ELECTRICAL SYSTEMS

service manual

FORM 73146366 English

(Replaces 70695436, 73063024, 70696657)

TOPIC 2 TROUBLESHOOTING

2.1 TROUBLESHOOTING INSTRUMENTS

2.1.1
Introduction—Many different tools and instruments have been developed for checking the mechanical or electrical condition of the components of an electrical system. This specialized equipment enables quick and accurate checks in a minimum amount of time. Three basic instruments are used in the testing of electrical equipment. These instruments are the voltmeter, the ammeter, and the ohmmeter.

2.1.2
The Voltmeter—Voltage in an electrical circuit is frequently compared to water pressure in a piping system (Figure 1). The voltmeter is used to measure this electrical pressure to assist in the location of electrical malfunctions. For the applications associated with electrical systems described in this manual, greater accuracy is desired in the voltmeter than in any of the other electrical checking instruments because the most accurate settings have to be made to the voltages in these systems.

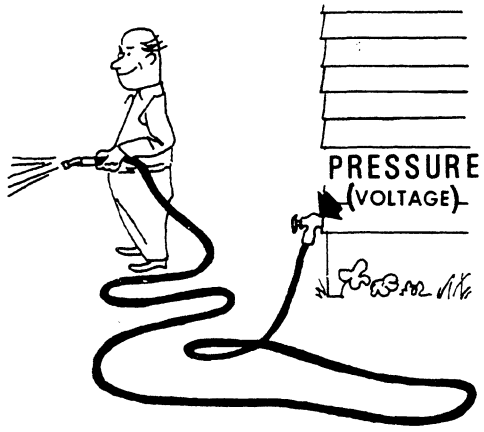

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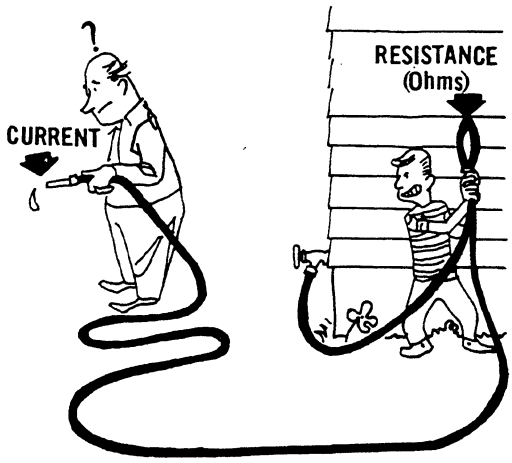
FIG. 1 VOLTAGE IS SIMILAR TO PRESSURE IN A WATER HOSE

Voltmeters measure the difference in electrical pressure between the points where the voltmeter leads are attached. For example, a voltmeter connected across the terminal posts of a battery measures the difference in electrical pressure—the battery voltage—between the two terminals. A voltmeter connected across a resistor (in parallel, with one lead connected to each side of the resistor) measures the difference in voltage caused by the resistor. Typically, the voltage at a given point in a circuit is measured with respect to the voltage at some reference point, usually the return side of the circuit at the battery. It is often the case that one side of the battery is connected (grounded) to the conducting metal frame and chassis of the unit. In such cases, the chassis is used instead of many separate wires to the battery terminal. In general, the grounded battery terminal should be used as the reference point for the voltages in a circuit.

2.1.3
The Ammeter—The current past a point in an electrical circuit can be compared to the quantity of water that can flow through a particular pipe in a water system. The amount of current (measured in amperes) that will flow depends on the voltage (like pressure) available to push the current and on the amount of resistance encountered in the electrical circuit to impede it. (See Figure 2.)



T-74524

FIG. 2 AMPS AND OHMS ARE SIMILAR TO CURRENT AND RESISTANCE IN A WATER HOSE

The ammeter is used to measure the flow of current. Since the current flows through the circuit, an ammeter must be connected in series with the circuit being measured. However, most ammeters cannot use all the current in the circuit in indicating a measurement, so a large, accurately measured fraction of the current is often diverted through an external path or shunt (shown in Figure 3) across the

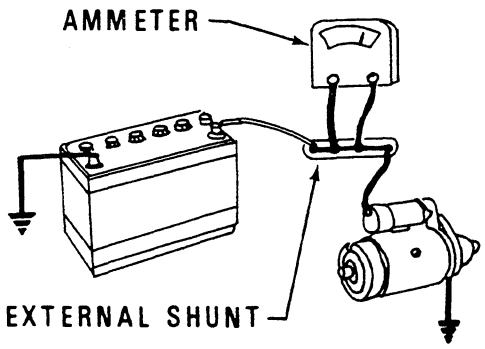


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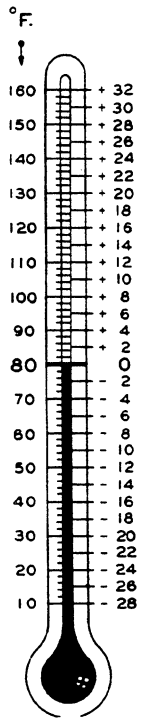
FIG. 3 EXTERNAL SHUNT

MEMO



EXAMPLE No. 1 —
Temperature *below* 80°F.
Hydrometer Reading 1.250
Acid Temperature 20°F.
***Subtract* .024 Sp. Gr.**
Corrected Sp. Gr. is 1.226

EXAMPLE No. 2 —
Temperature *above* 80°F.
Hydrometer Reading 1.235
Acid Temperature 100°F.
***Add* .008 Sp. Gr.**
Corrected Sp. Gr. is 1.243

(T-74527)

FIG. 22 CORRECTION FOR HYDROMETER

CAUTION

The battery electrolyte is a corrosive, acid solution. Avoid any contact of the electrolyte with skin, eyes, or clothing. If spills occur, they should be washed immediately with large amounts of water and, if possible, soap.

7.3 MAINTENANCE

7.3.1
Basic Servicing—A battery is a perishable item requiring periodic service. When a battery is properly maintained, the reward will be long and trouble-free operation. Regular maintenance should include the following steps:

1. Check the electrolyte level. Add clean water (distilled, if available) to maintain the prescribed level, but do not overfill the battery cells and cause a loss of electrolyte from spillage. Excessive use of water indicates overcharging or possible leakage.

2. Keep the top of the battery clean. When necessary, wash corrosion off the terminals with a baking soda solution, and rinse them with clear water. Use a steel brush or steel wool, if necessary, to be sure that the terminals are really clean. Coat the connections and the terminals with a very light layer of grease to retard additional corrosion.

3. Inspect the cables, clamps, and hold-down brackets. Clean them, and replace them as necessary.

7.3.2
Temperature Considerations—The electrolyte of a battery, in various states of charge, will start to freeze at the temperatures indicated below. The given temperatures indicate the approximate temperatures at which ice crystals first begin to form in the electrolyte. The electrolyte will not freeze solidly until a slightly lower temperature is reached, but solid freezing of the electrolyte may crack the battery container or damage the plates.

Specific Gravity (Corrected to 80°F (27°C)	Freezing Temperature
1.280	-90°F (-69°C)
1.250	-62°F (-55°C)
1.200	-16°F (-27°C)
1.150	+ 5°F (-15°C)
1.100	+19°F (- 7°C)

A battery charged three-fourths or more is in no danger of freezing, so batteries shoulc be kept at least three-fourths charged in winter weather.

7.3.3
Storage—If the equipment is not going to be used for more than one month, the battery should be removed and stored in a cool, dry place. During extended storage, it should be checked periodically and recharged as necessary. A battery left unused for a long period of time is subject to the crystallization of lead sulfate on the plates; this deterioration will adversely affect future performance.

7.3.4
Testing on the Unit—The electrolyte level should be checked and corrected, and the battery should be visually inspected. Signs of damage or serious abuse, like excessive corrosion, a cracked or bulging case, or cracked cell covers, will mean that the battery has to be replaced. A hydrometer test also can be performed.

The voltage of each cell of the battery may be checked with a voltmeter to be sure that each cell is properly charged. It is possible that a single cell of the battery has gone bad and has become incapable of holding a charge. This will be evident either through a low battery voltage, or a low individual cell voltage. Figure 18 illustrates the use of a special voltmeter to check the battery. Any voltmeter can be used, and the voltmeter should indicate between 1.7 and 1.8 volts per cell for battery temperatures between 70°F and 90°F (21°C and 33°C). If any cell indicates a low voltage and the situation cannot be remedied by charging (as described in Section 7.3.6), the battery will have to be replaced.

It is possible for a faulty battery to indicate sufficiently high cell voltages on a voltmeter, but still not perform satisfactorily on the unit. This is because the voltmeter

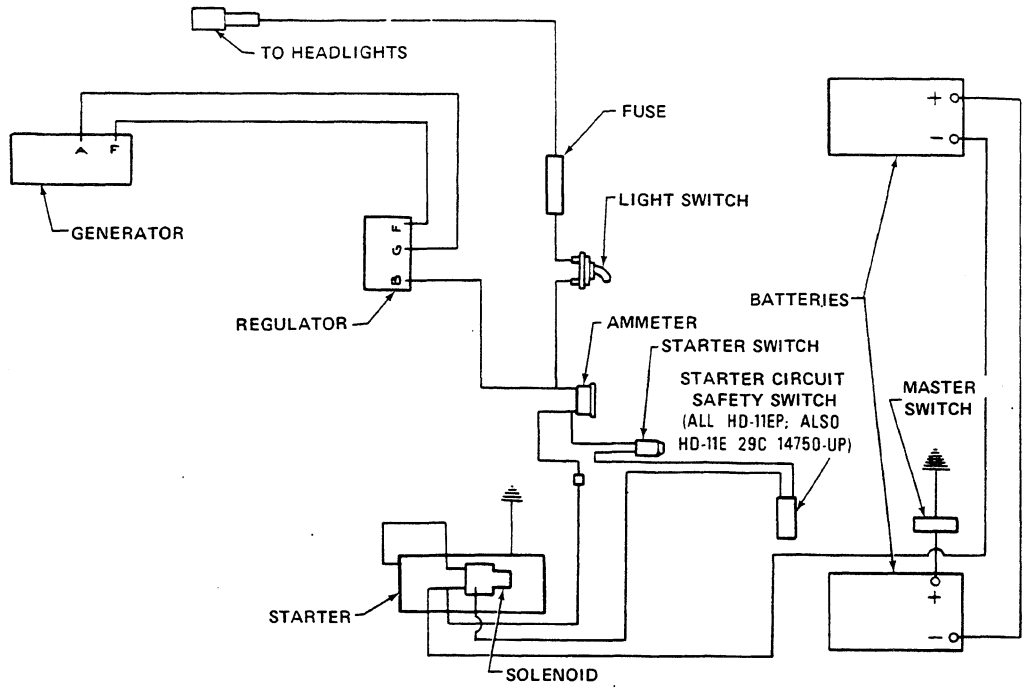


FIG. 27 HD-11 CRAWLER TRACTOR, HD11G CRAWLER LOADER (S/N 6427-up; 17L14651 through 17L16000; 29C14651 through 29C16000; 46Y14651 through 46Y16000)

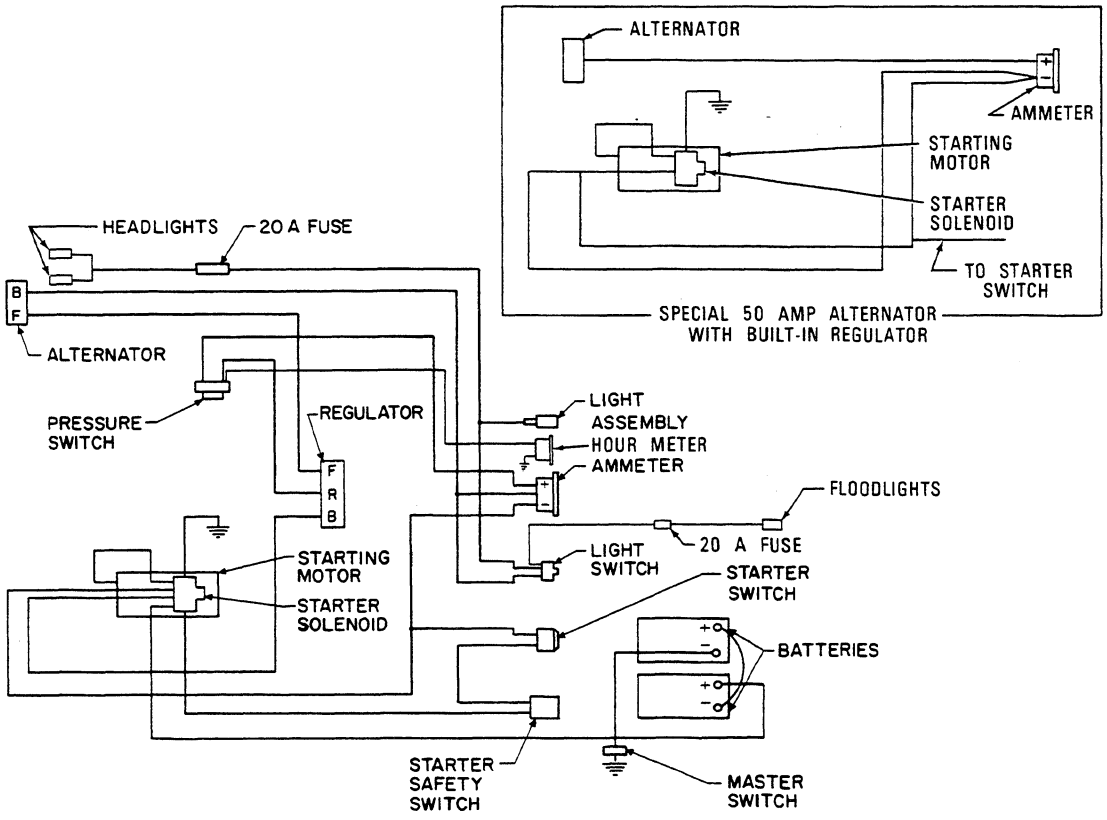
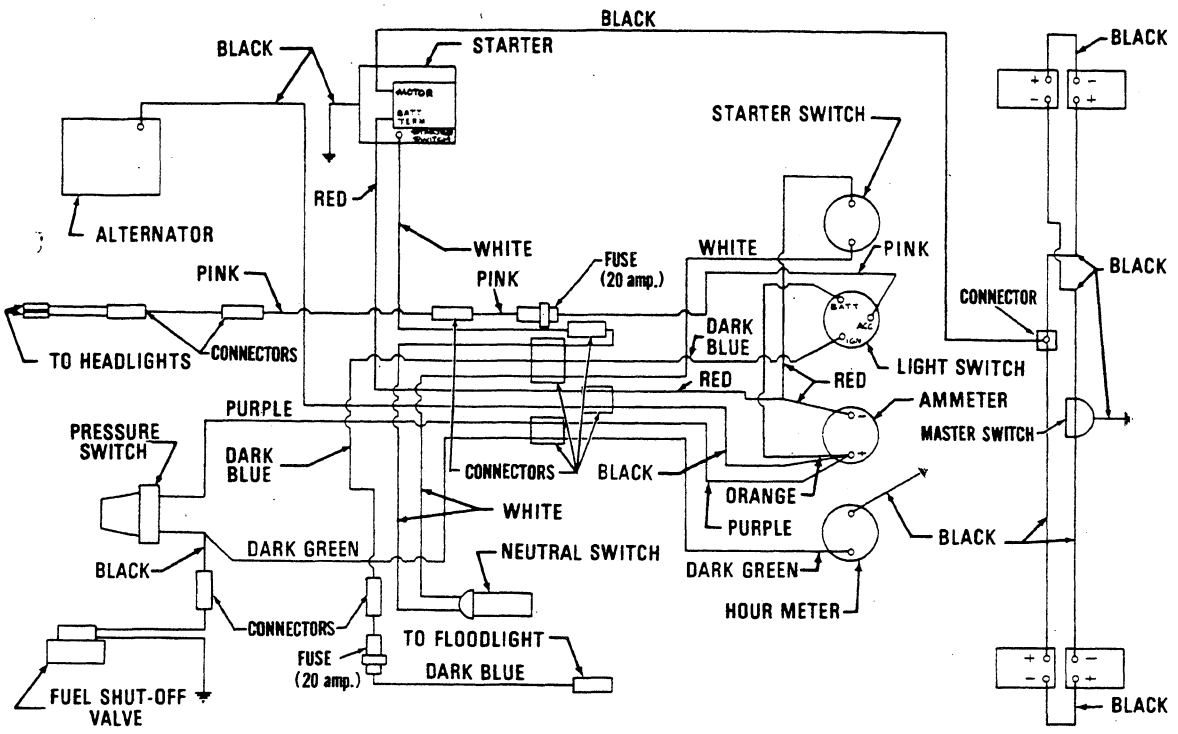


