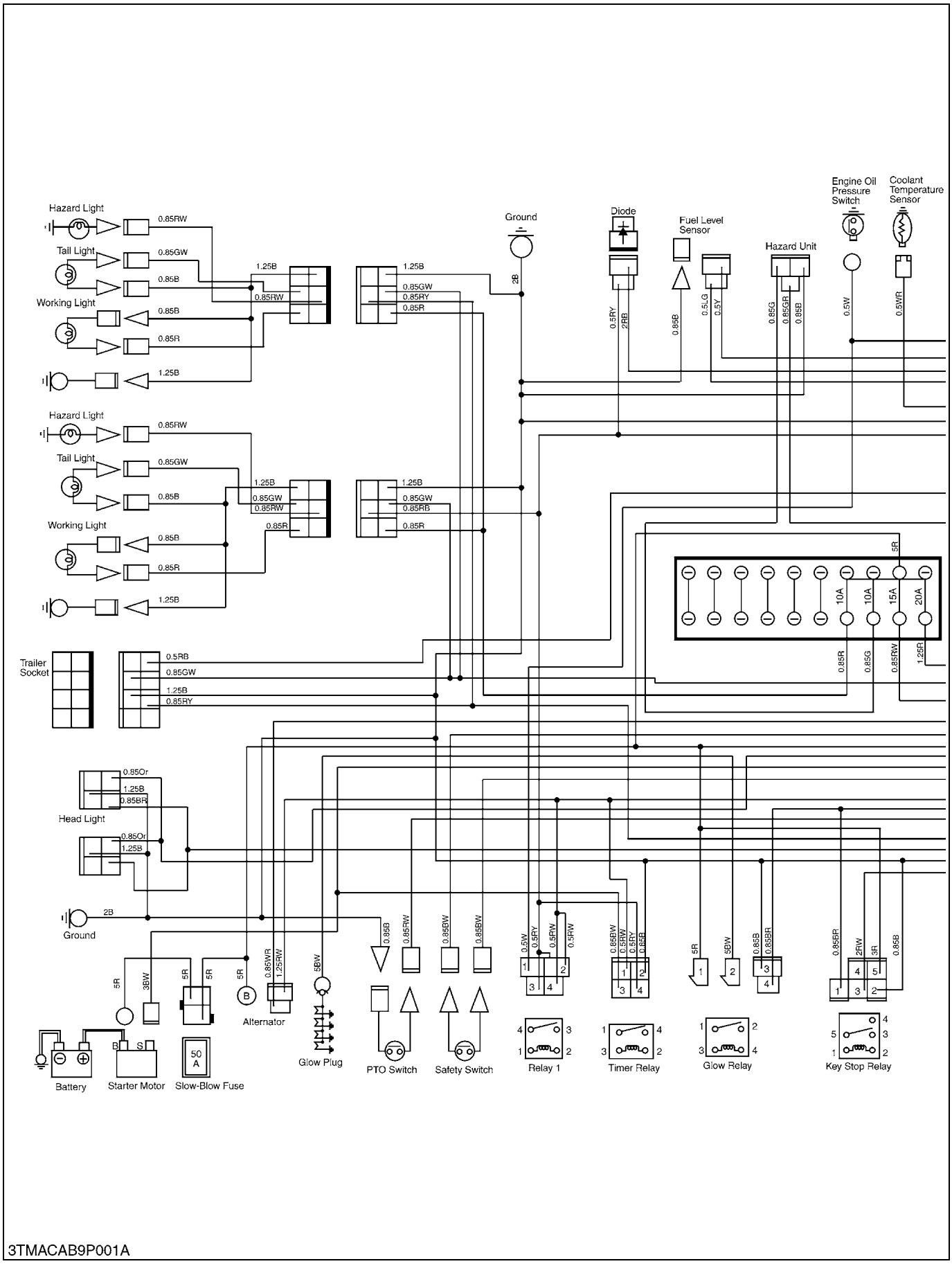
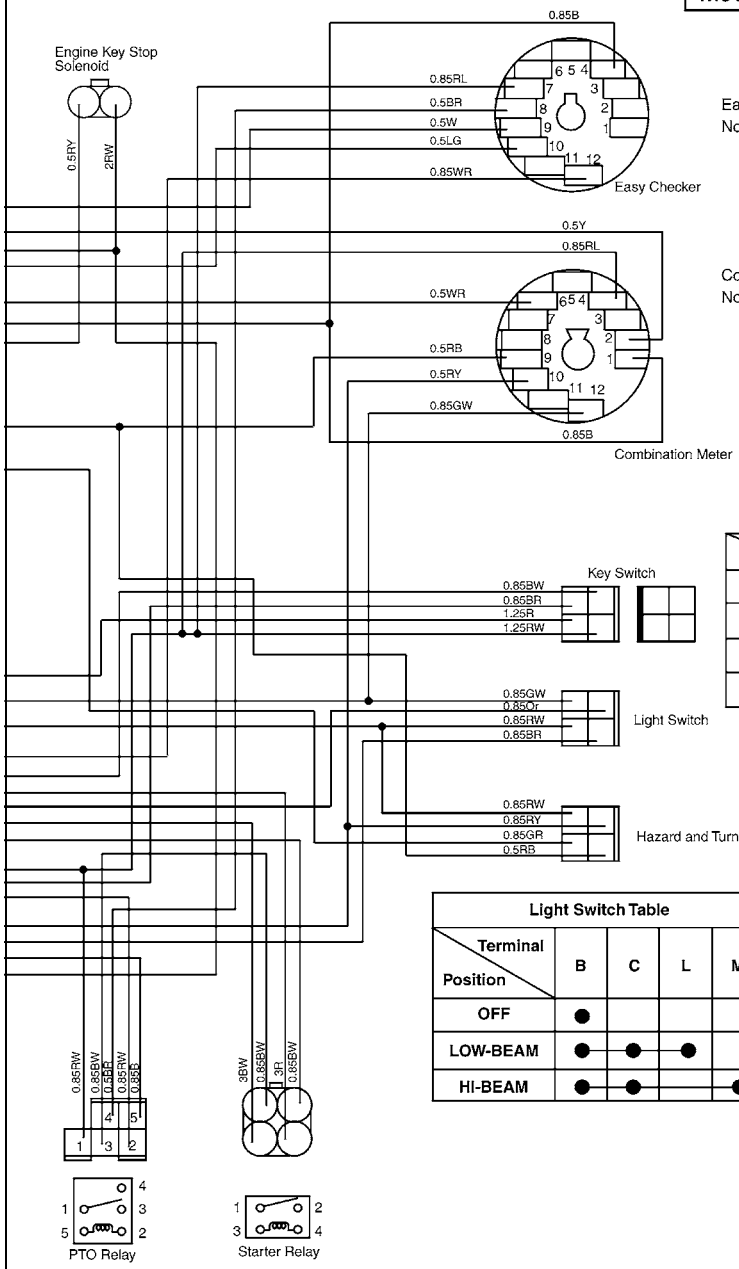
■ For North America (Old Type)



3TMACAB9P001A

Serial No. Affected

Model	2WD	4WD
M6800(S)	Below 10793	Below 50957
M8200	Below 10412	Below 50784
M9000	Below 10373	Below 50839



Easy checker
No. 4 : To the ground
7 : From the main switch **M**
8 : From the PTO relay to PTO lamp
9 : To the engine oil pressure lamp
10 : From the fuel limit sensor
12 : To the alternator **L** terminal

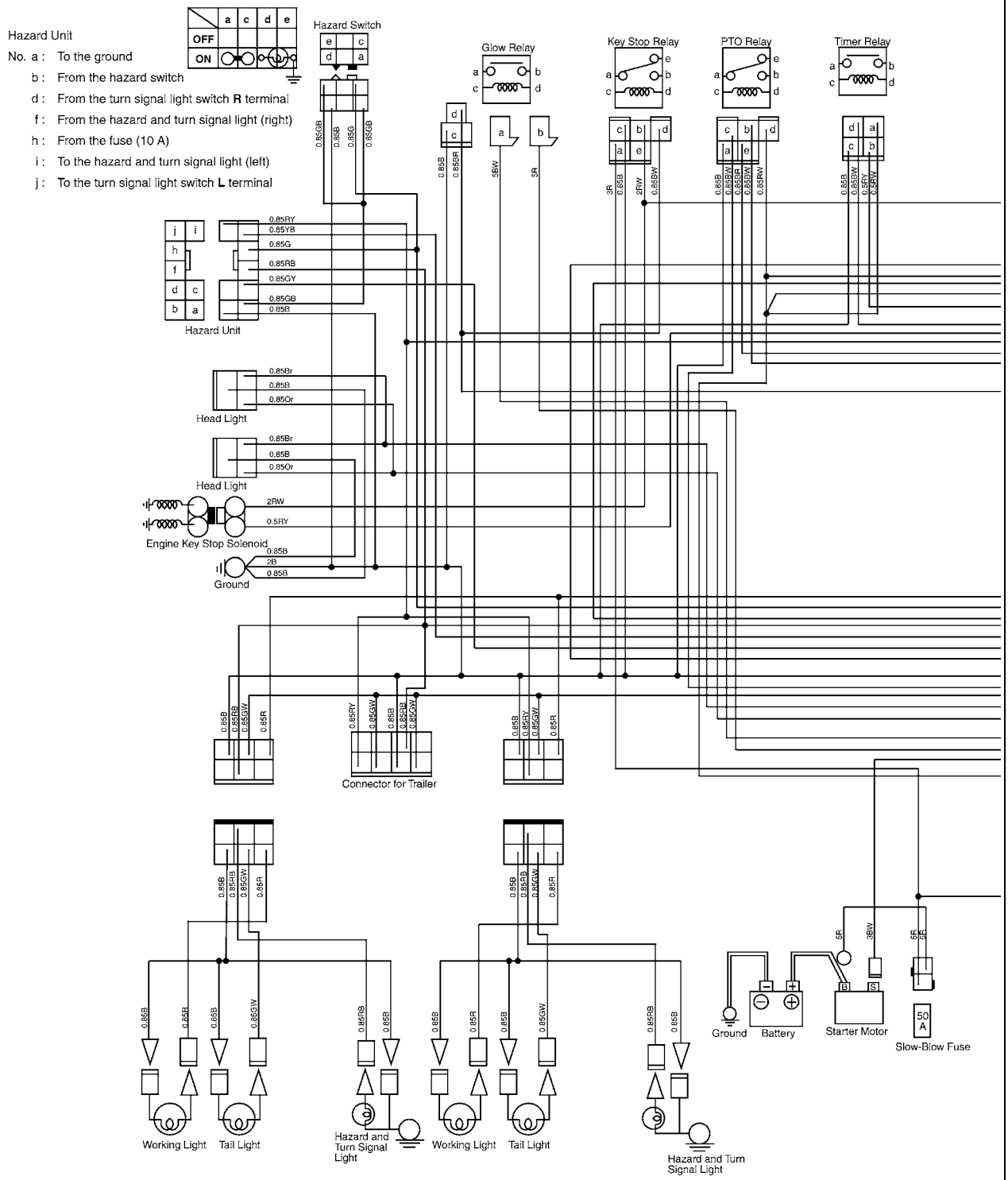
Combination meter
No. 1 : To the ground
2 : To the fuel level sensor
4 : From the main switch **M**
6 : To the coolant temperature sensor
10 : To the turn signal (right)
12 : To the turn signal (left)

