

YANMAR

SERVICE MANUAL

DIESEL TRACTOR

ELECTRICAL SCHEMATICS
YM 3-DIGIT MODELS



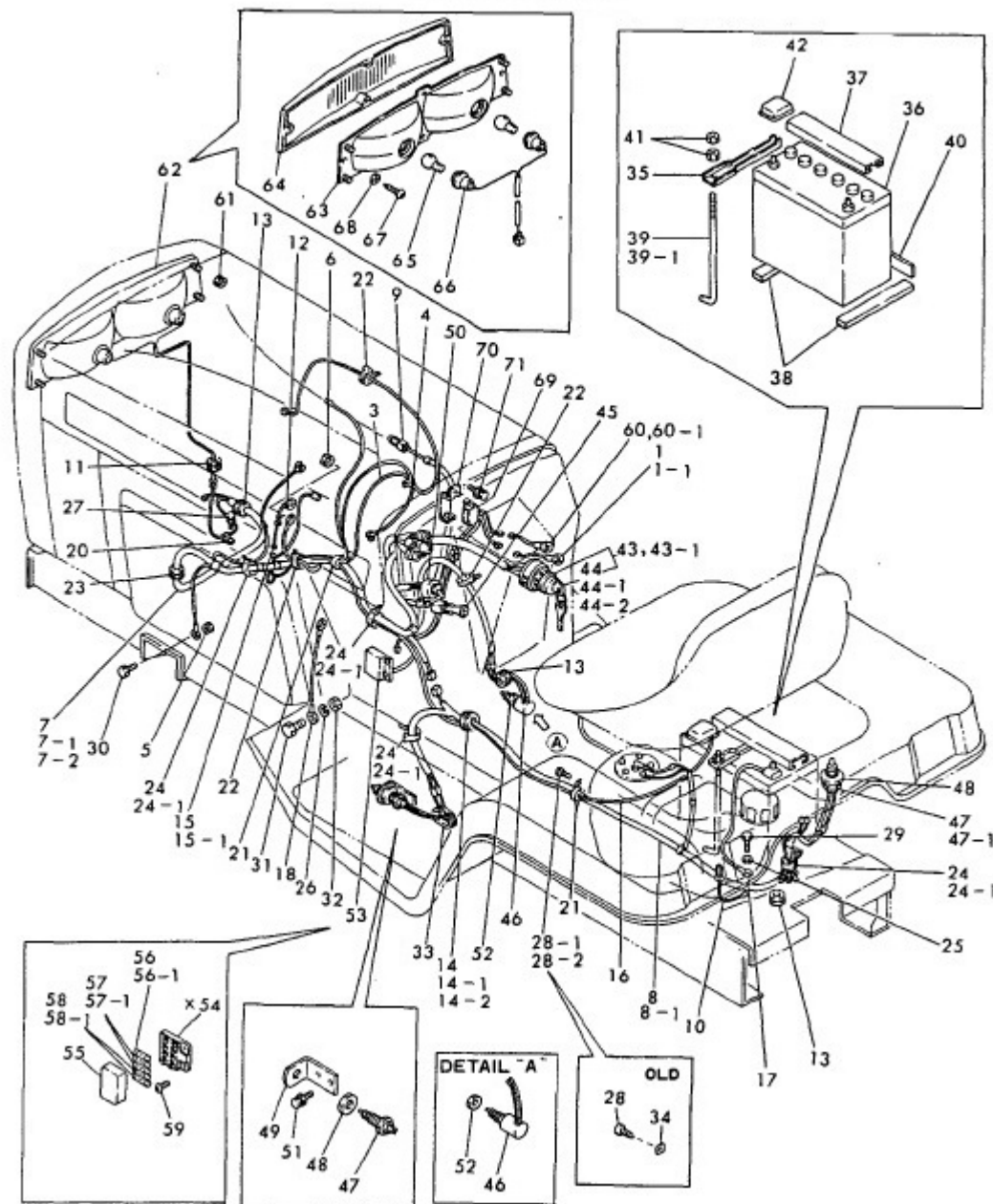
YANMAR DIESEL ENGINE CO.,LTD.

1-1, Yaesu 2-chome, Chuo-ku Tokyo 104, Japan Cable: YANMAR TOKYO Telex: TOK 0222-2310, 0222-4733

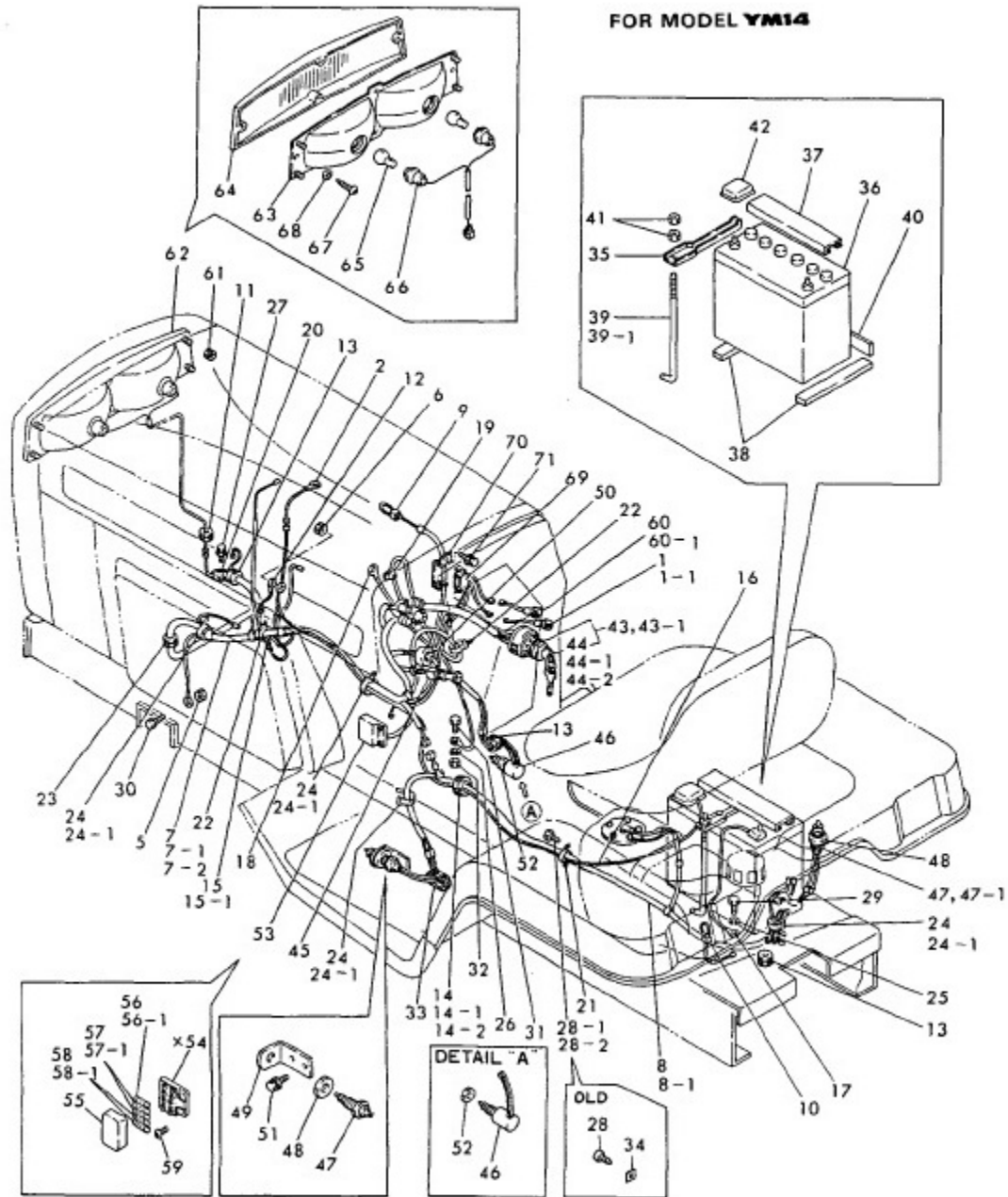
ELECTRICAL SCHEMATICS YM 3-DIGIT MODELS

- YM12 (GT12)
- YM14 (GT14)
- YM135 YM155 OLD MODEL
- YM135 YM155 NEW MODEL
- YM135F YM155F
- YM155T
- YM165
- YM169
- YM176
- YM177
- YM186
- YM195
- YM200HK
- YM206HK
- YM220
- YM226
- YM226F
- YM240 OLD MODEL
- YM240 NEW MODEL
- YM250
- YM273
- YM276
- YM330
- YM336
- OTHER ELECTRICAL EQUIPMENT (AS REFERENCE)