FIG. 28 11-B CRAWLER TRACTOR (S/N 16C16001-up; 25L16001-up)



HD-41

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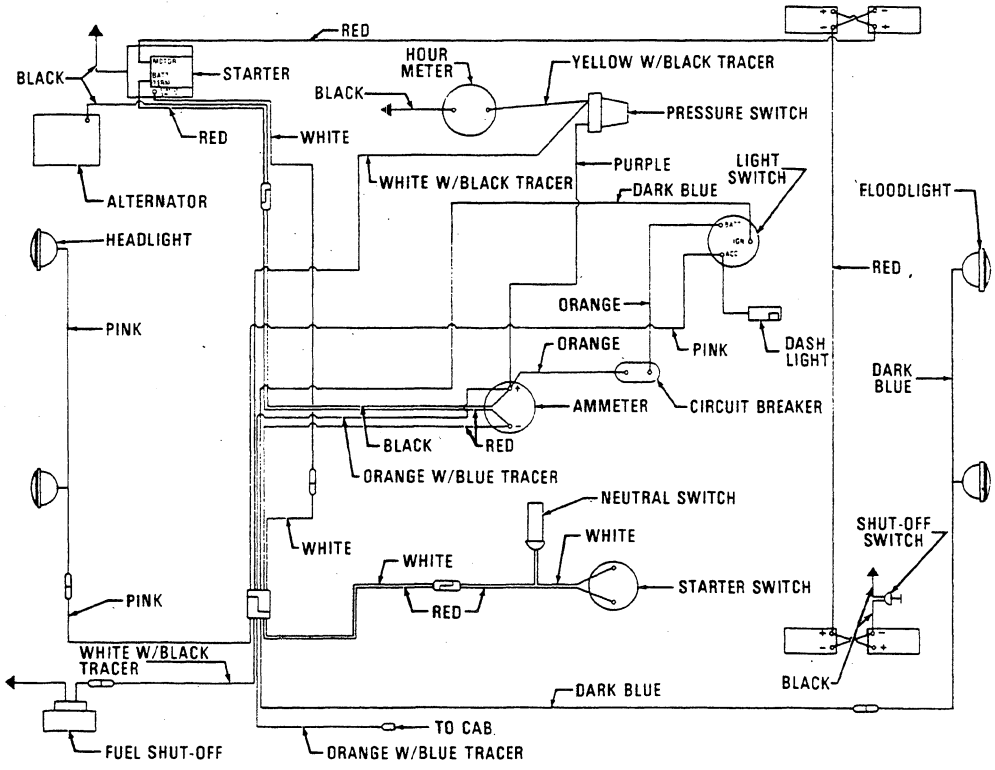

41-B

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FIG. 39 WIRING SCHEMATIC

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

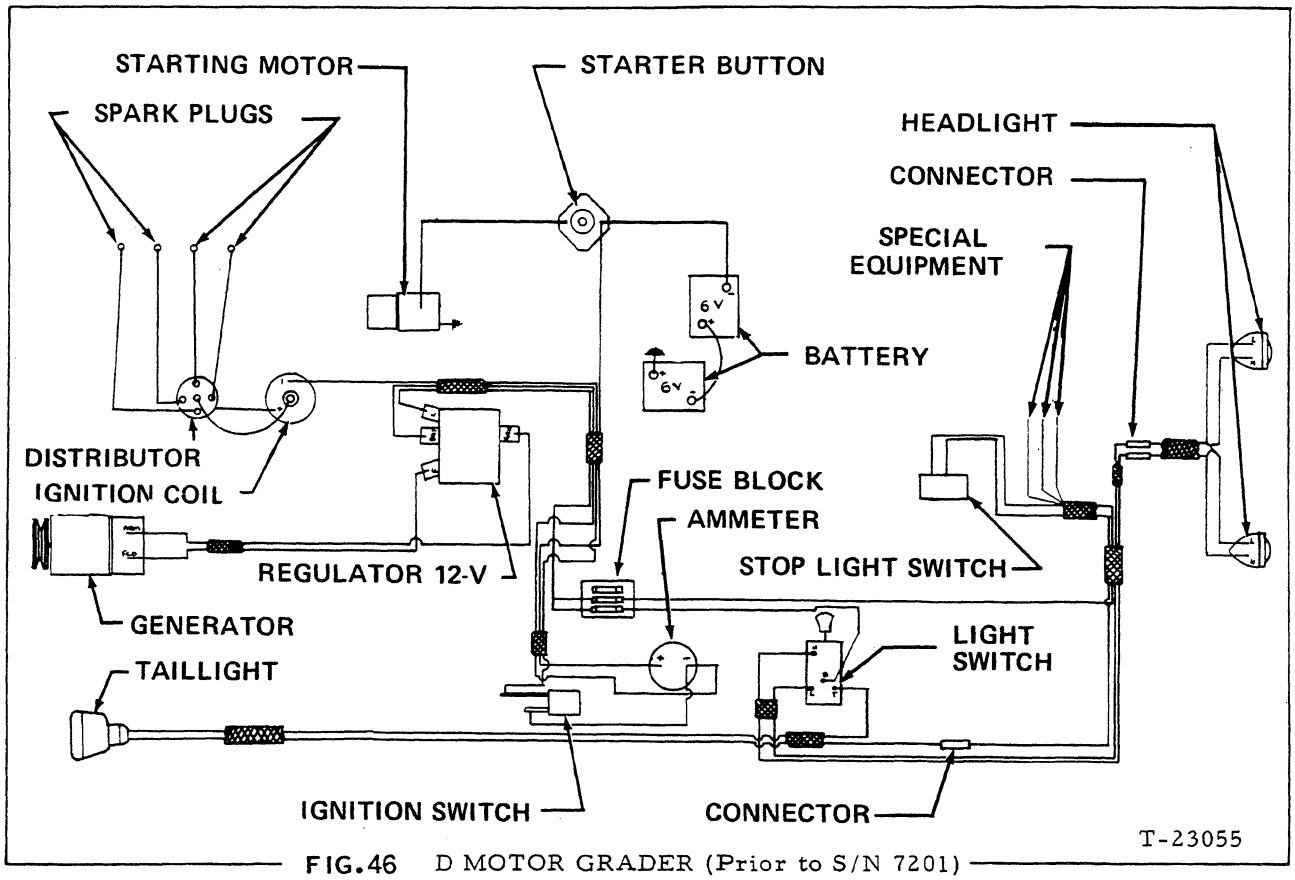

FIG. 46 D MOTOR GRADER (Prior to S/N 7201)

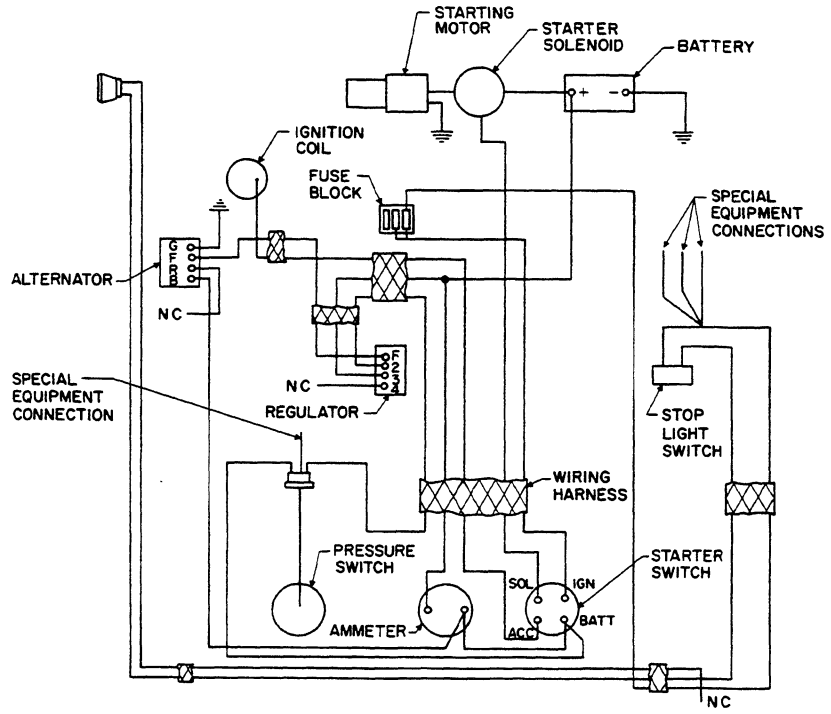

FIG. 47 D MOTOR GRADER (S/N 7201-up)

Electrical System Schematics

Legend for Fig. 59

1. Circuit Breaker
2. Circuit Breaker
3. Circuit Breaker
4. Circuit Breaker
5. Circuit Breaker
6. Circuit Breaker
7. Circuit Breaker
8. Circuit Breaker
9. Key switch
10. Hourmeter
11. Voltmeter
12. Engine start clearing switch(FG85,95 only)
13. Cold start switch
14. Cold start solenoid
15. Coldstart engine temperature switch
16. Engine oil pressure/hourmeter switch
17. Full fuel solenoid
18. Lamp diode(FG85,95 only)
19. Starter

Electrical System Schematics

Legend for Fig. 64

1. Circuit Breaker
2. Circuit Breaker
3. Circuit Breaker
4. Circuit Breaker
5. Circuit Breaker
6. Circuit Breaker
7. Circuit Breaker
8. Circuit Breaker
9. Key switch
10. Reverse alarm
11. Reverse alarm switch
12. Saddle lock pin solenoid
13. Moldboard pin switch
14. Beacon switch
15. Beacon

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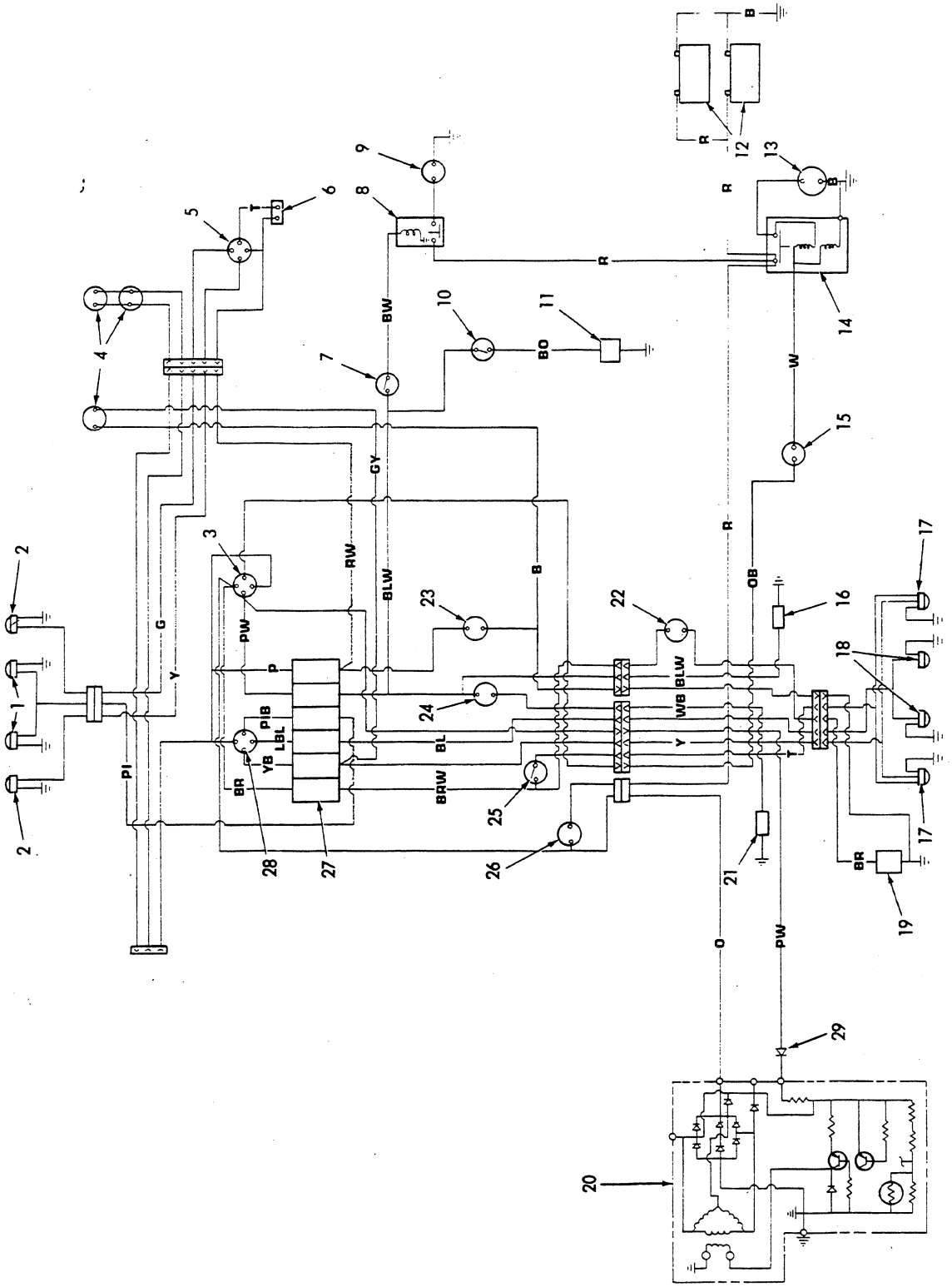

