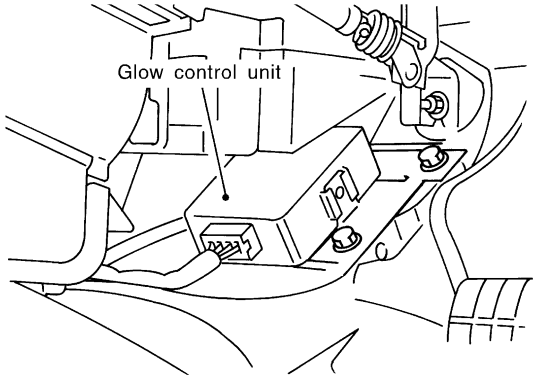
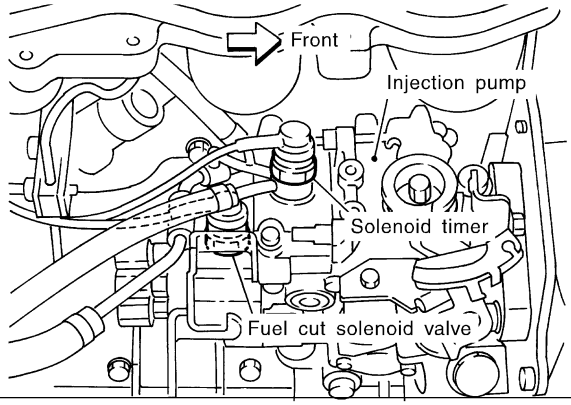
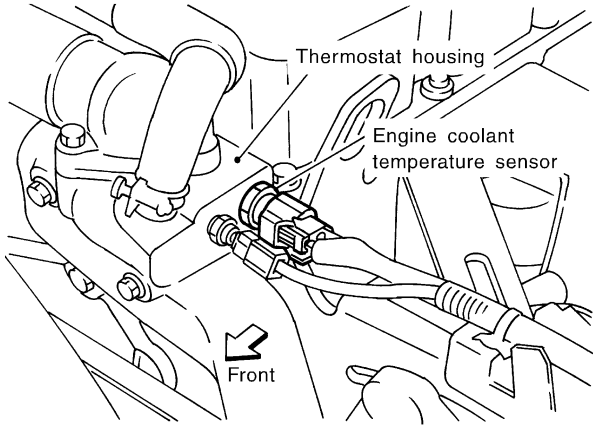
Component Parts Location

TD27 AND QD32 ENGINES

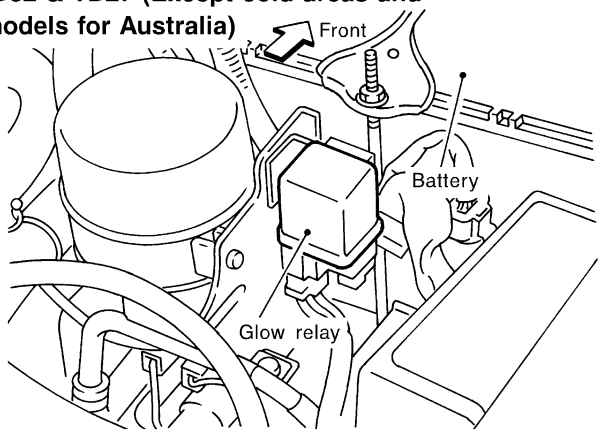
Under instrument panel



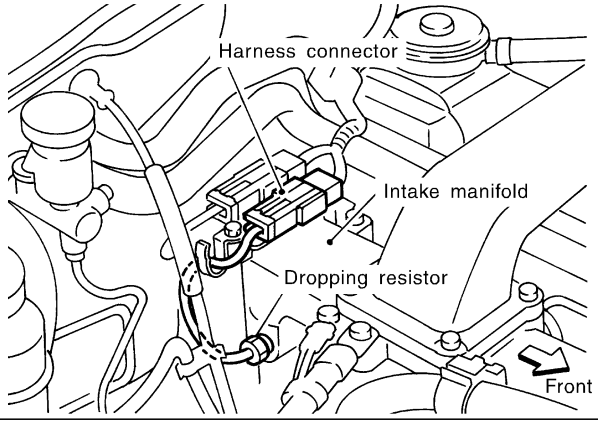




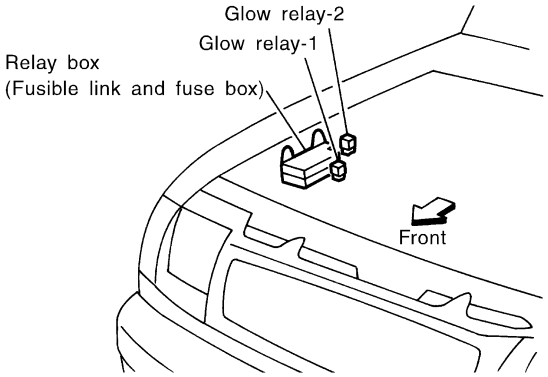
QD32 & TD27 (Except cold areas and models for Australia)



TD27 (For cold areas and models for Australia)



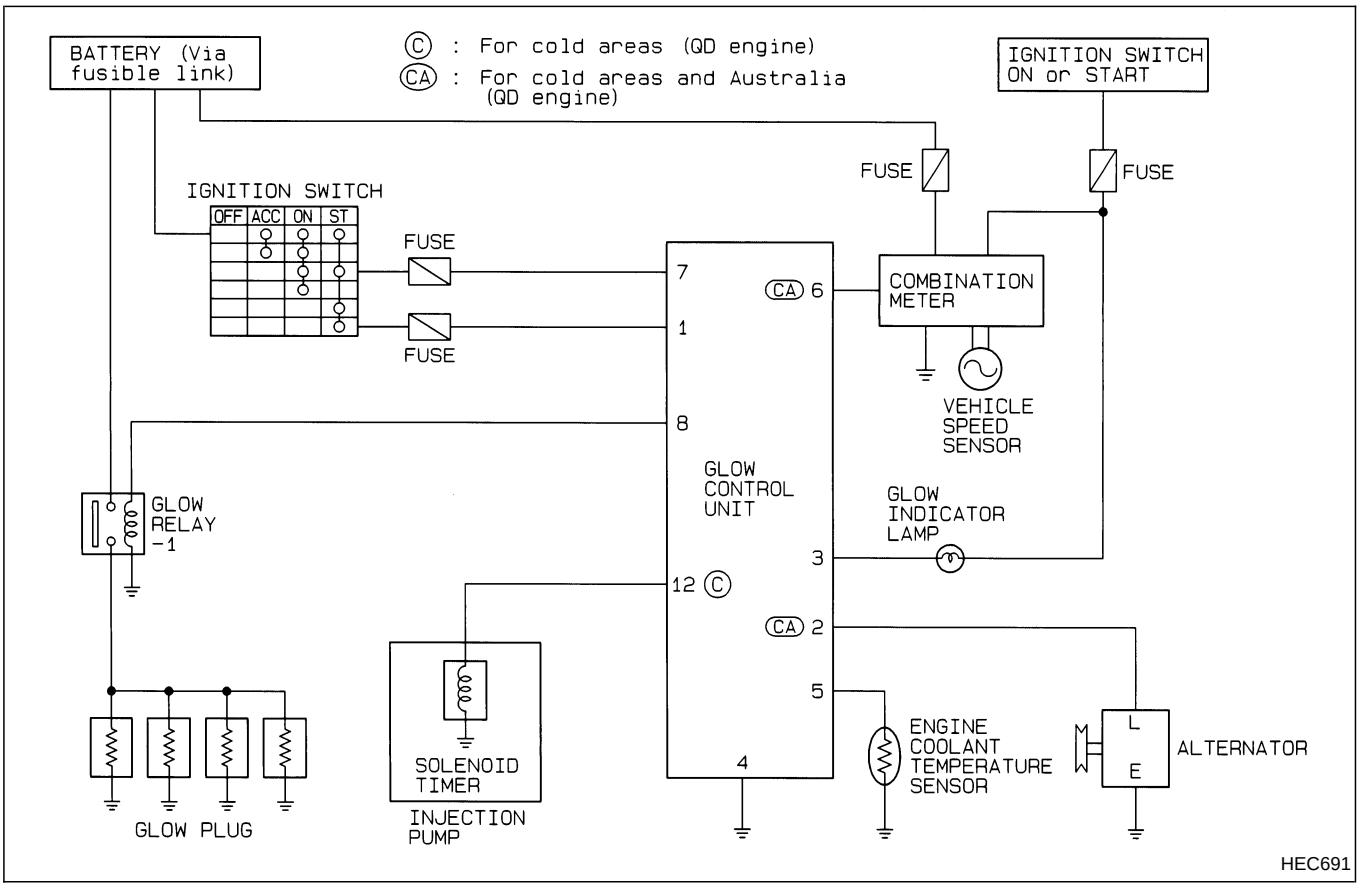
TD27 (For cold areas and models for Australia)



