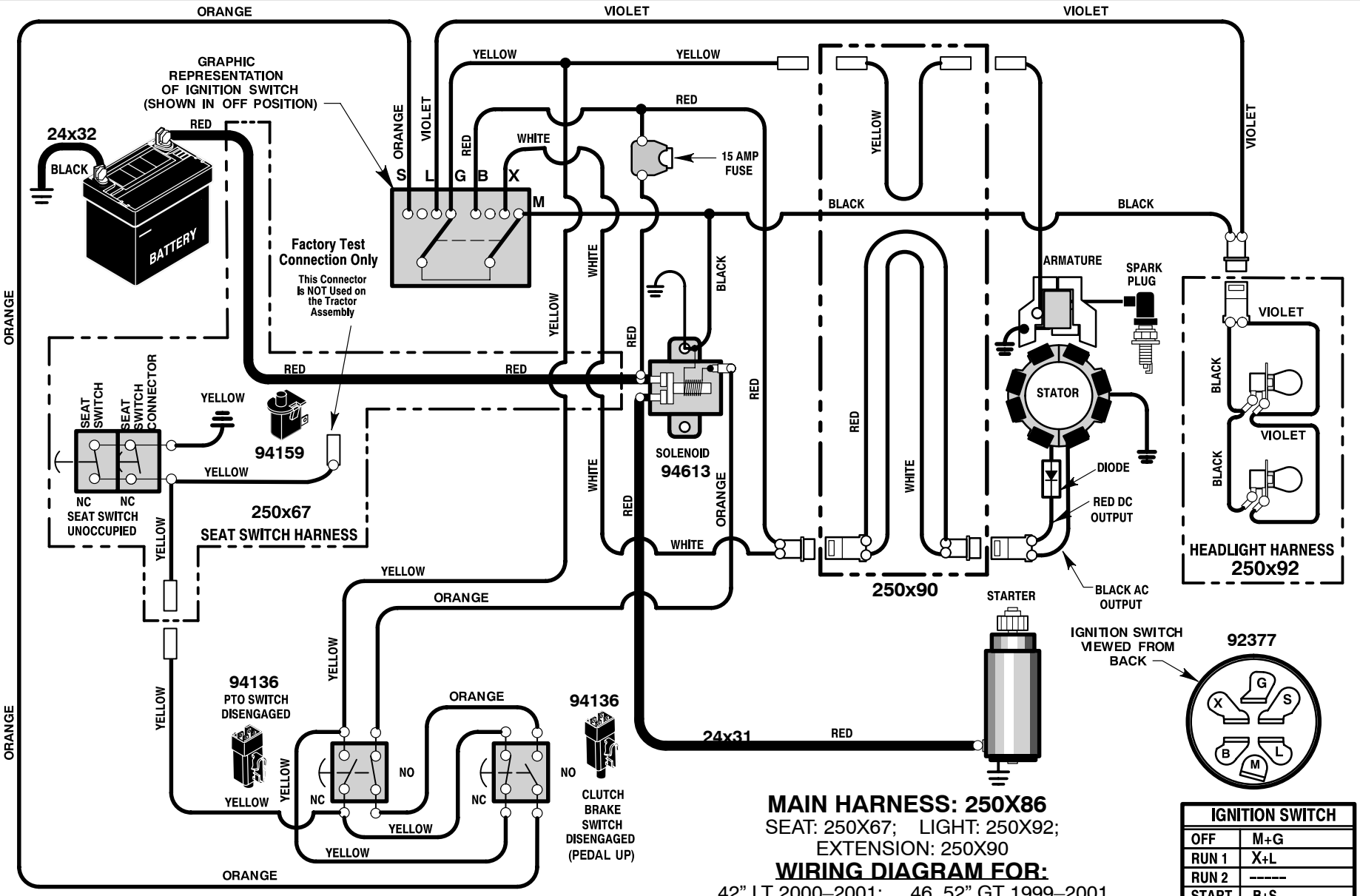
MAIN HARNESS: 250X86

SEAT HARNESS: 250X67;
LIGHT HARNESS: 250X92

WIRING DIAGRAM FOR:

38, 40, 42, 46" LT 1997–2001
SINGLE CYLINDER
WITHOUT AFTERFIRE SOLENOID

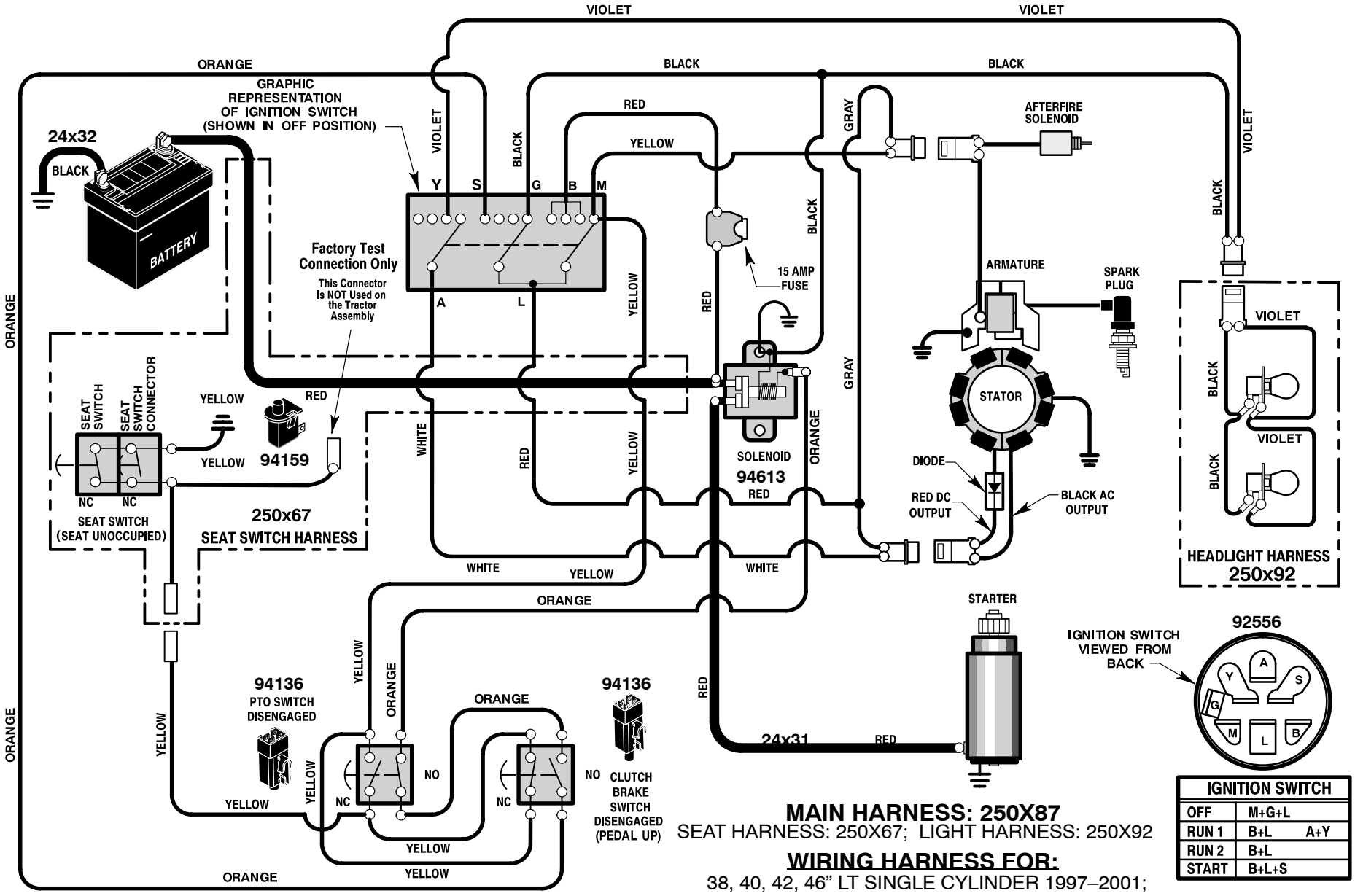
IGNITION SWITCH	
OFF	M+G
RUN 1	X+L
RUN 2	-----
START	B+S



NOTE: 250X86 & 250X90 ARE AVAILABLE AS PART NUMBER 776170

MAIN HARNESS: 250X86
SEAT: 250X67; LIGHT: 250X92;
EXTENSION: 250X90

WIRING DIAGRAM FOR:
42" LT 2000–2001; 46, 52" GT 1999–2001