	B	G	ST	M	OFF
OFF	●				●
ON	●			●	
GLOW	●	●		●	
START	●	●	●	●	

Light Switch Table				
Terminal / Position	B	C	L	M
OFF	●			
LOW-BEAM	●	●	●	
HI-BEAM	●	●		●

Hazard and Turn Signal Switch								
	Hazard OFF Position				Hazard ON Position			
Terminal / Position	1	2	3	4	1	2	3	4
R	●		●		●	●	●	●
N	●	●			●	●	●	
L		●	●		●	●	●	●

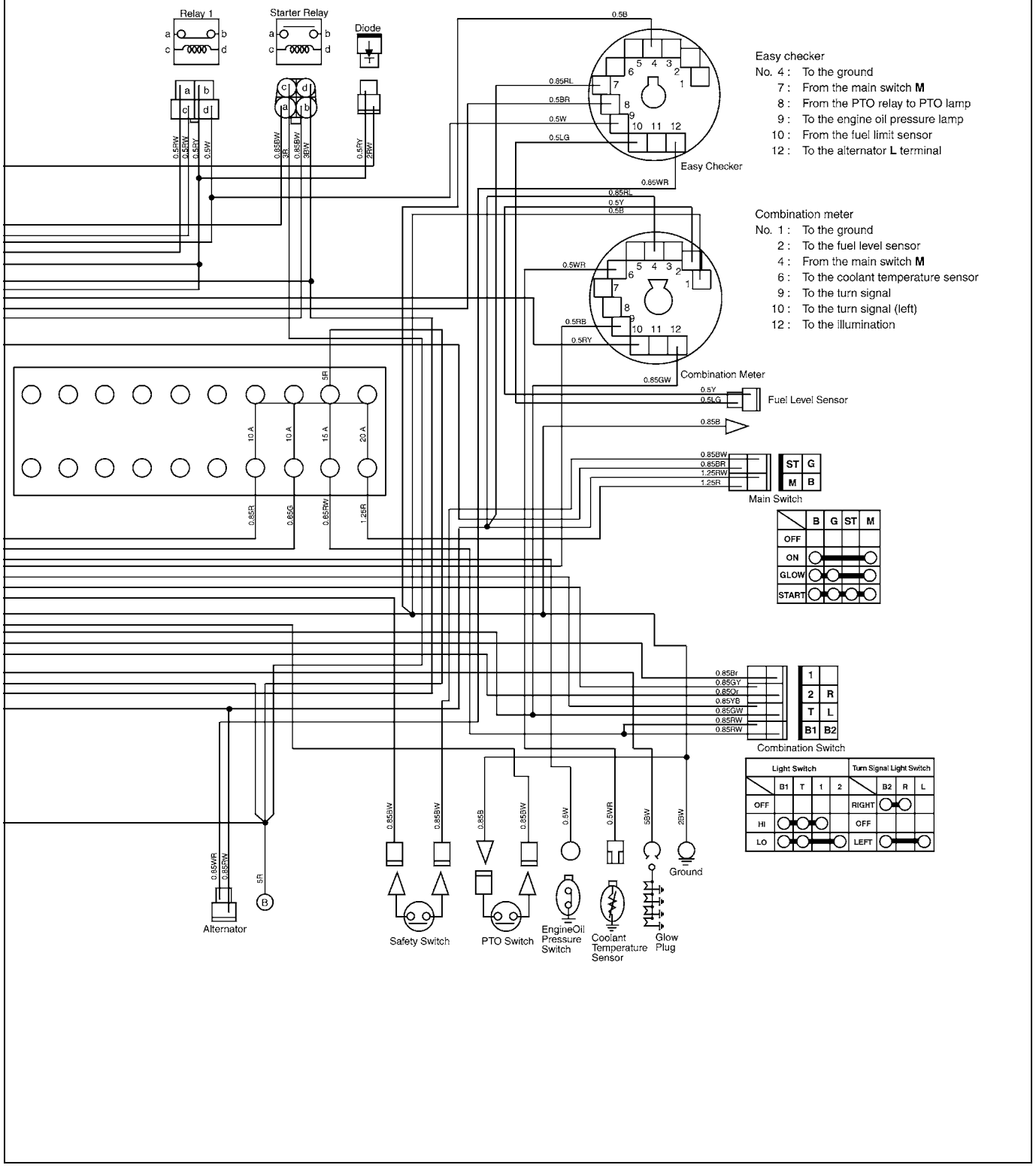
■ For North America (New Type)