DEF030-B

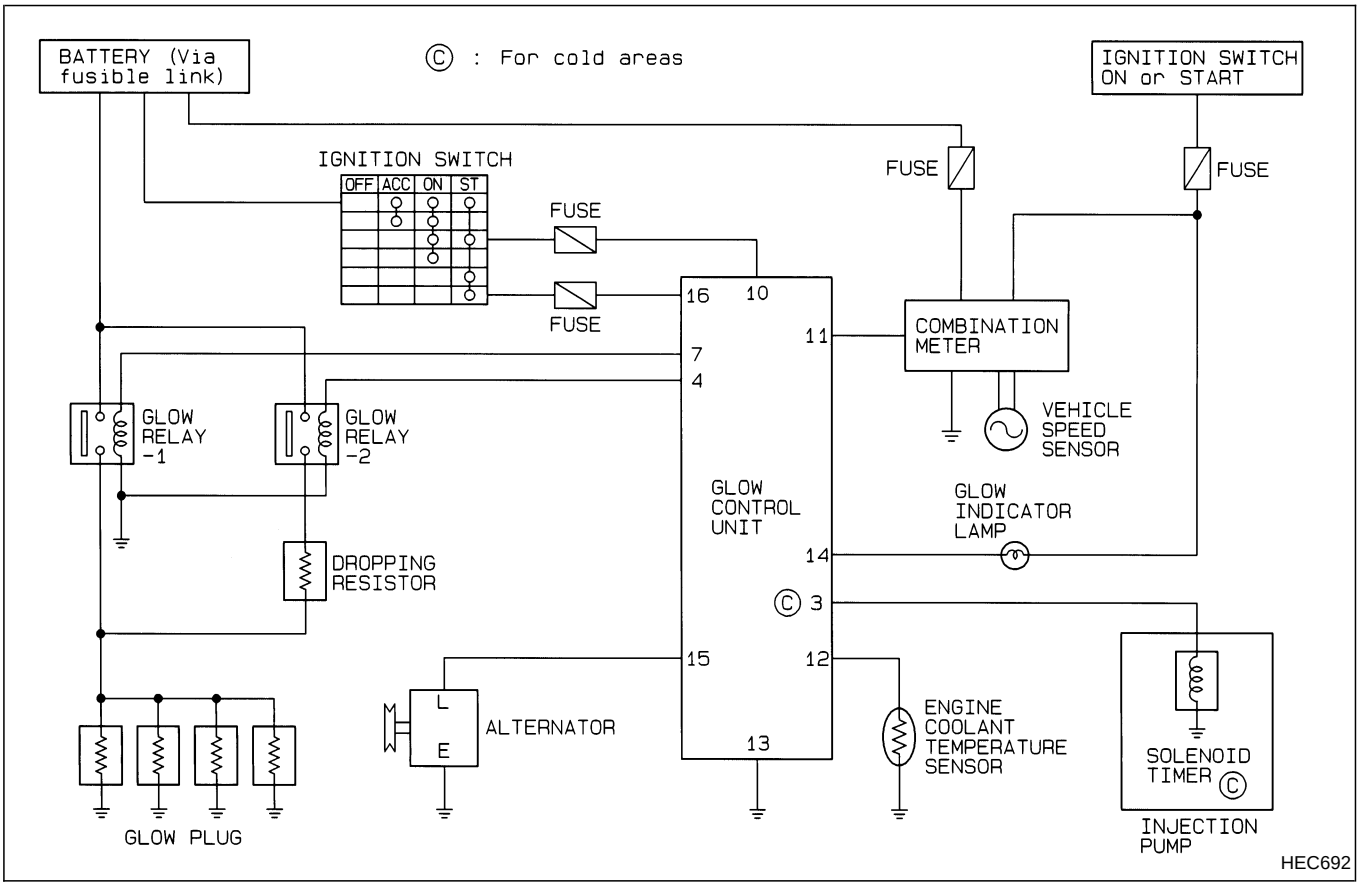
Circuit Diagram

TD27 (EXCEPT FOR COLD AREAS AND MODELS FOR AUSTRALIA) AND QD32 ENGINES



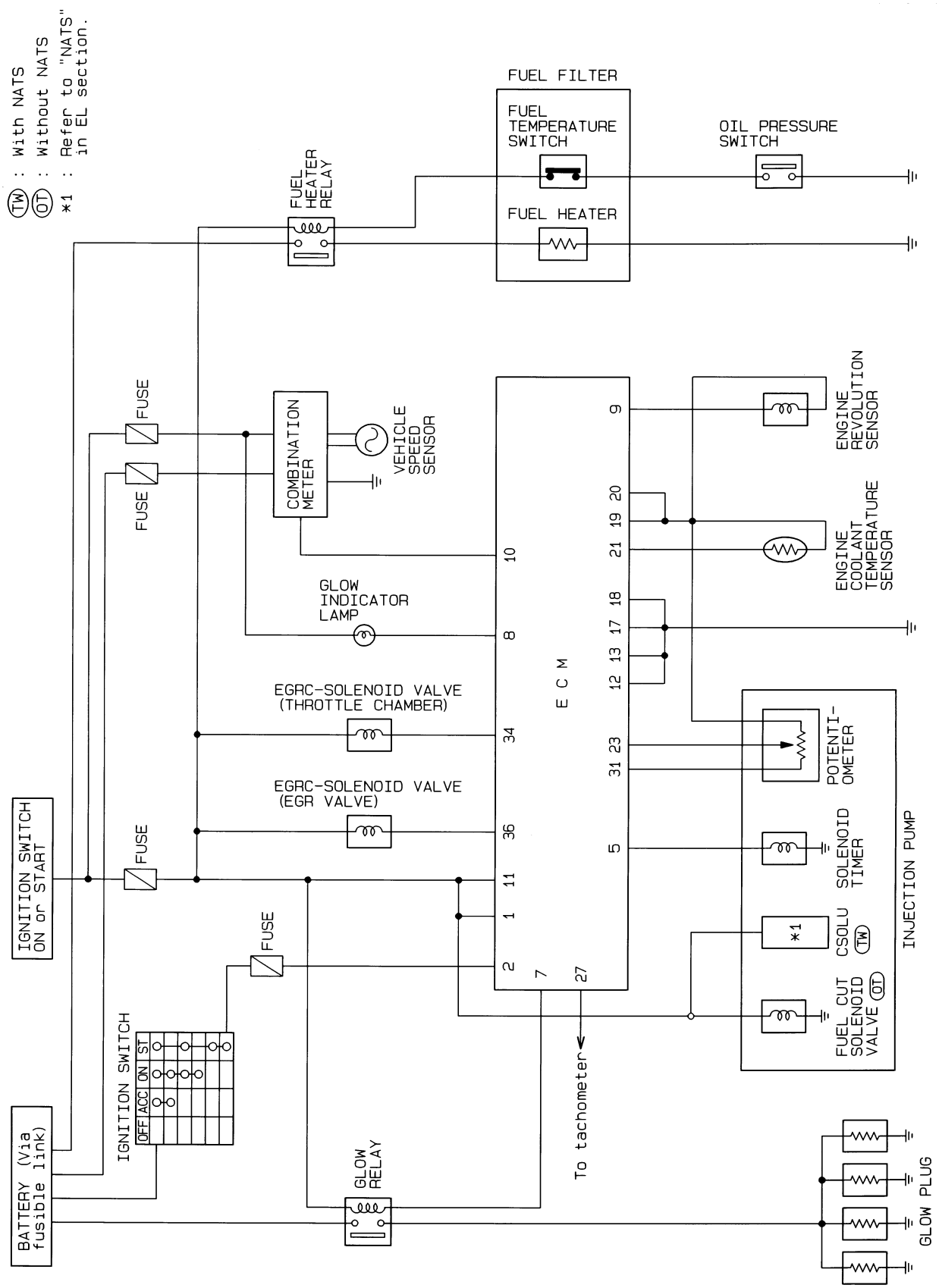
Circuit Diagram (Cont'd)

TD27 ENGINE FOR COLD AREAS AND AUSTRALIA



Circuit Diagram (Cont'd)

TD25 AND TD25Ti ENGINES

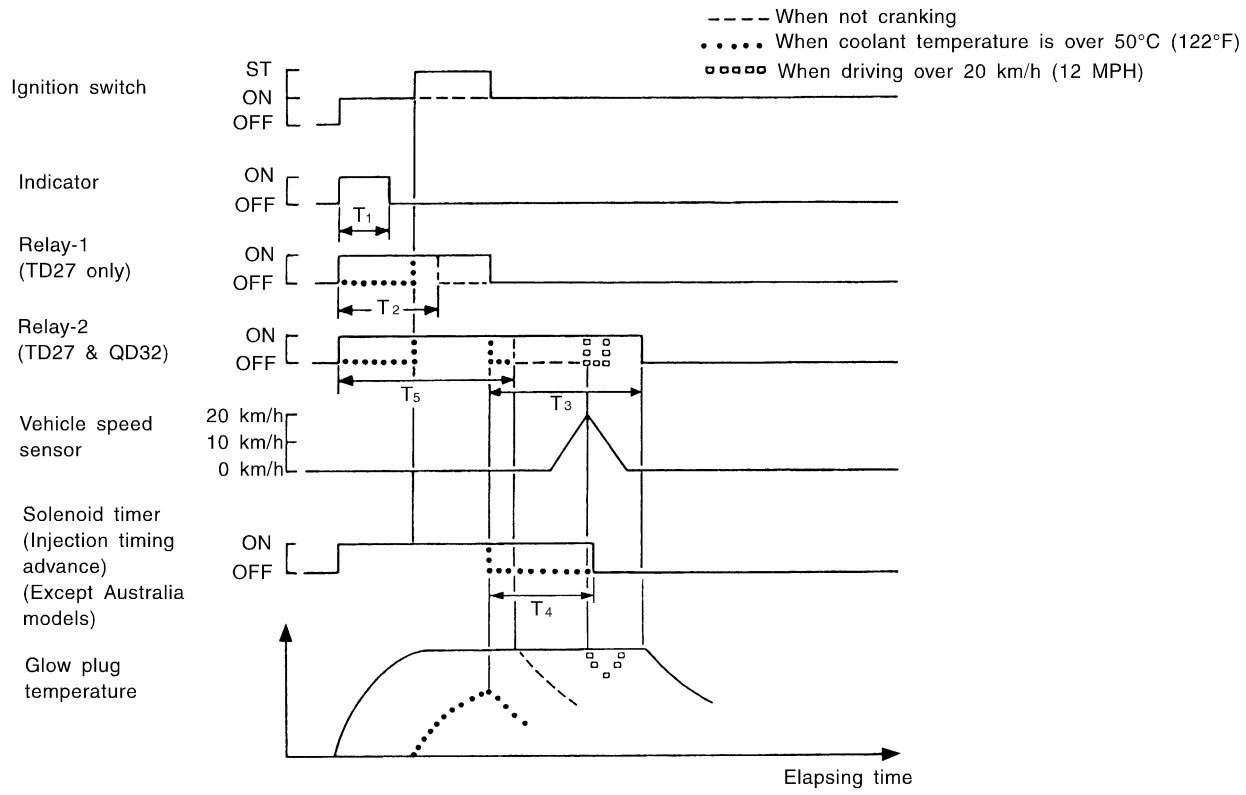


HEC693

Description

TD27 AND QD32 ENGINES

For cold areas and Australia



SEL983ND

When coolant temperature is lower than 50°C (122°F), the relay-1 and the relay-2 are turned on at the same time that the ignition switch is turned on. From this time, the electric current flows through the glow plugs and heats them up quickly. After T_1 seconds have passed, the control unit turns off the indicator. The relay-1 automatically turns off after it has been on for T_2 seconds or the cranking time, whichever is longer.
The solenoid timer (for advance injection timing) is turned on at the time that the ignition switch is turned to "ON". The relay-2 remains on for T_3 seconds and the solenoid timer remains on for T_4 seconds after the ignition switch has returned to "ON" from "START". The solenoid timer advances injection timing. These features improve the combustion performance of the engine after it has started.
When the coolant temperature is higher than 50°C (122°F), the relay-2 is turned on only during engine cranking for TD27 engine.
When the coolant temperature is higher than 10°C (50°F), the solenoid timer is turned on only during engine cranking.