OPPOSED TWIN CYLINDER
WITHOUT AFTERFIRE SOLENOID

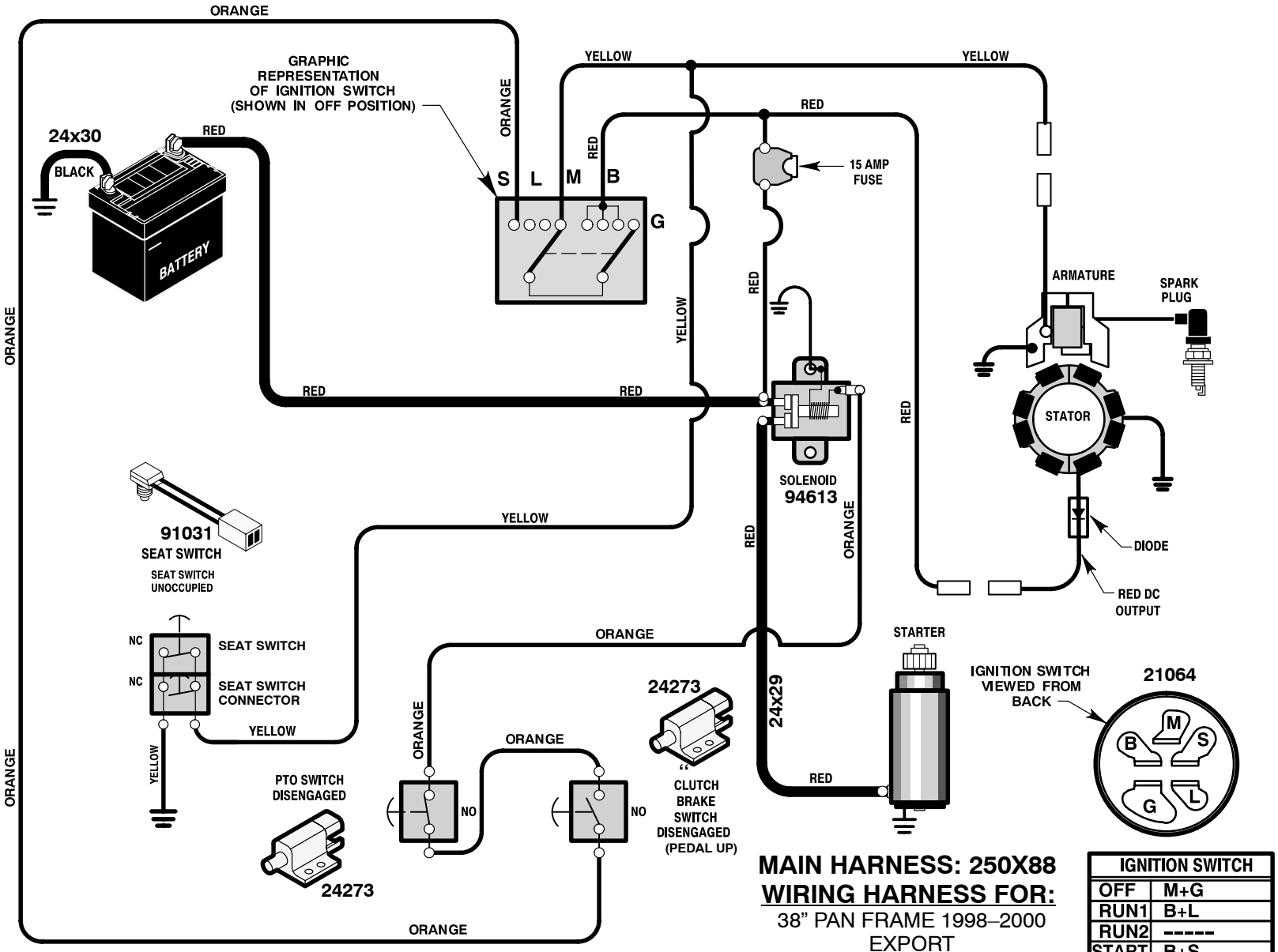


MAIN HARNESS: 250X87

SEAT HARNESS: 250X67; LIGHT HARNESS: 250X92

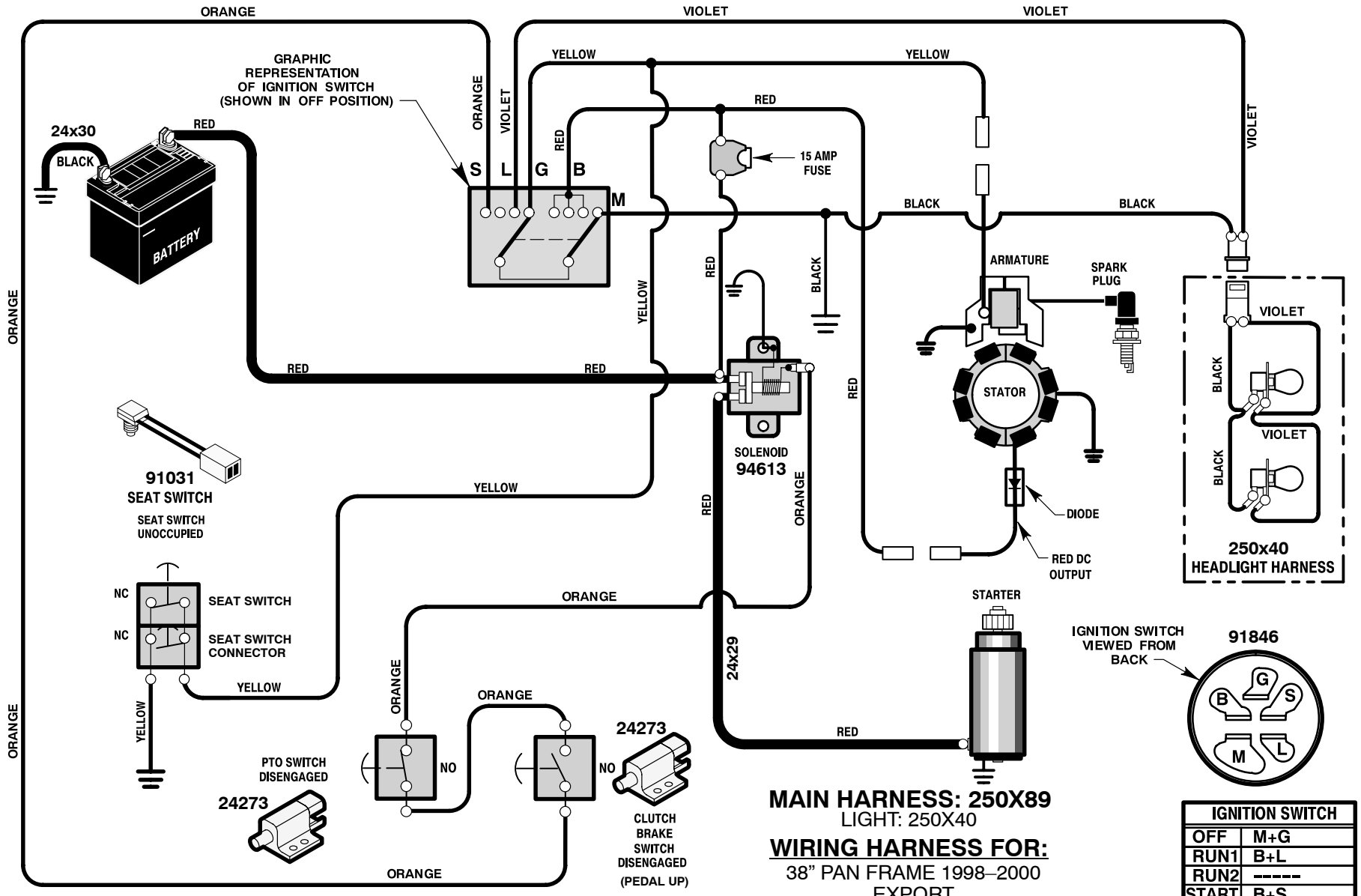
WIRING HARNESS FOR:

38, 40, 42, 46” LT SINGLE CYLINDER 1997–2001;
42” LT V–TWIN CYLINDER 2001; 46, 52” GT V–TWIN CYLINDER 1999–2001
WITH AFTERFIRE SOLENOID