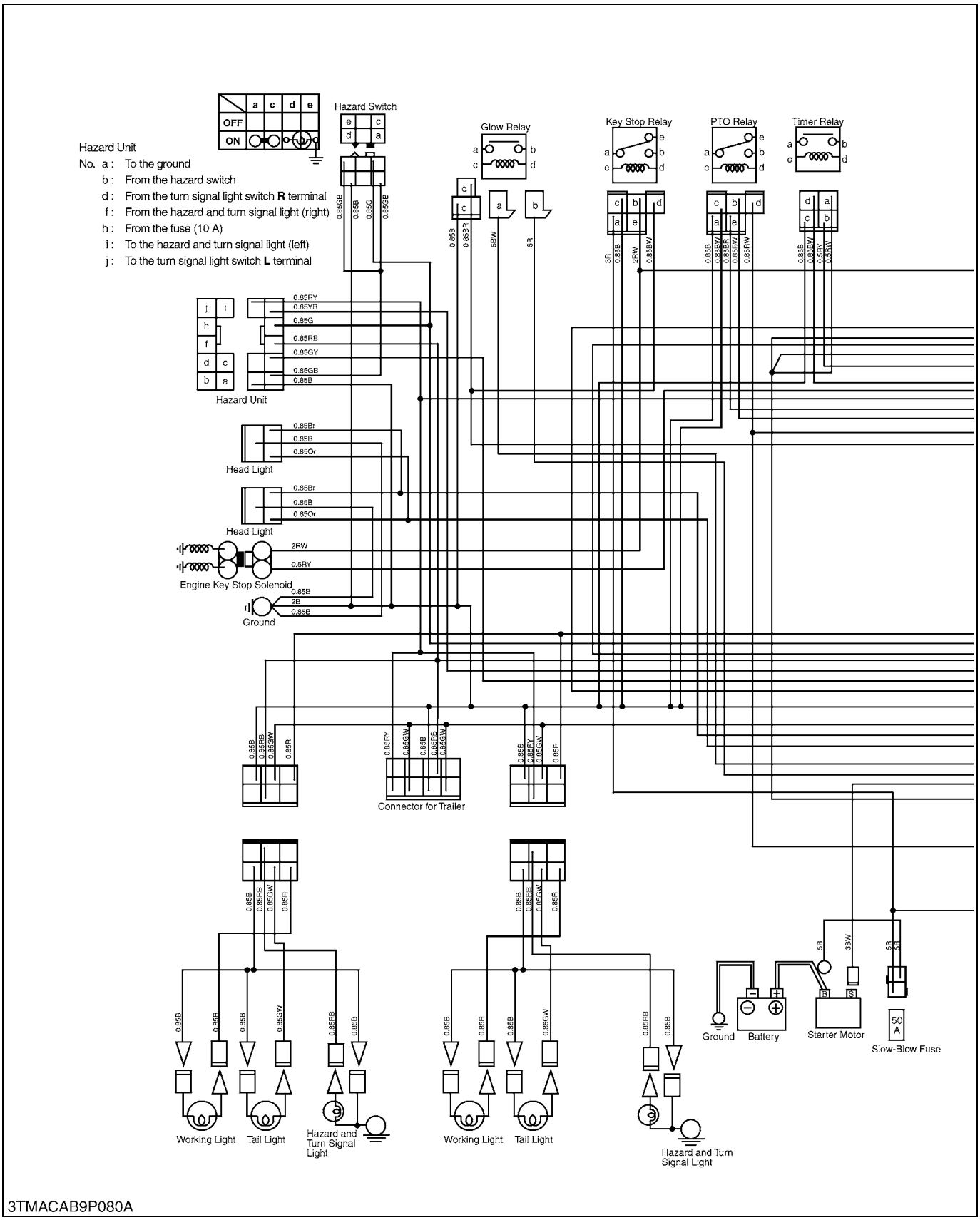
3TMACAB9P003A

Serial No. Affected

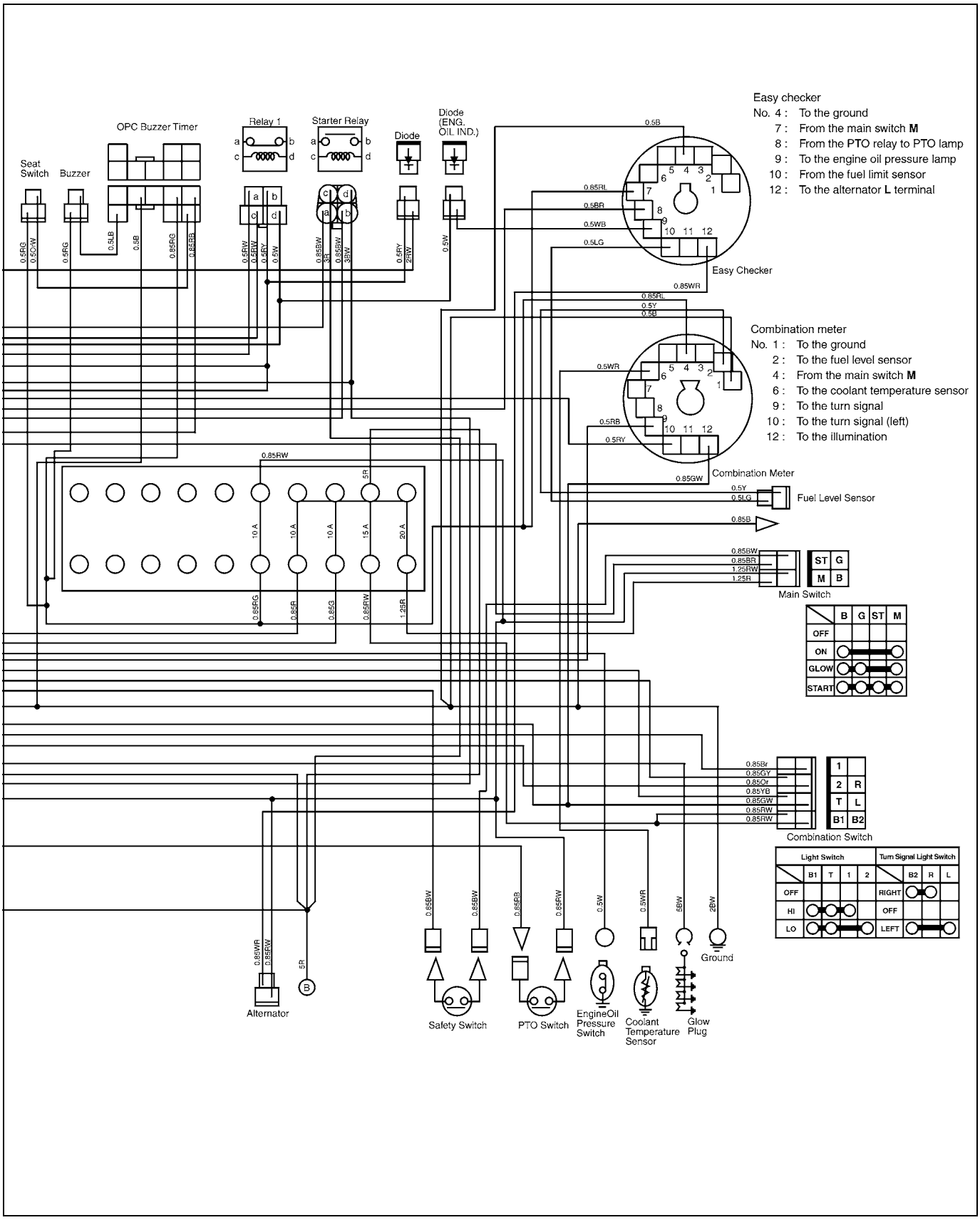
Model	2WD	4WD
M6800(S)	Above 10794	Above 50958
M8200	Above 10413	Above 50785
M9000	Above 10374	Above 50840



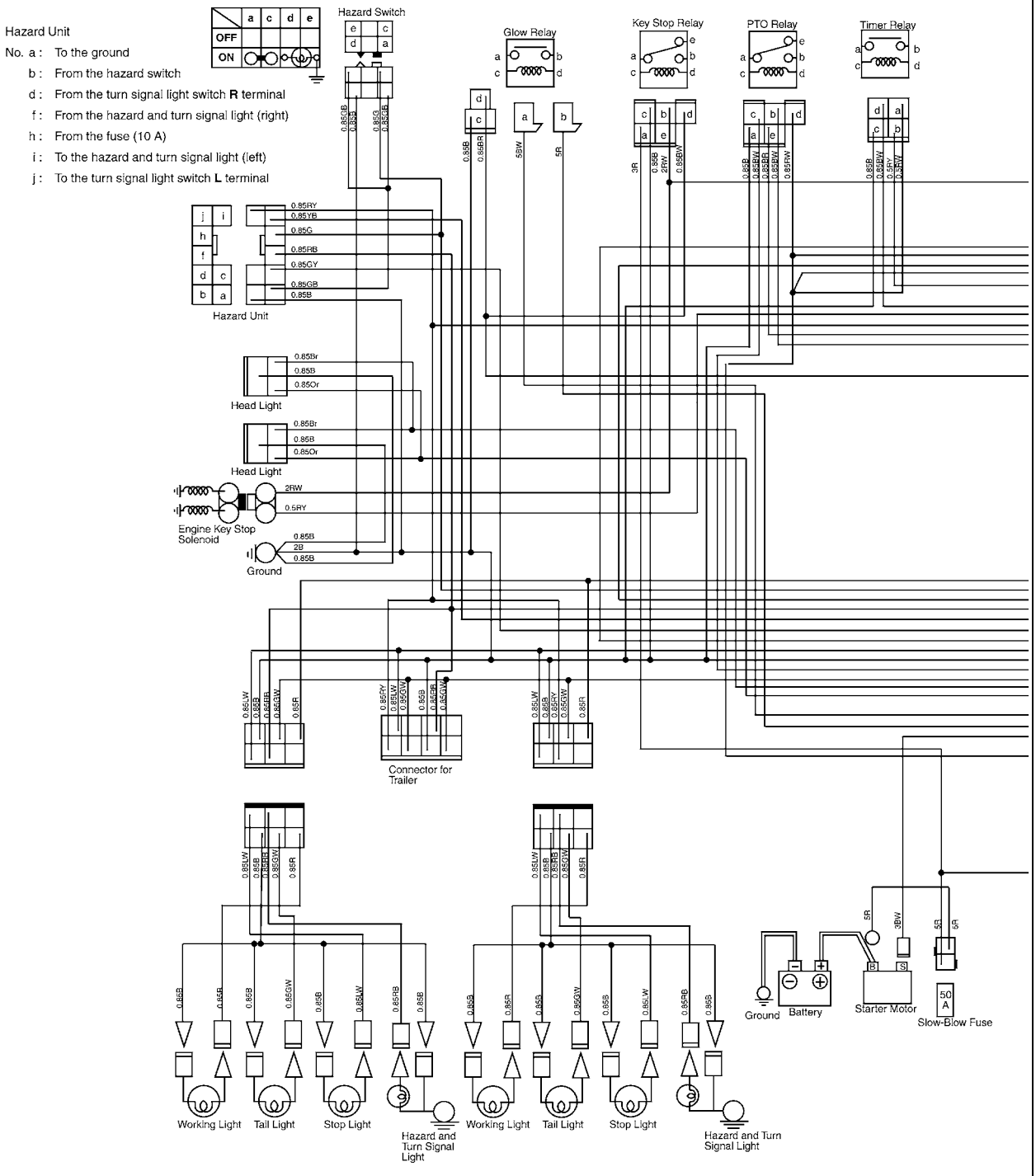
■ For North America (with OPC)