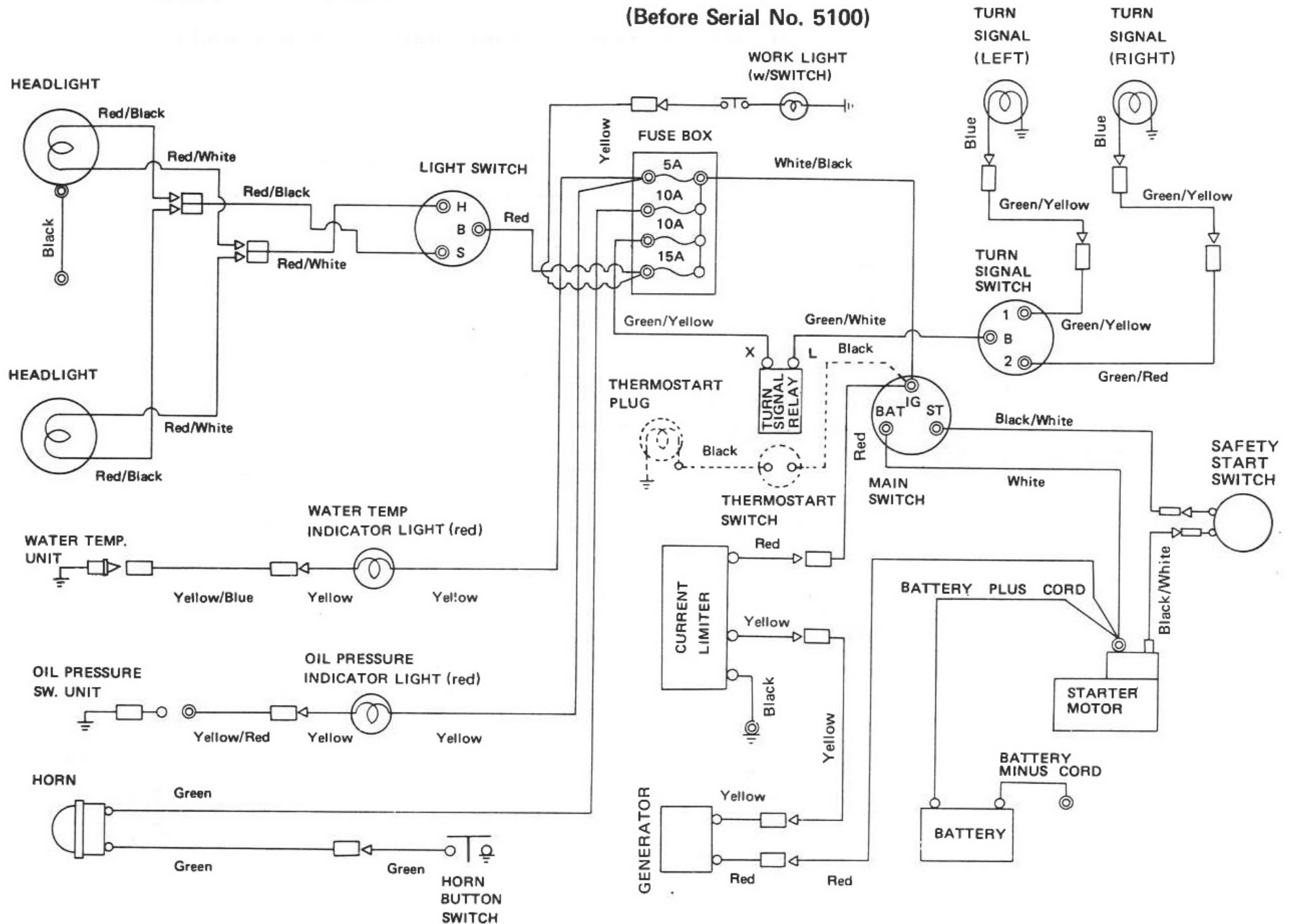
FOR MODEL YM12



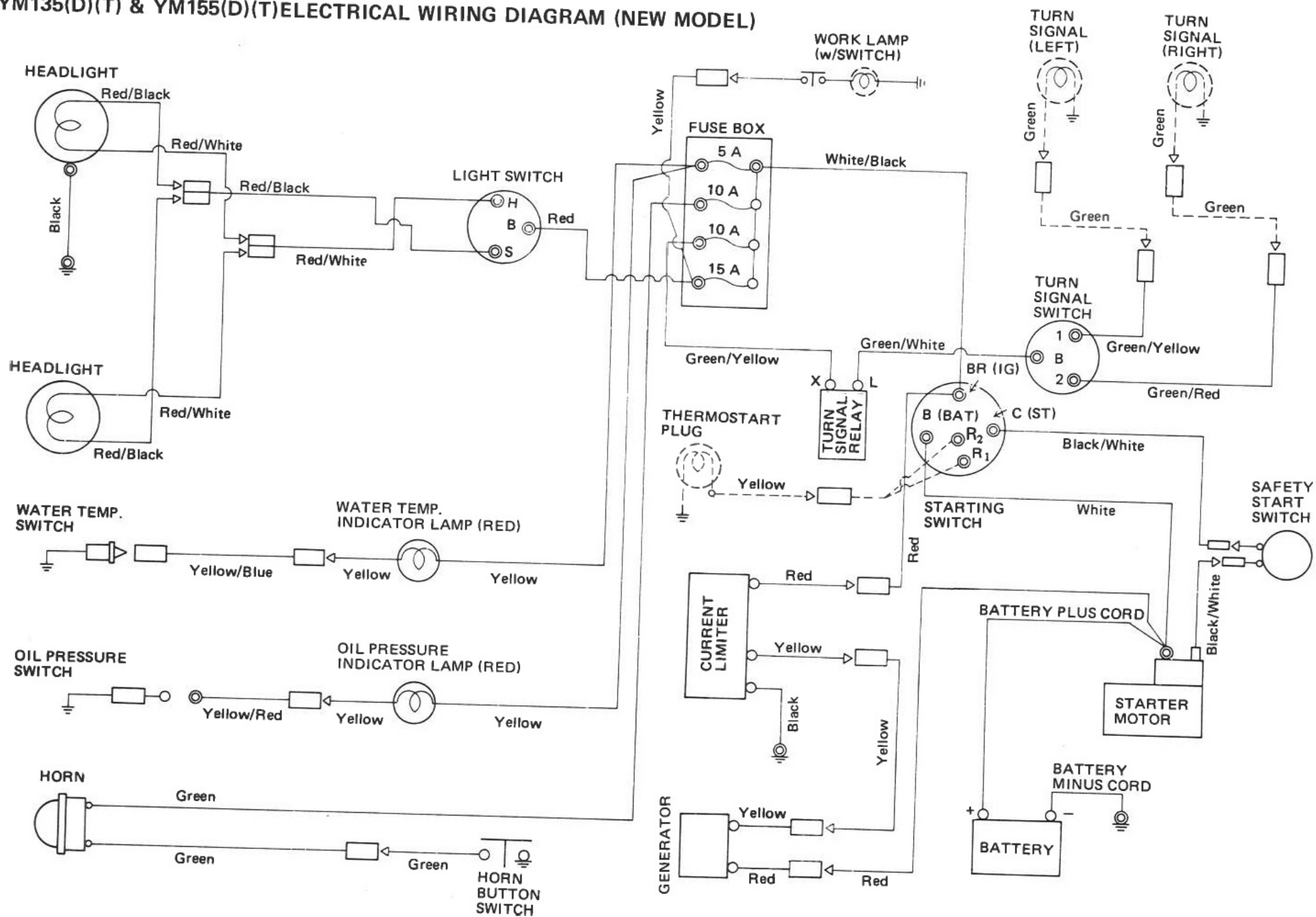
FOR MODEL YM14



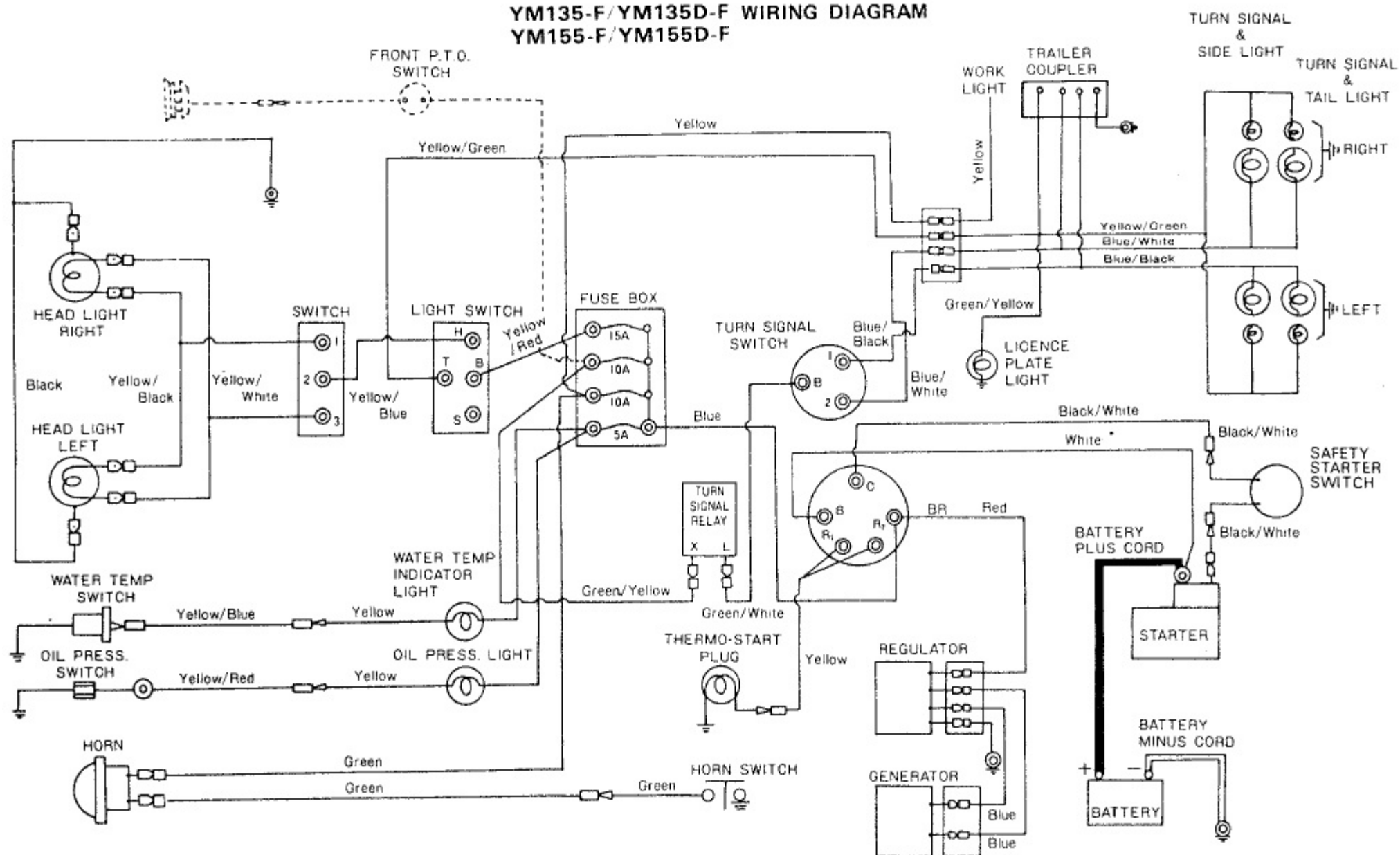
YM135(D)(T) & YM155(D)(T) ELECTRICAL WIRING DIAGRAM (FORMER) (Before Serial No. 5100)