T_1: approx. 2 - 6	[sec.]	(Varies with coolant temperature.)
T_2: approx. 4 - 8	[sec.]	(Varies with coolant temperature.)
T_3: 600	[sec.]	[When coolant temperature is below 50°C (122°F).]
0	[sec.]	[When coolant temperature is over 50°C (122°F).]
T_4, T_5*1: 30	[sec.]	[When coolant temperature is below 10°C (50°F).]
0	[sec.]	[When coolant temperature is over 10°C (50°F).]
T_5*2: 30	[sec.]	[When coolant temperature is below 50°C (122°F).]
5	[sec.]	[When coolant temperature is over 50°C (122°F).]

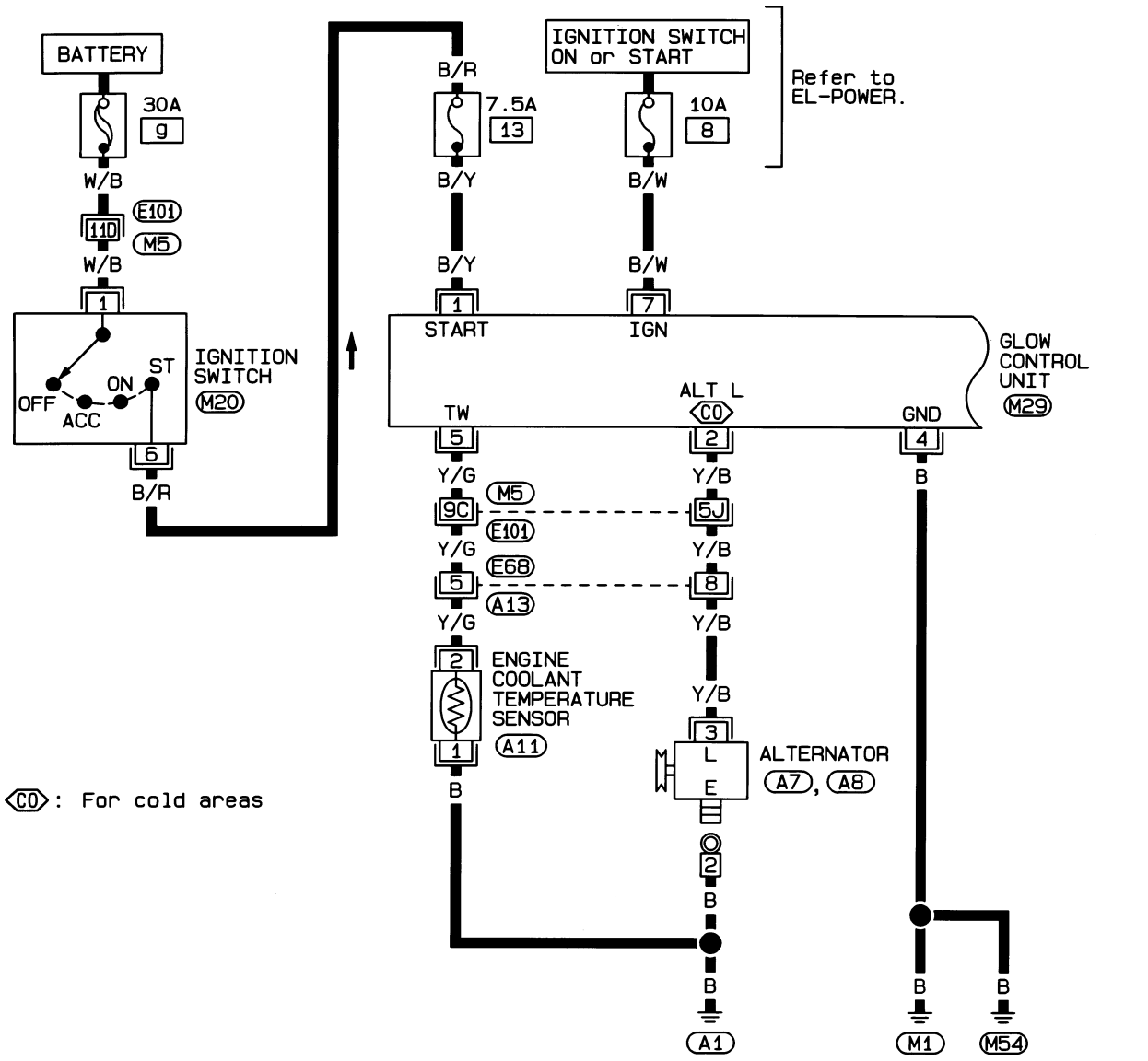
*1: For TD27 *2: For QD32

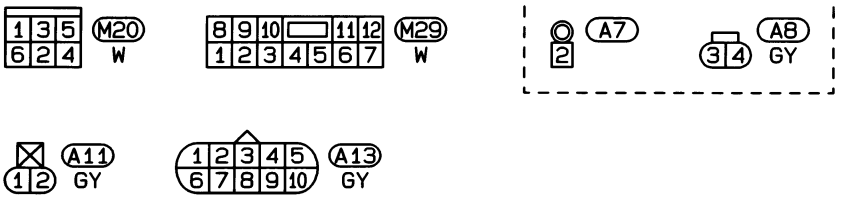
- When the ignition switch is repeatedly turned "ON" and "OFF", T_2 becomes shorter.

Wiring Diagram

LHD MODELS WITH TD27 EXCEPT COLD AREAS AND QD32 ENGINES

EC-GLOW-01





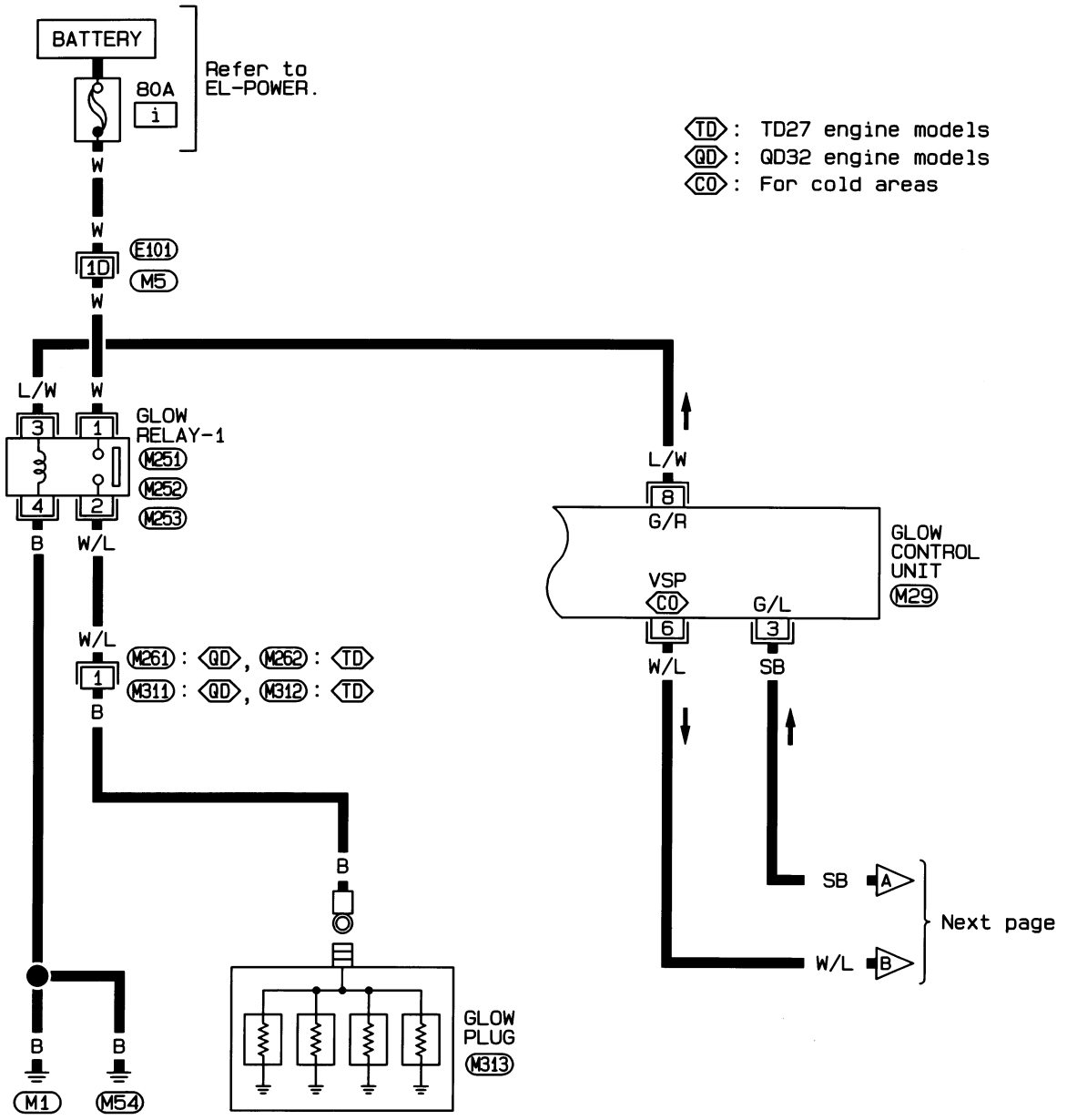
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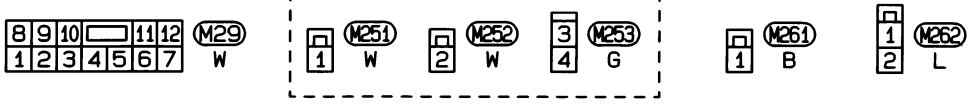
M5, E101