FIG. 73-345-B WHEEL LOADER

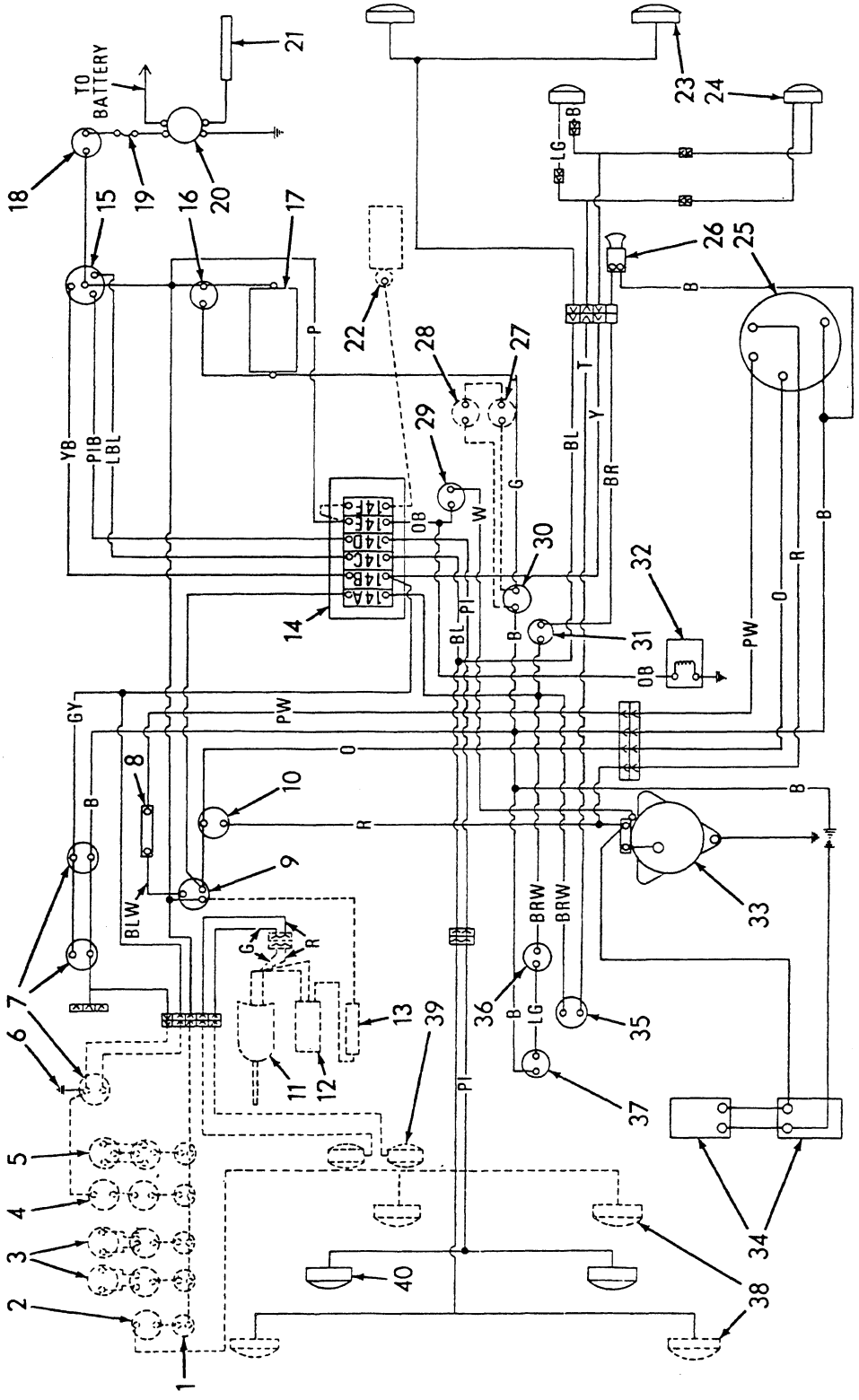

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FIG. 81 ELECTRICAL SYSTEM SCHEMATIC
(Eff. 545-B S/N 21C06870 and 605-B S/N 6863)
(Except 545-B S/N 33A07204-UP)

LEGEND FOR FIG. 49

1. Flood light switch
2. Cab defroster fans
3. Rear window wiper
4. Front window wiper
5. Cab ground
6. Instrument panel lights
7. Key switch
8. Ammeter
9. Circuit breaker junction box

9A. Stop lights - 8 amp
9B. Tail lights - 8 amp
9C. Flood lights - 15 amp
9D. Head lights - 8 amp
9E. Starter switch - 15 amp
9F. Cab heater - 8 amp

10. Low air pressure buzzer
11. Low air pressure warning light
12. Light switch

*13. Engine air heater switch
*14. Fuse
*15. Magnetic switch
*16. Air heater

17. Cab heater switch
18. Rear flood lights
19. Stop lights/tail lights

**20. Back-up alarm
21. Alternator (integral) 40, 45 or 50 amps

***22. Electric F.I.P. shut off

23. Low air pressure switch
24. Starter switch

**25. Back-up alarm pressure switch

26. Starting motor
27. Batteries
28. Stop light switch

**29. Hour meter pressure switch
**30. Hour meter

31. Optional flood lights
32. Optional turn signals
33. Fuse
34. Turn signal flasher
35. Turn signal switch
36. Head lights
37. Fuse and fuse holder
38. Resistor (part of integral alternator circuit)

See Note:
*** Standard circuit after Feb. 1966 (S/N 11Y04904)
** Standard circuit after May 1966 (S/N 11Y05008)
* Standard circuit after Nov. 1977 (S/N 11Y05638)

NOTE: Not applicable to brush-type alternator

COLOR CODE FOR FIG. 49

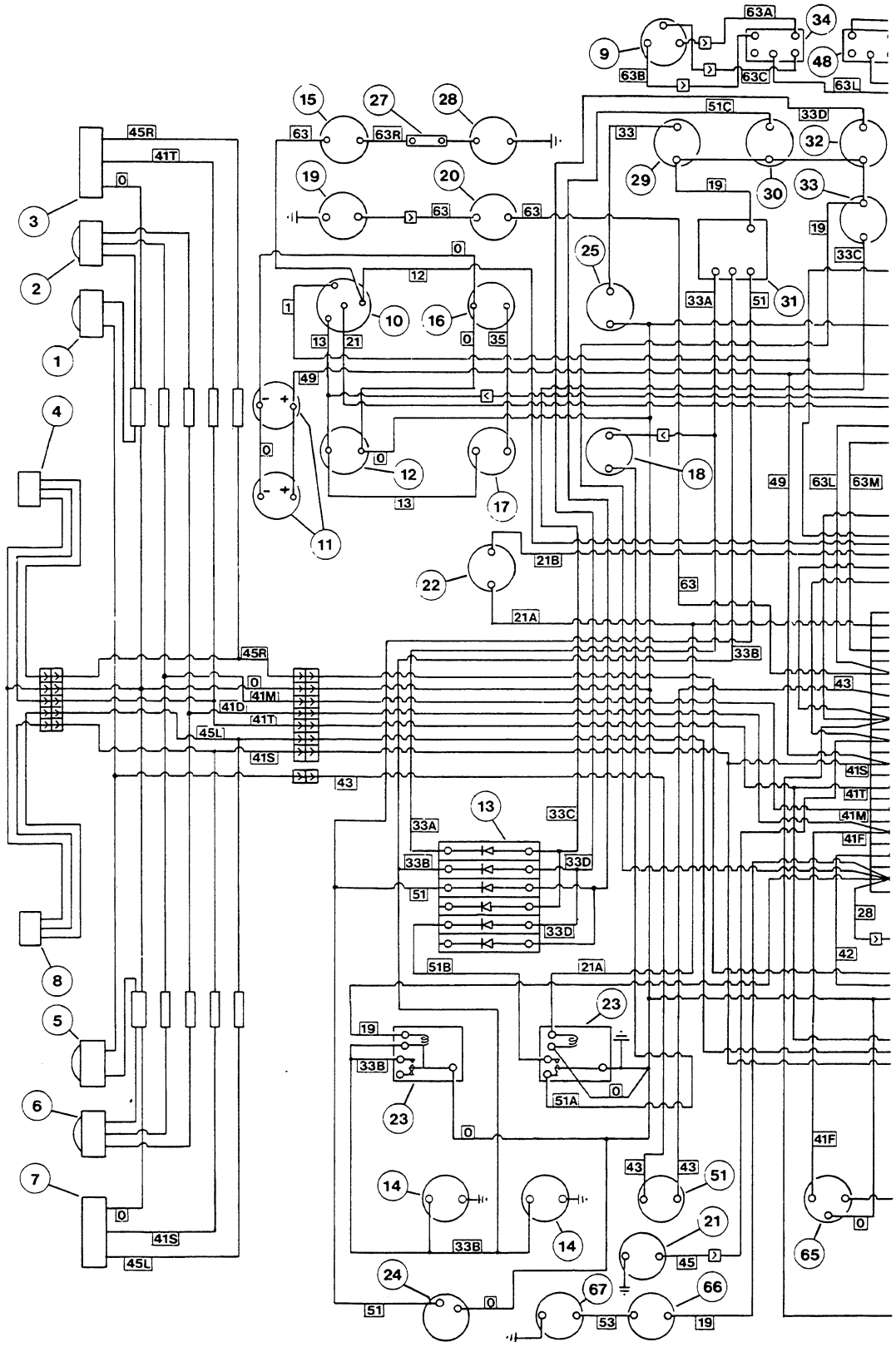
B - Black
LBl - Light Blue
Bl - Blue
Br - Brown
G - Green
LG - Light Green
Gy - Grey
O - Orange
P - Purple
Pi - Pink
R - Red
T - Tan
W - White
Y - Yellow
Br/W* - Brown with white tracer
O/B* - Orange with black tracer
Pi/B* - Pink with black tracer
Y/B* - Yellow with black tracer

LEGEND FOR FIG. 93

1. Panel Lights
2. Key Switch
3. Ammeter
4. Cab Junction Box
5. Brake Fluid Level Warning Light
6. Low Air Pressure Warning Light
7. Light Switch
8. Warning Buzzer
9. Headlight
10. Pressure Convertor Stroke Switch
11. Starter Switch
12. Pressure Switch
13. Pressure Switch
14. Back-Up Horn
15. Stop, Tail, Flasher Light
16. Alternator
17. Hourmeter
18. Starter Motor
19. Pressure Switch
20. Batteries
21. Floodlight
22. Resistor
23. Fuel Shut-Off Solenoid
24. Stoplight Switch
25. Flasher Switch
26. Flasher Unit
27. Flasher Warning Light
28. Hazard Warning Light
29. Side and Flasher Light
30. Main Beam Warning Light
31. Cab Connector
32. Diode
33. Warning Light, Floodlight

WIRING COLOUR CODE

B	—	Black
BL	—	Blue
BR	—	Brown
G	—	Green
LG	—	Light Green
GR	—	Grey
O	—	Orange
P	—	Purple
R	—	Red
T	—	Tan
DG	—	Dark Green
W	—	White
GW	—	Green/White
RB	—	Red/Black
RW	—	Red/White
YB	—	Yellow/Black
BRW	—	Brown/White
GR	—	Green/Red
BRY	—	Brown/Yellow
BRG	—	Brown/Green
BRR	—	Brown/Red
BLR	—	Blue/Red
BLW	—	Blue/White
GY	—	Green/Yellow
GB	—	Green/Black
GBR	—	Green/Brown
PB	—	Purple/Black



(LEGEND : see page 124)

FIG. 98-FR10 **ELECTRICAL**

(Loader serial no.

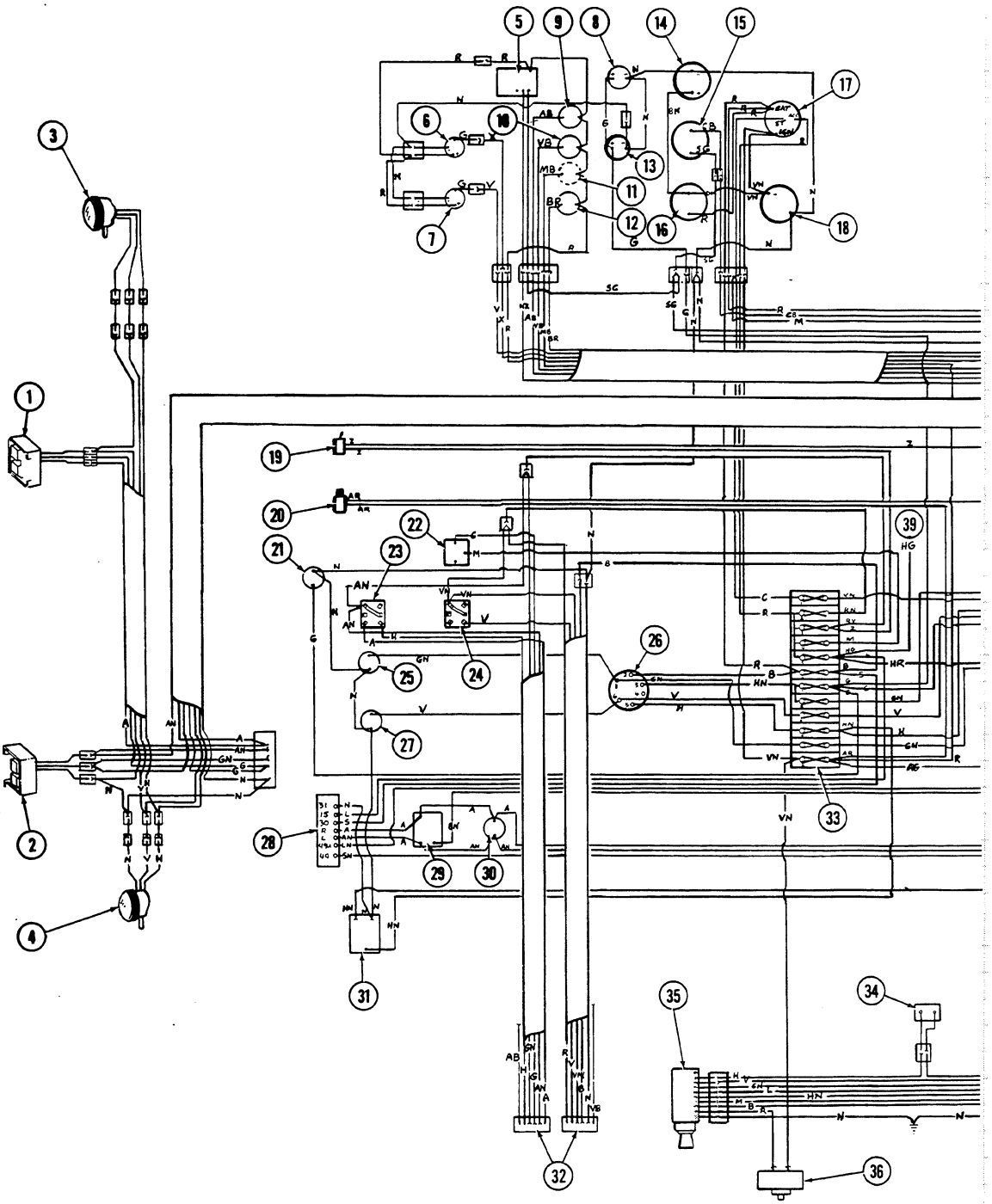


FIG. 101 FR10 (S/N 525395-UP);