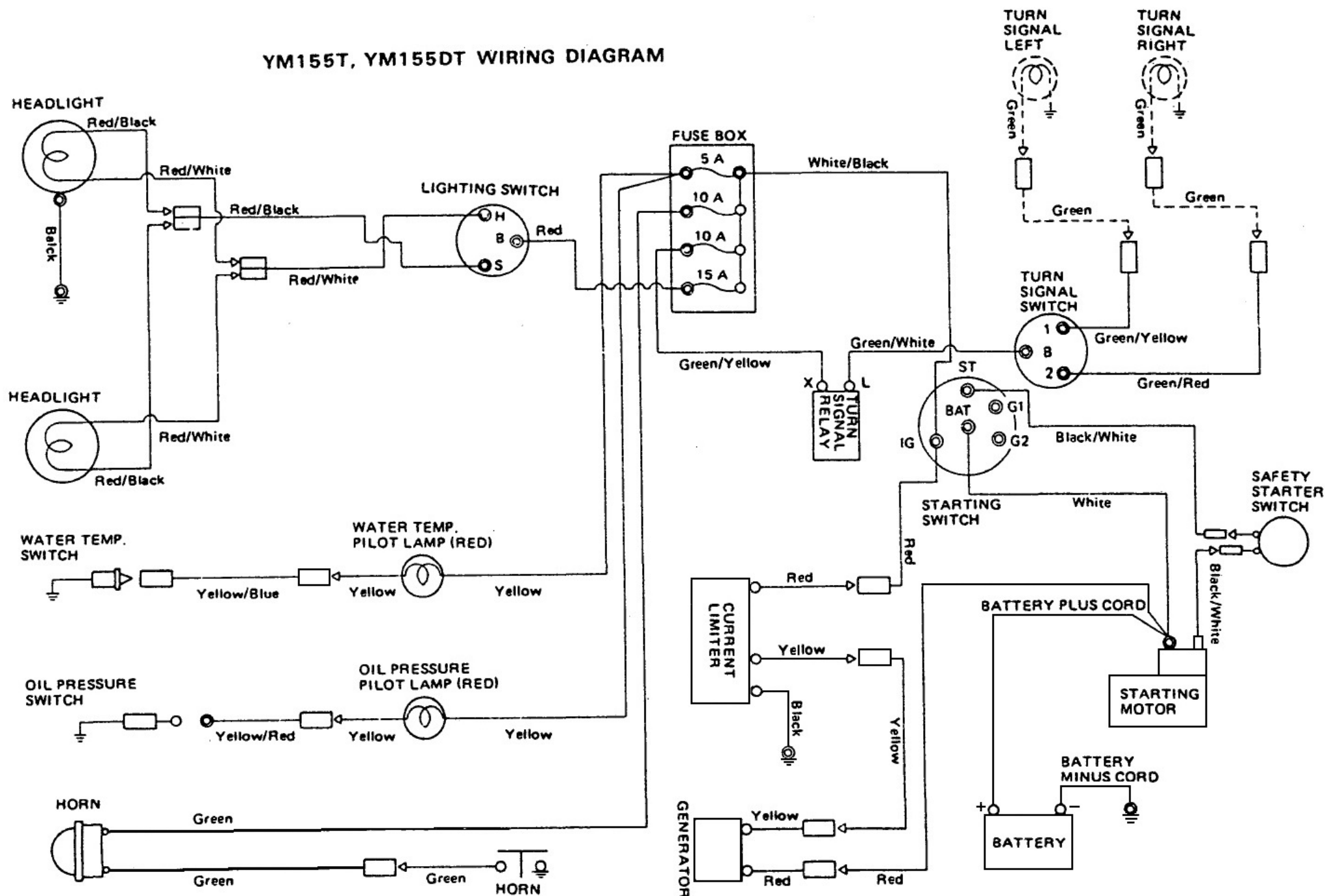
YM135(D)(T) & YM155(D)(T) ELECTRICAL WIRING DIAGRAM (NEW MODEL)



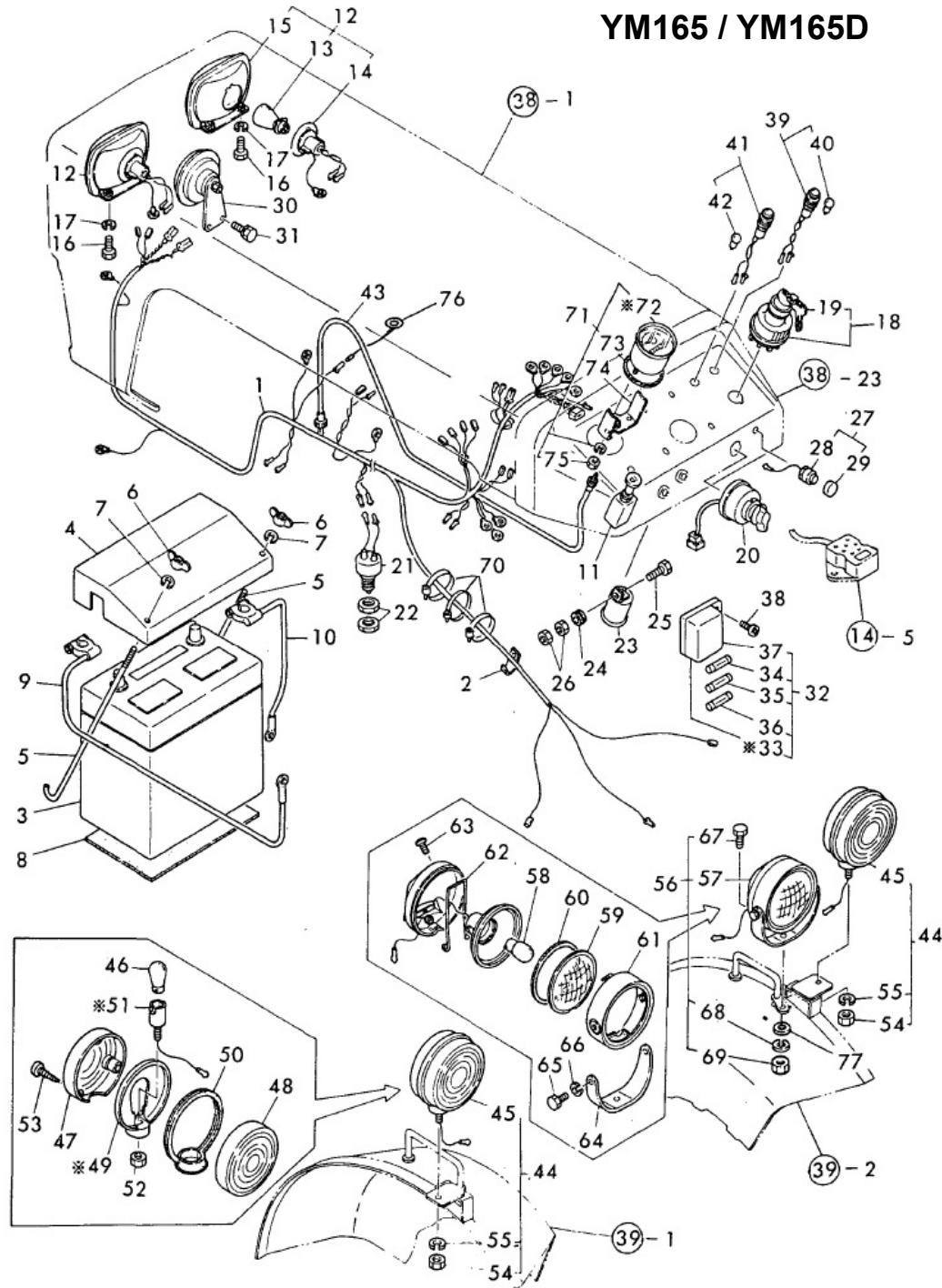
YM135-F/YM135D-F WIRING DIAGRAM YM155-F/YM155D-F