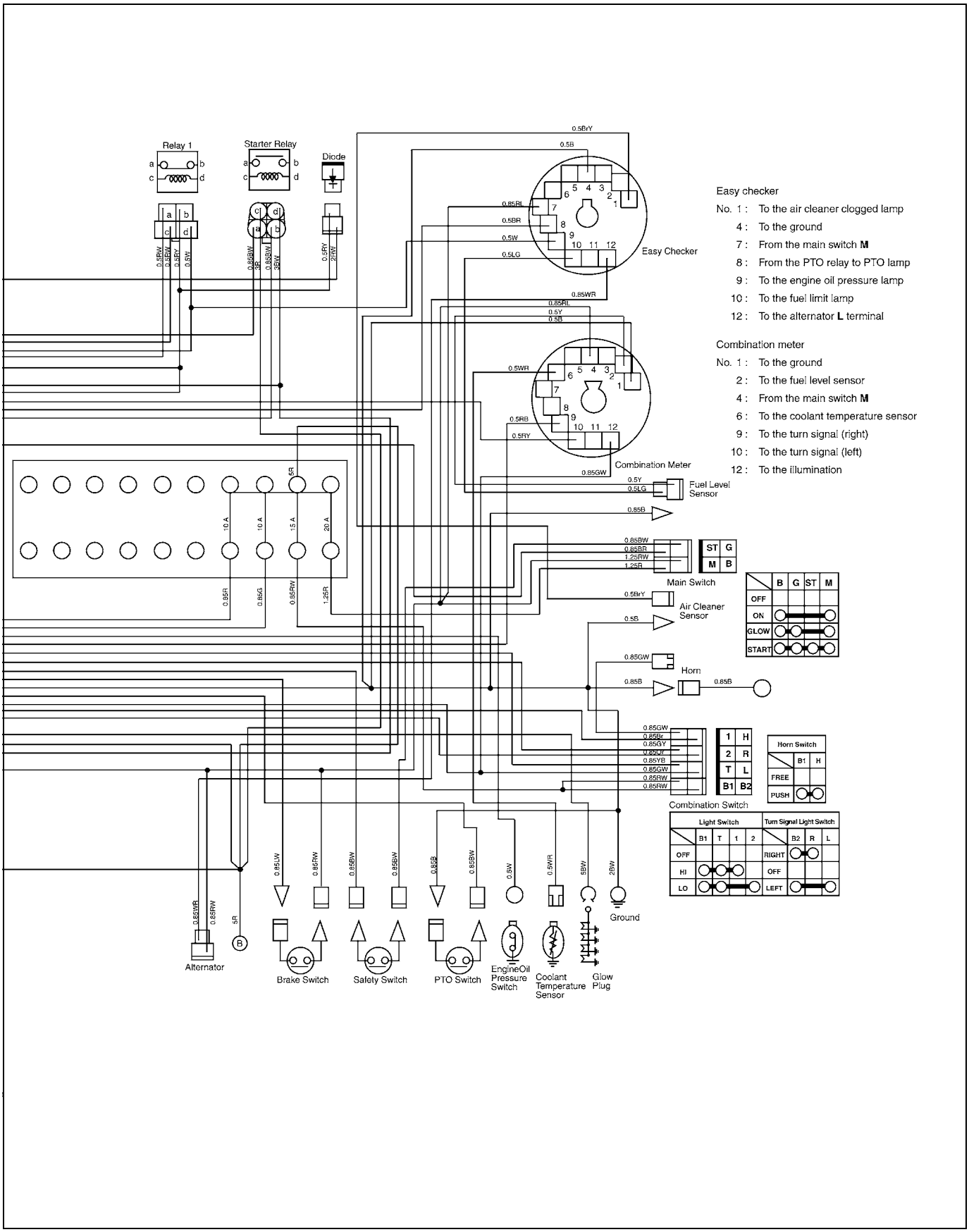
3TMACAB9P080A


Easy checker
No. 4 : To the ground
7 : From the main switch M
8 : From the PTO relay to PTO lamp
9 : To the engine oil pressure lamp
10 : From the fuel limit sensor
12 : To the alternator L terminal
Easy Checker
Combination meter
No. 1 : To the ground
2 : To the fuel level sensor
4 : From the main switch M
6 : To the coolant temperature sensor
9 : To the turn signal
10 : To the turn signal (left)
12 : To the illumination
Combination Meter
Fuel Level Sensor
Main Switch
Combination Switch
Light Switch
Turn Signal Light Switch
OPC Buzzer Timer
Relay 1
Starter Relay
Diode
Diode (ENG. OIL IND.)
Seat Switch
Buzzer
Alternator
Safety Switch
PTO Switch
EngineOil Pressure Switch
Coolant Temperature Sensor
Glow Plug
Ground

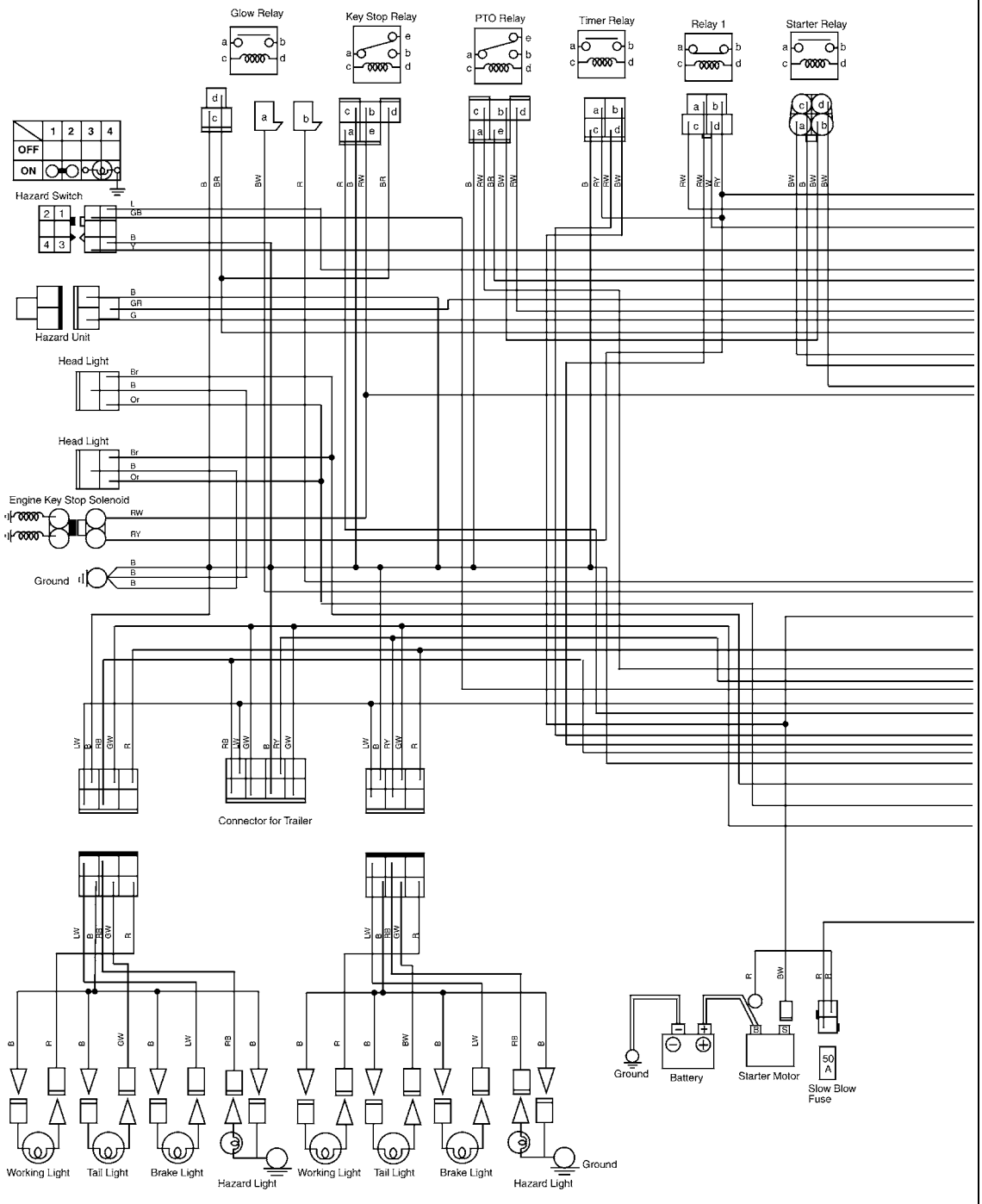
■ For Oceania



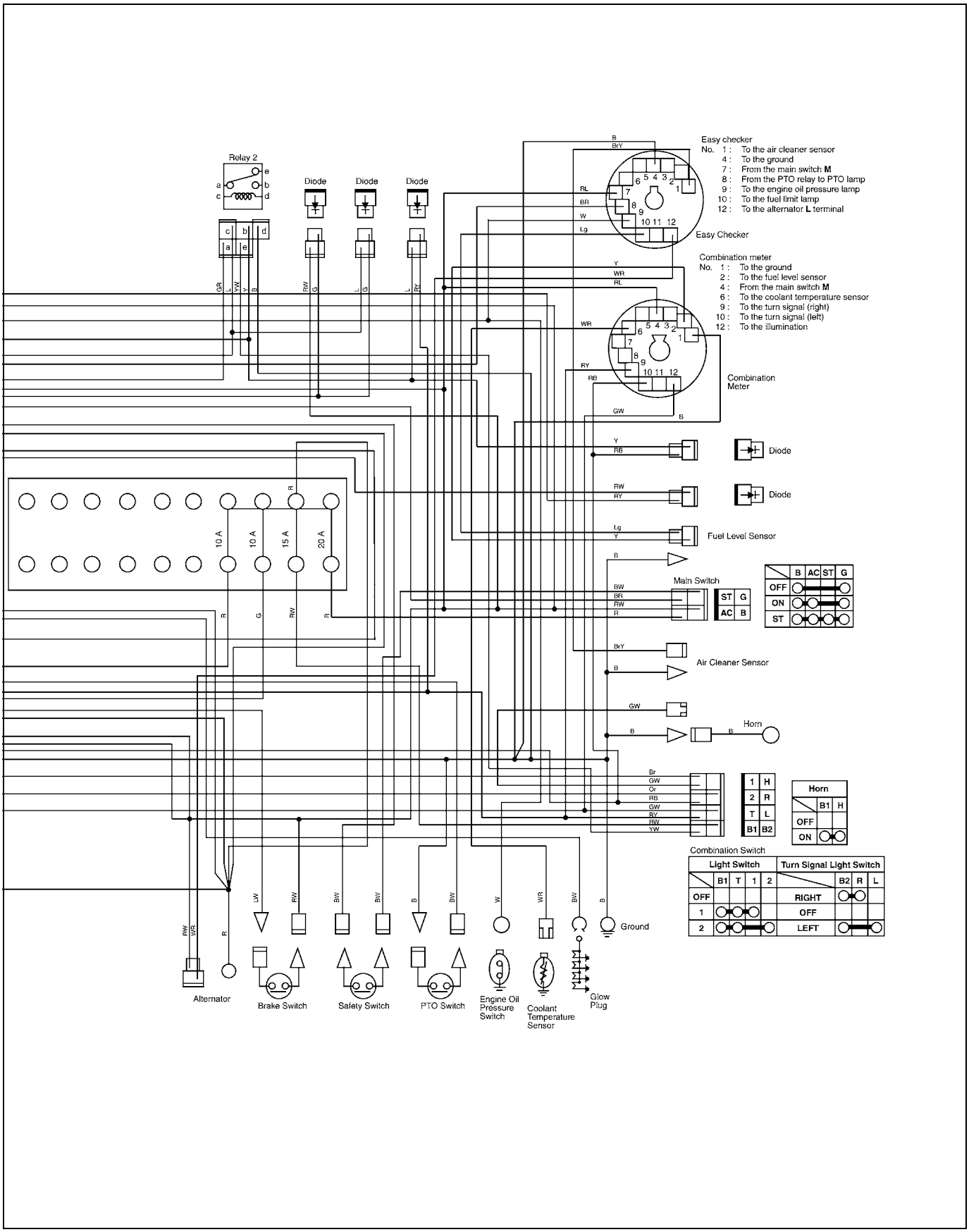
3TMACAB9P005A


Relay 1
Starter Relay
Diode
Easy Checker
Combination Meter
Fuel Level Sensor
Main Switch
Air Cleaner Sensor
Horn
Combination Switch
Alternator
Brake Switch
Safety Switch
PTO Switch
EngineOil Pressure Switch
Coolant Temperature Sensor
Glow Plug
Ground
Easy checker
No. 1 : To the air cleaner clogged lamp
4 : To the ground
7 : From the main switch M
8 : From the PTO relay to PTO lamp
9 : To the engine oil pressure lamp
10 : To the fuel limit lamp
12 : To the alternator L terminal
Combination meter
No. 1 : To the ground
2 : To the fuel level sensor
4 : From the main switch M
6 : To the coolant temperature sensor
9 : To the turn signal (right)
10 : To the turn signal (left)
12 : To the illumination
Horn Switch
Light Switch
Turn Signal Light Switch