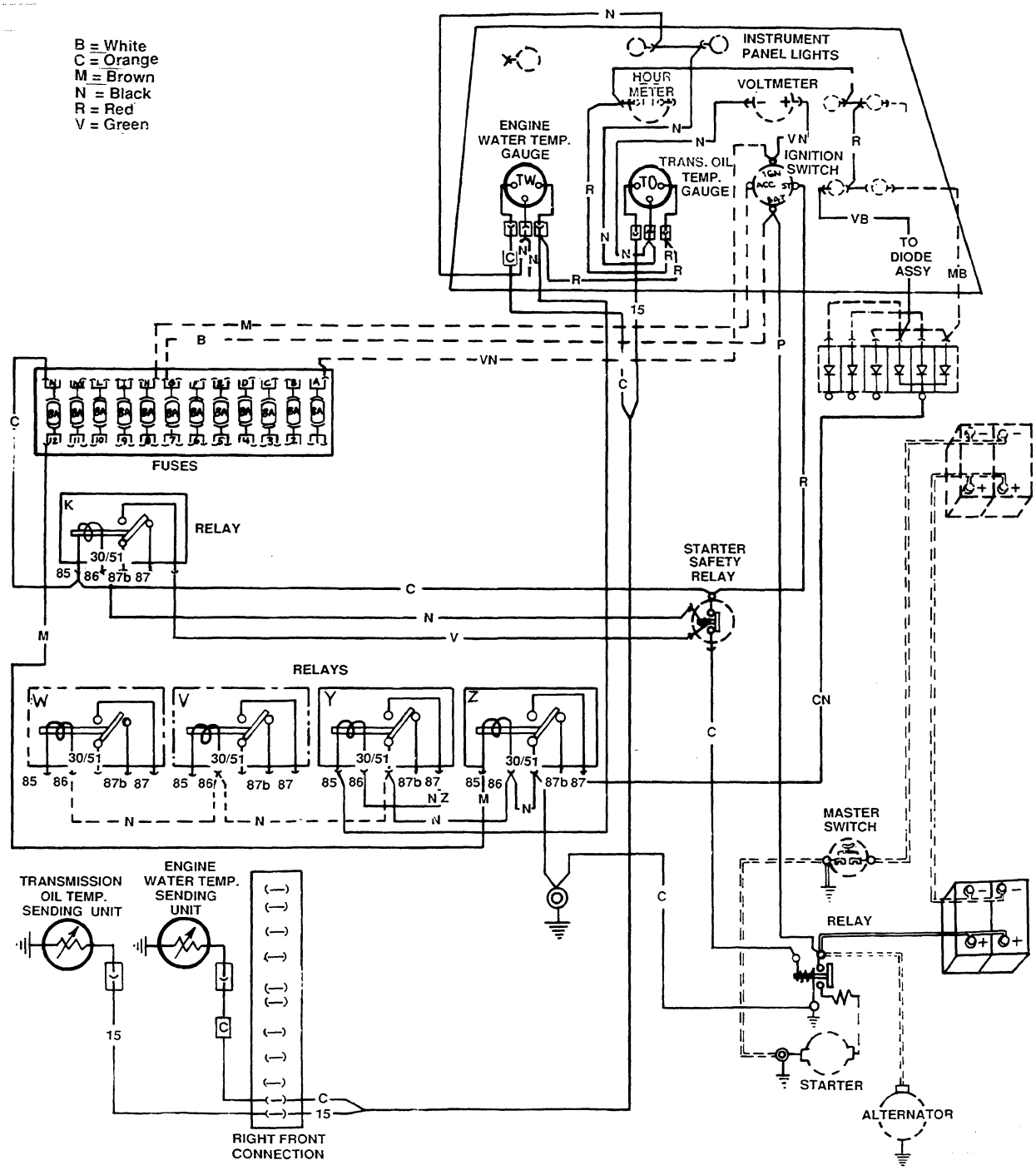


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FIG. 107 FR15 (S/N 575403-UP) ENGINE WATER TEMP. and TRANS. OIL TEMP. GAUGES

NOTE:

1. Circuits are identified by a number, or by a number and letter, contained in a square box. Metal tags bearing the circuit identification number are attached to each wire at all connectors and / or connection points.

2. Components are designated by a number in a circle. The following list identifies each designated component by its name.

LEGEND FOR FIG. 113

1. Right front cab floodlight
2. Right front head light
3. Right front side and turn signal/hazard flasher light
4. * Right front side and turn signal/hazard flasher light
5. Left front cab floodlight
6. Left front head light
7. Left front side and turn signal/hazard flasher light
8. * Left front side and turn signal/hazard flasher light
9. Front windscreen wiper motor
10. Ignition switch
11. Panel lights
12. Voltmeter
13. Diode assembly
14. Overstroke sensor switch
15. Rear windscreen washer switch
16. Hour meter
17. Engine oil pressure switch
18. Air pressure switch
19. Front windscreen washer pump
20. Front windscreen washer switch
21. Dome light
22. Neutral safety switch
23. Relay
24. Flow switch
25. Parking brake switch
26. Circuit breaker assembly
27. 10 amp. fuse
28. Rear windscreen washer pump
29. Parking brake "on" light
30. Emergency steering activated light
31. Buzzer
32. Brake system fault light
33. Low air pressure light
34. Front windscreen wiper switch
35. Flasher unit
36. Turn signal switch
37. Hazard warning switch
38. Light switch
39. Ether starting aid switch
40. Starter solenoid
41. Battery disconnect switch
42. Starter motor
43. Ether start solenoid
44. Thermo guard
45. Panel light
46. Heater switch
47. Heater unit
48. Rear windscreen wiper switch
49. Rear windscreen wiper motor
50. Turn signal/hazard flasher indicator light
51. Cab floodlight switch
52. Brake light switch
53. Excess fuel solenoid
54. Alternator
55. Batteries (2)
56. Alarm switch
57. Back-up alarm
58. Right rear flood light
59. Right rear turn signal/hazard flasher/tail light
60. Registration number plate light
61. Left rear flood light
62. Left rear turn signal/hazard flasher/tail light
63. Main beam warning light
64. Flood warning light
65. Fog light switch

* Fitted to Bucket Tooth Guard (Special Equipment)

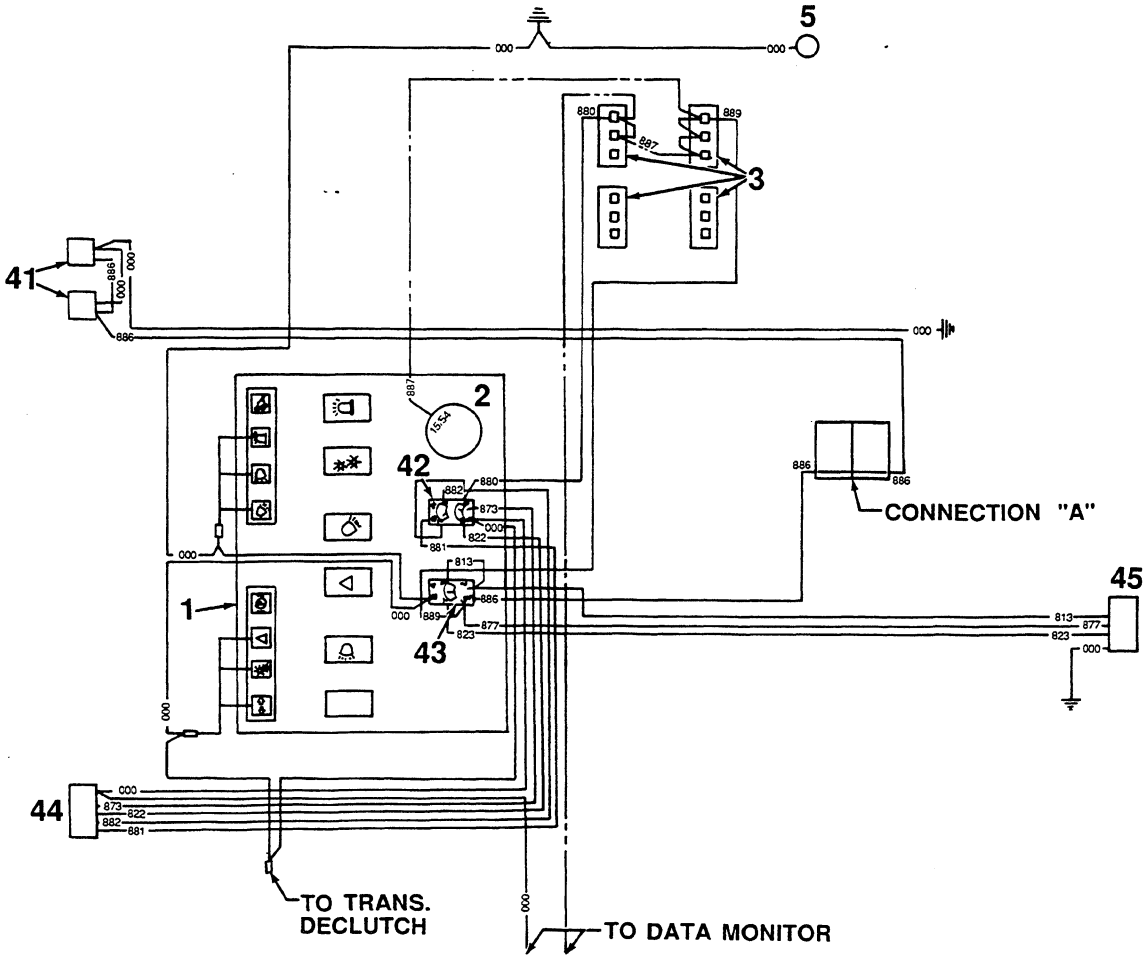

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FIG. 120 FR10B WINDSHIELD WIPERS & WASHERS

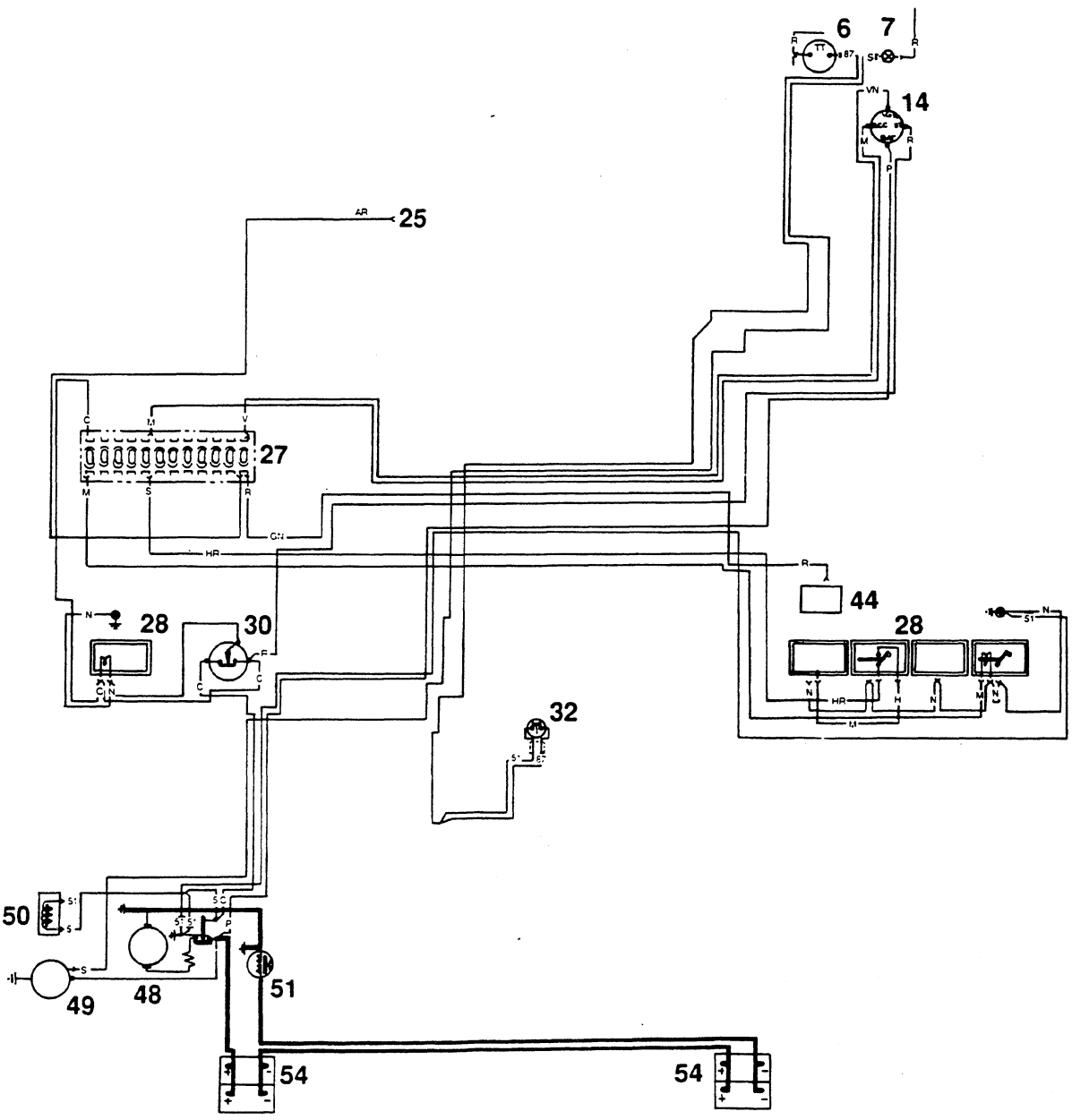

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FIG. 128 FR11, 12B, 15B, 20B BATTERY FEED

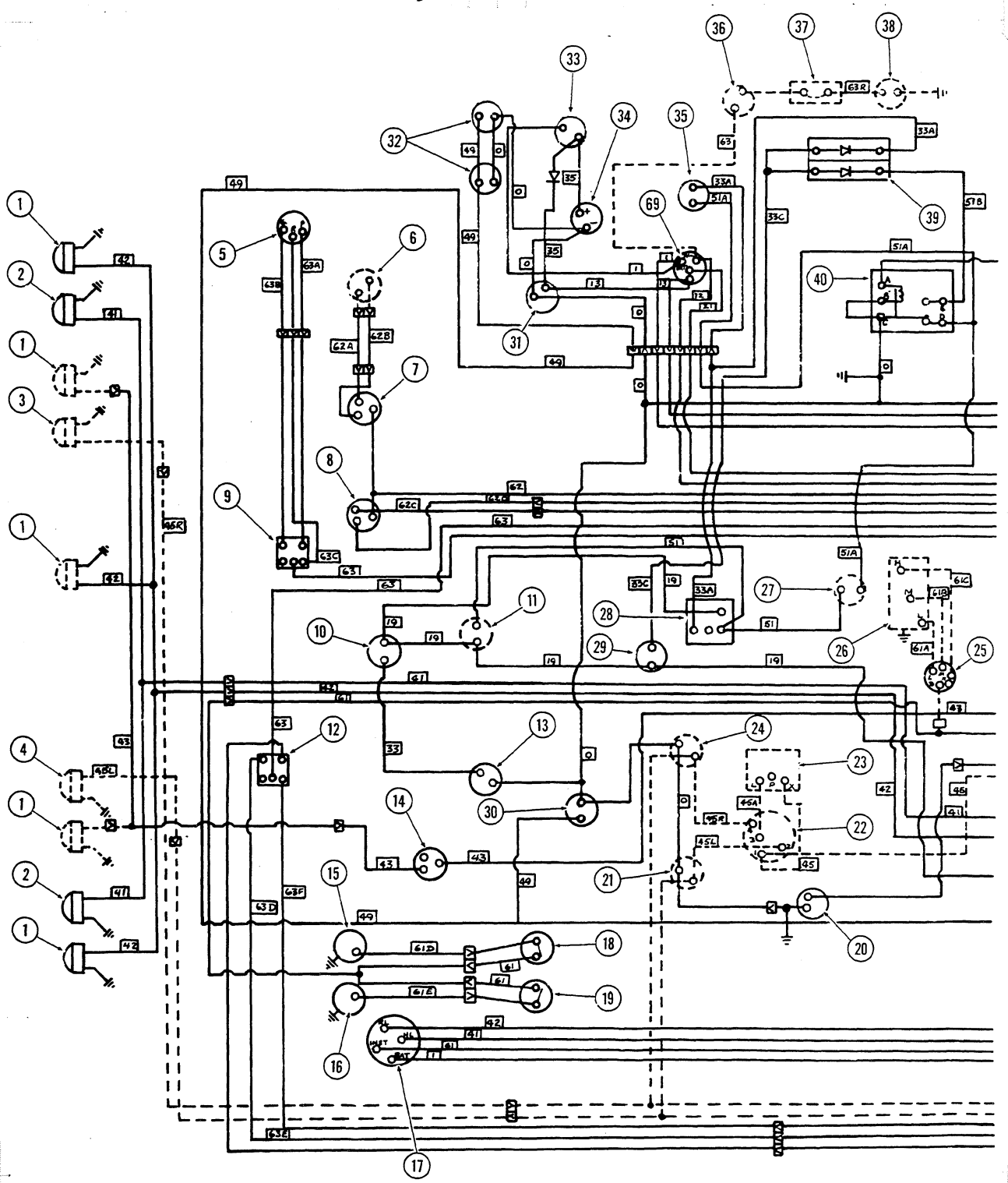


FIG. 133 FR35 ELECTRICAL SCHEMATIC

FOREWORD

Always furnish serial number if making an inquiry to dealer or factory about this machine.