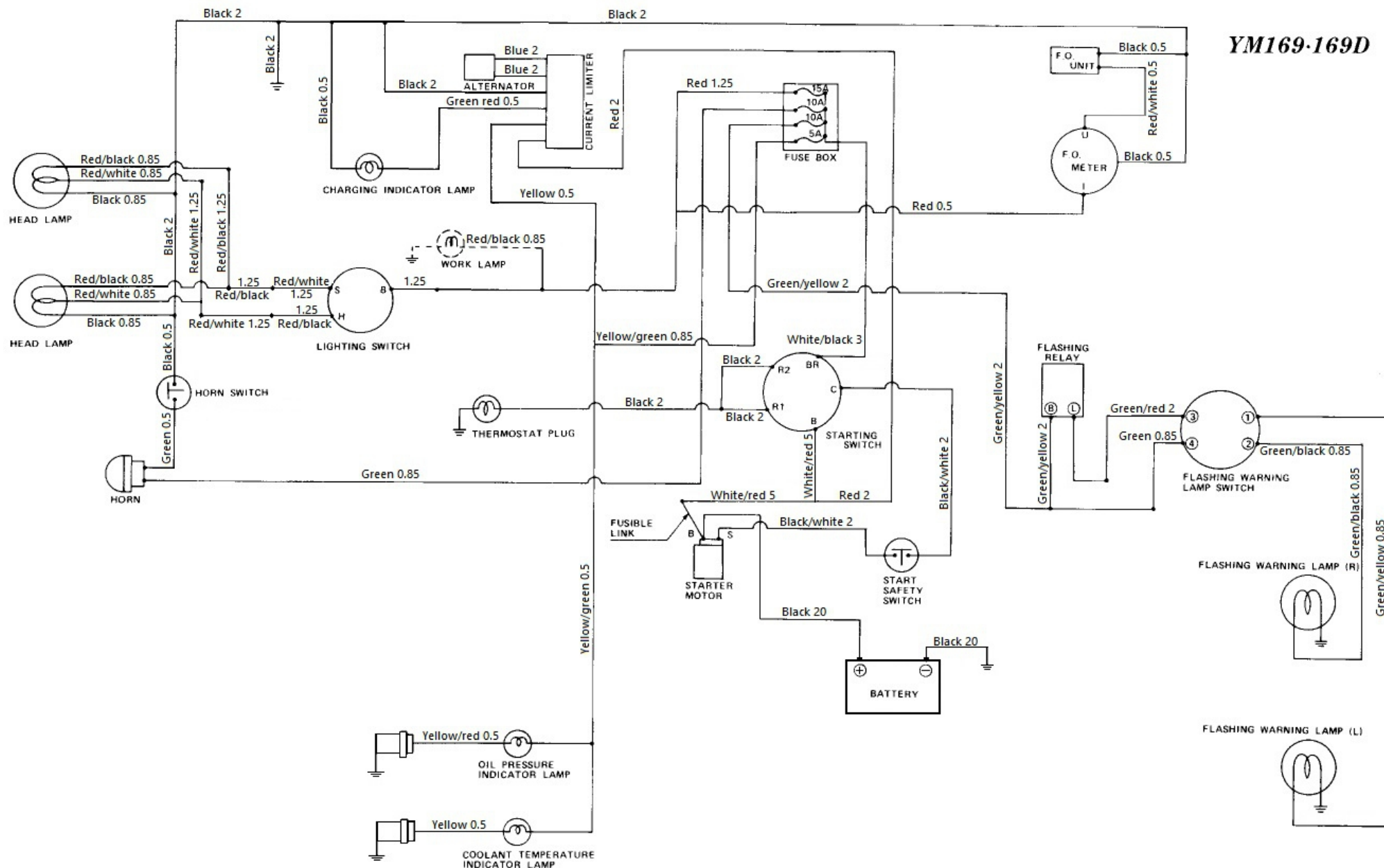
YM155T, YM155DT WIRING DIAGRAM



YM165 / YM165D

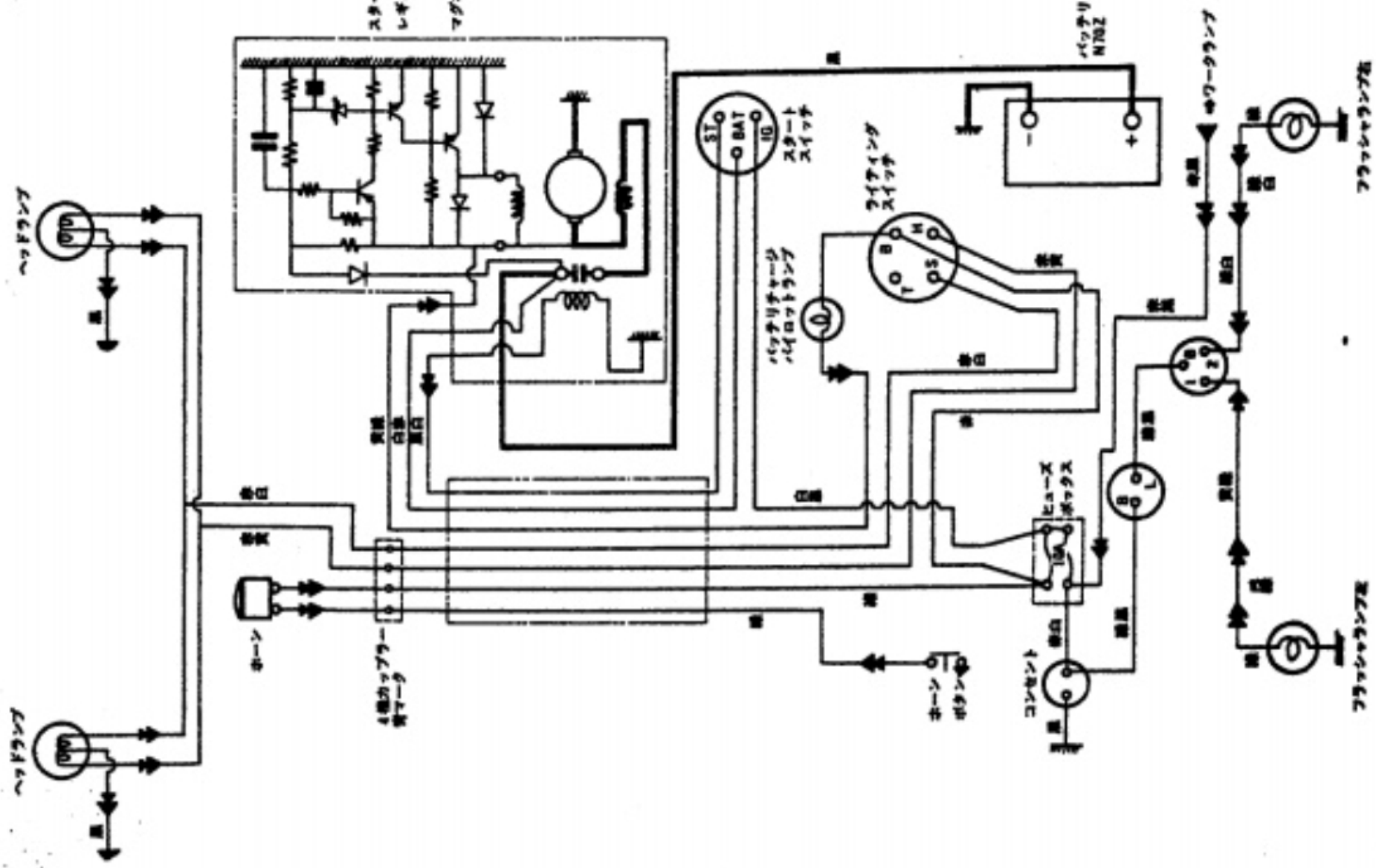


YM169-169D



配線図

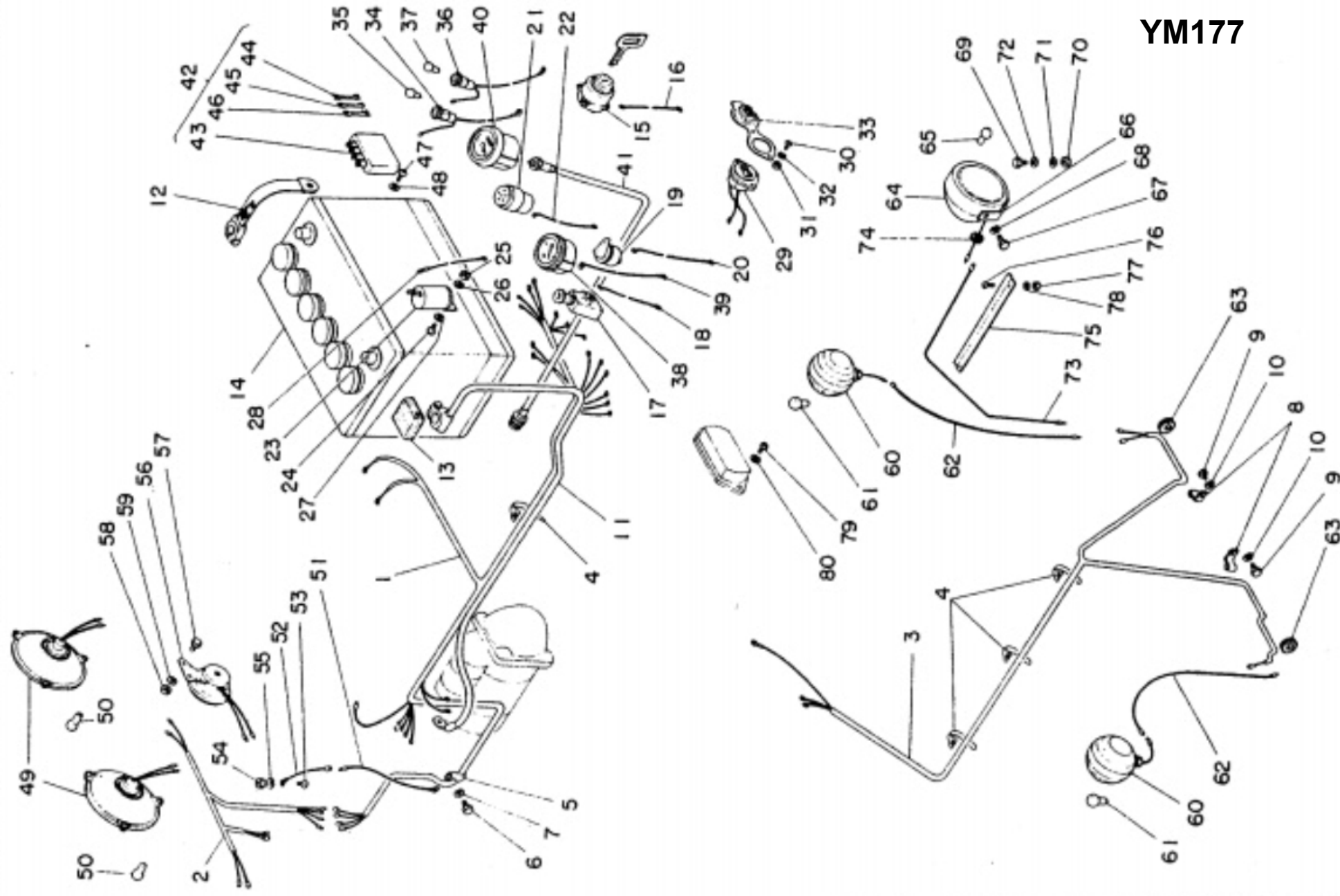
YM176



スタートスイッチ
レギュレーター
バッテリー

バッテリーチャージレギュレーター

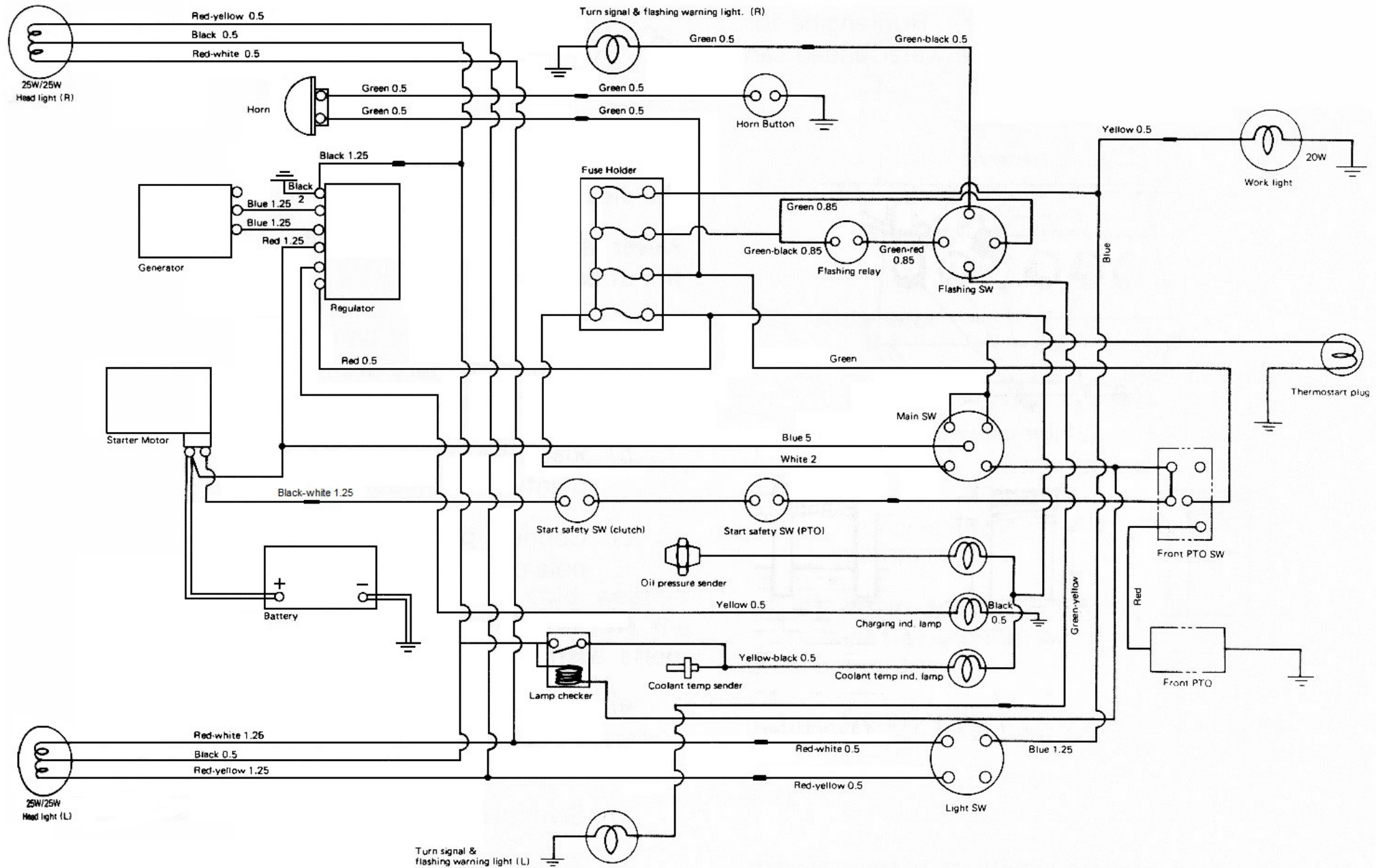
バッテリーチャージレギュレーター



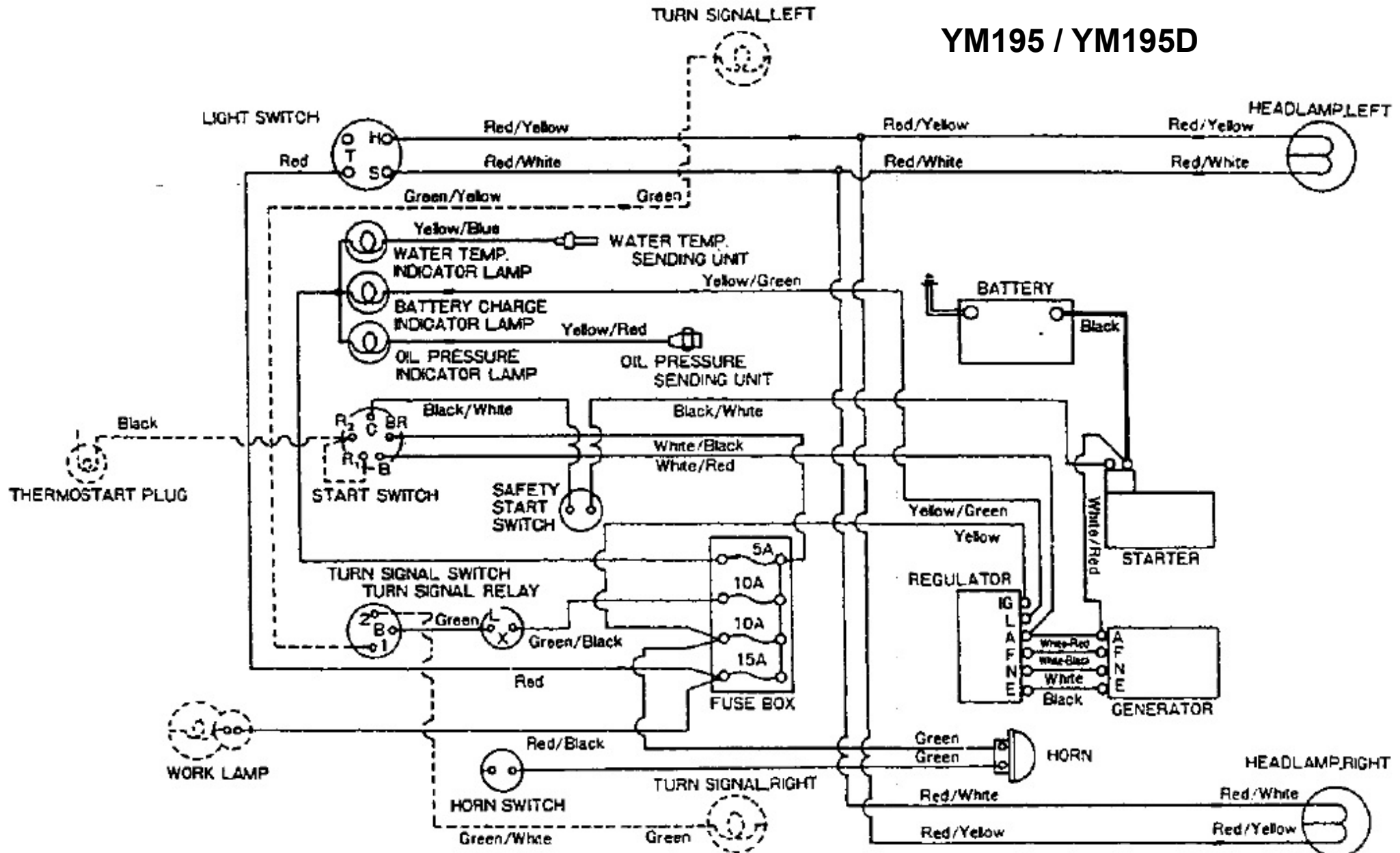
YM177

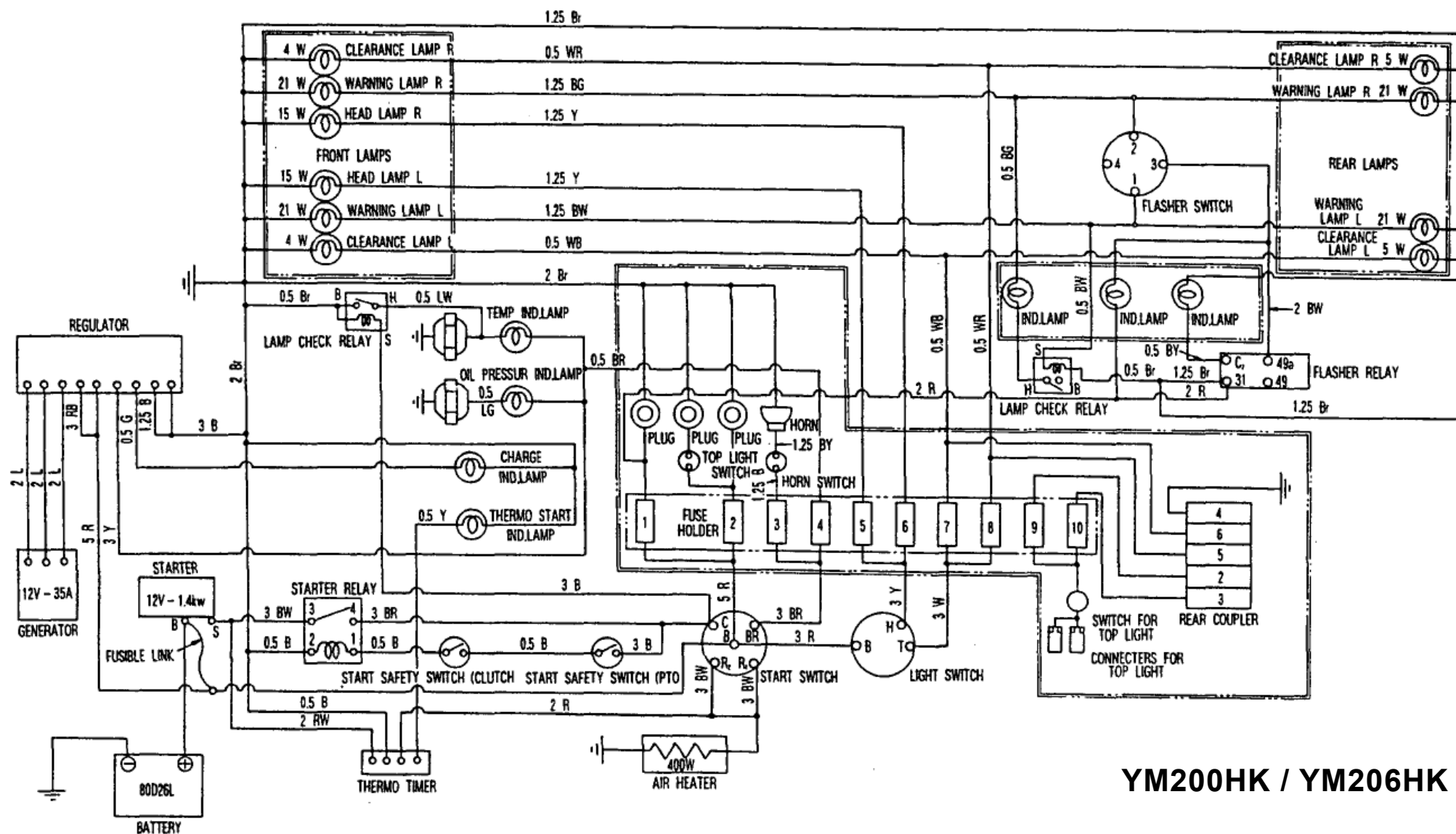
[10-8] ELECTRICAL

YM186 / YM186D