MAIN HARNESS: 250X88
WIRING HARNESS FOR:
38" PAN FRAME 1998–2000
EXPORT
WITHOUT HEADLIGHTS
DC ONLY

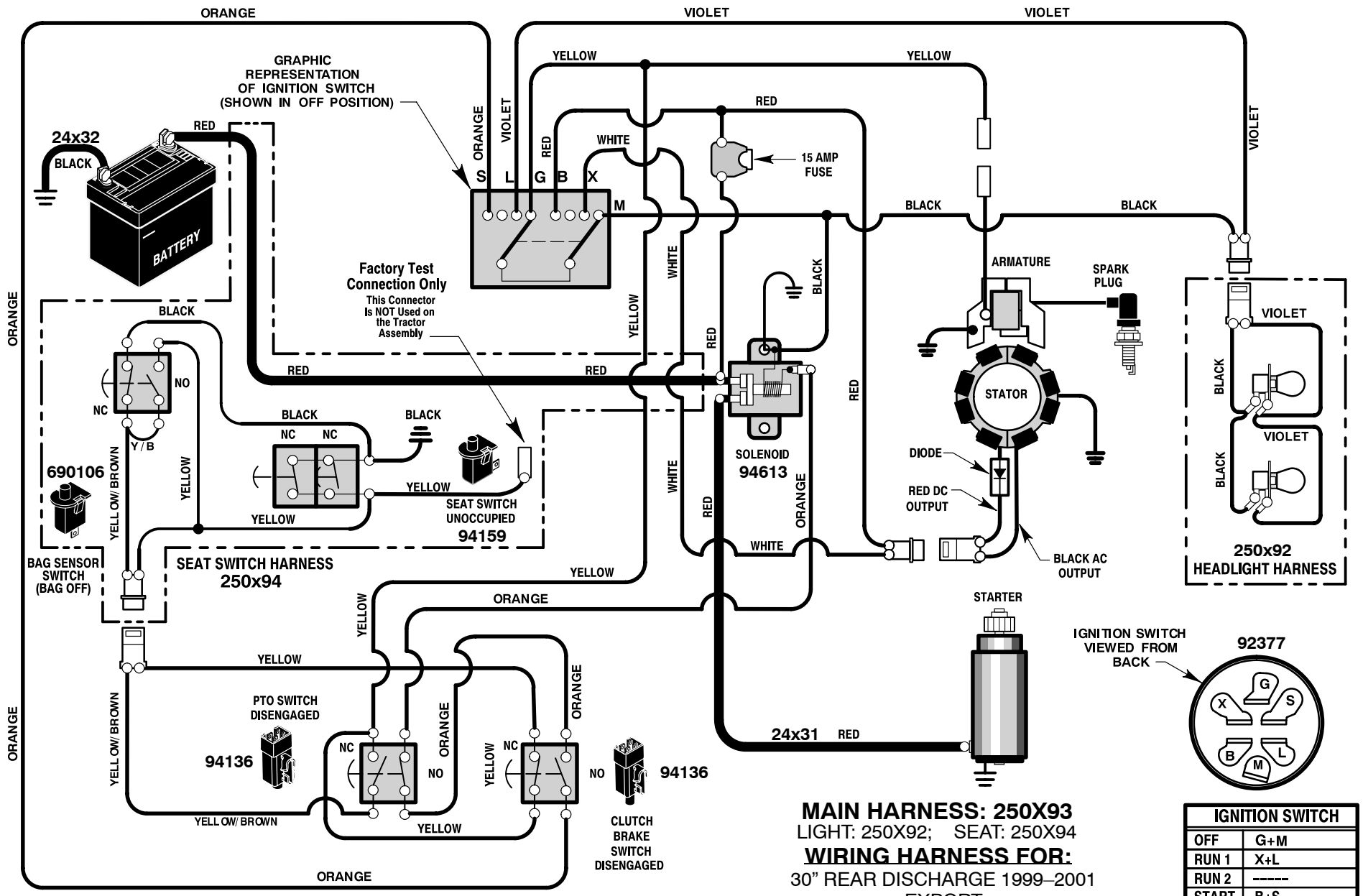
IGNITION SWITCH	
OFF	M+G
RUN1	B+L
RUN2	-----
START	B+S

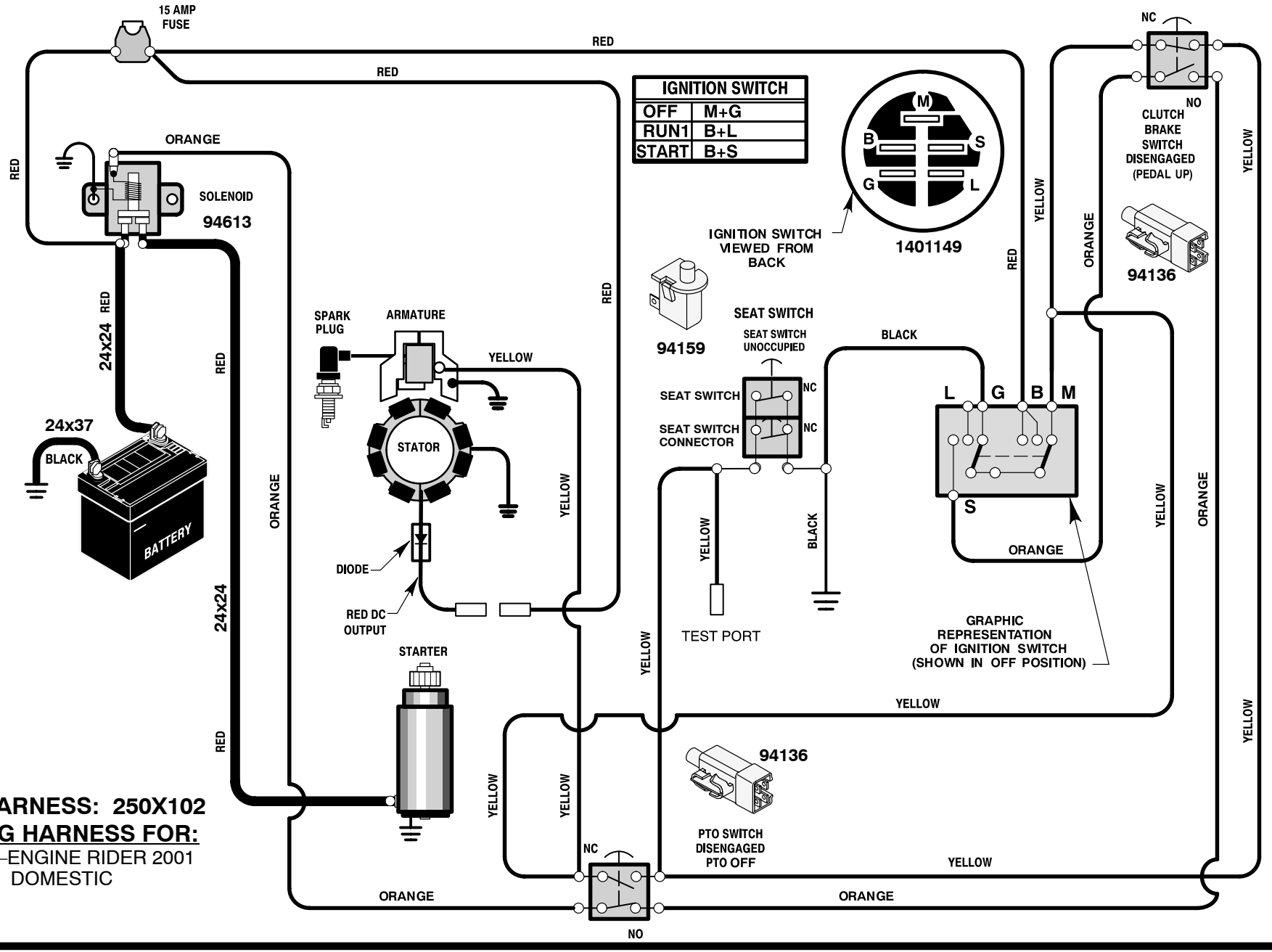


MAIN HARNESS: 250X89
LIGHT: 250X40

WIRING HARNESS FOR:
38" PAN FRAME 1998–2000
EXPORT
WITH HEADLIGHTS
DC ONLY

IGNITION SWITCH	
OFF	M+G
RUN1	B+L
RUN2	-----
START	B+S

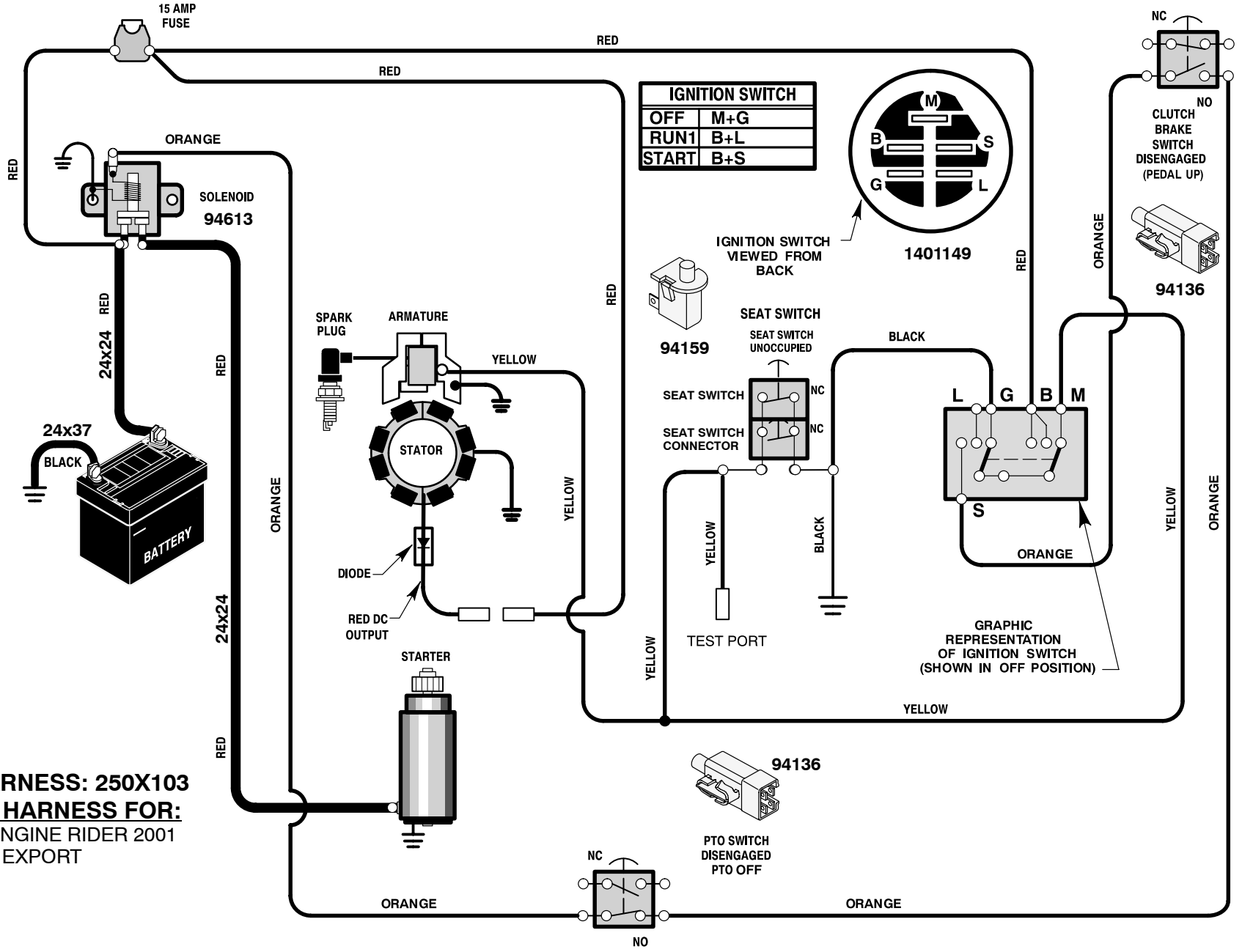

ORANGE
VIOLET
VIOLET
GRAPHIC REPRESENTATION OF IGNITION SWITCH (SHOWN IN OFF POSITION)
YELLOW
YELLOW
RED
WHITE
15 AMP FUSE
VIOLET
24x32
BLACK
RED
BATTERY
S L G B X
M
BLACK
BLACK
ARMATURE
SPARK PLUG
Factory Test Connection Only
This Connector Is NOT Used on the Tractor Assembly
WHITE
YELLOW
RED
BLACK
STATOR