Many equipment owners employ the Dealer Service Department for all work other than routine lubrication and minor service. This practice is encouraged, as our Dealers are well informed and equipped to render efficient service by factory trained mechanics.

Illustrations show standard and optional items.

IMPORTANT

The information in this manual was current at the time of publication. It is our policy to constantly improve our product and to make available additional items. These changes may affect procedures outlined in this manual. If variances are observed, verify the information through your Dealer.

Fiatallis is not responsible for any liability arising from any damage resulting from defects caused by parts and/or components not approved by Fiatallis for use in maintaining and/or repairing products manufactured or merchandized by Fiatallis.

In any case, no warranty of any kind is made or shall be imposed with respect to products manufactured or merchandized by Fiatallis when failures are caused by the use of parts and/or components not approved by Fiatallis.

Charging Circuit

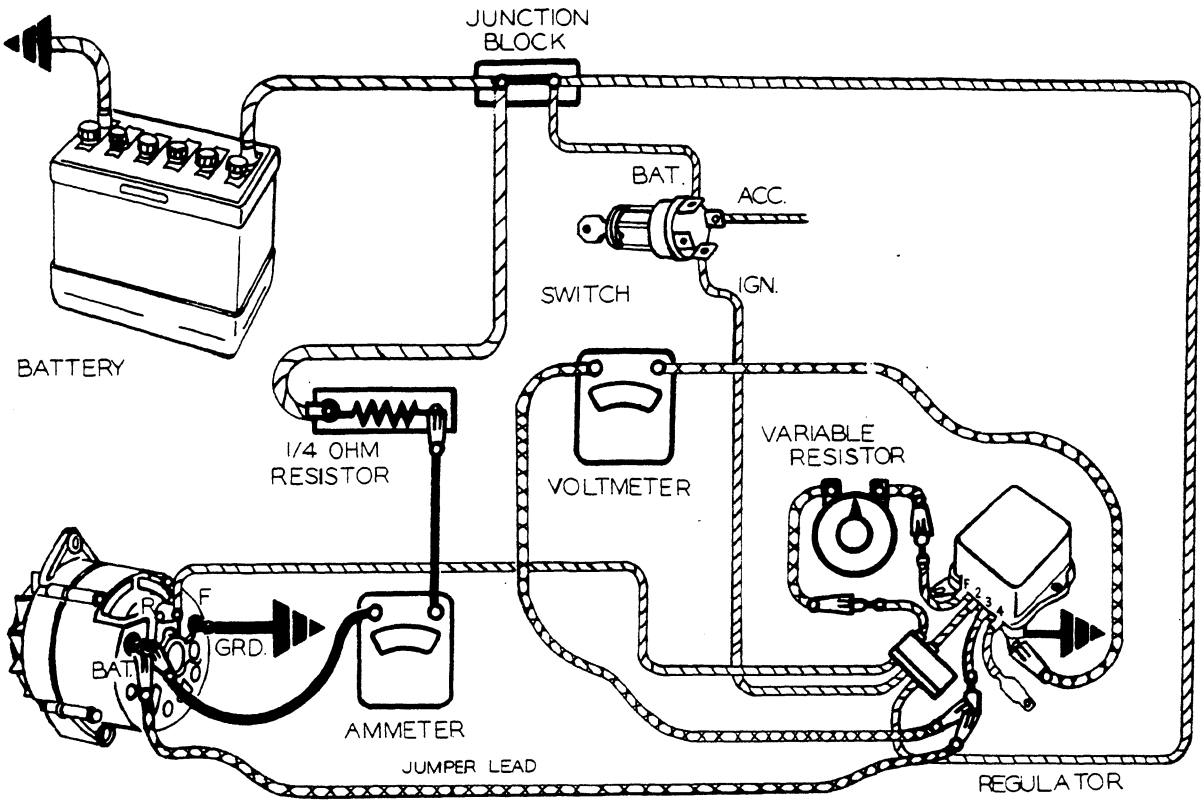


FIG. 11 CHECKING VOLTAGE SETTING A.C.

3.4.2.4.2
Make connections to the regulator as shown in Fig. 11. Use a 25 ohm 25 watt variable resistor in series with the alternator field winding at the regulator "F" terminal and connect a jumper lead from the adapter to the alternator "BAT" terminal as shown. Also, connect a voltmeter from the adapter to ground as shown.

3.4.2.4.3
Turn the variable resistor to the closed or "no resistance" position. Do not allow the No. 4 lead to touch ground.

⚠ WARNING

- ⚠ If engine is to be started indoors, insure proper ventilation to remove deadly gases.
- ⚠ Warn all people who may be servicing or working around machine before starting engine.
- ⚠ Sound horn before starting.
- ⚠ Never leave machine unattended with engine running.

TOPIC 6 ACCESSORY CIRCUITS

6.1 DESCRIPTION

The accessory circuits of a unit include all the electrical devices that are built into the unit or that may be attached to the unit, but that are not a part of either the starting circuit or the charging circuit. Such electrical devices as the headlights, the taillights, the horn, and the hour meter are on accessory circuits. The particular circuits will vary from one unit to the next, but the methods used to check these circuits are similar and may be applied to devices omitted in the following discussion.

6.2 GENERAL SERVICING

If an accessory is not functioning, the wiring and switches in the circuit should be checked to see if they are in good repair. The procedure, described in Section 4.3.1 for testing the switches in the starting circuit, is applicable to any of the switches in the electrical system. The wiring also should be checked for loose or corroded connections and for damaged or burned wires. If the possibility of a short exists, it should be checked with an ohmmeter.

6.3 ACCESSORIES

6.3.1
The Ammeter—If the ammeter does not register, the wiring to it should be checked. If the wiring is in good condition, the electrical connections to the ammeter should be disconnected and, using alligator clip leads, should be attached to a good meter. The ammeter, when functioning properly, will show a slight charging current after starting the engine.

In order to be sure that the ammeter is functioning properly, a slight load should be put on the electrical system. With the engine off, turn on the lights for one minute. The ammeter should indicate that the battery is discharging because the lights are on. Then start the engine. The ammeter should show charging. If the new meter connected in the circuit functions properly, and if the old meter did not, the old meter should be removed from the unit and the new one mounted in its place. (On units having an oil pressure switch in the charging circuit, the engine oil level and the pressure switch should be checked if the ammeter never indicates charging.) If the new meter also fails to function properly, the rest of the charging circuit should be checked carefully.

6.3.2
Lights—The lighting on the unit typically is controlled by one switch located on the instrument panel. By drawing current from the battery, the lights will operate even though the engine is not running. If the lights are flickering, check for a loose or broken connection. If the lights do not work at all, and if the switch and wiring appear to be in good condition, replace the fuse in the lighting circuit. (If the fuse is burned out, then excess current has been flowing in the lighting circuit. The circuit should be checked carefully for shorts before it is tried again.) Individual lights that do not work are probably burned out and should be replaced.

6.3.3
The Hour Meter—After checking the wiring to the hour meter, the connections to the hour meter should be removed and attached to a new meter. If the new meter functions properly while the engine is running, the old meter should be removed and replaced. If the new meter does not function, the charging circuit oil pressure switch may have failed and should be checked.

MEMO

Electrical System Schematics

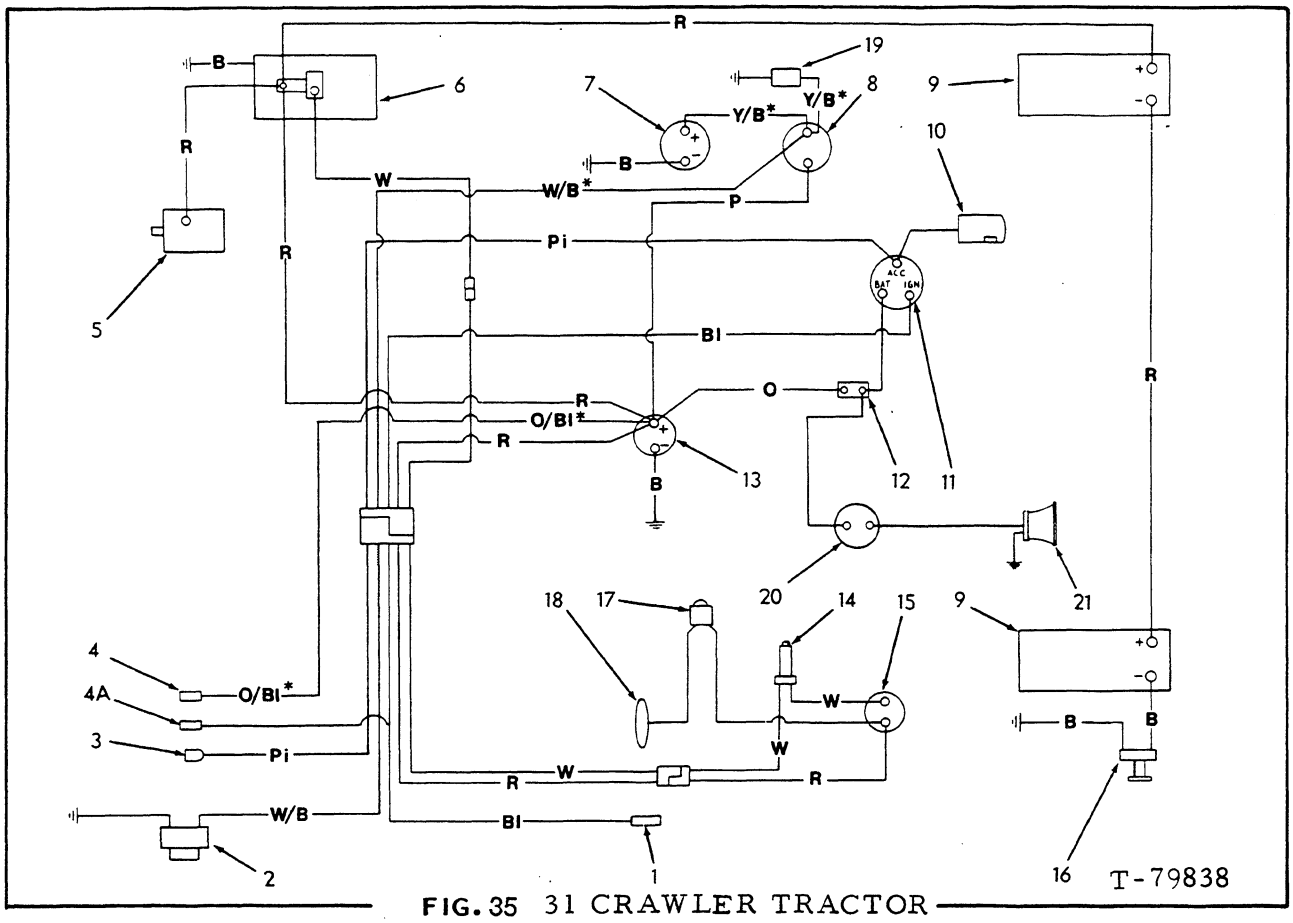


FIG. 35 31 CRAWLER TRACTOR

1. Rear floodlight
2. Automatic fuel shut-off (Prior to S/N 84M01265)
   Manual shut off (Effective S/N 84M01265)
3. Headlight
4. Cab electrical supply

4A. Rear flood light

5. Alternator (50 amp)
6. Starter
7. Hour meter
8. Pressure switch
9. Battery (12V)
10. Dash light
11. Light switch
12. Circuit breaker
13. Voltmeter
14. Neutral switch
15. Starter switch
16. Master switch
17. Horn switch
18. Horn
19. Fuel shut off solenoid (Prior to S/N 84M01265)
20. Pressure switch (reverse)
21. Back-up alarm

B - Black
Bl - Dark Blue
O - Orange
P - Purple
R - Red
W - White
O/Bl* - Orange with blue tracer
W/B* - White with black tracer
Y/B* - Yellow with black tracer
Pi. - Pink

MEMO

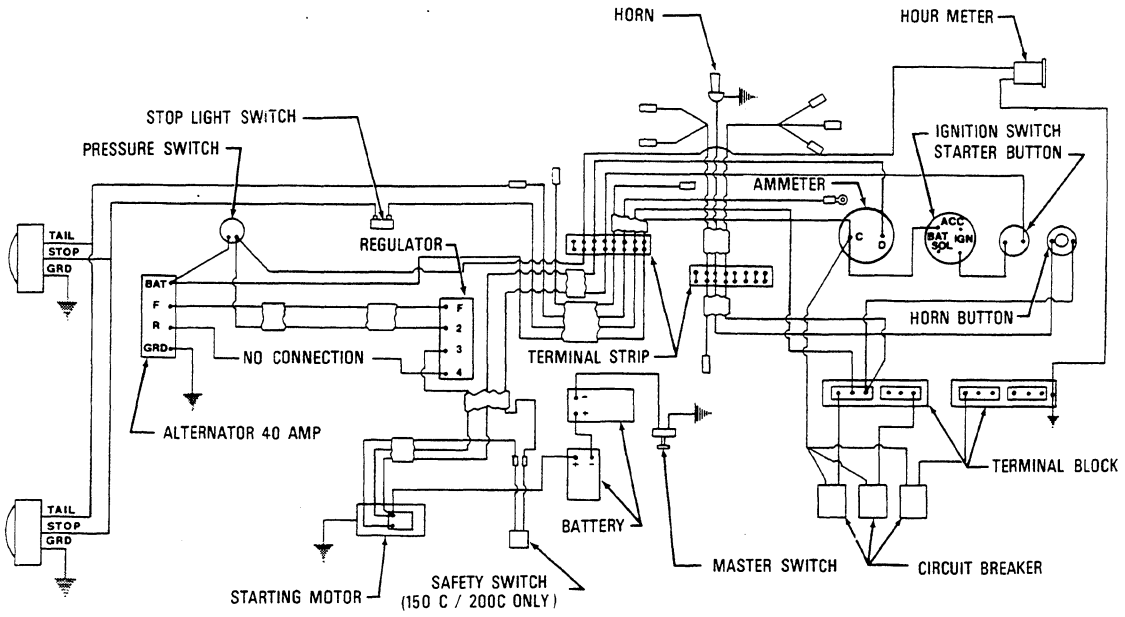


FIG. 56 100-C, 150-C, 200-C MOTOR GRADER (Prior to S/N 27Y08281; Prior to S/N 99C01047; Prior to S/N 90M01047)