HEC694

Wiring Diagram (Cont'd)

EC-GLOW-02





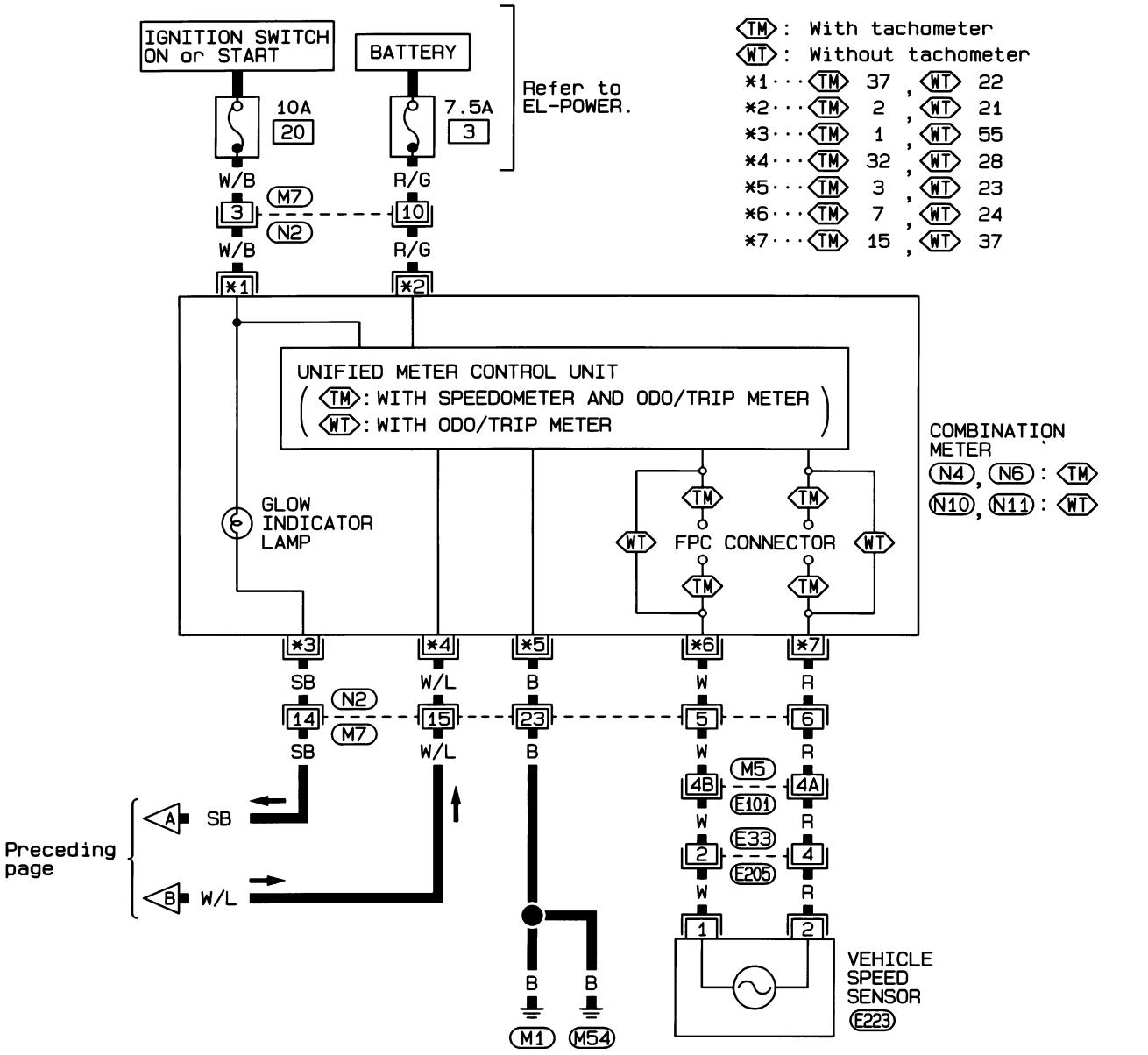
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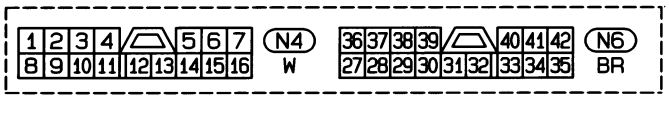
M5, E101

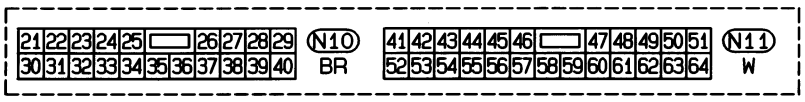
HEC695

Wiring Diagram (Cont'd)

EC-GLOW-03









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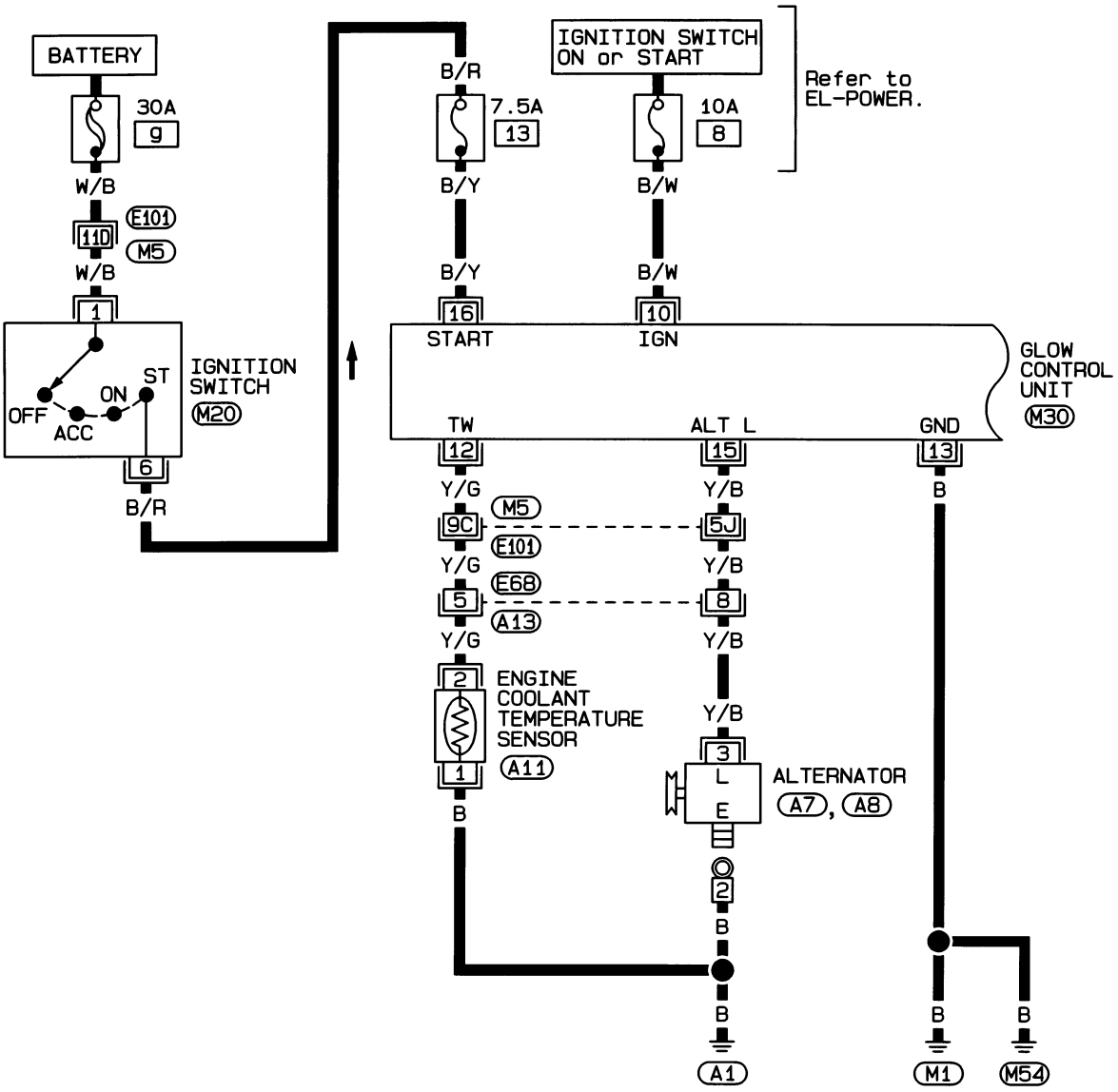
M5, E101

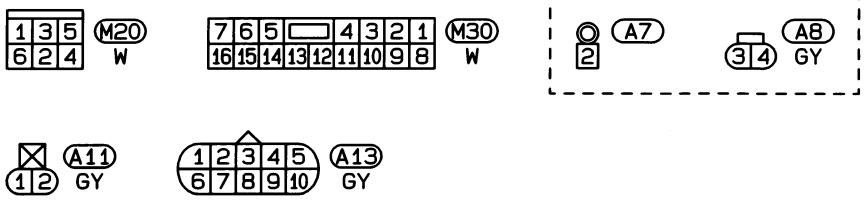
HEC696

Wiring Diagram (Cont'd)