YM195 / YM195D





YM200HK / YM206HK

STARTING SWITCH LOGIC CIRCUIT

	B	R	R ₁	BR	C
HEAT	○	○	○	○	○
OFF	○	○	○	○	○
ON	○	○	○	○	○
START	○	○	○	○	○

LIGHTING SWITCH LOGIC CIRCUIT

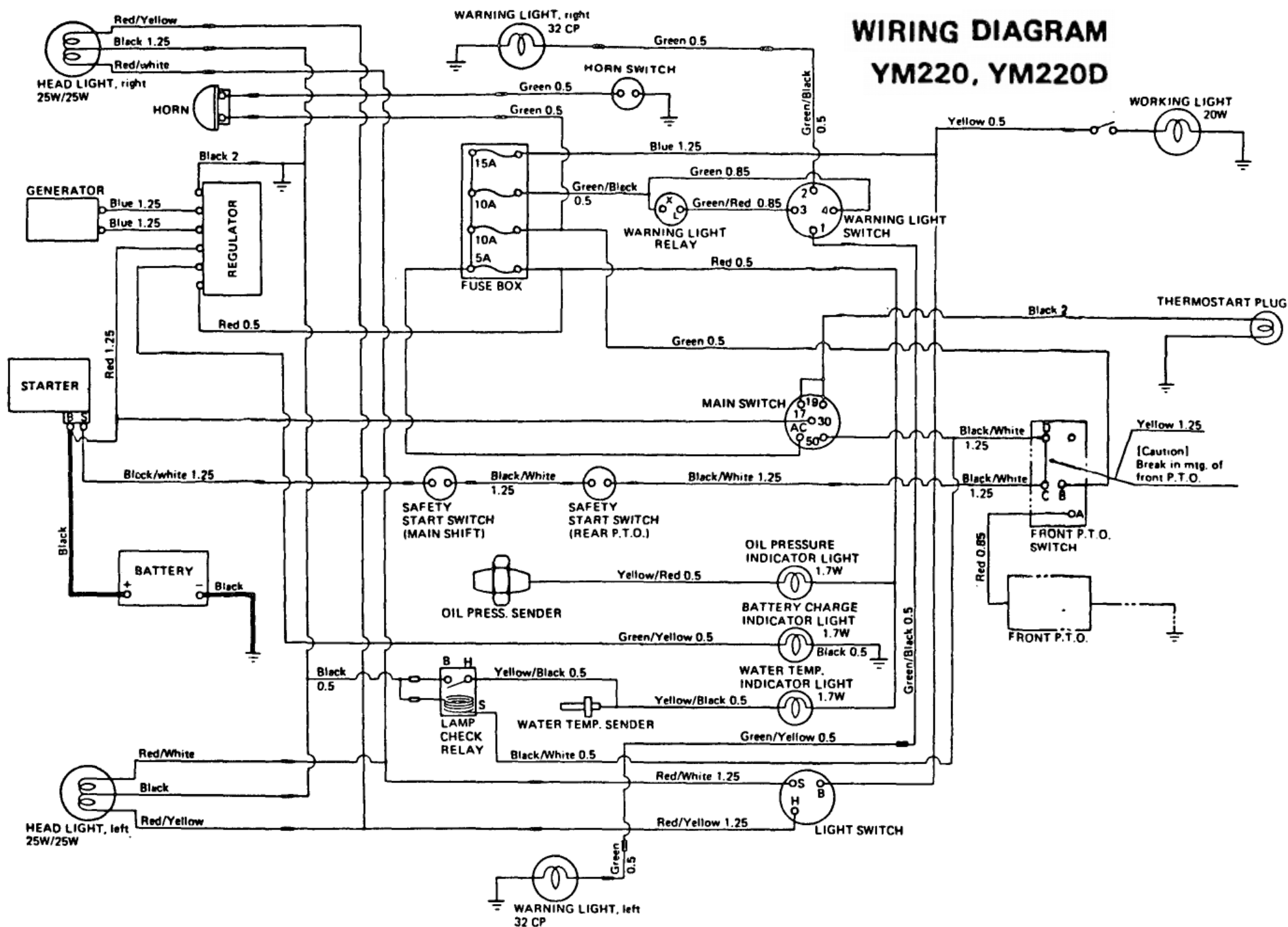
	B	T	S	H
OFF	○	○	○	○
I	○	○	○	○
B	○	○	○	○

FLASHER SWITCH LOGIC CIRCUIT
(HAZARD OFF)

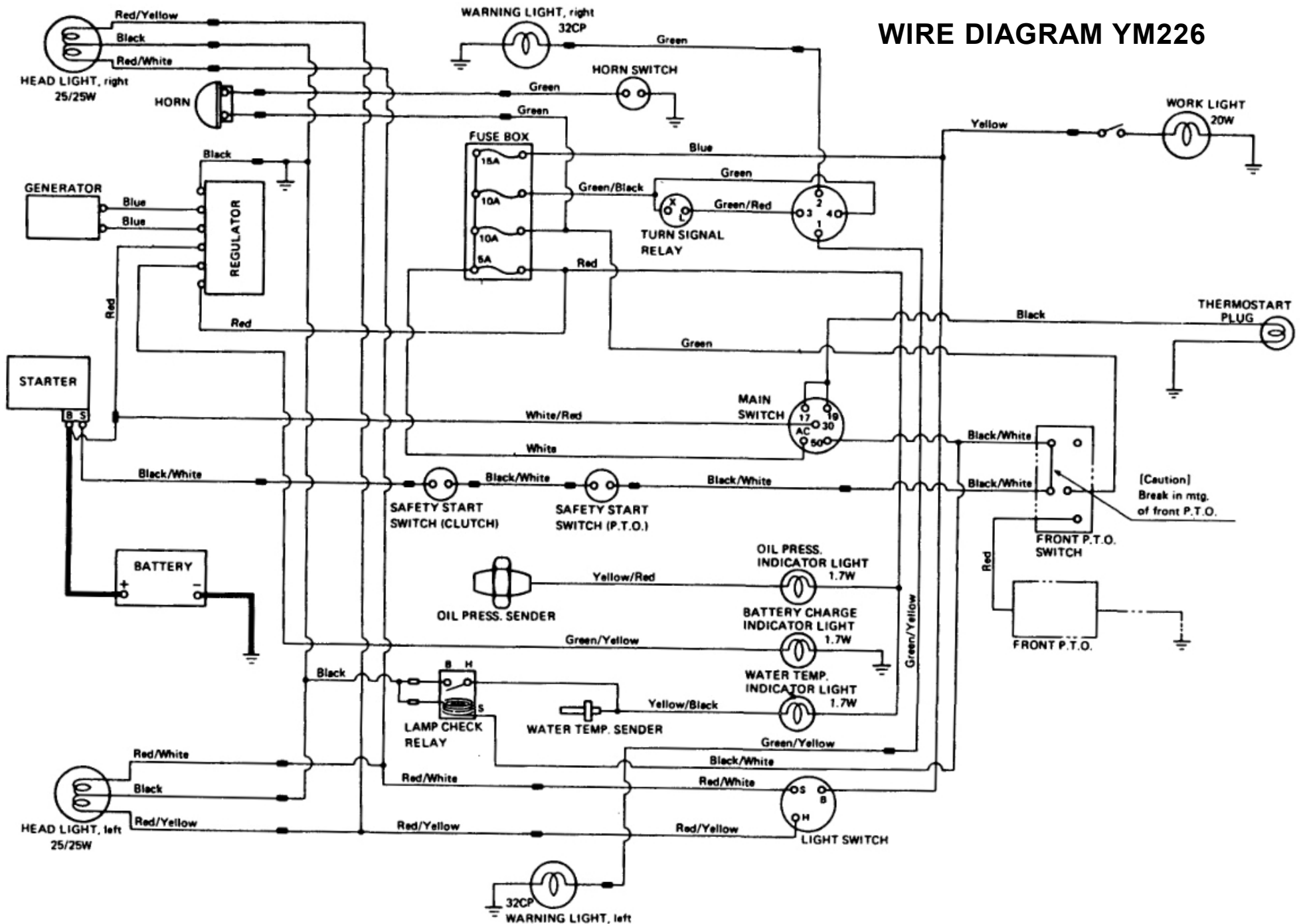
	1	2	3	4
R	○	○	○	○
N	○	○	○	○
L	○	○	○	○

HAZ4RD SWITCH LOGIC CIRCUIT
(HAZARD ON)