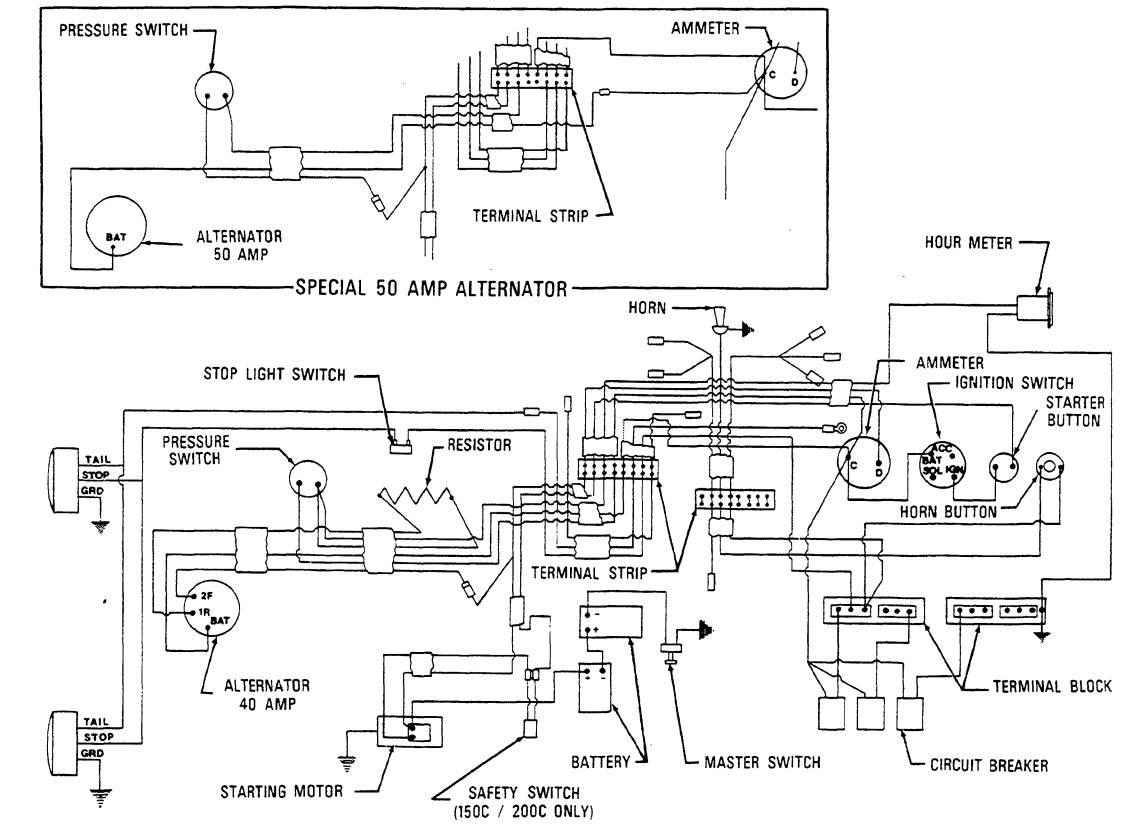


FIG. 57 100-C, 150-C, 200-C MOTOR GRADER (S/N 27Y08281-up; 99C01047-up; 90M01047-up)

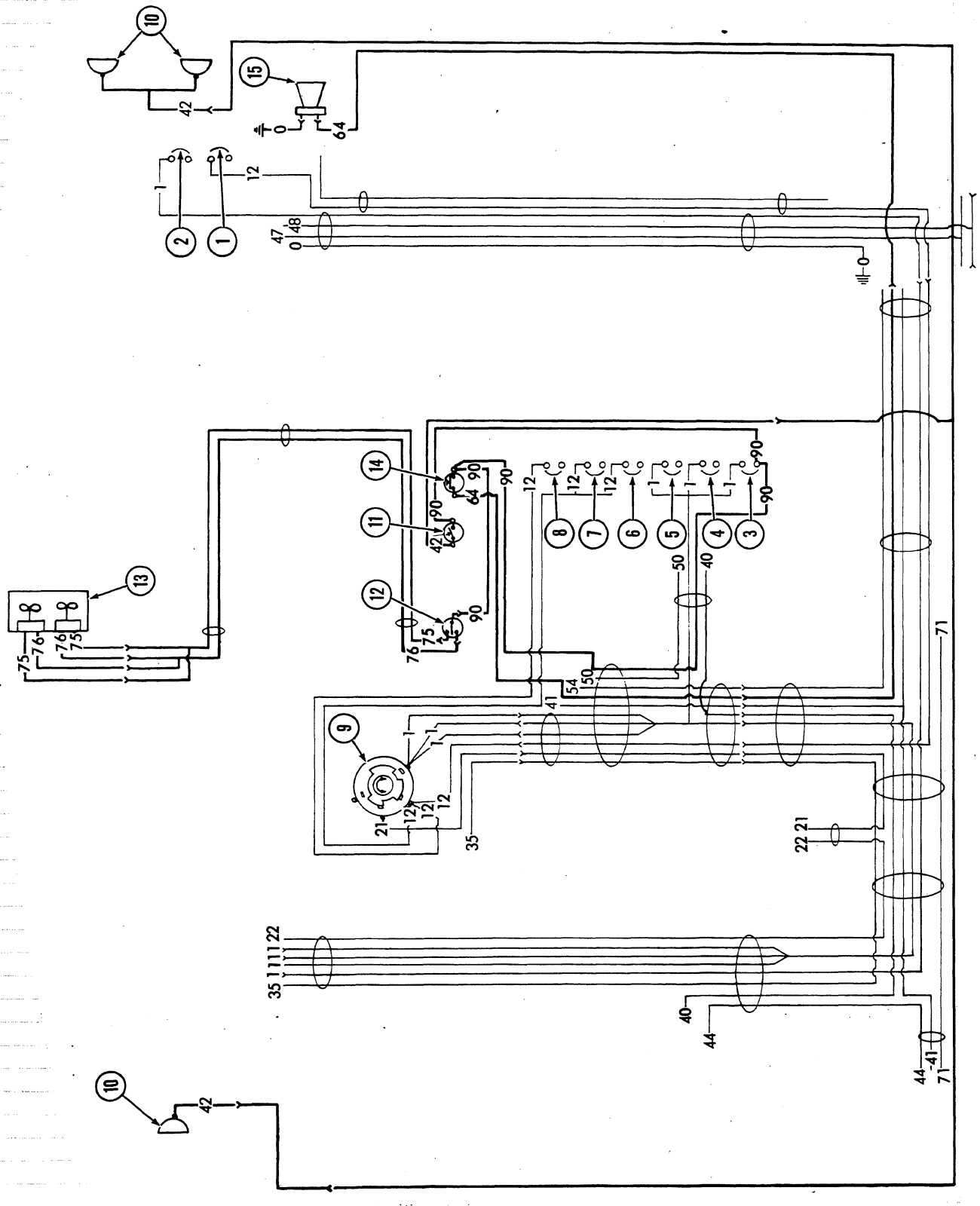
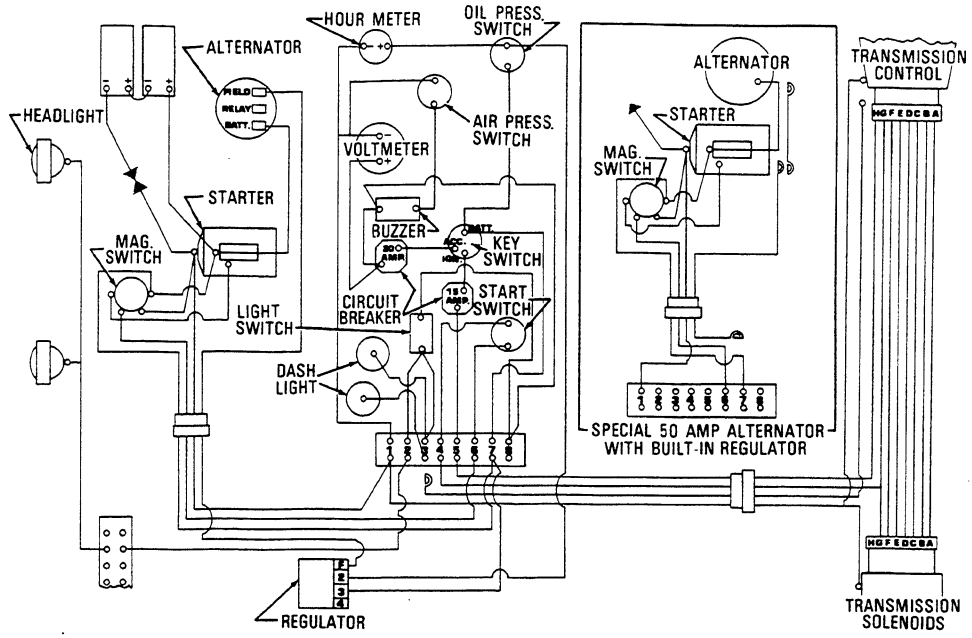
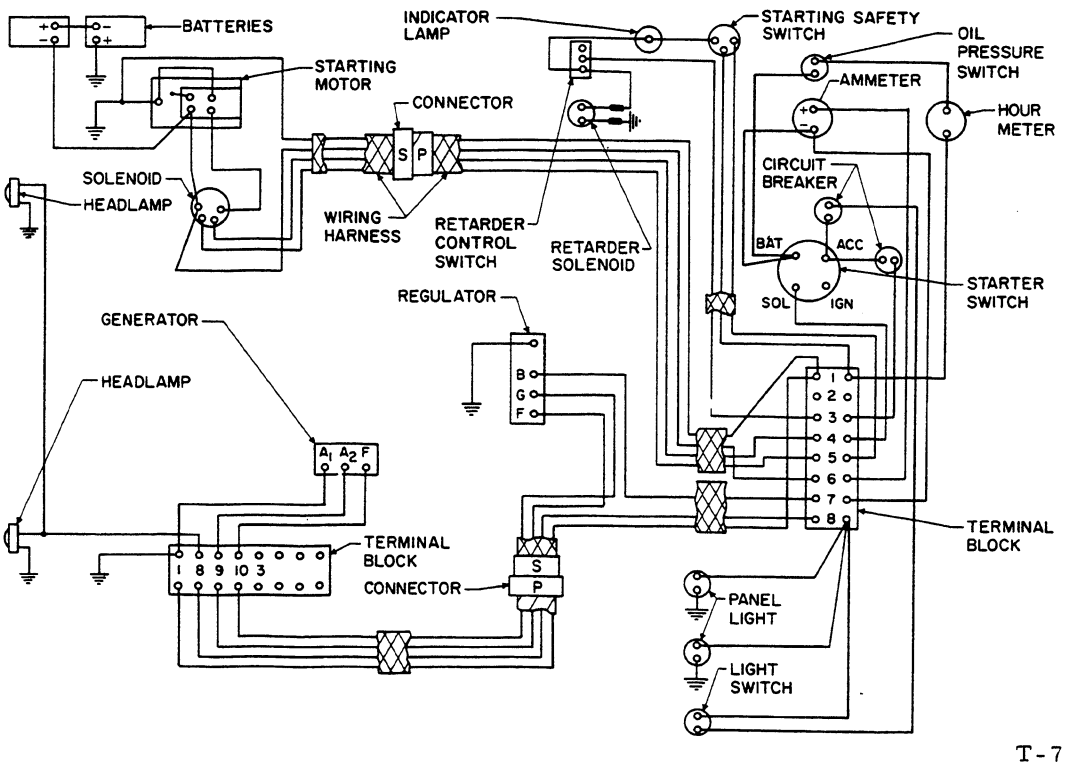


FIG. 62 FG75,85,95 FLOODLIGHTS, HORN, HEATER FAN



T-79165

FIG. 70 260-B TRACTOR SCRAPER, 261-B ELEVATING SCRAPER



T-76860

FIG. 71 460-C TRACTOR SCRAPER (S/N 5105-up; 13U05501-up)

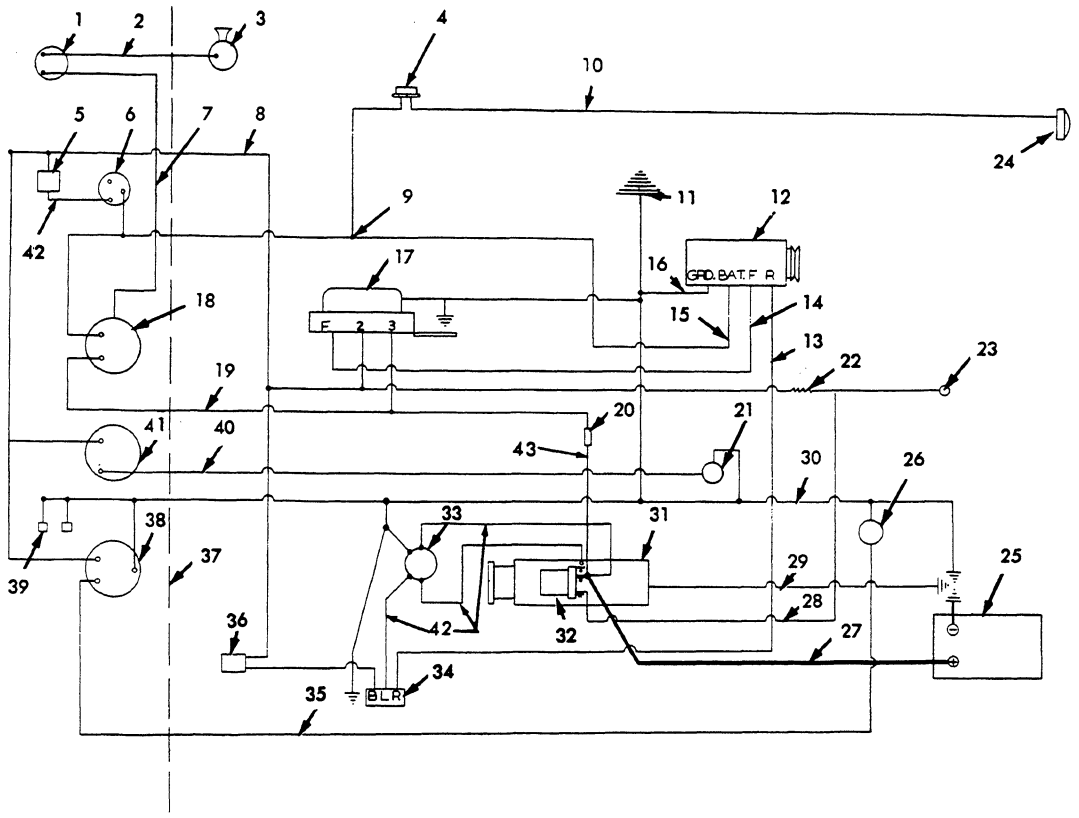


Fig. 79 Wiring Diagram (Schematic) Model 545G
(Loader S/N 1759 - UP)