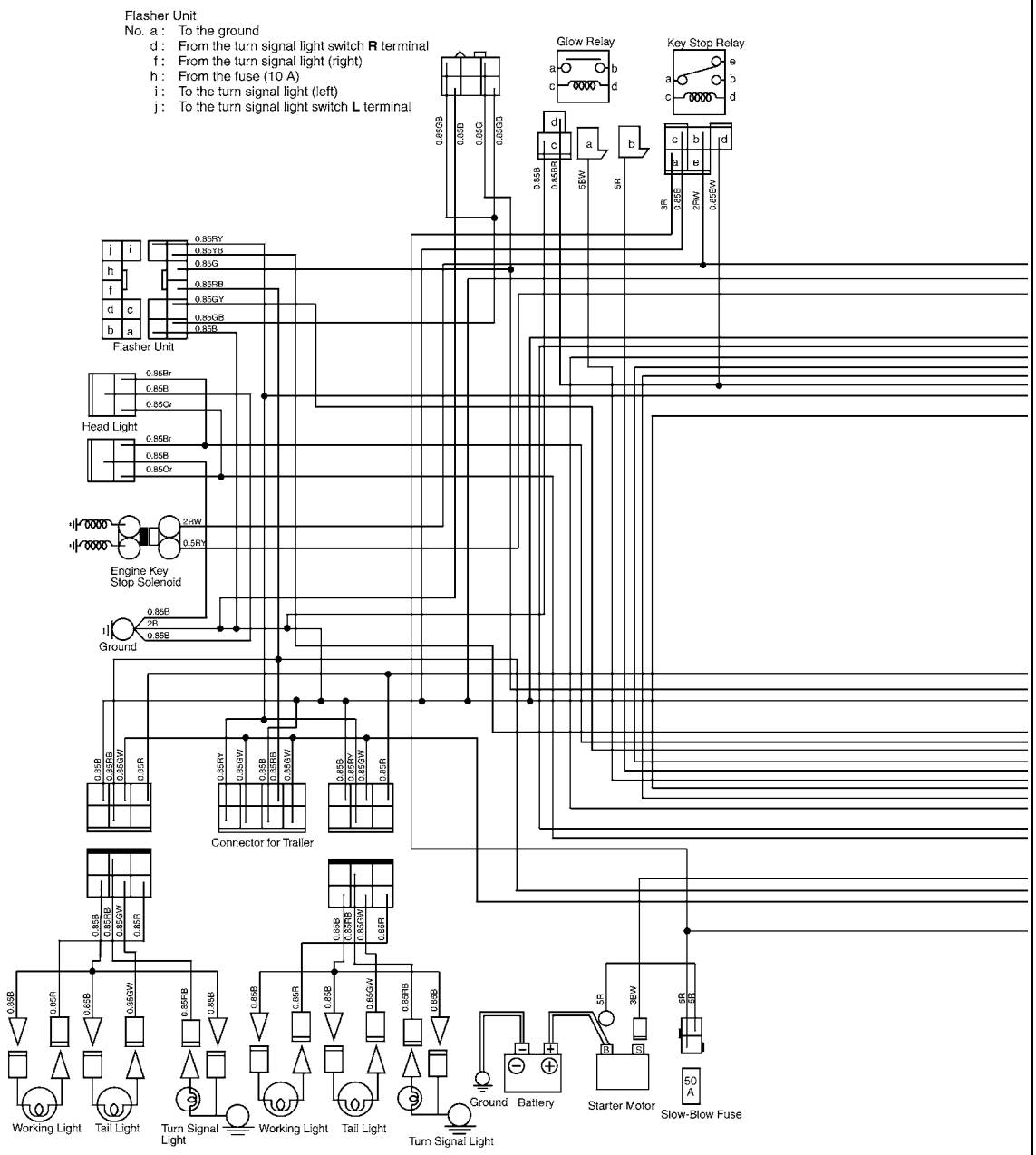
■ For Euro



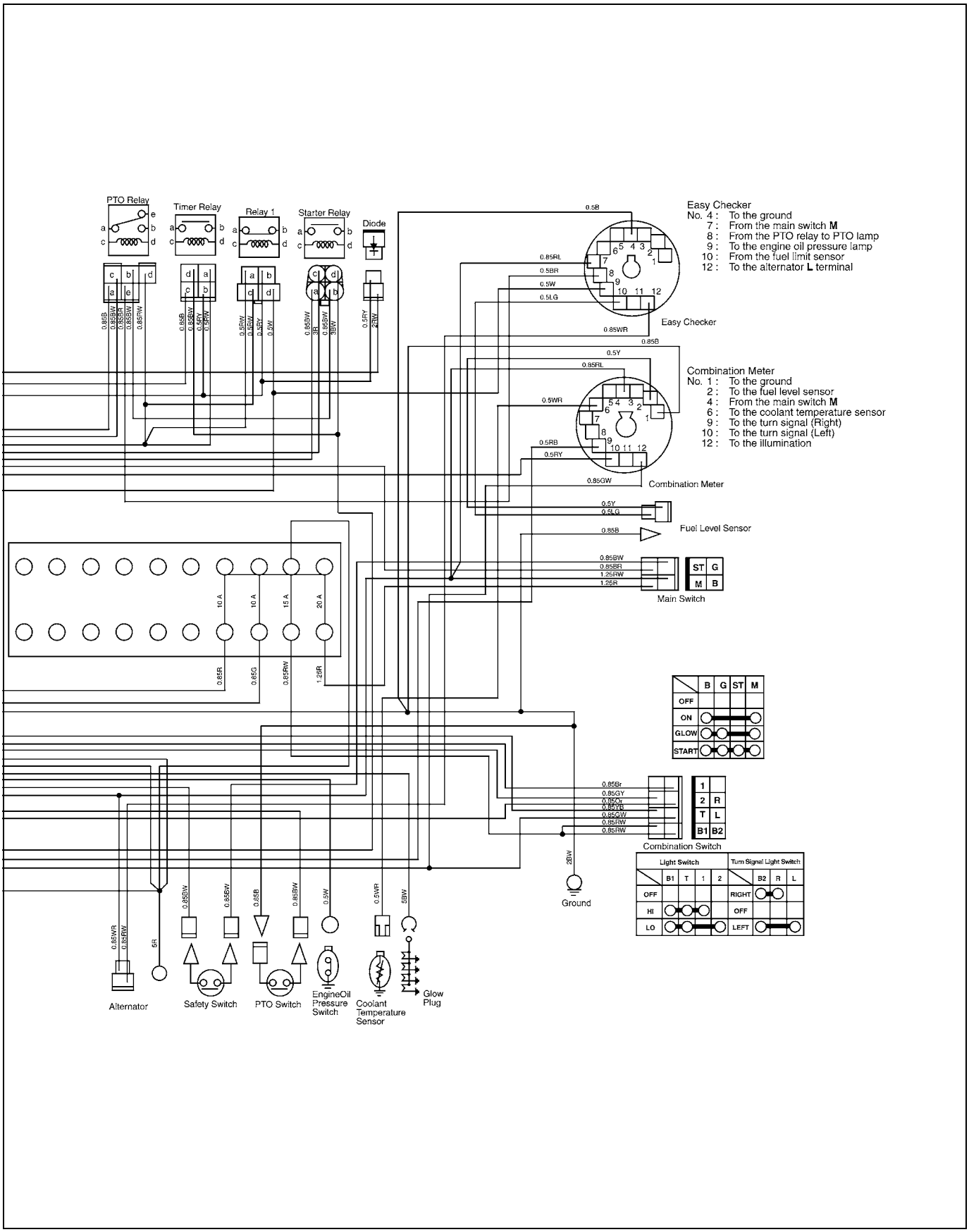
3TMACAB9P007A


Relay 2
Diode
Diode
Diode
Easy checker
No. 1 : To the air cleaner sensor
4 : To the ground
7 : From the main switch M
8 : From the PTO relay to PTO lamp
9 : To the engine oil pressure lamp
10 : To the fuel limit lamp
12 : To the alternator L terminal
Easy Checker
Combination meter
No. 1 : To the ground
2 : To the fuel level sensor
4 : From the main switch M
6 : To the coolant temperature sensor
9 : To the turn signal (right)
10 : To the turn signal (left)
12 : To the illumination
Combination Meter
Diode
Diode
Fuel Level Sensor
Main Switch
Air Cleaner Sensor
Horn
10 A
10 A
15 A
20 A
Combination Switch
Light Switch
Turn Signal Light Switch
OFF
1
2
RIGHT
OFF
LEFT
Alternator
Brake Switch
Safety Switch
PTO Switch
Engine Oil Pressure Switch
Coolant Temperature Sensor
Glow Plug
Ground