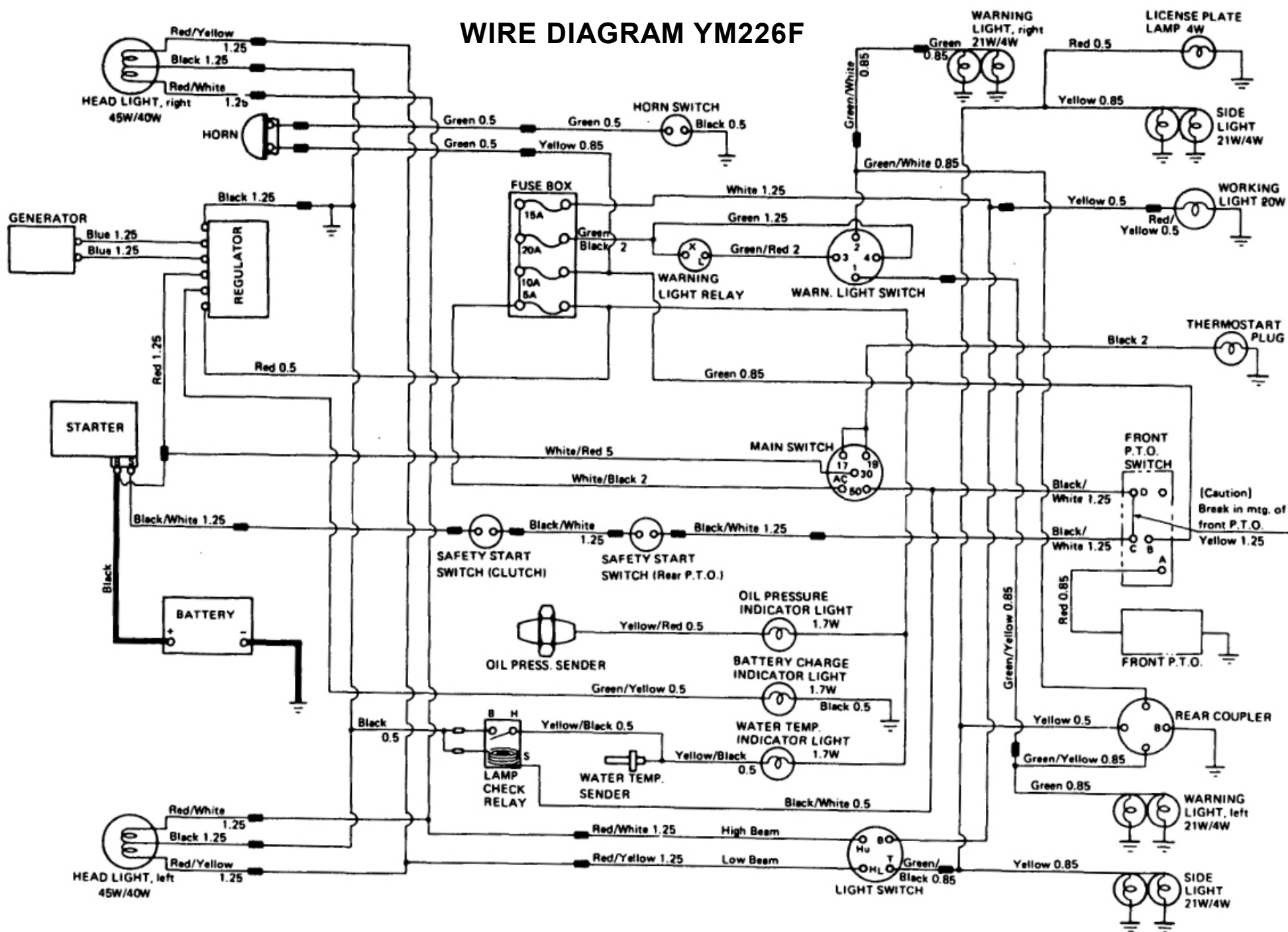
	1	2	3	4
R	○	○	○	○
N	○	○	○	○
L	○	○	○	○



WIRE DIAGRAM YM226

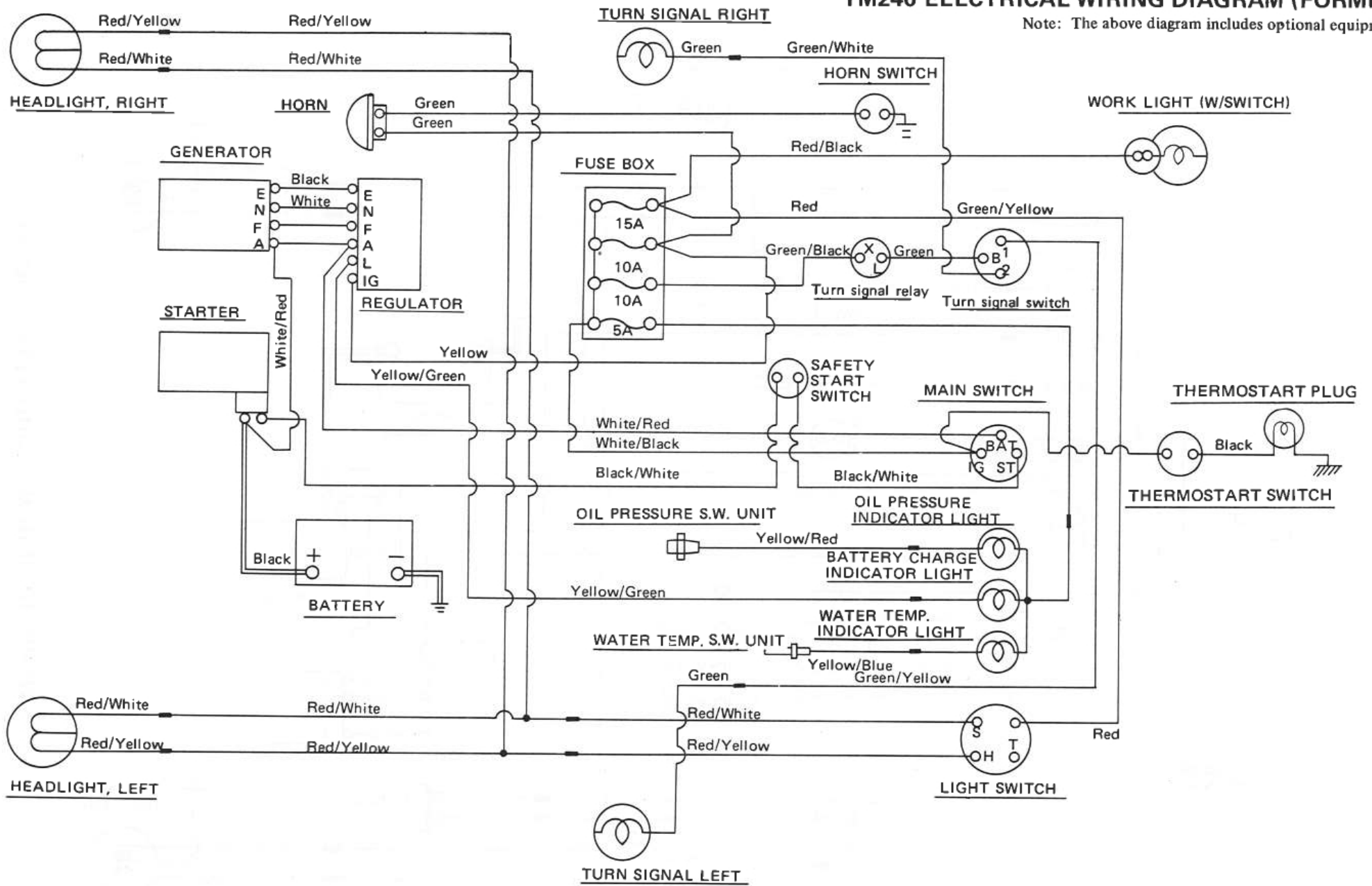


WIRE DIAGRAM YM226F



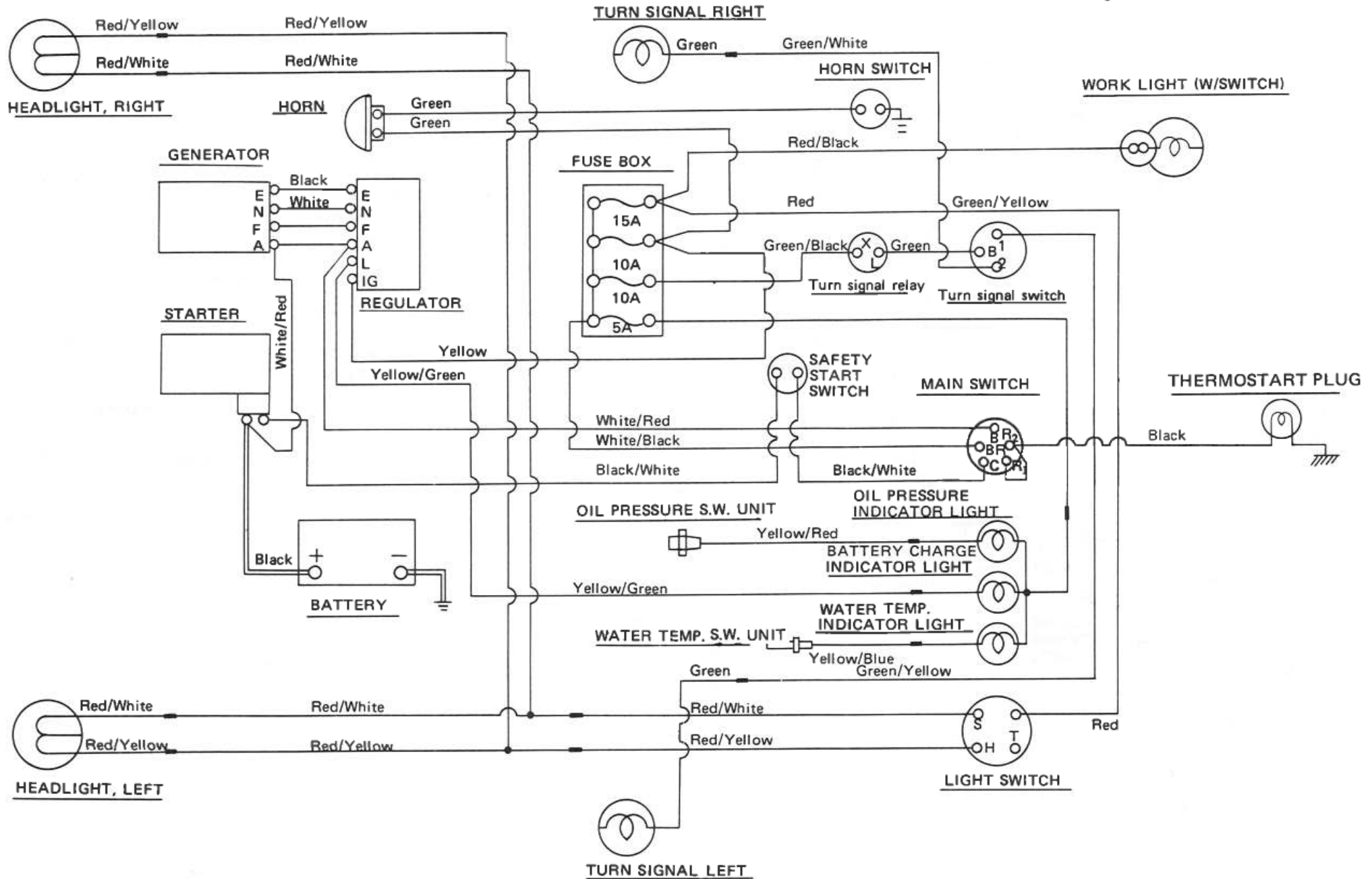
YM240 ELECTRICAL WIRING DIAGRAM (FORMER)

Note: The above diagram includes optional equipment

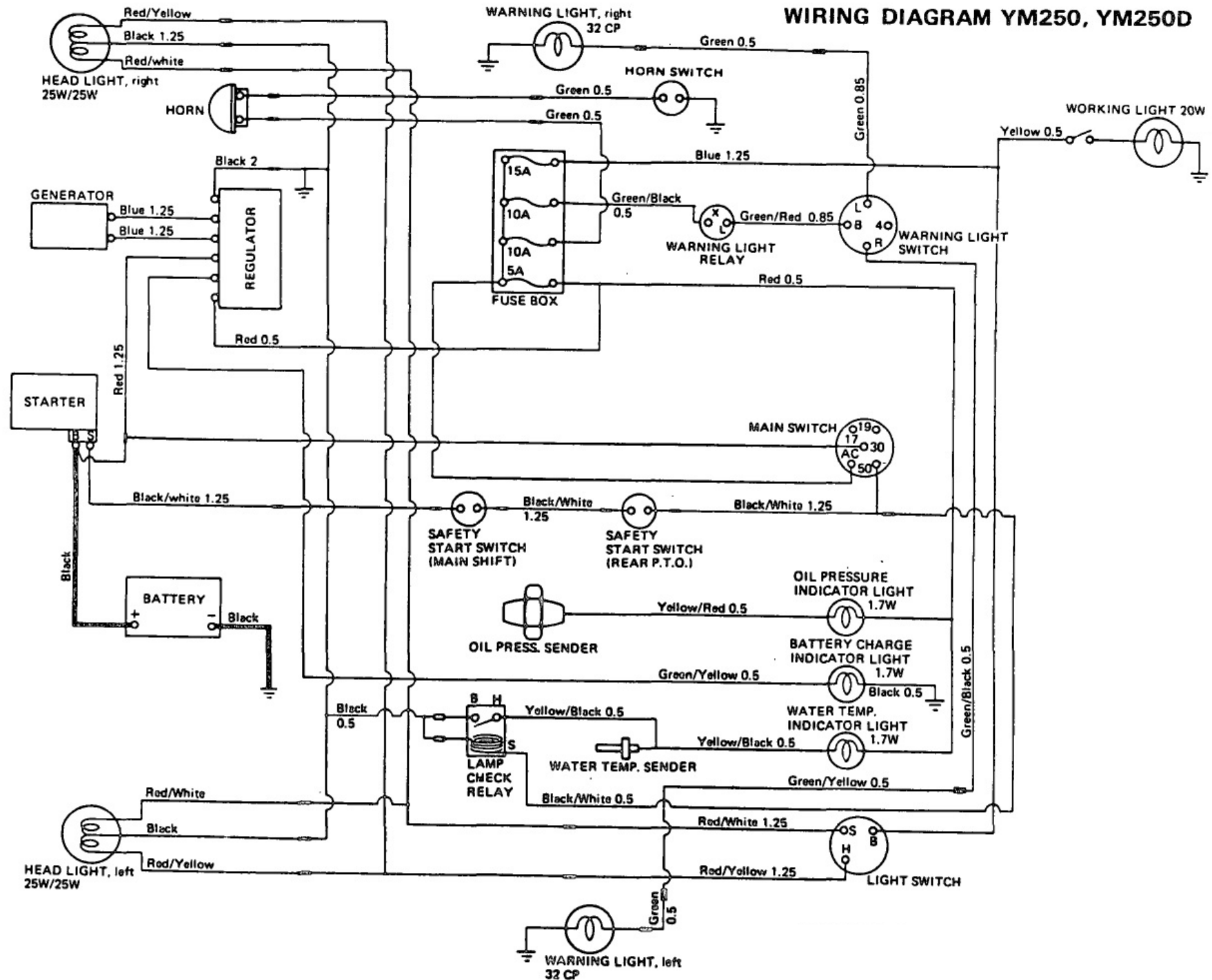


YM240 ERECTRICAL WIRING DIAGRAM (NEW MODEL)

Note: The above diagram includes optional equipment.