1. Horn button
2. Gray
3. Horn
4. Stoplight switch
5. Circuit breaker (6 amp)
6. Key switch
7. Orange
8. Purple
9. Orange
10. Tan
11. Engine ground
12. Generator (alternator)
13. Brown
14. Light green
15. Orange
16. Black
17. Generator regulator
18. Ammeter
19. Red
20. Fuse
21. Hour meter pressure switch
22. Resistor
23. Ignition coil
24. Stoplight
25. Battery
26. Fuel sender
27. Red
28. Gray and white
29. Black
30. Black
31. Starting motor
32. Starting motor solenoid
33. Auxiliary solenoid
34. Relay
35. Pink
36. Starter switch
37. Harness connections
38. Fuel gauge
39. Ground receptacle
40. Yellow
41. Hour meter
42. Black
43. Gray

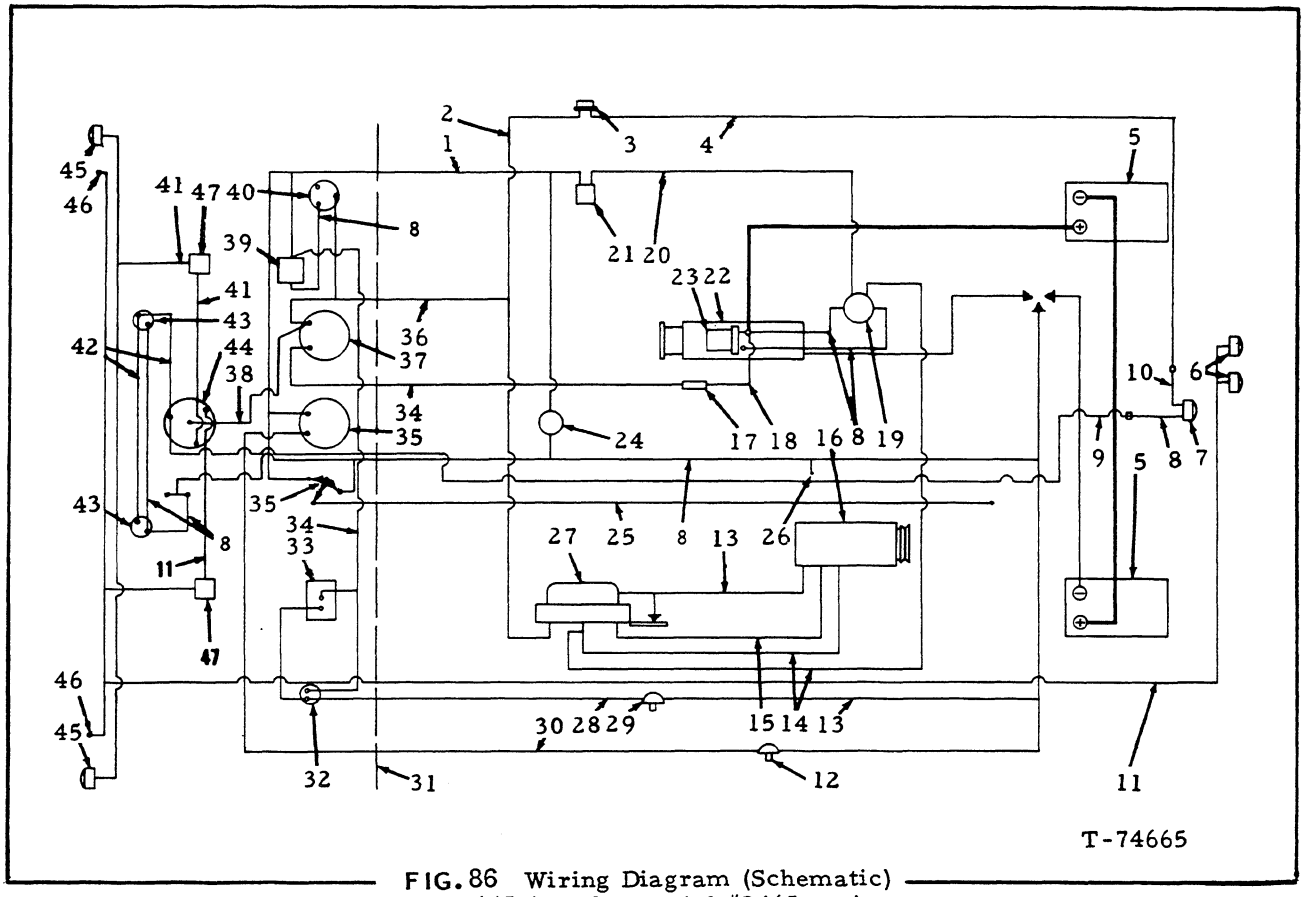


FIG. 86 Wiring Diagram (Schematic)
645 (Loader serial #2465- up)

1. Purple
2. Orange
3. Stoplight switch
4. Tan
5. Battery
6. Floodlight
7. Stoplight
8. Black
9. Blue
10. Green
11. Dark green
12. Hour meter pressure switch
13. Black
14. Brown
15. Light green
16. Generator
17. Fuse (30 amp)
18. Gray
19. Auxiliary solenoid
20. White
21. Starter switch
22. Starting motor
23. Starting motor solenoid
24. Fuel shut-off
25. Pink (Not used, tape both ends)
26. Engine ground
27. Generator regulator
28. Yellow and black
29. Air pressure switch
30. Yellow
31. Harness connection
32. Warning light (low air pressure)
33. Buzzer (low air pressure)
34. Red
35. Tape ends
36. Hour meter
37. Ammeter
38. Orange
39. Circuit breaker (2 amp)
40. Key switch
41. Pink
42. Blue
43. Panel light
44. Light switch
45. Head light
46. Receptacle for optional equipment
47. Circuit breaker (10 amp)

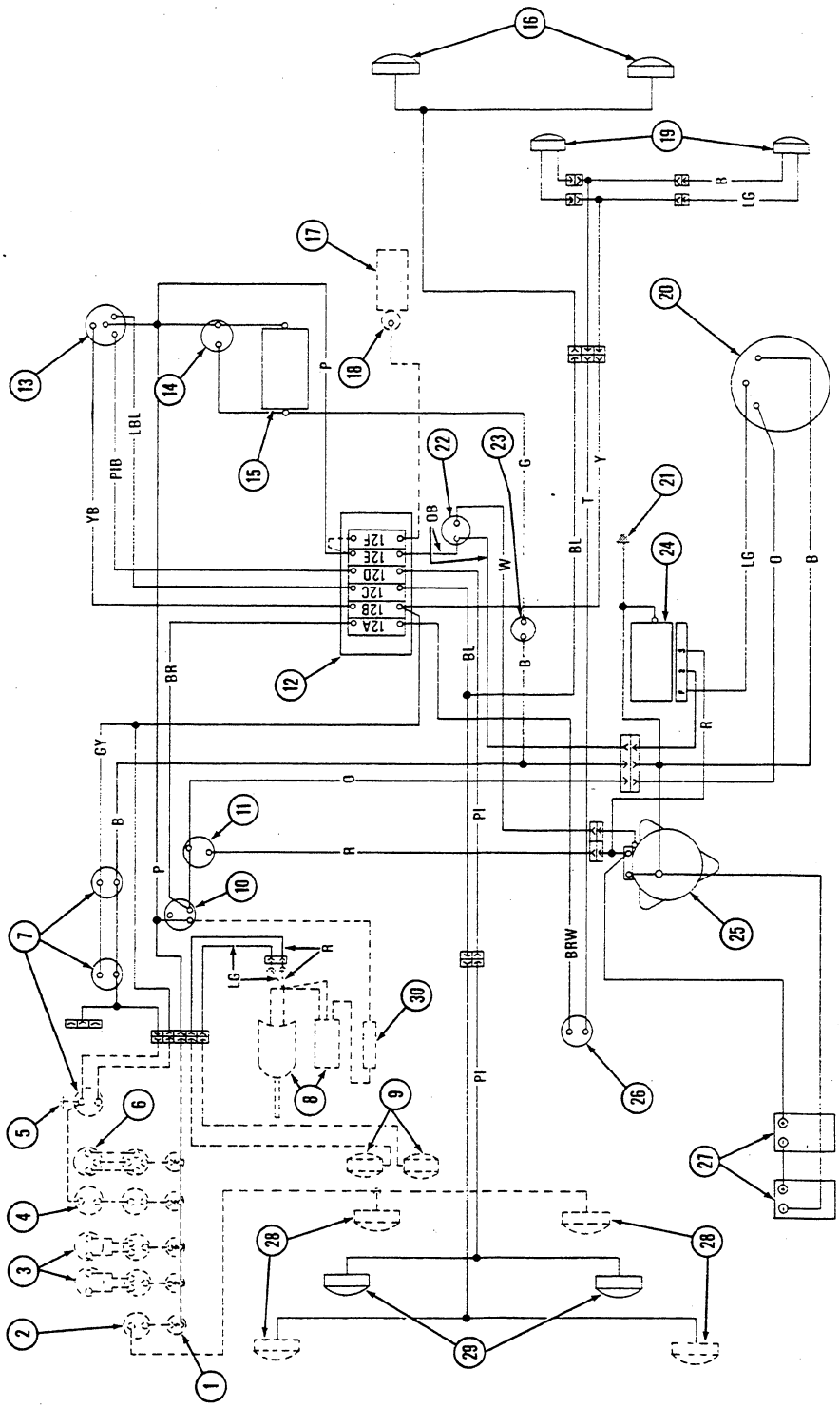


FIG. 91 ELECTRICAL SYSTEM – SCHEMATIC 745-B, 745H-B

FR10 ELECTRICAL SYSTEM

(Loader Serial No. 46C00101,78Y00201 and up)

NOTE:

1. Circuits are identified by a number, or by a number and letter, contained in a square box. Metal tags bearing the circuit identification number are attached to each wire at all connectors and/or connection points.
2. Components are designated by a number in a circle. The following list identifies each designated component by its name.
3. Circuits and components shown in dashed lines are optional or accessory items.

LEGEND FOR FIG. 97

1. Right front flood light
2. Right front head light
3. Right cab flood light
4. Right front turn signal light
5. Left front turn signal light
6. Left front cab light
7. Left front head light
8. Left front flood light
9. Right turn indicator
10. Hour meter
11. Panel lights
12. Engine oil pressure switch
13. Buzzer
14. Brake system fault light
15. Panel light
16. Cab flood light switch
17. Front windshield wiper switch
18. Front windshield wiper motor
19. Left turn indicator
20. Key switch
21. Rear windshield washer switch
22. 10 amp fuse
23. Rear windshield washer pump
24. Voltmeter
25. Air pressure switch
26. Parking brake light
27. Parking brake switch
28. Emergency steering light
29. Low air pressure light
30. Front windshield defog switch
31. Front windshield defog fan
32. Rear windshield defog switch
33. Rear windshield defog fan
34. Light switch
35. Flow switch
36. Rear windshield wiper motor
37. Rear windshield wiper switch
38. Front windshield washer pump
39. Front windshield washer switch
40. Heater assembly
41. Heater switch
42. Flasher
43. Turn signal switch
44. Dome light
45. Thermo guard
46. Ether start assembly
47. Ether start switch
48. Diode assembly
49. Overstroke sensor switch
50. Relay
51. Neutral safety switch
52. Brake light switch
53. Circuit breaker assembly
54. Alternator
55. Back up alarm
56. Alarm switch
57. Batteries
58. Excess fuel solenoid
59. Starter solenoid
60. Starter motor
61. Battery disconnect switch
62. Axle disconnect light
63. Rear axle disconnect switch
64. Right rear flood light
65. Right rear turn signal light
66. Right tail light
67. Left tail light
68. Left rear turn signal light
69. Left rear flood light
70. Transmission neutralizer switch
71. Transmission neutralizer valve

WIRE COLOR CODE

B- Black
G- Green
O- Orange
R- Red

FR12 ELECTRICAL SYSTEM

(Loader serial no. 59U00101 and up)

NOTE:

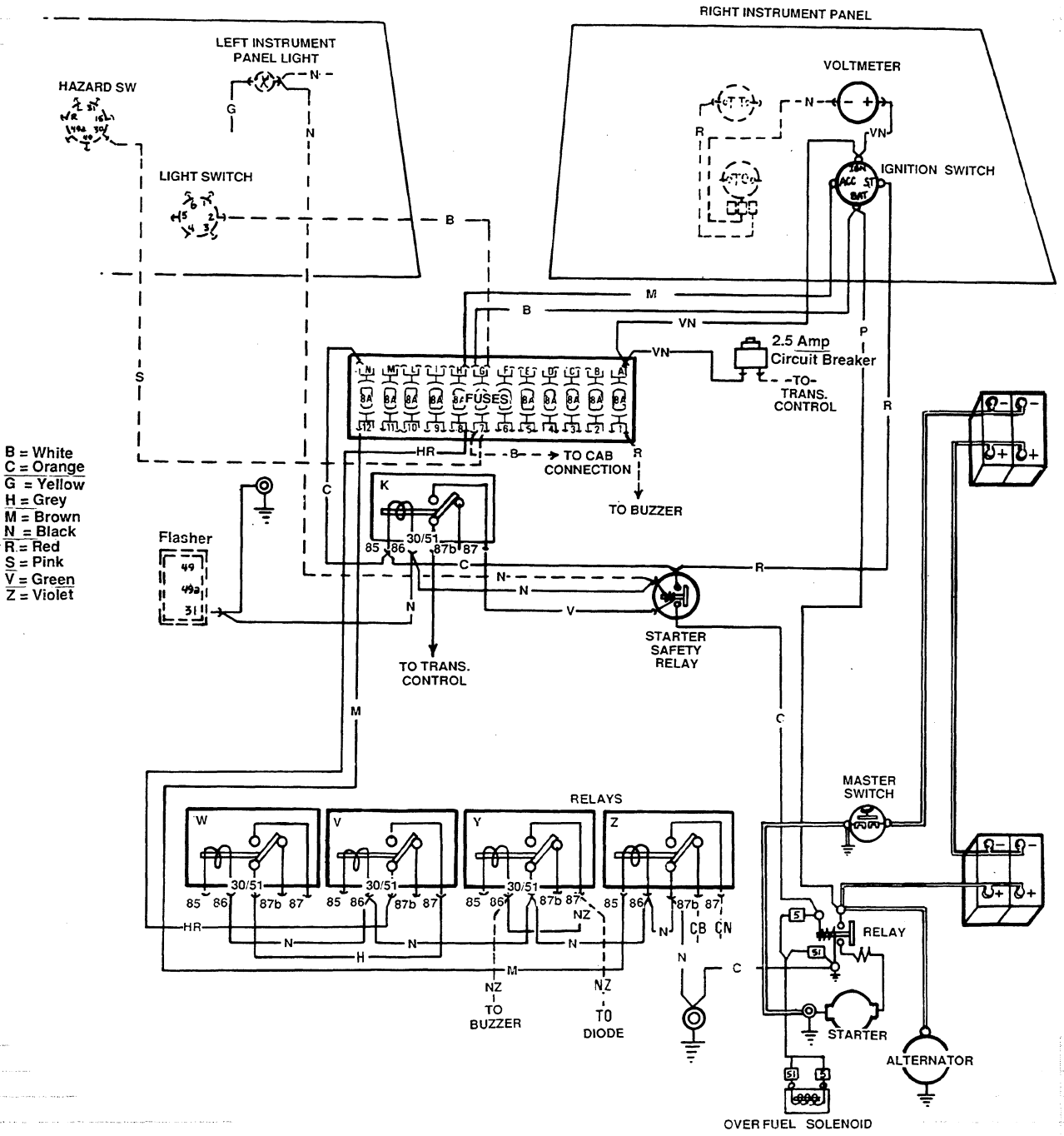
1. Circuits are identified by a number, or by a number and letter, contained in a square box. Metal tags bearing the circuit identification number are attached to each wire at all connectors and / or connection points.