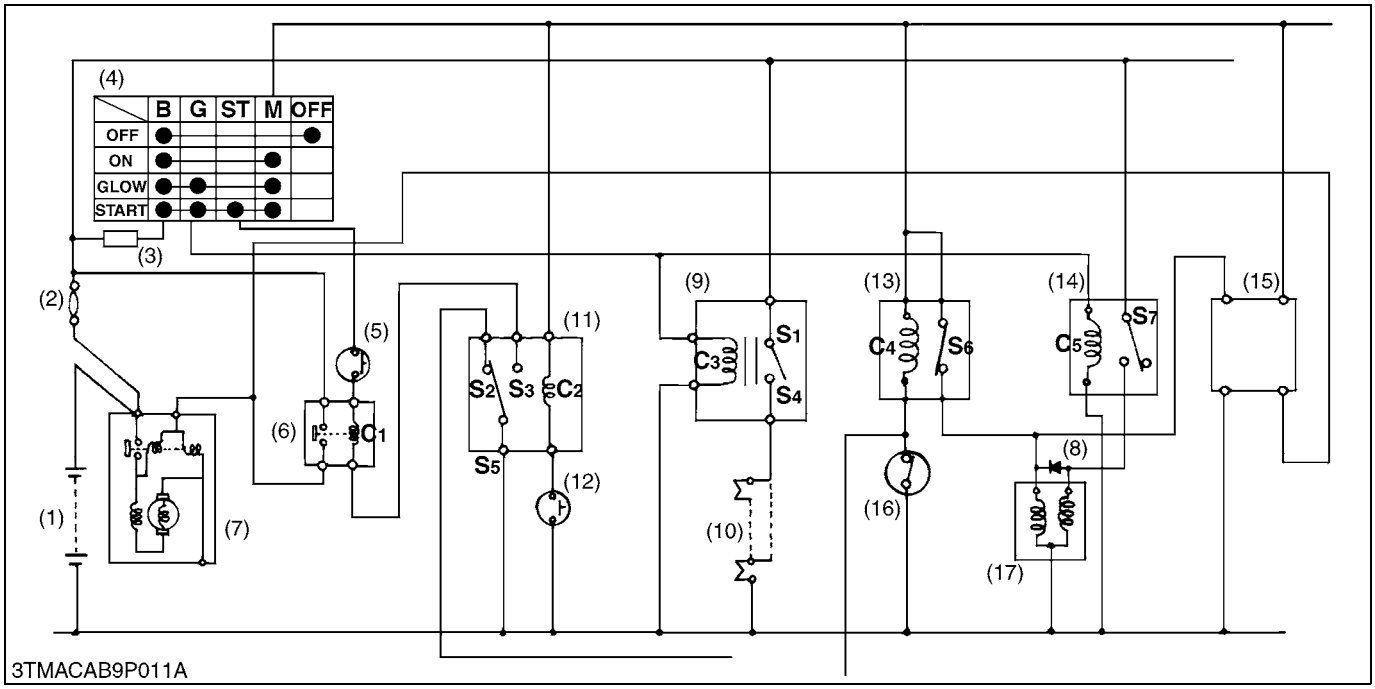
■ For Asia and other country



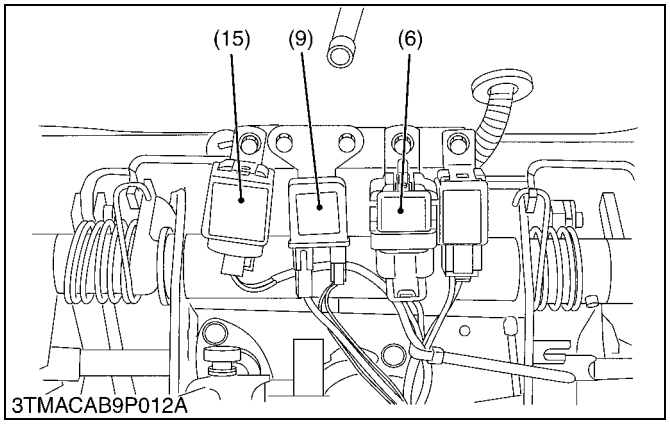
3TMACAB9P009A

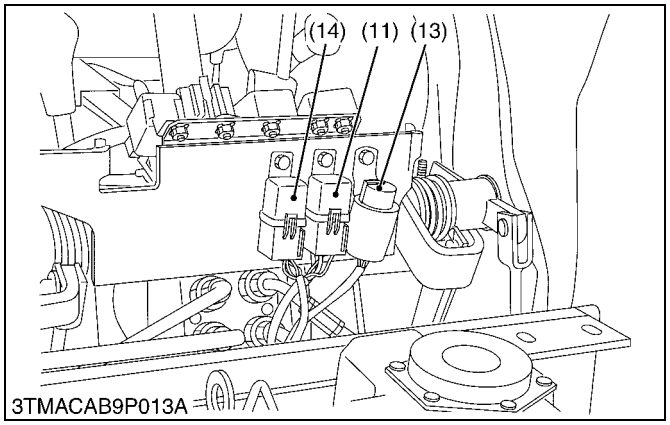

PTO Relay
Timer Relay
Relay 1
Starter Relay
Diode
Easy Checker
No. 4 : To the ground
7 : From the main switch M
8 : From the PTO relay to PTO lamp
9 : To the engine oil pressure lamp
10 : From the fuel limit sensor
12 : To the alternator L terminal
Easy Checker
Combination Meter
No. 1 : To the ground
2 : To the fuel level sensor
4 : From the main switch M
6 : To the coolant temperature sensor
9 : To the turn signal (Right)
10 : To the turn signal (Left)
12 : To the illumination
Combination Meter
Fuel Level Sensor
Main Switch
ST G
M B
10 A
10 A
15 A
20 A
B G ST M
OFF
ON
GLOW
START
Combination Switch
1
2 R
T L
B1 B2
Light Switch
Turn Signal Light Switch
B1 T 1 2
B2 R L
OFF
HI
LO
RIGHT
OFF
LEFT
Ground
Alternator
Safety Switch
PTO Switch
EngineOil Pressure Switch
Coolant Temperature Sensor
Glow Plug

2. STARTING SYSTEM



(1) Battery
(2) Slow Blow Fuse
(3) Fuse (20 A)
(4) Main Switch
(5) Safety Switch
(6) Starter Relay
(7) Starter Motor
(8) Diode
(9) Glow Relay
(10) Glow Plug
(11) PTO Relay
(12) PTO Switch
(13) Key Stop Relay
(14) Relay 1
(15) Timer Relay
(16) Engine Oil Pressure Switch
(17) Fuel Cut-off Solenoid





There are four key positions, **OFF**, **ON**, **PREHEAT (GLOW)**, and **START**.

When the main switch is set to **PREHEAT (GLOW)**, **B** terminal of the main switch is connected to **G** and **AC (M)** terminals. Consequently, battery current flows to coil **C3** of the glow relay (9), and the relay contact point **S4** is turned on. This makes the glow plugs red-hot.

When the main switch (4) is set to **START** under the condition that the range gear shift lever is in neutral position and the safety switch (5) is turned on and PTO clutch lever is in **OFF** position (PTO switch (12) is **ON**.).

B terminal of the main switch is connected **G**, **ST** and **AC (M)** terminals.

Consequently, battery current flows to coil **C1** of the starter relay (6) and PTO relay (11) contact point **S3** of the PTO relay (11) (When the PTO switch is set to **ON**, battery current flows to coil **C2** and **S5** is turned to **ON**.) and coil **C3** of the glow plug relay at the same time, and relay contact points **S1** and **S4** are turned on.

This actuates starter motor (7) and keeps the glow plugs red-hot.

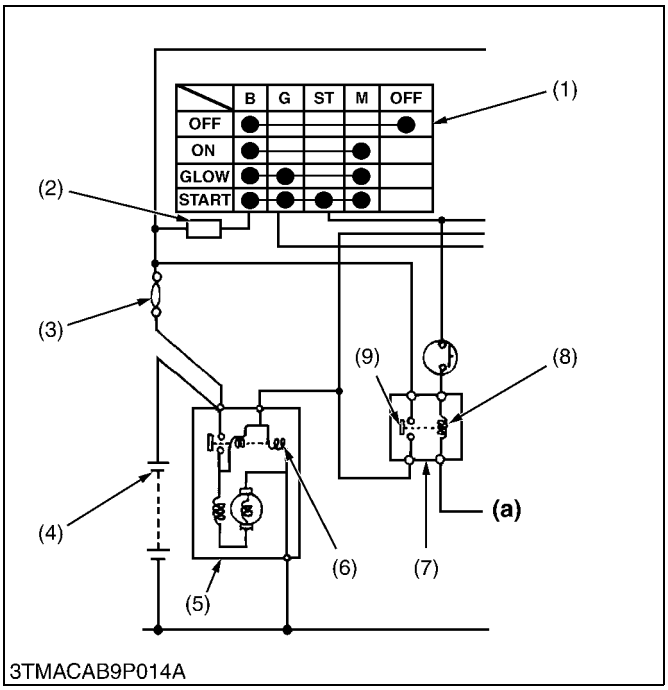
At this time, battery current flows to coil **C5** of the relay 1 (14) and relay contact point **S7** is turned on.

Battery current to flows to pull-in coil and holding coil of fuel cut-off solenoid (17) to pull the plunger at engine starting position.

When the main switch is released after starting the engine, the main switch returns to **ON** automatically.

W1012830

[1] STARTER MOTOR



3TMACAB9P014A

■ Starter Relay

The starter relay (7) is mounting on this starter (5) to prevent the contact of the main switch (1) burning out when the main switch is switched.

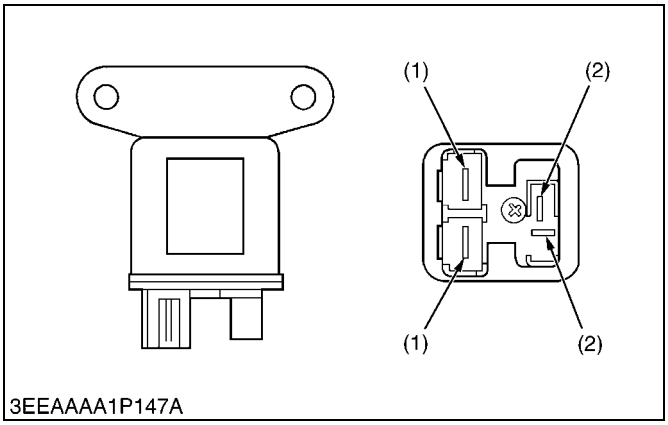
Current from the main switch flows only the starter relay coil (8), and the relay contact (9) is pulled to **ON** position by electromagnetic force.

Therefore, current from the battery (4) flows directly to the pull-in coil and holding coil (6) of this starter. As a result, its durability is much better.