VIOLET
BLACK
VIOLET
BLACK
NO
NC
Y / B
690106
BLACK
NC NC
BLACK
YELLOW
YELLOW
SEAT SWITCH UNOCCUPIED
94159
SOLENOID
94613
DIODE
RED DC OUTPUT
BLACK AC OUTPUT
250x92
HEADLIGHT HARNESS
YELLOW/ BROWN
YELLOW
WHITE
RED
ORANGE
WHITE
BAG SENSOR SWITCH (BAG OFF)
SEAT SWITCH HARNESS
250x94
YELLOW
ORANGE
STARTER
YELLOW
YELLOW/ BROWN
PTO SWITCH DISENGAGED
94136
NC
NO
ORANGE
ORANGE
YELLOW
NC
NO
94136
24x31
RED
IGNITION SWITCH VIEWED FROM BACK
92377
G
X
S
B
M
L
YELLOW/ BROWN
YELLOW
CLUTCH BRAKE SWITCH DISENGAGED
ORANGE
MAIN HARNESS: 250X93
LIGHT: 250X92; SEAT: 250X94
WIRING HARNESS FOR:
30” REAR DISCHARGE 1999–2001
EXPORT
IGNITION SWITCH
OFF G+M
RUN 1 X+L
RUN 2 -----
START B+S



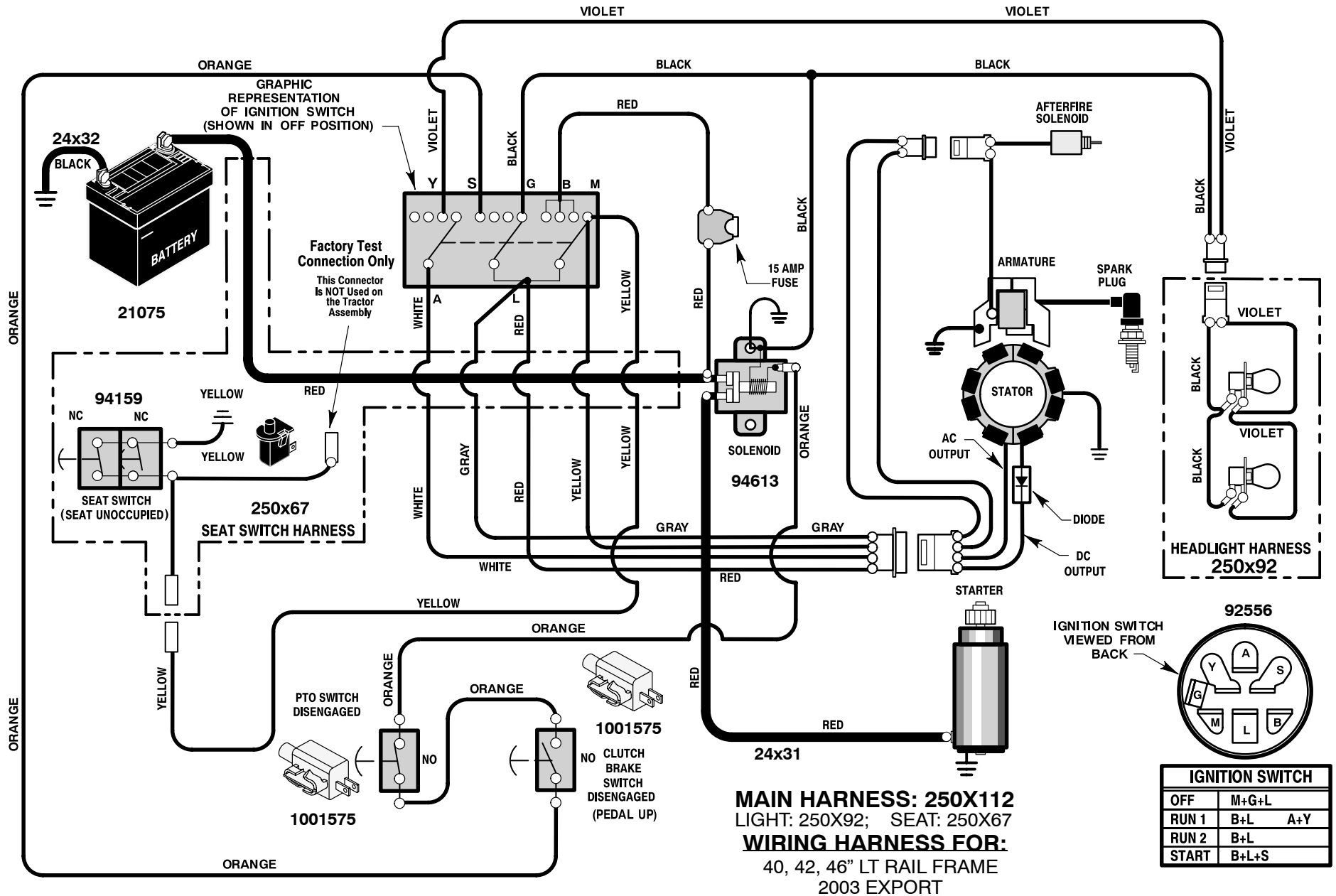
MAIN HARNESS: 250X102

WIRING HARNESS FOR:

30" MID–ENGINE RIDER 2001
DOMESTIC

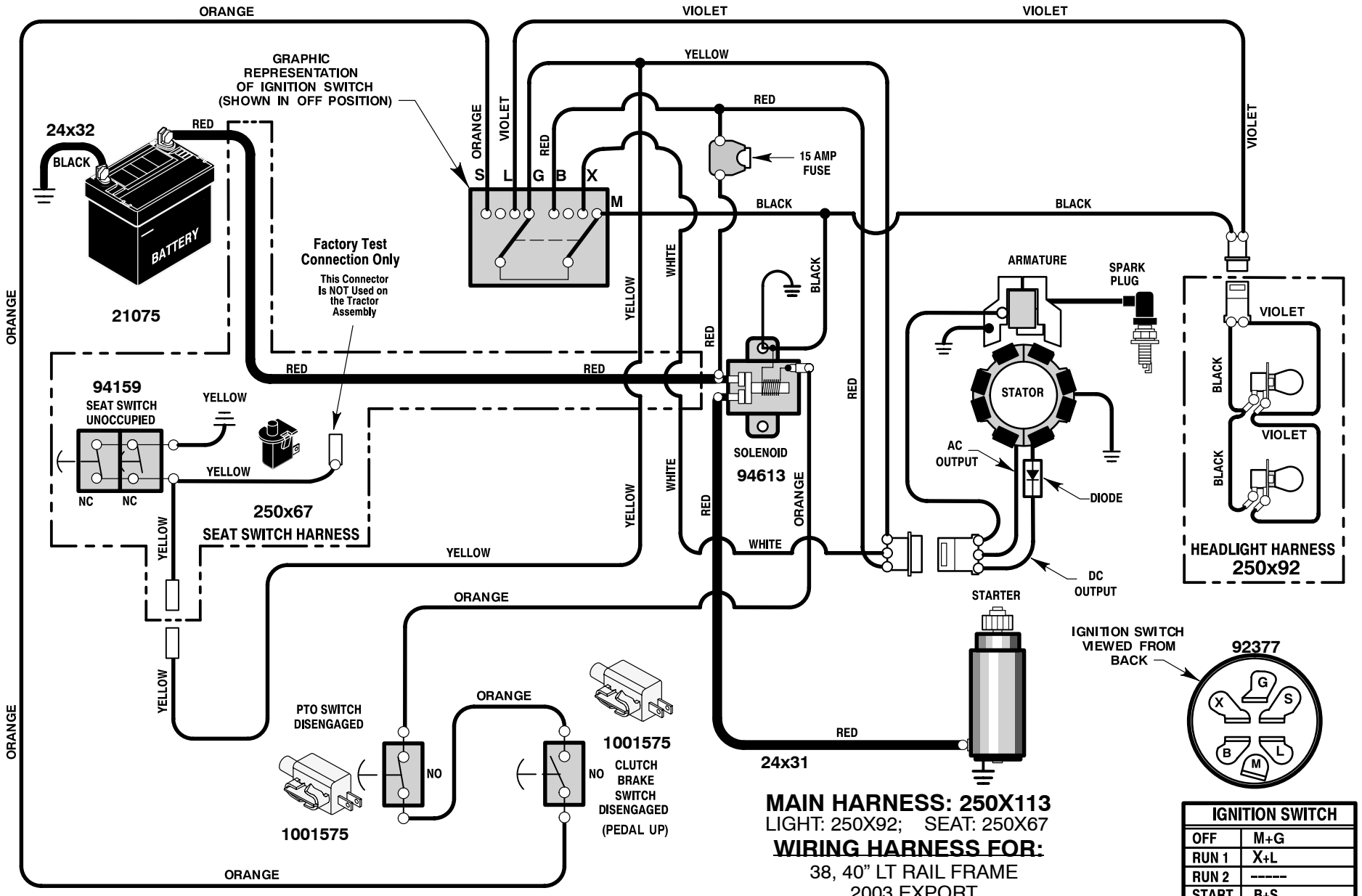


MAIN HARNESS: 250X103
WIRING HARNESS FOR:
30" MID–ENGINE RIDER 2001
EXPORT



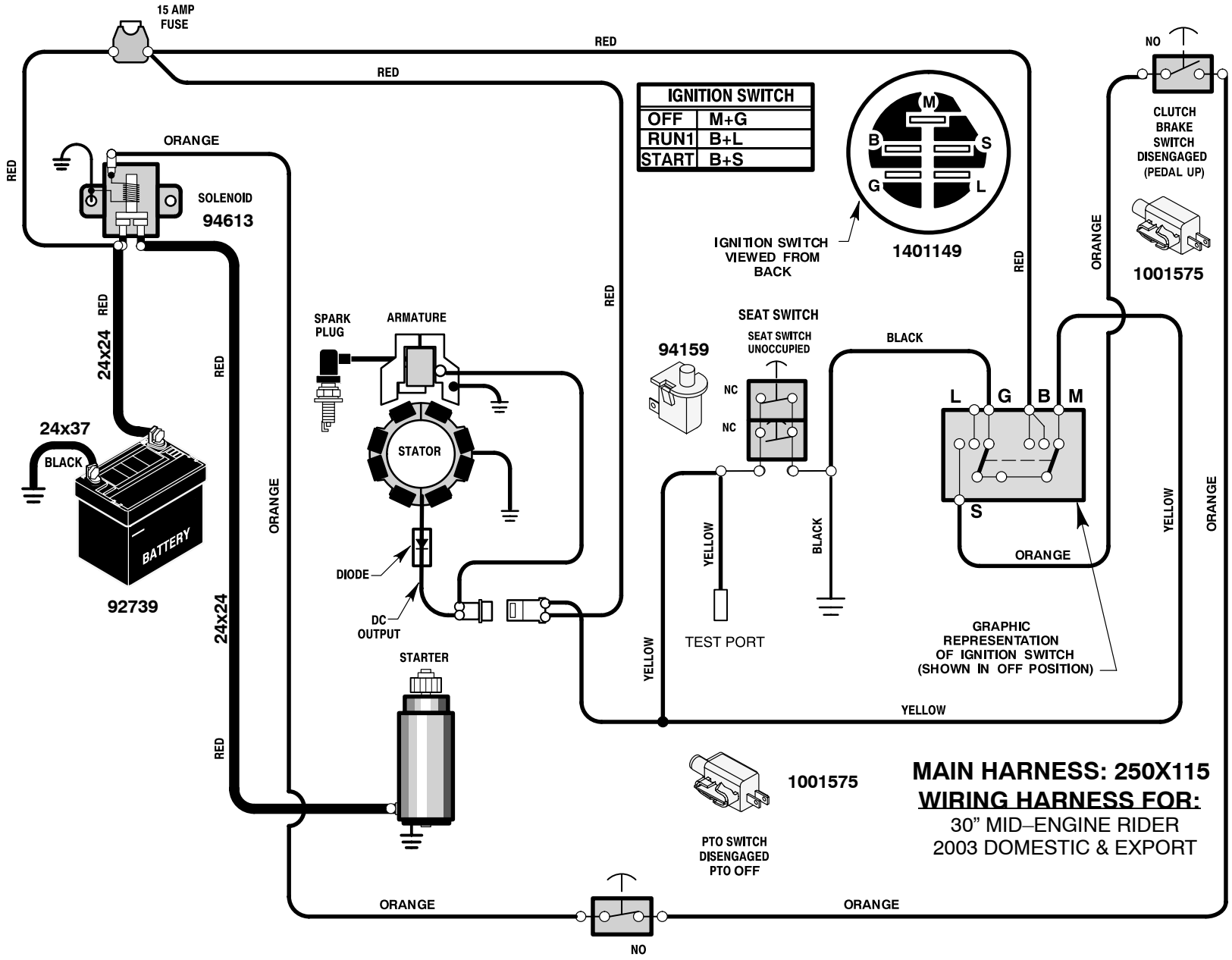
IGNITION SWITCH	
OFF	M+G+L
RUN 1	B+L A+Y
RUN 2	B+L
START	B+L+S

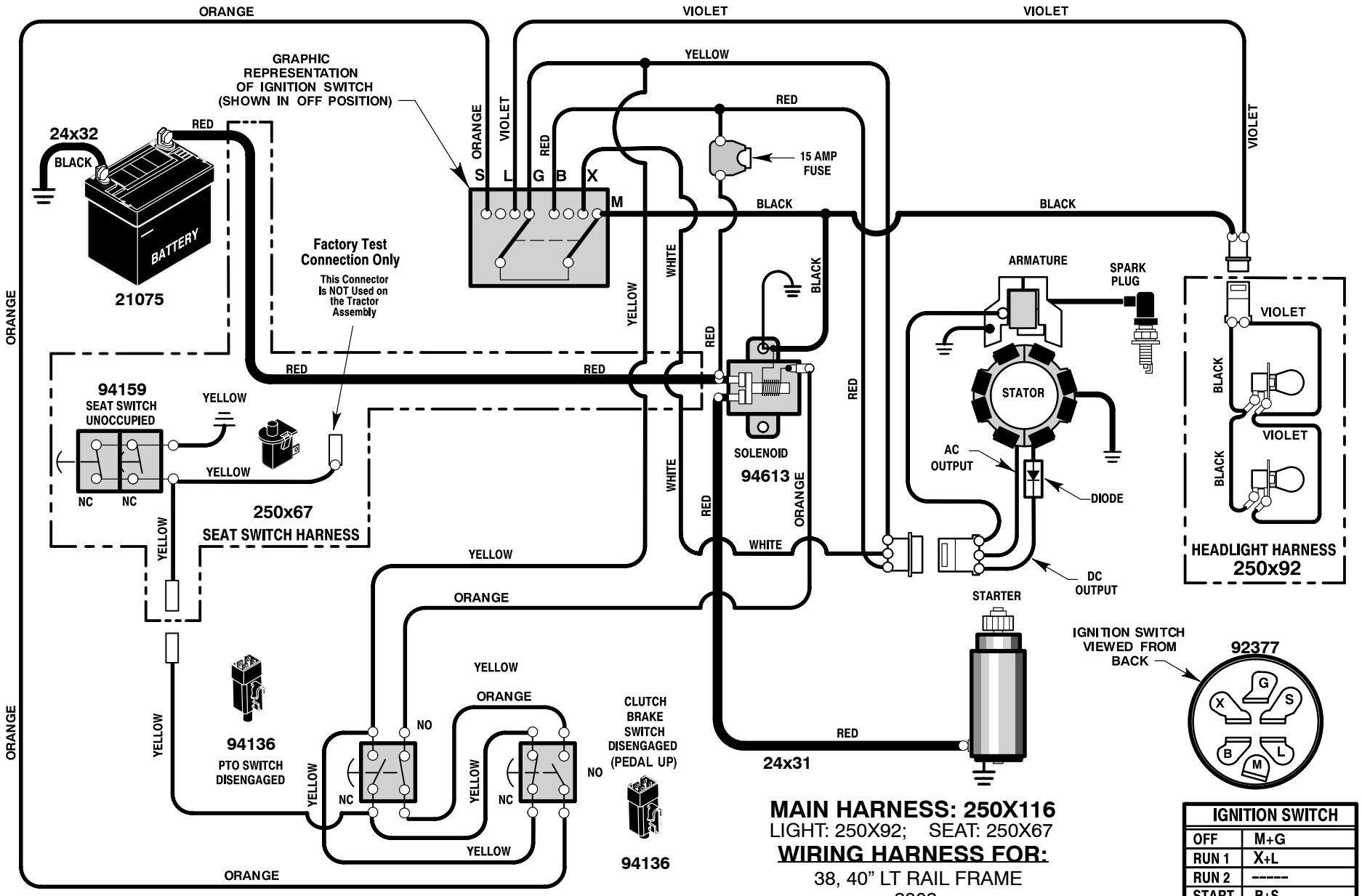
MAIN HARNESS: 250X112
LIGHT: 250X92; SEAT: 250X67
WIRING HARNESS FOR:
40, 42, 46" LT RAIL FRAME
2003 EXPORT
WITH AFTERFIRE SOLENOID



MAIN HARNESS: 250X113
LIGHT: 250X92; SEAT: 250X67
WIRING HARNESS FOR:
38, 40" LT RAIL FRAME
2003 EXPORT
WITHOUT AFTERFIRE SOLENOID