2. Components are designated by a number in a circle. The following list identifies each designated component by its name.

LEGEND FOR FIG. 100

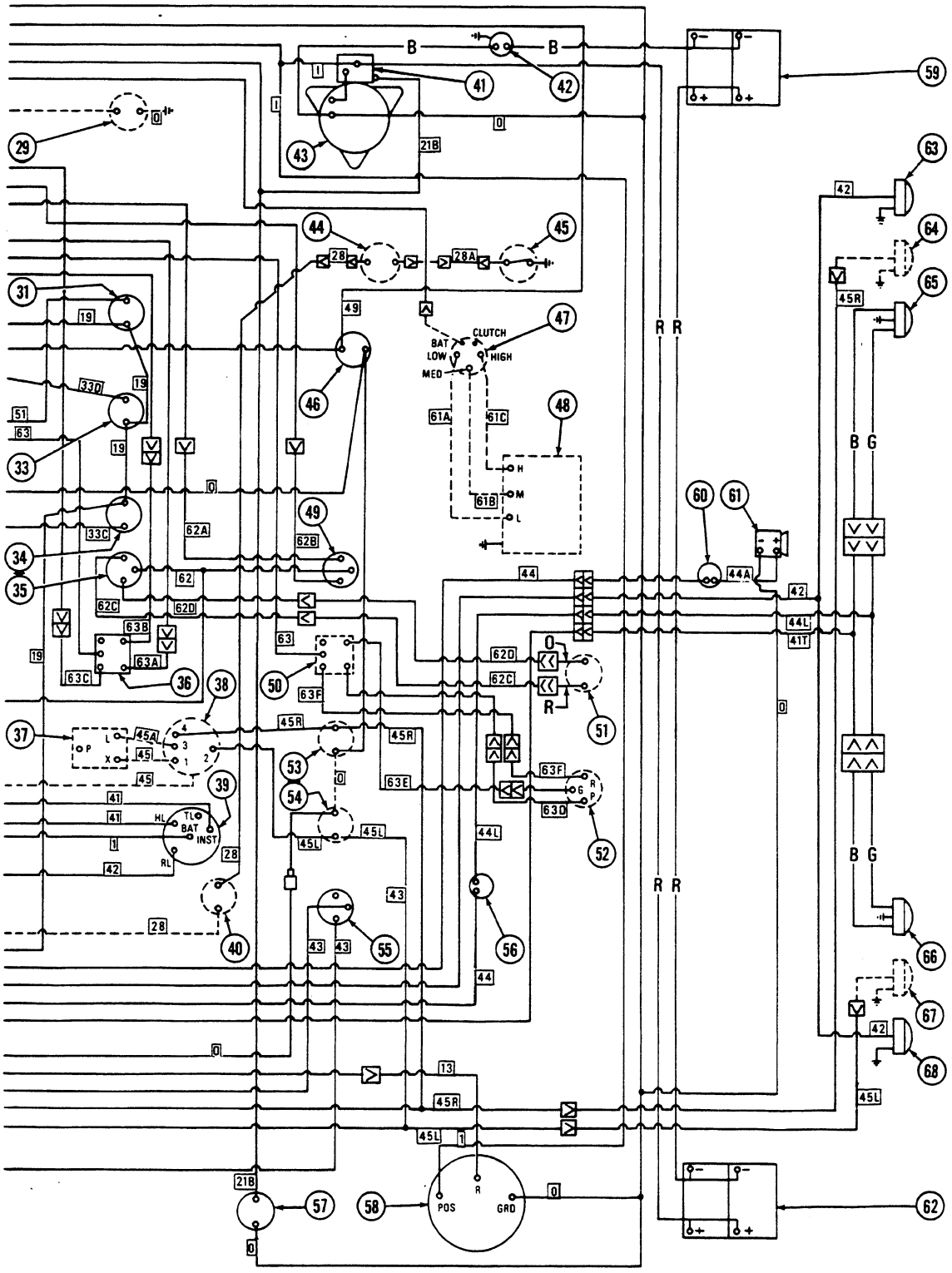
1. †Right front cab floodlight
2. Right front head light
3. Right front side and turn signal/hazard flasher light
4. †Right front side and turn signal/hazard flasher light (Bucket tooth guard)
5. †Left front cab floodlight
6. Left front head light
7. Left front side and turn signal/hazard flasher light
8. †Left front side and turn signal/hazard flasher light (Bucket tooth guard)
9. †Front windscreen wiper motor
10. Ignition switch
11. Panel lights (R.H. Instrument Panel)
12. Voltmeter
13. Diode assembly
14. Overstroke sensor switch (2)
15. †Rear windscreen washer switch
16. Hour meter
17. Engine oil pressure switch
18. Air pressure switch
19. †Front windscreen washer pump
20. †Front windscreen washer switch
21. †Dome light
22. Neutral safety switch
23. Relay (2)
24. Flow switch
25. Parking brake switch
26. Fuse Box
27. 10 amp. fuse
28. †Rear windscreen washer pump
29. Parking brake "on" light
30. Emergency steering activated light
31. Buzzer
32. Brake system fault light
33. Low air pressure light
34. Front windscreen wiper switch
35. Flasher unit
36. Turn signal switch
37. Hazard warning switch
38. Light switch
39. †Ether starting aid switch
40. Starter solenoid
41. Battery disconnect switch
42. Starter motor
43. †Ether start assembly
44. †Thermo guard
45. Panel light (L.H. Instrument Panel)
46. †Heater switch
47. †Heater unit
48. Rear windscreen wiper switch
49. †Rear windscreen wiper motor
50. Turn signal/hazard flasher indicator light
51. †Cab floodlight switch
52. Brake light switch
53. Excess fuel solenoid
54. Alternator
55. Batteries (2)
56. Alarm switch
57. Back-up alarm
58. Right rear floodlight
59. Right rear turn signal/hazard flasher/tail light
60. †Registration number plate light
61. Left rear floodlight
62. Left rear turn signal/hazard flasher/tail light
63. Main beam warning light
64. Flood warning light
65. Fog light switch
66. †Rear axle disconnect light
67. †Rear axle disconnect switch

†Special Equipment



T-85274

FIG. 104 FR15 (S/N 575403-UP) ALTERNATOR, STARTER, BATTERIES



T-81225

SCHEMATIC (S/N 80C,81C,00101-up)

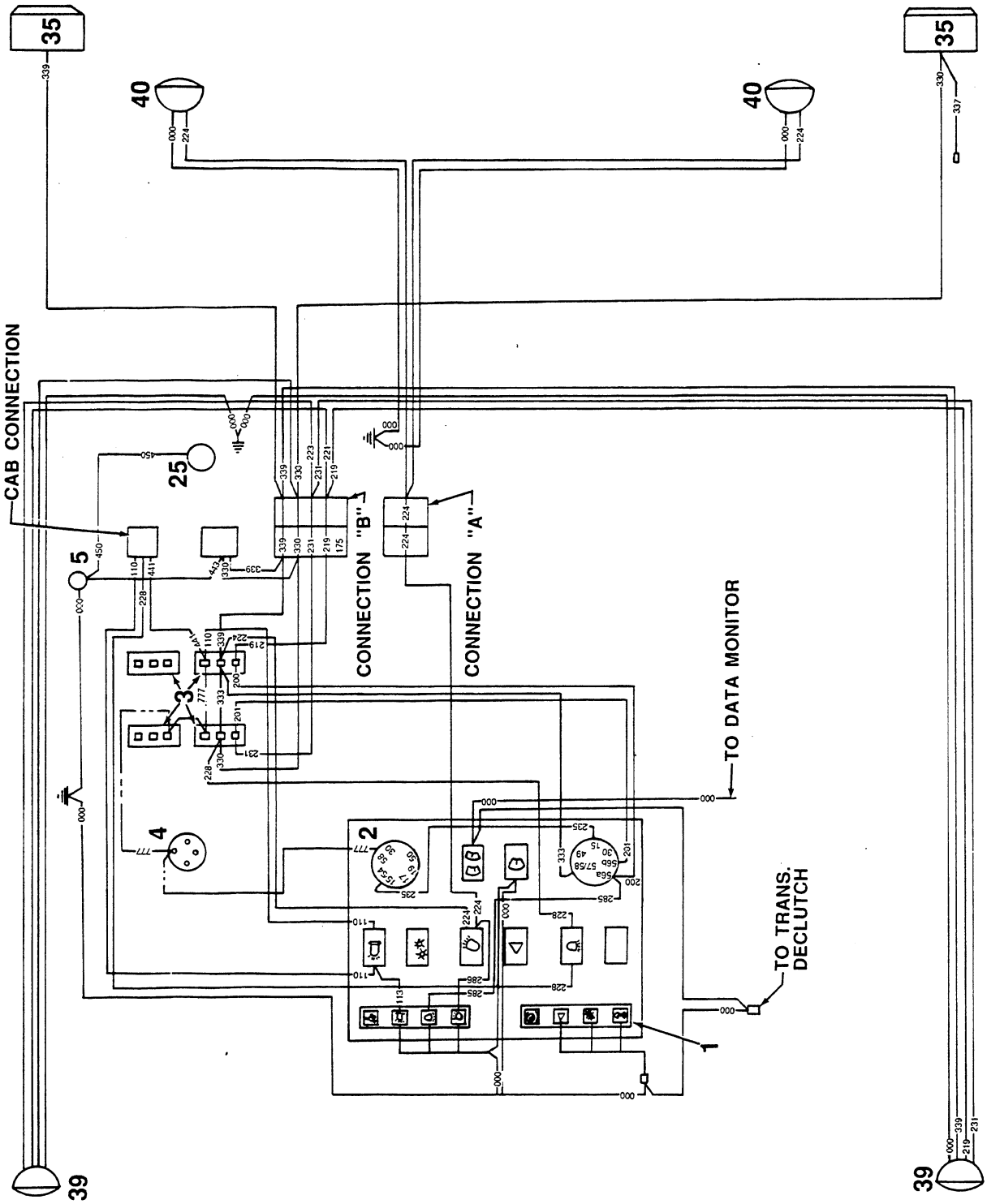


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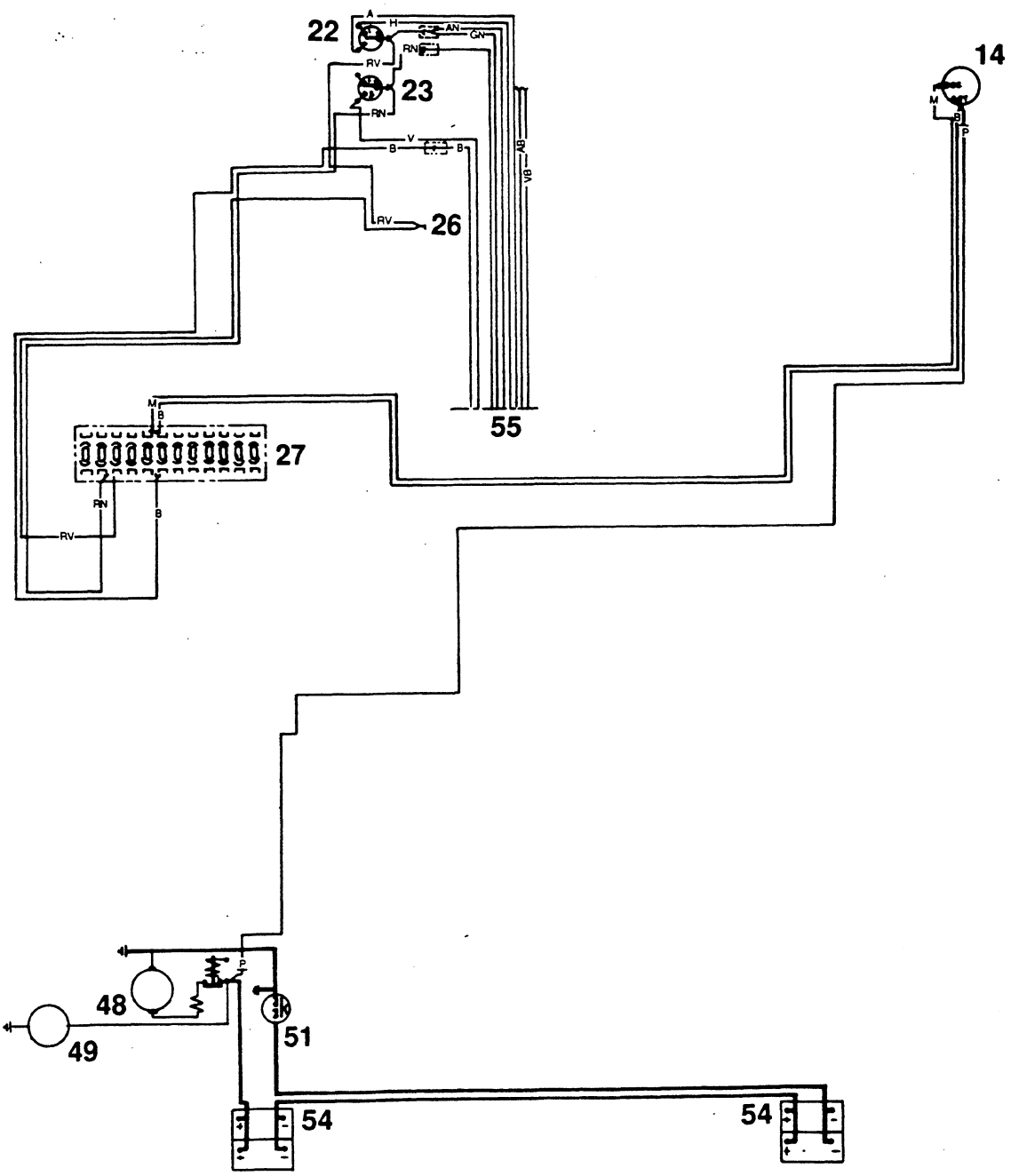
FIG. 117 FR10B LIGHTS



T-85670

FIG. 125 FR11, 12B, 15B,20B WINDSHIELD WIPERS & WASHERS