(1) Main Switch
(2) Fuse (20 A)
(3) Slow Blow Fuse
(4) Battery
(5) Starter
(6) Holding and Pull in Coil
(7) Starter Relay
(8) Starter Relay Coil
(9) Relay Contact
(a) PTO Relay

W1013470

[2] GLOW CONTROL SYSTEM



3EEAAAA1P147A

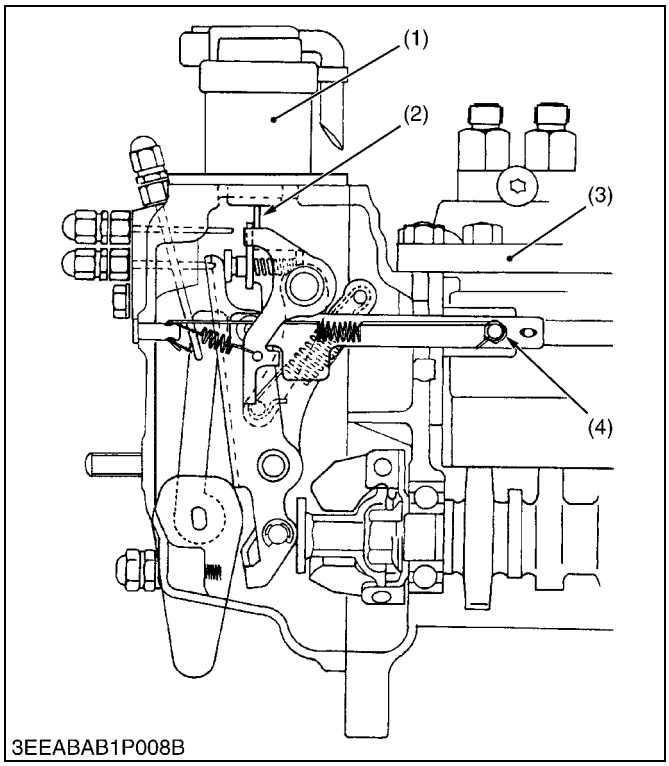
■ Glow Relay

The glow relay is actuated by the signal from the glow controller and supplies the battery power to the glow plug directly.

(1) Contact Point
(2) Coil

W1013374

3. ENGINE KEY SWITCH SHUT-OFF SYSTEM



3EEABAB1P008B

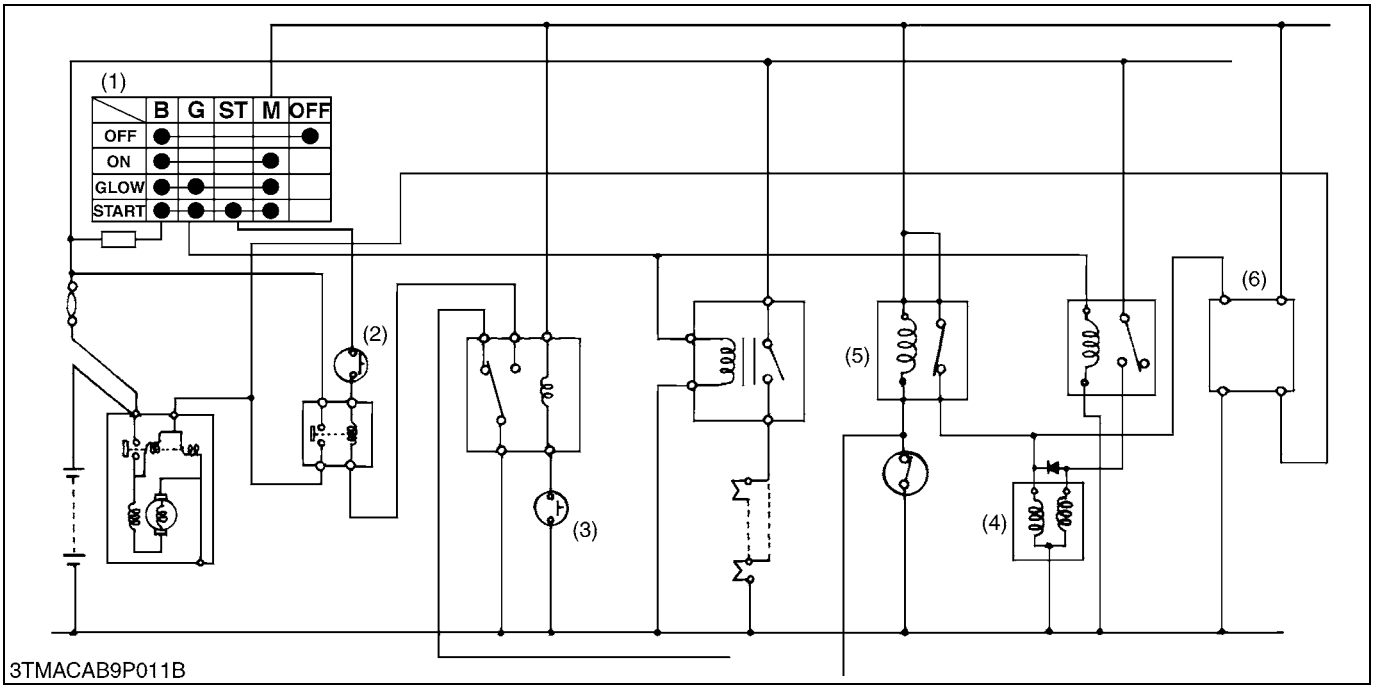
The fuel cut-off solenoid is located at the top of the injection pump (3).

When the main switch is turned to **START** position, the push rod (2) is pulled to top side by solenoid (1) for control rack (4) to starting position.

When the main switch is turned to **OFF** position, the push rod (2) is moved back to down side by the spring in the solenoid (1) for control rack to stop position.

(1) Fuel Cut-off Solenoid
(2) Push Rod
(3) Injection Pump
(4) Control Rack

W1013842



(1) Main Switch
(2) Safety Switch
(3) PTO Switch
(4) Fuel Cut-off Solenoid
(5) Key Stop Relay
(6) Timer Relay

■ **"START" Position**

When the main switch (1) is turned to **START** position, the current of the starter motors **S** terminal goes to **PULL** terminal of fuel cut-off solenoid (4) through the key stop relay (5). And current flows from timer relay (6) to hold terminal of fuel cut-off solenoid (4) for approx. 10 seconds.

During the discharging period, the current flows as follows.

Battery → Main Switch (1) → Timer Relay (6) → Fuel Cut-off Solenoid (4) → Ground.

■ **"OFF" Position**

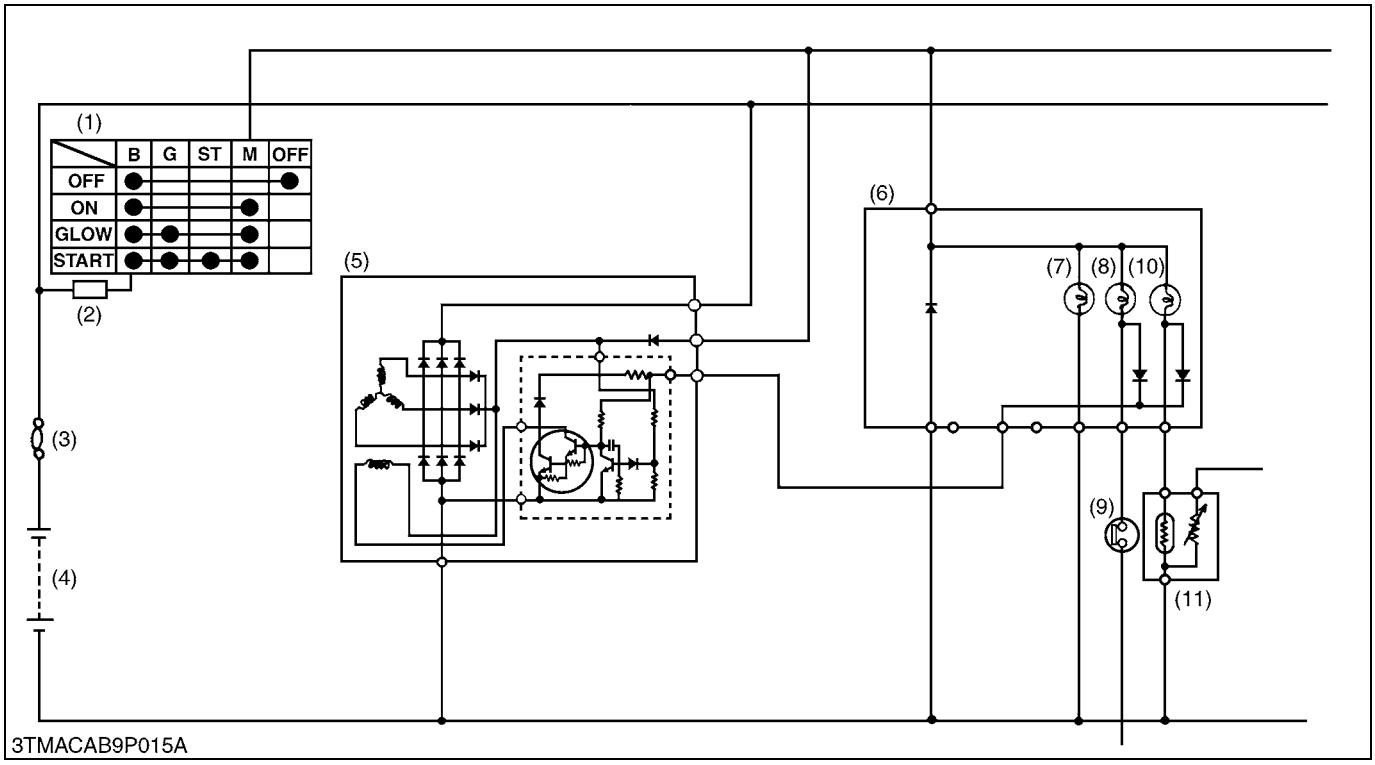
When the main switch (1) is turned to **OFF** position, the current is cut-off on hold terminal of the fuel cut-off solenoid (4).

Then, the control rack of the injection pump is pushed to no injection position by the spring of fuel cut-off solenoid.

■ **"ON" Position**

When the main switch (1) is turned to **ON** position, the current is only **HOLD** terminal of the fuel cut-off solenoid (4) to hold the start position of the control rack.