WIRING DIAGRAM YM250, YM250D



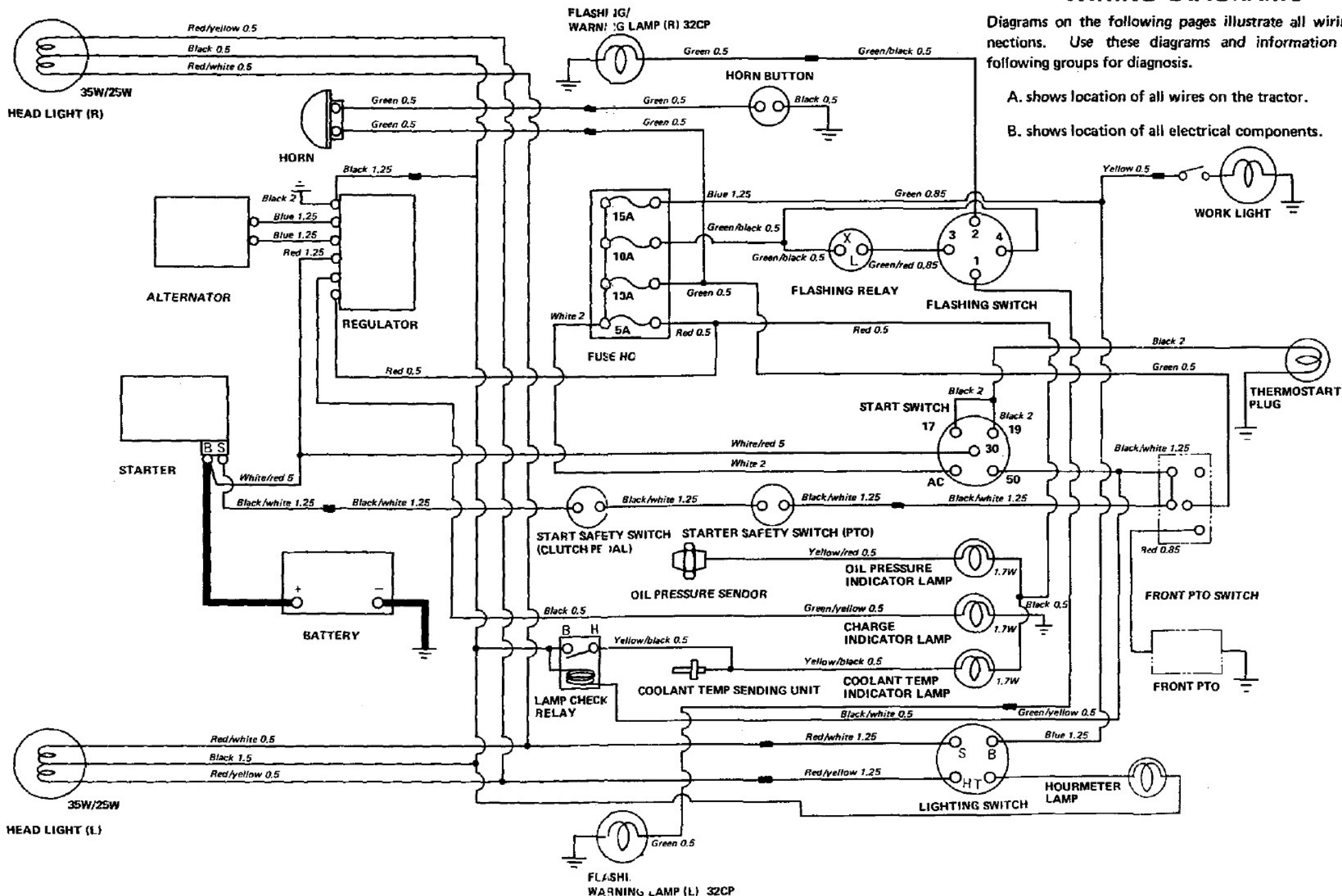
WIRE DIAGRAM YM276 / YM276D

WIRING DIAGRAMS

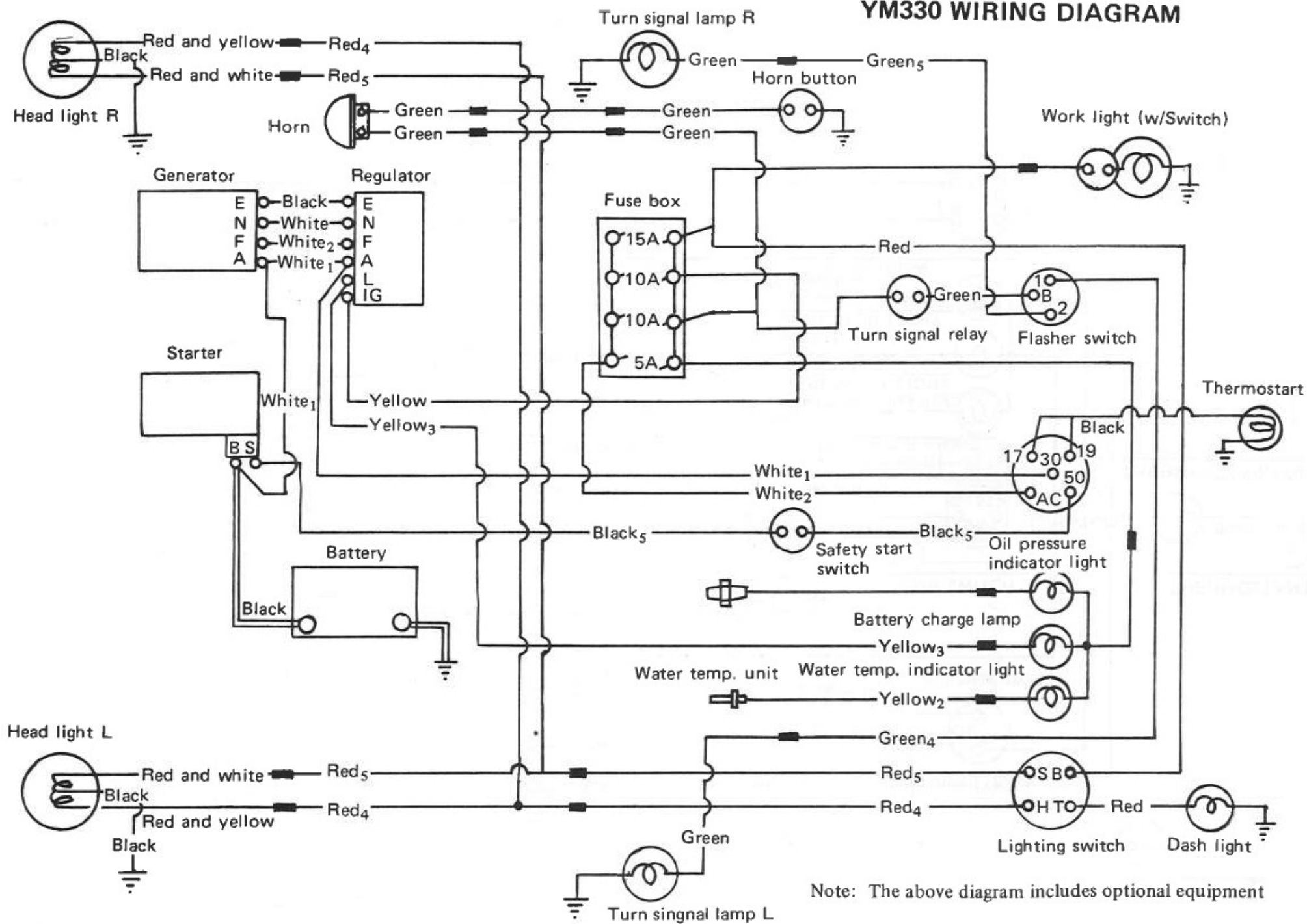
Diagrams on the following pages illustrate all wiring connections. Use these diagrams and information in the following groups for diagnosis.

A. shows location of all wires on the tractor.

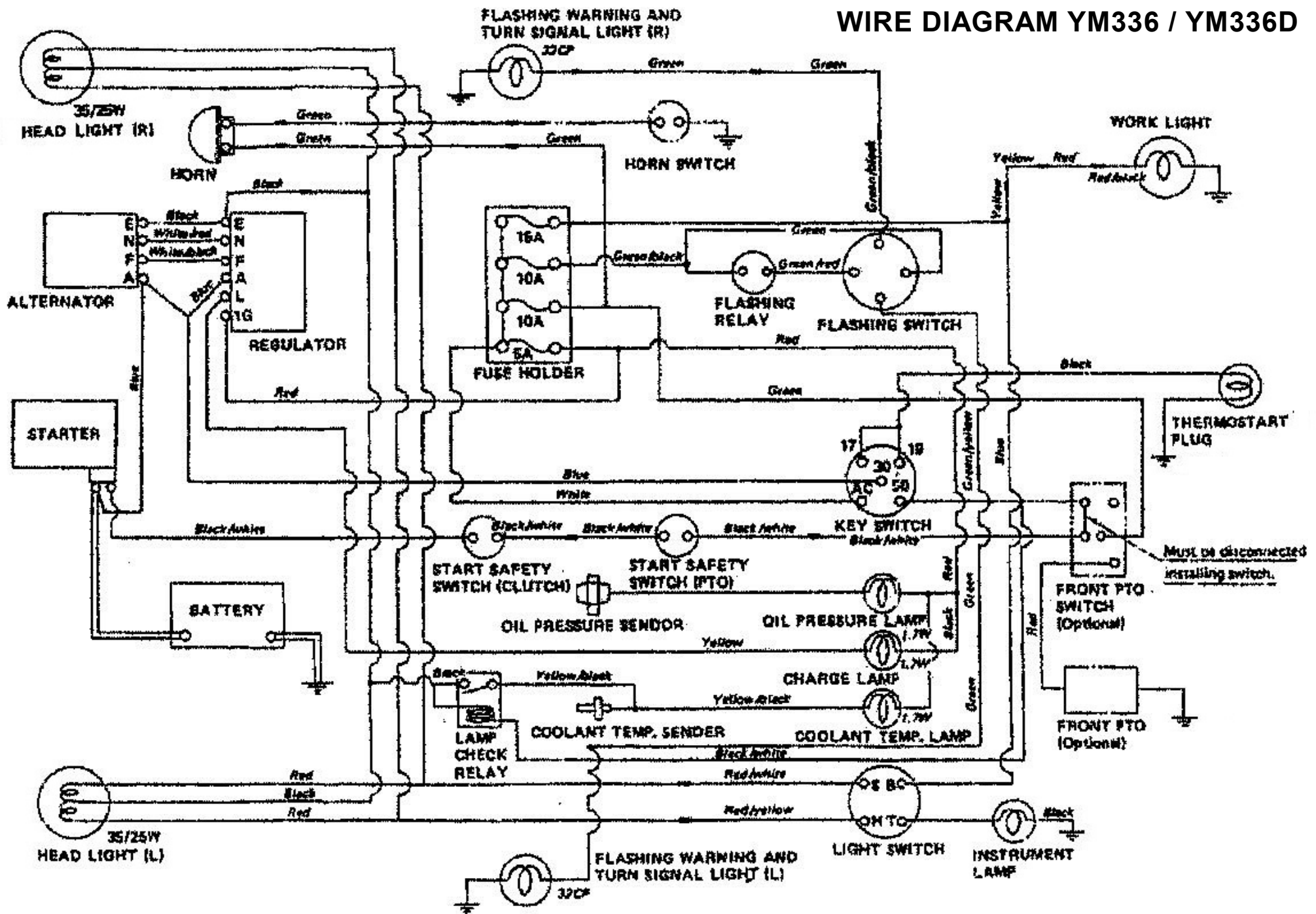
B. shows location of all electrical components.



YM330 WIRING DIAGRAM



WIRE DIAGRAM YM336 / YM336D



IV. OTHER EQUIPMENT

IV. OTHER EQUIPMENT

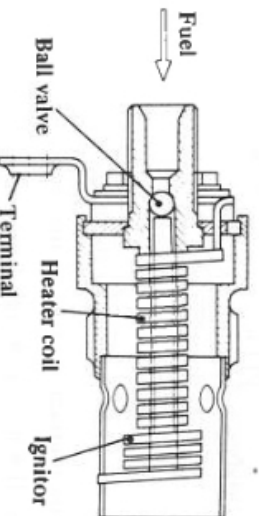
1. Thermostat
2. Water Temperature Indicator Light
3. Charging Indicator Light
4. Engine Lube Oil Pressure Indicator Light
5. Turn Signal Light
6. Horn
7. Lights
8. Safety Switch
9. Main Switch
10. Fuse
11. Bulb Capacity
12. Electric Wiring Diagram

1. THERMOSTART

Item	Specifications
Type	SH100-02 (Hitachi) Magnetic valve type
Voltage	12V
Current flow	13A

1.1 Description of the Thermostart

The thermostart is a starting aid for use in low ambient temperatures. It ignites and burns fuel in the intake manifold to warm the air intake and improve starting qualities. The thermostart, unlike glow plugs, is not exposed to the combustion heat of the engine during operation and therefore provides outstanding durability, and since its consumption of electricity is lower than that of glow plugs, the load on the



battery is reduced.

- (1) Thermostart switch is set to the ON position. This activates the heater coil.
- (2) Valve stem moves. This opens the ball valve.
- (3) Fuel flows through the ball valve, and volatilizes because of heat from the heater coil.
- (4) Volatilized fuel is ignited by the ignitor.
- (5) Set the thermostart switch to the OFF position to switch off the electricity and the heater will cool off. This will close the ball valve.
- (6) Fuel will cease to flow Fuel is stored in the header tank, and is fed to the thermostart plug by gravity.

1.2 Operation

- (1) Throttle lever is set to the STOP position.
- (2) Decompression lever is operated.
- (3) Clutch pedal is depressed, and the starter motor is operated for five seconds (until lube oil indicating light goes out.)
- (4) Restore decompression lever to position providing compression.
- (5) Open the throttle above halfway.
- (6) Press the thermostart switch for 5 to 10 seconds (in the ON position) and turn the starter motor.

Note: In the case of model YM330(T), turn the starter key switch for 5 to 10 seconds to the "TS" position.

- (7) As soon as the engine start up, switch off the thermostart, and remove your hand from the starter key switch (the main switch will automatically revert from the START to the ON position).

Note: Model YM330(T), remove your hand from the starter key switch, and turn the key switch to the "START" position immediately.

2. WATER TEMPERATURE INDICATOR LIGHT

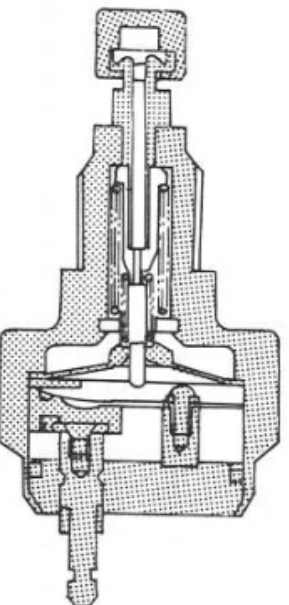
2.1 Specifications

Water temperature unit

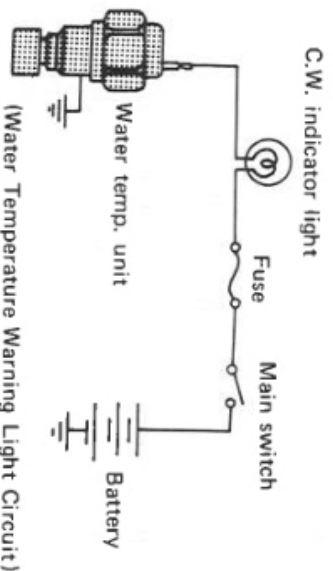
		YM135(D)(T) YM155(D)(T)	YM240(T) YM330(T)
Working temp.	ON	$120 \pm 3^{\circ}\text{C}$	$110 \pm 3^{\circ}\text{C}$
	OFF	$112 \pm 3^{\circ}\text{C}$	$102 \pm 3^{\circ}\text{C}$
Current capacity	DC12V, 7A		DC12V, 7A
Unit Identification color	black		gray

C.W. indicator light

Bulb	12V—3.4W
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(Water Temperature Unit)



3. CHARGING INDICATOR LIGHT

The functioning of the charging indicator light has already been explained in Chapter III in the section on the voltage regulator.

- (1) The light goes on when the starting switch is turned to the ON position.
- (2) When the engine starts up, electricity is generated by the AC generator; and when the prescribed voltage is reached, the charging relay is activated to extinguish the charging indicator light.