IGNITION SWITCH	
OFF	M+G
RUN 1	X+L
RUN 2	-----
START	B+S

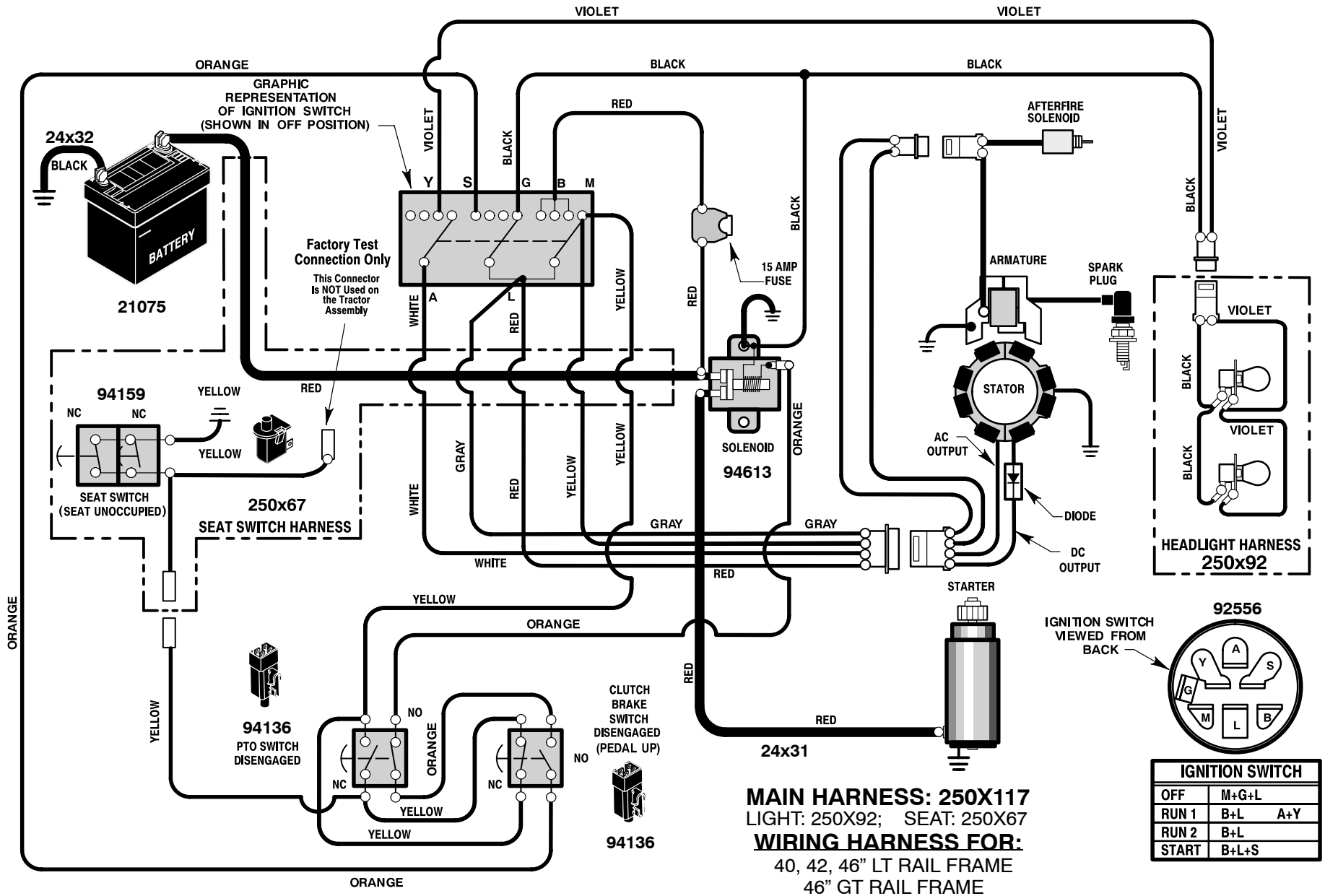

15 AMP FUSE
RED
RED
ORANGE
RED
SOLENOID
94613
24x24
RED
24x37
BLACK
BATTERY
92739
ORANGE
RED
24x24
RED
SPARK PLUG
ARMATURE
STATOR
DIODE
DC OUTPUT
STARTER
IGNITION SWITCH
OFF M+G
RUN1 B+L
START B+S
M
B
S
G
L
IGNITION SWITCH VIEWED FROM BACK
1401149
SEAT SWITCH
94159
SEAT SWITCH UNOCCUPIED
NC
NC
BLACK
L G B M
S
ORANGE
YELLOW
BLACK
TEST PORT
GRAPHIC REPRESENTATION OF IGNITION SWITCH (SHOWN IN OFF POSITION)
YELLOW
YELLOW
ORANGE
NO
CLUTCH BRAKE SWITCH DISENGAGED (PEDAL UP)
ORANGE
1001575
RED
1001575
PTO SWITCH DISENGAGED PTO OFF
ORANGE
ORANGE
NO
MAIN HARNESS: 250X115
WIRING HARNESS FOR:
30” MID–ENGINE RIDER
2003 DOMESTIC & EXPORT



IGNITION SWITCH	
OFF	M+G
RUN 1	X+L
RUN 2	------
START	B+S

MAIN HARNESS: 250X116
LIGHT: 250X92; SEAT: 250X67

WIRING HARNESS FOR:
38, 40” LT RAIL FRAME
2003
WITHOUT AFTERFIRE SOLENOID



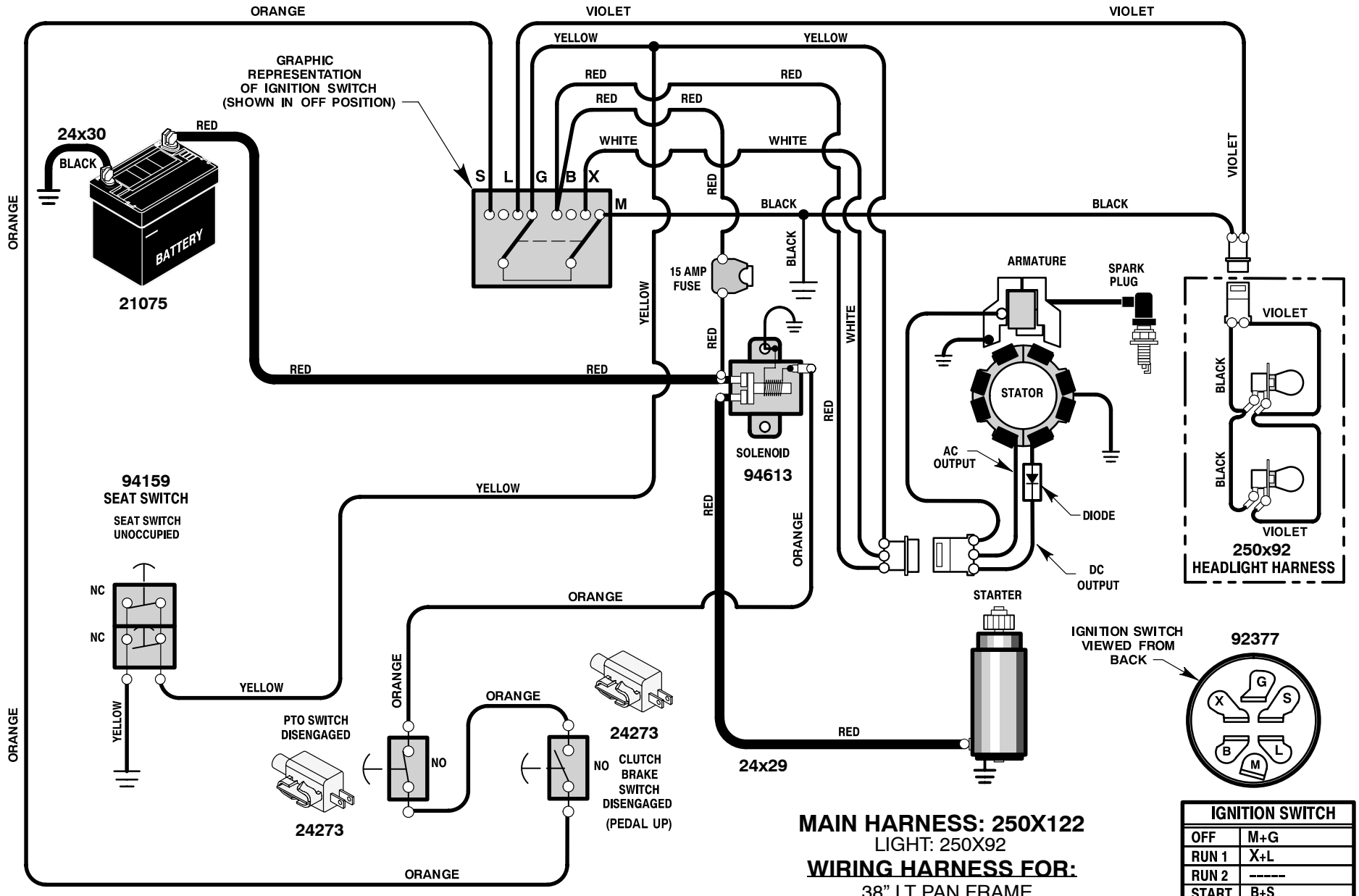
IGNITION SWITCH	
OFF	M+G+L
RUN 1	B+L A+Y
RUN 2	B+L
START	B+L+S

MAIN HARNESS: 250X117

LIGHT: 250X92; SEAT: 250X67

WIRING HARNESS FOR:

40, 42, 46" LT RAIL FRAME
46" GT RAIL FRAME
2003
WITH AFTERFIRE SOLENOID


ORANGE
VIOLET
VIOLET
YELLOW
YELLOW
GRAPHIC REPRESENTATION OF IGNITION SWITCH (SHOWN IN OFF POSITION)
RED
RED
RED
RED
24x30
BLACK
WHITE
WHITE
S L G B X
M
BLACK
BLACK
VIOLET
ORANGE
BATTERY
21075
15 AMP FUSE
BLACK
YELLOW
RED
RED
RED
RED
WHITE
ARMATURE
SPARK PLUG
STATOR
VIOLET
BLACK
BLACK
VIOLET
SOLENOID
94613
AC OUTPUT
DIODE
DC OUTPUT
250x92
HEADLIGHT HARNESS
94159
SEAT SWITCH
SEAT SWITCH UNOCCUPIED
YELLOW
RED
ORANGE
NC
NC
YELLOW
YELLOW
ORANGE
ORANGE
STARTER
IGNITION SWITCH VIEWED FROM BACK
92377
PTO SWITCH DISENGAGED
24273
NO
NO
CLUTCH BRAKE SWITCH DISENGAGED
(PEDAL UP)
24273
RED
24x29
ORANGE
ORANGE
G
S
X
B
L
M
IGNITION SWITCH
OFF M+G
RUN 1 X+L
RUN 2 -----
START B+S
MAIN HARNESS: 250X122
LIGHT: 250X92
WIRING HARNESS FOR:
38” LT PAN FRAME
2003