4. CHARGING SYSTEM



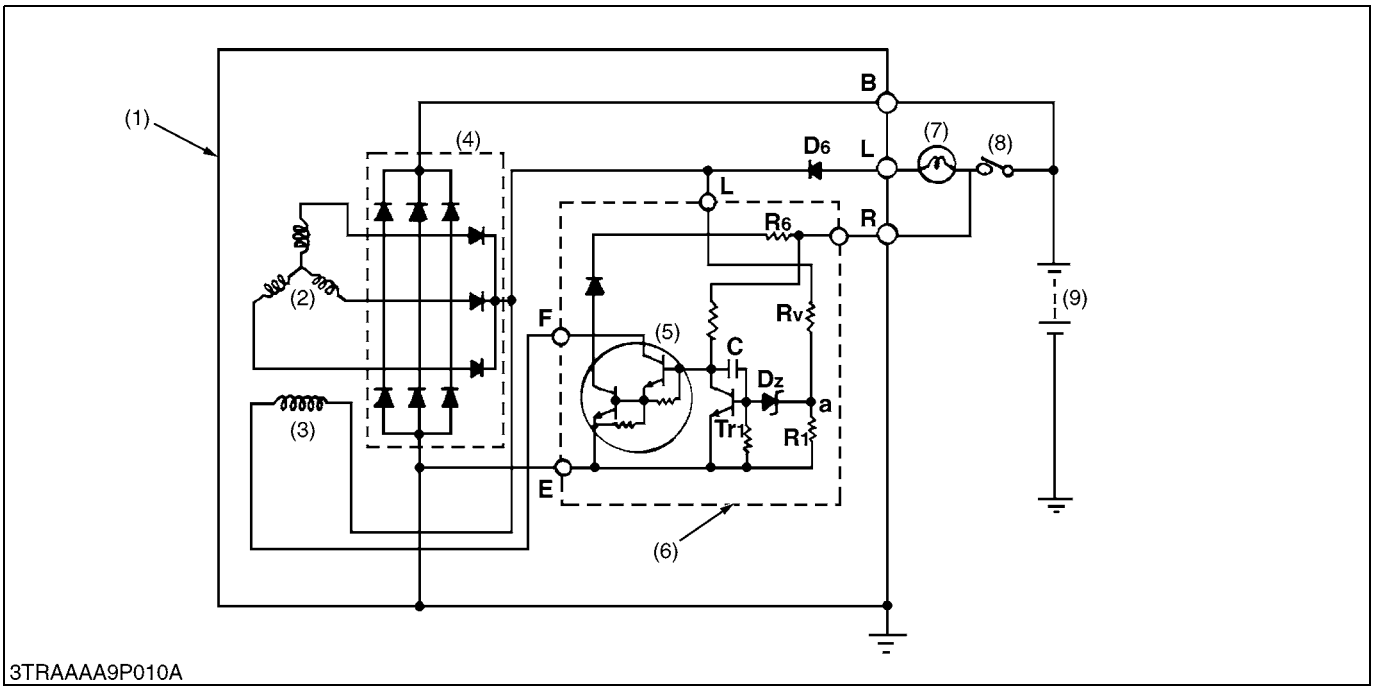
(1) Main Switch
(2) Fuse (20 A)
(3) Slow Blow Fuse
(4) Battery
(5) Alternator
(6) Panel Board
(7) PTO Lamp
(8) Engine Oil Pressure Lamp
(9) Engine Oil Pressure Switch
(10) Fuel Limit Lamp
(11) Fuel Limit Sensor

The charging system supplies electric power for various electrical devices and also charges the battery while the engine runs.

This alternator has IC regulator.

If the alternator is not charging the battery, both engine oil pressure lamp (8) and fuel limit lamp (10) in the panel board (6) will come on.

[1] IC REGULATOR



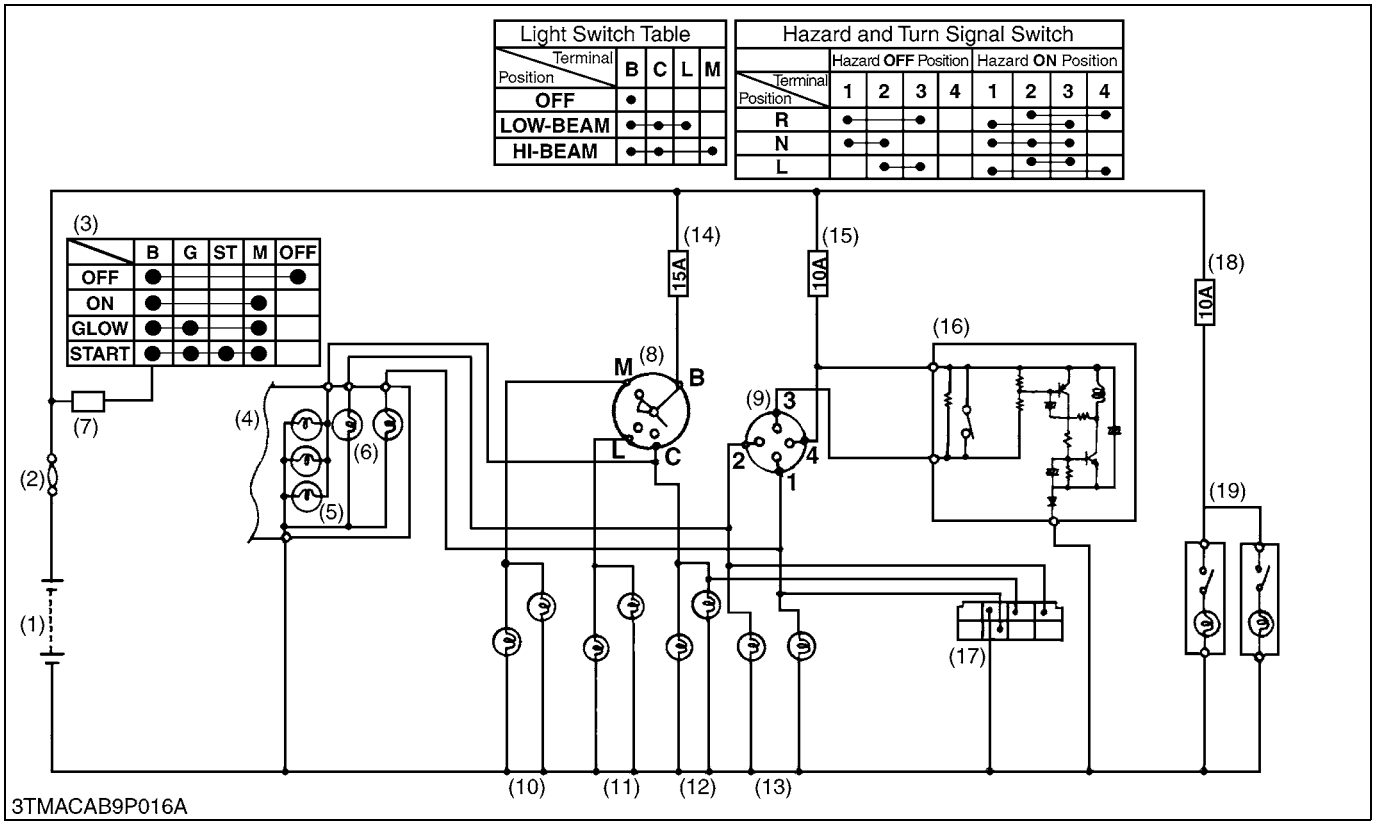
(1) Alternator
(2) Stator Coil
(3) Field Coil
(4) Trio Diode
(5) Power Transistor
(6) IC Regulator
(7) Charge Lamp
(8) Main Switch
(9) Battery

1. When the main switch (8) is turned on, the base current of the power transistor starts flowing.
   Battery → Main Switch (8) → Terminal (R) → Power Transistor's (5) Base → Power Transistor's (5) Emitter → Ground.
2. Now the power transistor (5) is energized, causing the field current to flow.
   Battery → Main Switch (8) → Charge Lamp (7) – Terminal (L) · Resistance **R6** → Field Coil (3) → Power Transistor (5) → Ground.
3. The engine gets started and the alternator starts generating electricity. The base current and field current, mentioned above, are both supplied by the alternator. The field current flows as follows.
   Trio Diode (4) → Field Coil (3) → Power Transistor (5) → Ground.
4. If the alternator-generated voltage is too low, the terminal voltage (divided by resistors **Rv** and **R1**, electric potential at point **"a"**) of the Zener diode **Dz** is lower than the Zener voltage. This means that no current flows into the diode **Dz** and that the transistor **Tr1** is shut off.
5. In this state, the generated voltage gets higher. When the voltage applied to the Zener diode **Dz** exceeds the Zener voltage, current starts flowing into the diode **Dz**. This current is the base current of transistor **Tr1**.
   Terminal (L) → Resistor **Rv** → Point **"a"** → Diode **Dz** → Base of Transistor **Tr1** → Emitter of Transistor **Tr1** → Ground.
6. Now the transistor **Tr1** is energized. In this state, the collector and emitter of transistor **Tr1** makes a sort of short-circuit between the base and emitter of the power transistor (5). The base current of the power transistor stops flowing, causing the power transistor (5) to turn off. The field current is therefore cut off, reducing the generated voltage.
7. In this way, the voltage begin applied to the Zener diode **Dz** drops below the Zener voltage. The diode **Dz** first and then the transistor **Tr1** are therefore turned off again. This causes the base current to flow in the power transistor (5) again. This transistor is energized to make the field current and raise the generated voltage. The above steps 5., 6., 7. are repeated to turn on and off the field current and control the alternator voltage.
8. The capacitor **C** is intended to keep the transistor **Tr1** functioning stably. To do this, repples of the alternator output and surges at ignition are suppressed. The reverse-current preventive diode **D6** serves to block the current that would flow from the trio diode through terminal **L** to the machine's cabling.

5. LIGHTING SYSTEM

[1] DESTINATION

(1) For North America and Oceania



(1) Battery
(2) Slow Blow Fuse
(3) Main Switch
(4) Panel Board
(5) Panel Board Illumination
(6) Indication Lamp
(7) Fuse (20 A)
(8) Head Light Switch
(9) Hazard Light Switch
(10) Tail Lamp
(11) Head Light (Hi)
(12) Head Light (Lo)
(13) Hazard Light
(14) Fuse (15 A)
(15) Fuse (15 A)
(16) Hazard Unit
(17) Connector for Trailer
(18) Fuse (10 A)
(19) Working Light (Option)

The lighting system consists of a head light circuit, a hazard light circuit and a working light circuit (option).