LHD MODELS WITH TD27 ENGINE FOR COLD AREAS

EC-GLOW-04





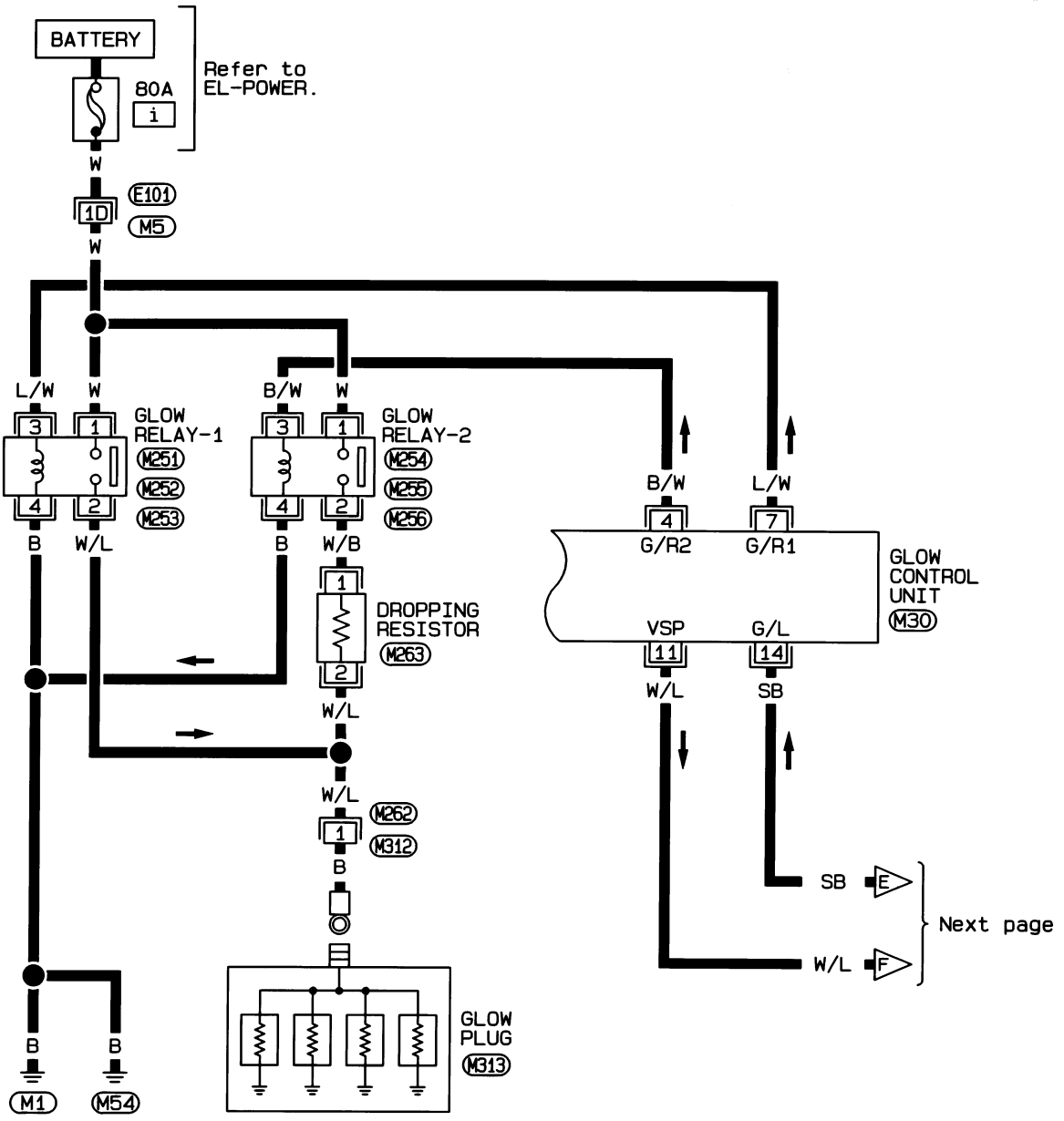
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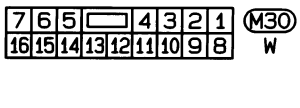
M5, E101

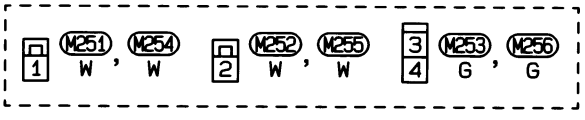
HEC700

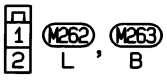
Wiring Diagram (Cont'd)

EC-GLOW-05









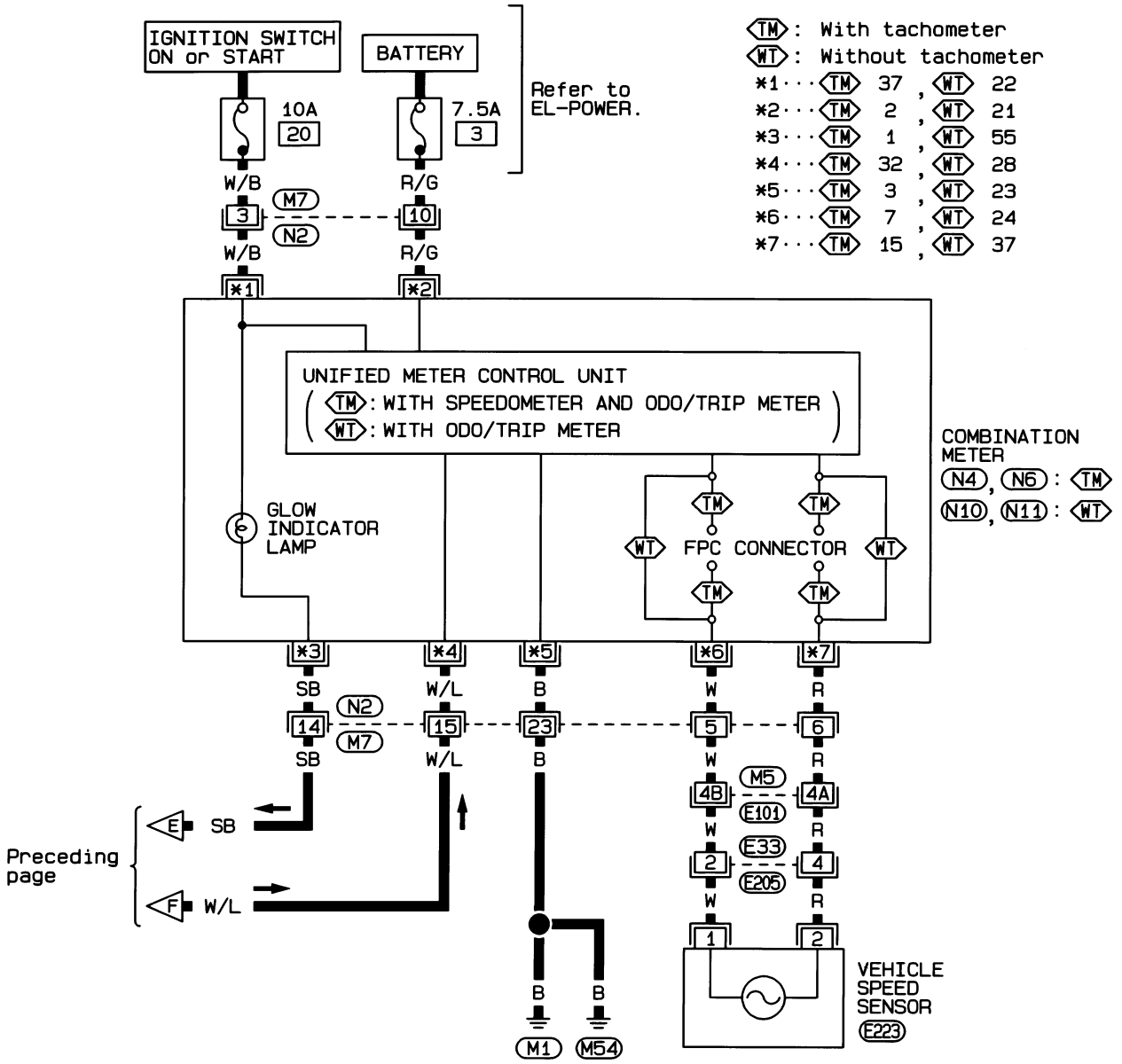
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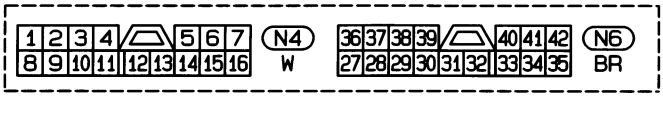
M5, E101

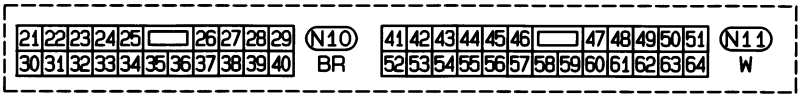
HEC701

Wiring Diagram (Cont'd)