4. ENGINE LUBE OIL PRESSURE INDICATOR LIGHT

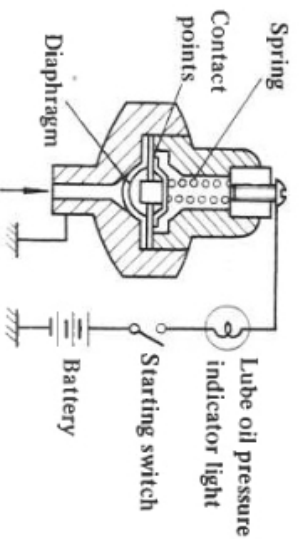
4.1 Specifications

Item	Specifications
Oil pressure switch	Activating pressure (1 kg/cm ²)
Lube oil pressure indicator light	12V — 3.4W

4.2 Description of Lube Oil Pressure Indicator Light

The lube oil pressure regulating valve fitted inside the lube oil filter (cartridge type) is adjusted to specified value, while the relief valve is set to activate at a pressure of specified value.

The lube oil switch is fitted at the lower part of the cylinder block, to the left of the lube pipe. It is activated when the lube oil pressure drops, at which time the indicator light goes on.



The oil pressure forces the diaphragm upwards to open the contact points, so that when pressure is normal, the indicator light turns off. When the oil pressure drops and the diaphragm is being forced up

Even when the main switch is turned ON, the light does not go on.	1. Fusing	* change the fuse.
	2. Ground the terminal of the oil pressure switch	* change the oil pressure switch (Note) Check the engine oil level.
	2.1 lights up	
	2.2 does not light up	* repair the light and wiring.
	3. The oil pressure is low	* check up the oil pressure, repair
	4. The engine oil is low	* Supply oil.
The light does not go out when the engine is in operation	5. The oil pressure switch malfunctioning	* change the switch.
	6. Ground between the light and the pressure switch	* repair the wire harness.

to keep the contact points open, the points close to allow electricity to flow so that the indicator light will turn on.

Thus, when the starting switch is moved to the ON position, the indicator light goes on since there is no oil pressure, but once the engine starts up and oil pressure rises, the light will go off. This is the normal, correct condition.

Item	Specifications
Flasher relay	12V-23W heat band snap type
Signal lights	12V-20W
Counting	70 ± 10 r/min
Counting ratio	30 ~ 75% at 11 ~ 13V
Starting time	less than 1.7 second at 12.8V

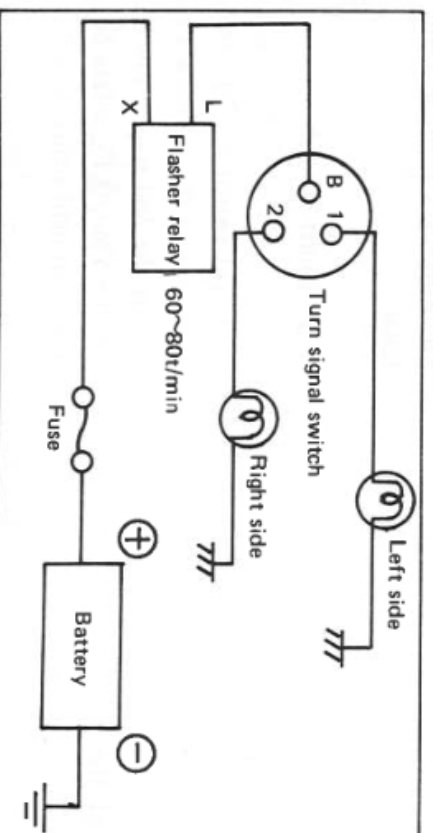
5. TURN SIGNAL LIGHTS

5.1 Specifications

5.2 Description of Turn Signal Lights

The turn signal lights comprise the turn signal switch, the flasher relay, and the signal lights.

The flasher relay is a heat band snap type; it opens and closes a pair of contact points through expansion



resulting from a rise in the temperature of the heat band.

5.3 Turn Signal Switch

Inspect the turn signal switch in the following manner, after removing the lead wire connected to the terminals (B)-(1) and -(2).

- (1) Place the SW in the neutral position.
Measure the insulation between
B-2
B-1
1-2

With a tester, and confirm the insulation among the three; the switch is normal if continuity is not found.

- (2) Turn the SW on the (1) side (left) . If there is continuity in the B-1 interval, and there is no continuity in the B-2 and 2-1 intervals, the switch is normal.

- (3) Turn the SW on the (2) side (right). If there is continuity in the B-2 interval, and there is no continuity in the B-1 and 1-2 intervals, the switch is normal.

When using a light with a larger than standard capacity, the frequency of the on/off switchings increases; when a light with a small capacity is used, the frequency decreases. When using a light whose right and left capacities differ from each other, the right and left frequencies will not coincide.

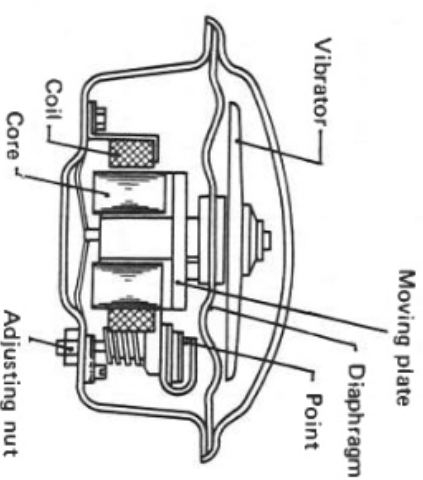
6. HORN

6.1 Specifications

Voltage	12V
Current flow	less than 1.2A
Sound level	100dB \pm 2
Frequency	440 Hz \pm 20

6.2 Description of the horn

When the horn button is depressed, electricity flows



through the coil of the horn, the core of the coil is magnetized, the moving plate is drawn towards the core, and causes the diaphragm that is coupled to the plate to move and open the contact points. The flow of current therefore is cut off. Through a repetition of this cycle, the vibrator vibrates to generate sound.

7. LIGHTS

7.1 Headlights

The headlights consist of low-high beam dual filament bulbs. Switching between low and high beams is accomplished by the lighting switch.

7.2 Work light

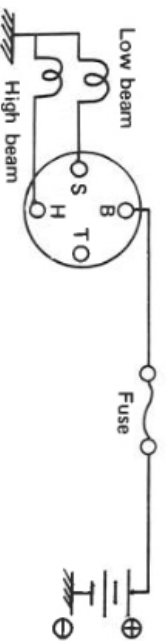
The work light is fitted to the rear part of the right fender.

7.3 Light switch

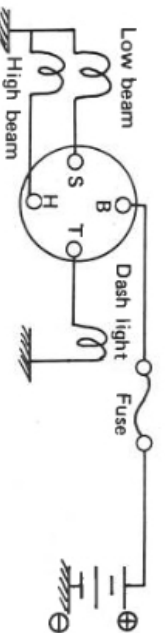
The light switch is of the two-stage, change-over type; during the 1st stage a high beam lights up, and during the 2nd stage a low beam lights up.

On the YM330(T), a dash-board light is incorporated. The dash light lights up while the light is at either at the 1st or 2nd stage.

(1) YM135(D)(T), YM155(D)(T), YM240(T)



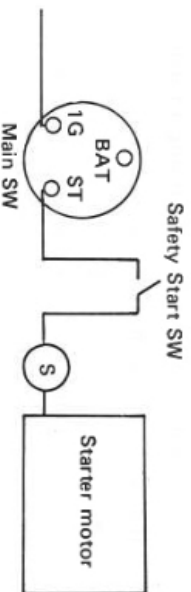
(2) YM330(T)



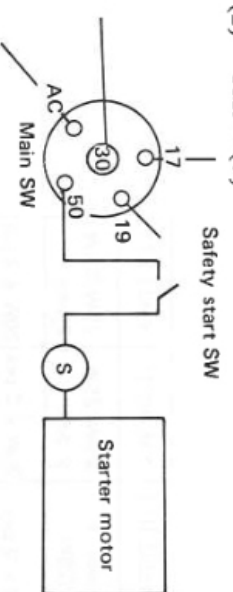
8. SAFETY START SWITCH

The safety start switch is provided for added safety of the tractor and prevention of accidents. When the clutch pedal is depressed (when the clutch is disengaged), the safety switch incorporated in the starter motor system circuitry closes to facilitate starting of the tractor.

(1) YM135(D)(T), 155(D)(T), 240(T)



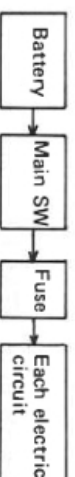
(2) YM330(T)



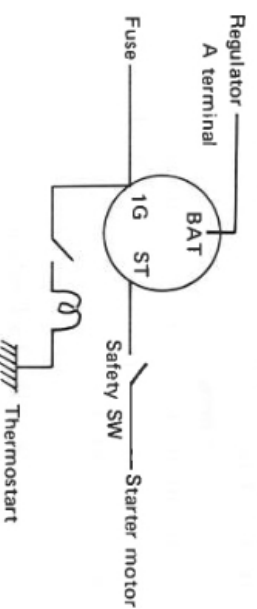
9. MAIN SWITCH

9.1. Construction

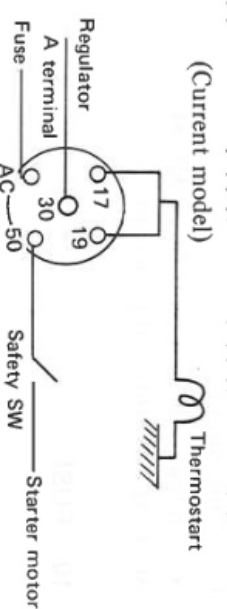
In forming the electric circuits, the main switch should be incorporated as follows:



(1) YM135(D)(T), YM155(D)(T), YM240(T) (Former model)



(2) YM135(D)(T), YM155(D)(T), YM240(T) & YM330(T)



9.2 Inspection

Inspect the main switch in the following manner:
After removing each terminal. Measure each terminal interval by using a tester. If the following results are obtained, the main switch is functioning normally.

(1) Key SW in the OFF position

(a) for 3 terminals

No continuity in any of the following:

BAT-IG

BAT-ST

ST-IG

(b) for 5 terminals

On 3 terminals, no continuity should be found in any of the 2-terminal intervals.

(2) Key SW in the ON Position

(a) for 3 terminals

Continuity for the BAT-1G interval. No continuity for the BAT-ST and 1G-ST intervals.

(b) for 5 terminals

Continuity for the 30-AC interval. No continuity for the 30-17, 30-19, 30-50, 17-19 and 19-50 intervals.

short-circuit.

If a fuse with a specified capacity is not used, the fuse will often be subjected to fusing, thus damaging the electrical equipment directly.

If a fuse with a specified capacity is used and fusing occurs, the fuse must be changed, either the fuse must be changed or the causes behind the fusing must be investigated.

(3) Key SW in the START Position

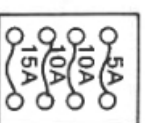
(a) for 3 terminals

Continuity for any of the BAT-ST, BAT-1G and 1G-ST intervals.

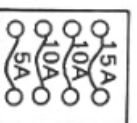
(b) for 5 terminals

Continuity for the 30-50 and 30-AC intervals.

No continuity for the 30-19, 30-17, 50-19, 50-17, AC-17 and AC-19 intervals.



← C.W. temp. & L. O. pressure
← Horn
← Turn signal
← Head light, work light



← Head light, work light
← Horn, regulator
← Turn signal
← C.W. temp., L.O. pressure, charging

[YM135(D)(T), YM155(D)(T)]

(4) Key SW in the TS Position

(YM330 (T) only)

Continuity for 30-19

No continuity for 30-17, 30-50, 30-AC, AC-50, AC-A, AC-17, 50-19, 50-17 and 19-17

[YM240(T), YM330(T)]

10. FUSE

The fuse is provided in order to protect the circuit, i.e., the electrical equipment cannot be damaged directly during periods of trouble, as in the case of a

11. BULB CAPACITY

As explained above, it is necessary to use lights with a specified capacity; otherwise, either fusing, or increases/decreases in the going-on/off frequency of the turn signal will occur. These troubles violate regulations and hinder efficient service or operation and can even cause serious problems. The table below indicates the specified capacities.

For 12V	YM135(D)(T)	YM155(D)(T)	YM240(T)	YM330(T)
Head light	2 pcs 25W/25W	2 pcs 25W/25W	25W/25W 2 pcs	25W/25W 2 pcs
Turn signal light	20W x 2 pcs	20W x 2 pcs	20W x 2 pcs	20W x 2 pcs
Work light	20W x 1 pcs	20W x 1 pc	20W x 1 pc	20W x 1 pc
C.W. temp.	3.4W x 1 pc	3.4W x 1 pc	3.4W x 1 pc	3.4W x 1 pc
L.O. pressure	3.4W x 1 pc	3.4W x 1 pc	3.4W x 1 pc	3.4W x 1 pc
Charging light	—	—	3.4W x 1 pc	3.4W x 1 pc
Dash board light	—	—	—	3.4W x 1 pc