EC-GLOW-06









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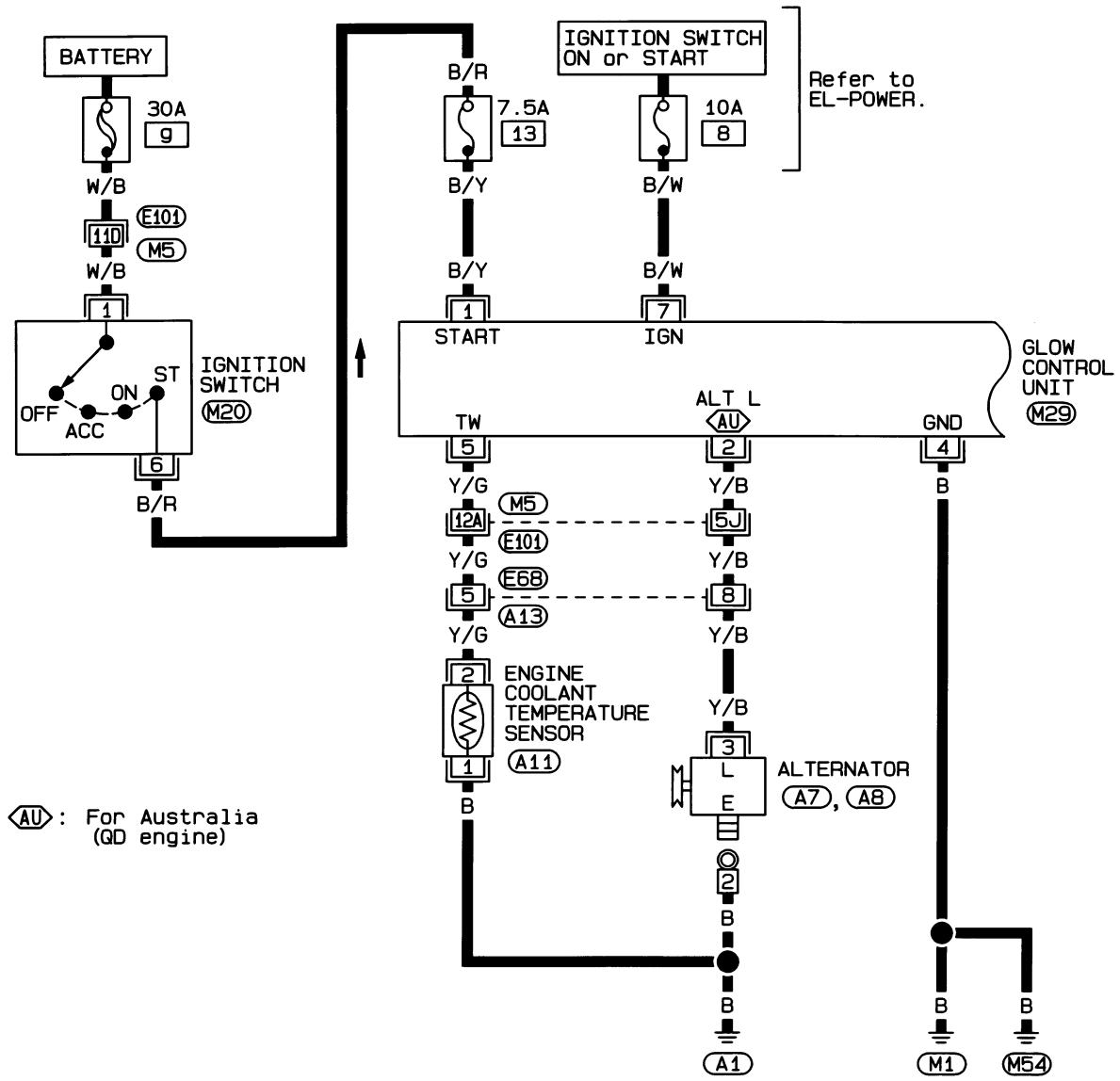
M5, E101

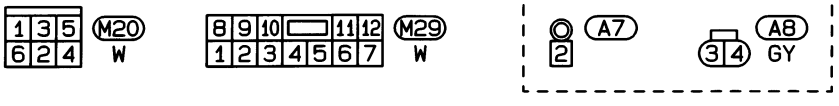
HEC702

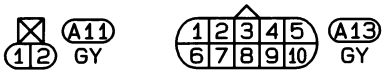
Wiring Diagram (Cont'd)

RHD MODELS WITH TD27 EXCEPT AUSTRALIA AND QD32 ENGINES

EC-GLOW-07







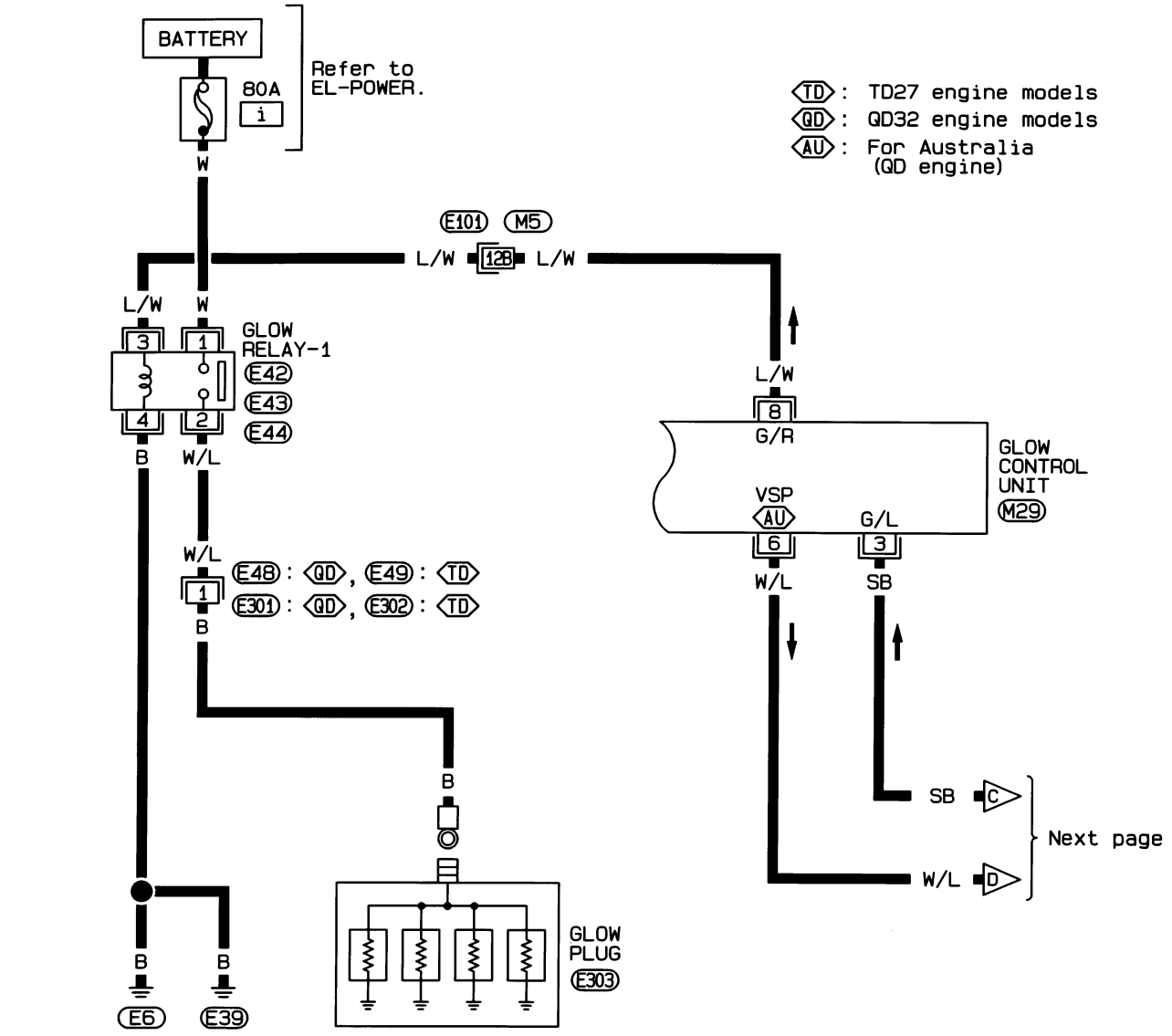
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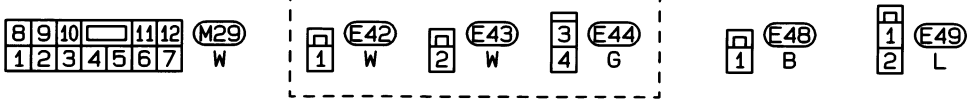
M5, E101

HEC697

Wiring Diagram (Cont'd)

EC-GLOW-08





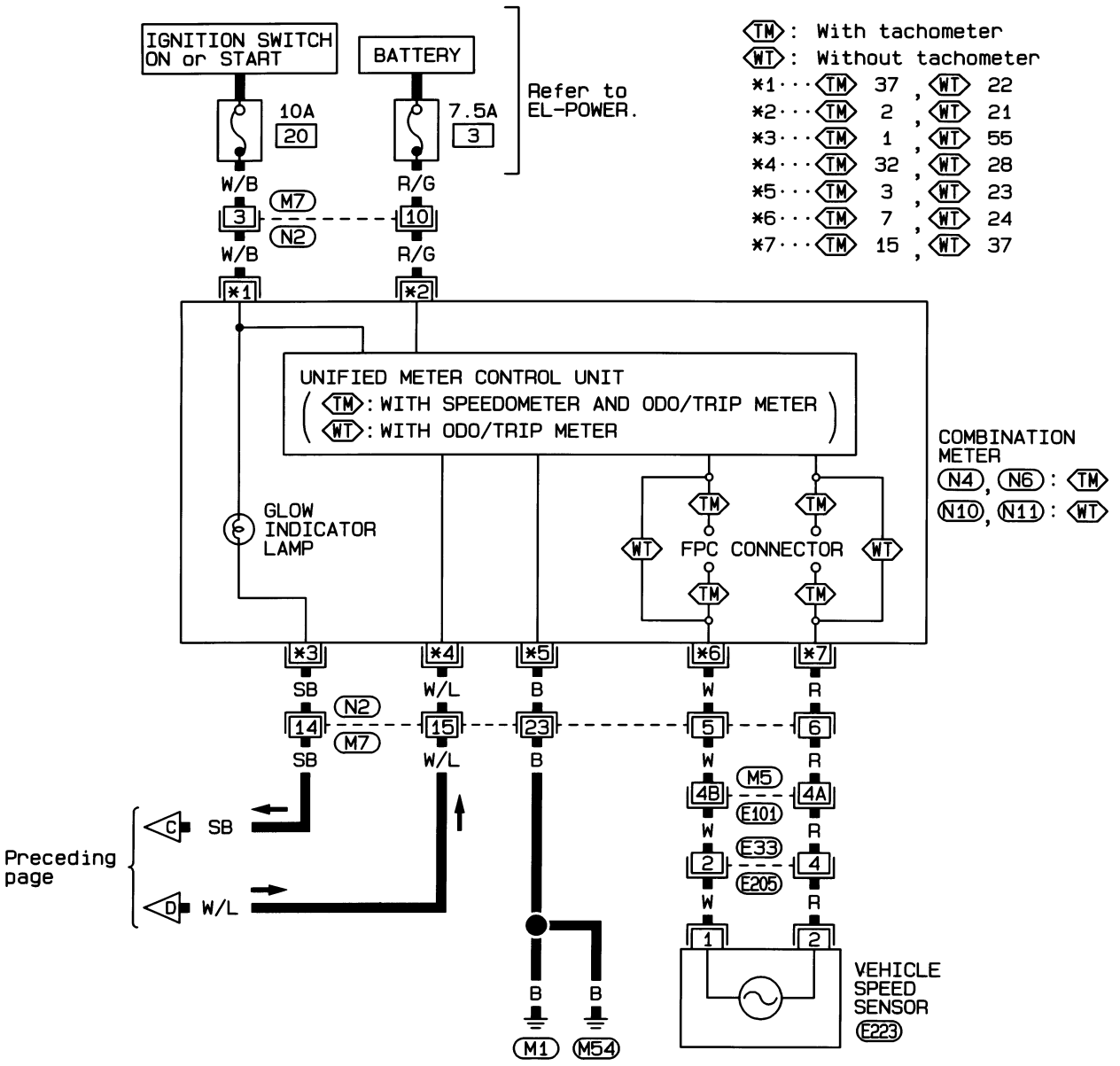
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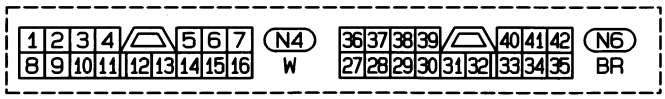
M5, E101

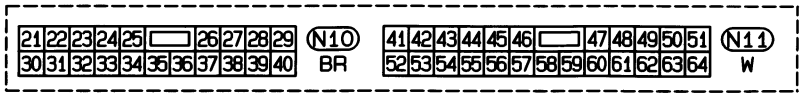
HEC698

Wiring Diagram (Cont'd)

EC-GLOW-09









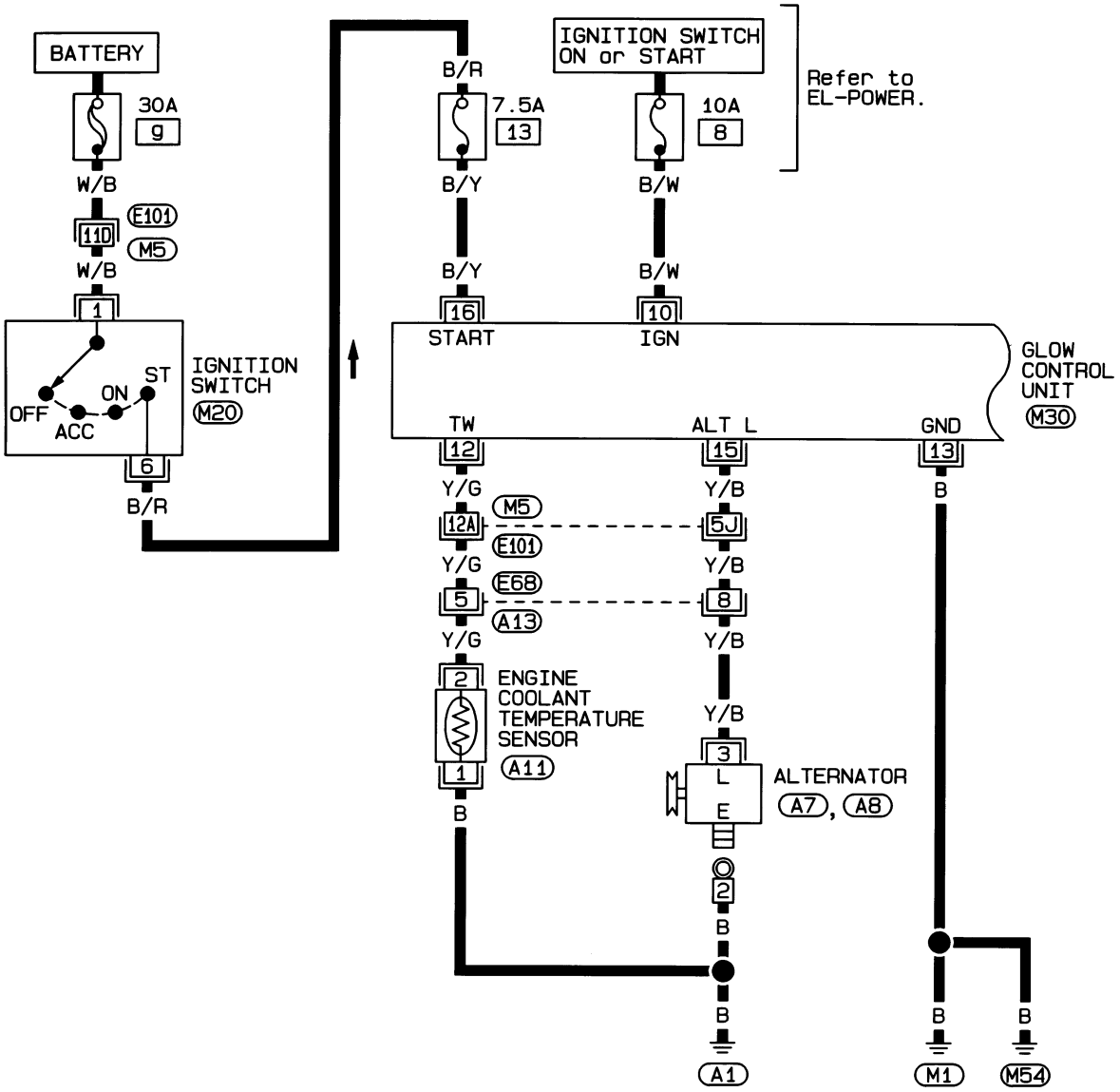
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M5, E101

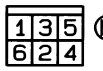
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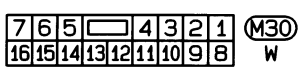
Wiring Diagram (Cont'd)

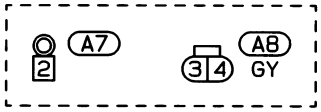
RHD MODELS WITH TD27 ENGINE FOR AUSTRALIA

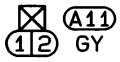
EC-GLOW-10

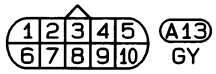












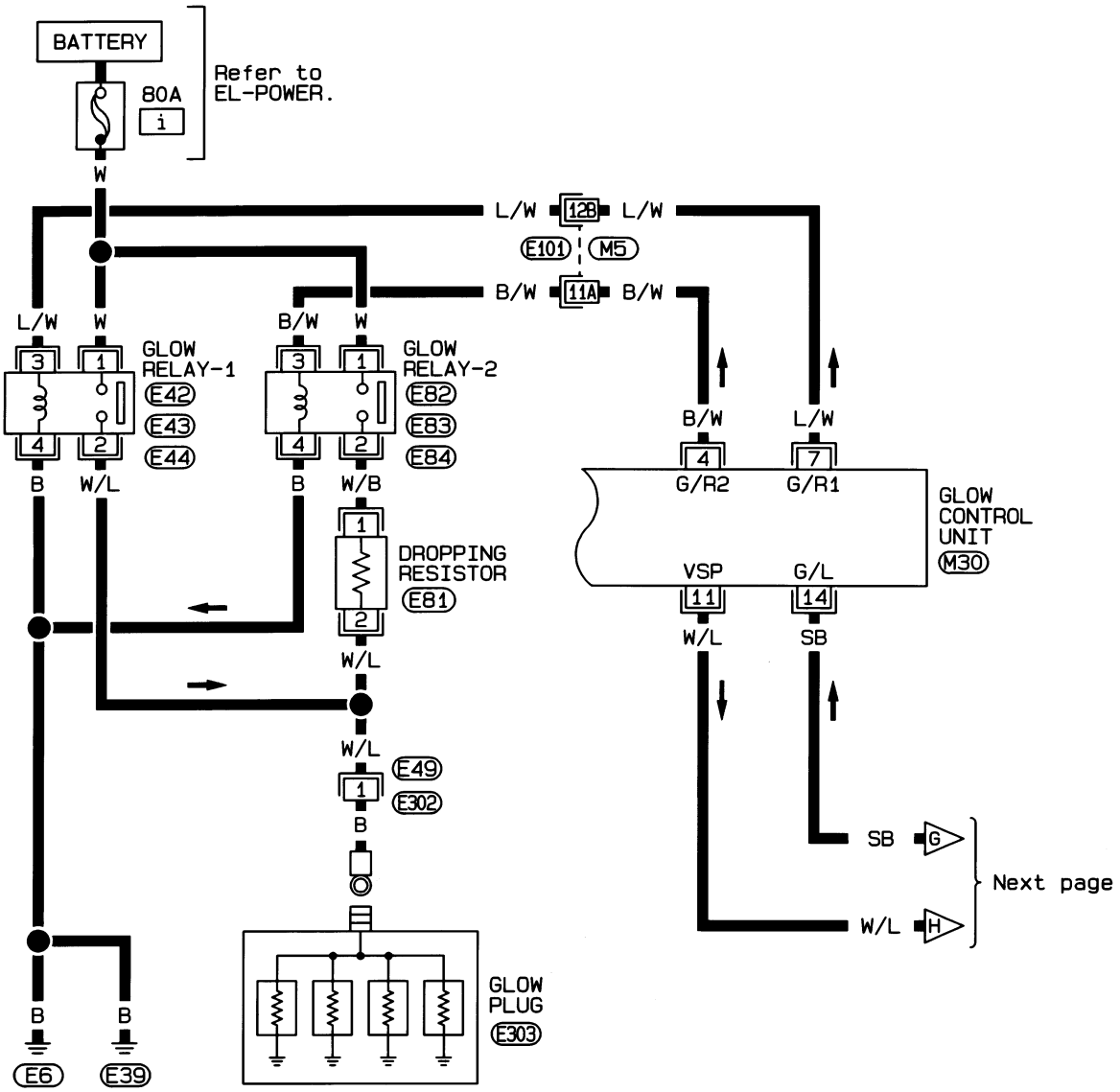
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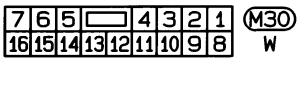
M5, E101

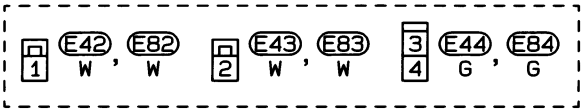
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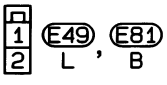
Wiring Diagram (Cont'd)

EC-GLOW-11









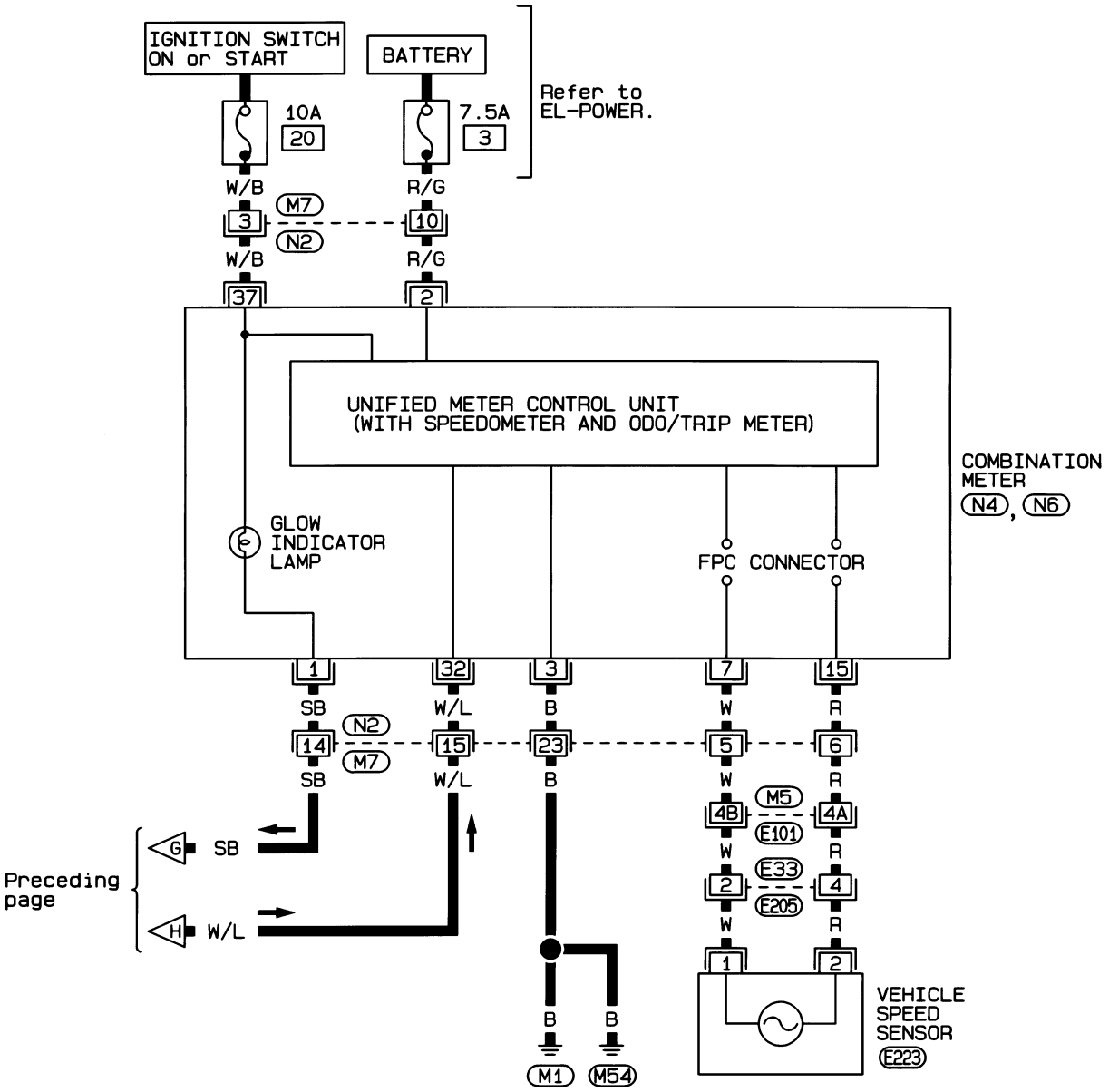
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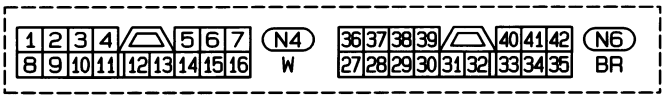
M5, E101

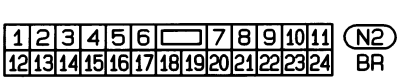
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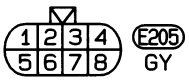
Wiring Diagram (Cont'd)

EC-GLOW-12









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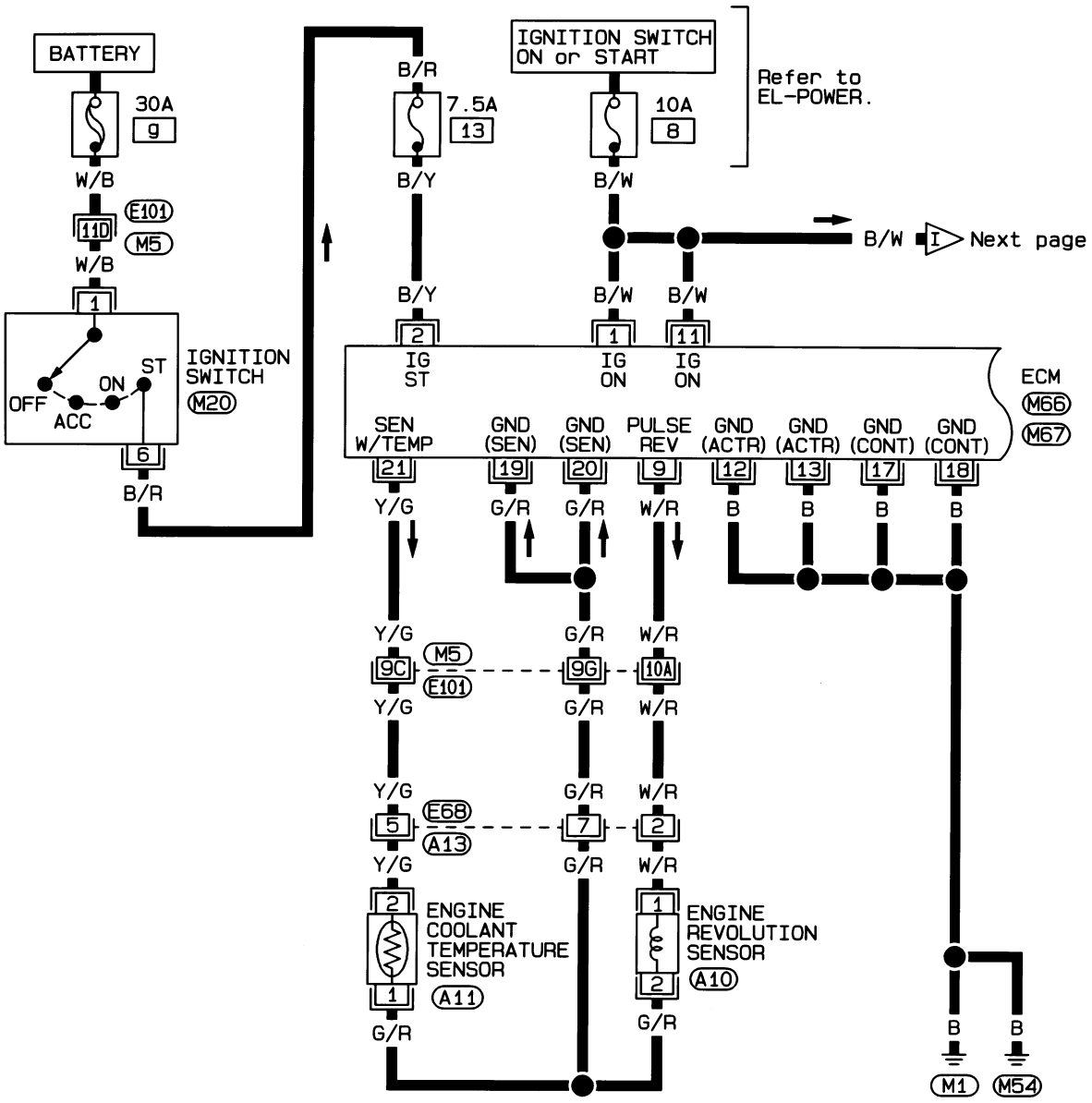
M5, E101

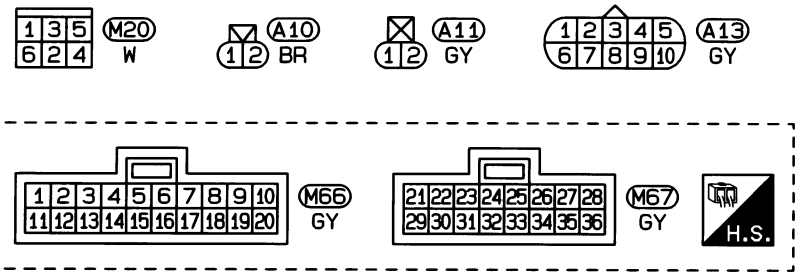
HEC705

Wiring Diagram (Cont'd)

LHD MODELS WITH TD25 AND TD25Ti ENGINES

EC-GLOW-13





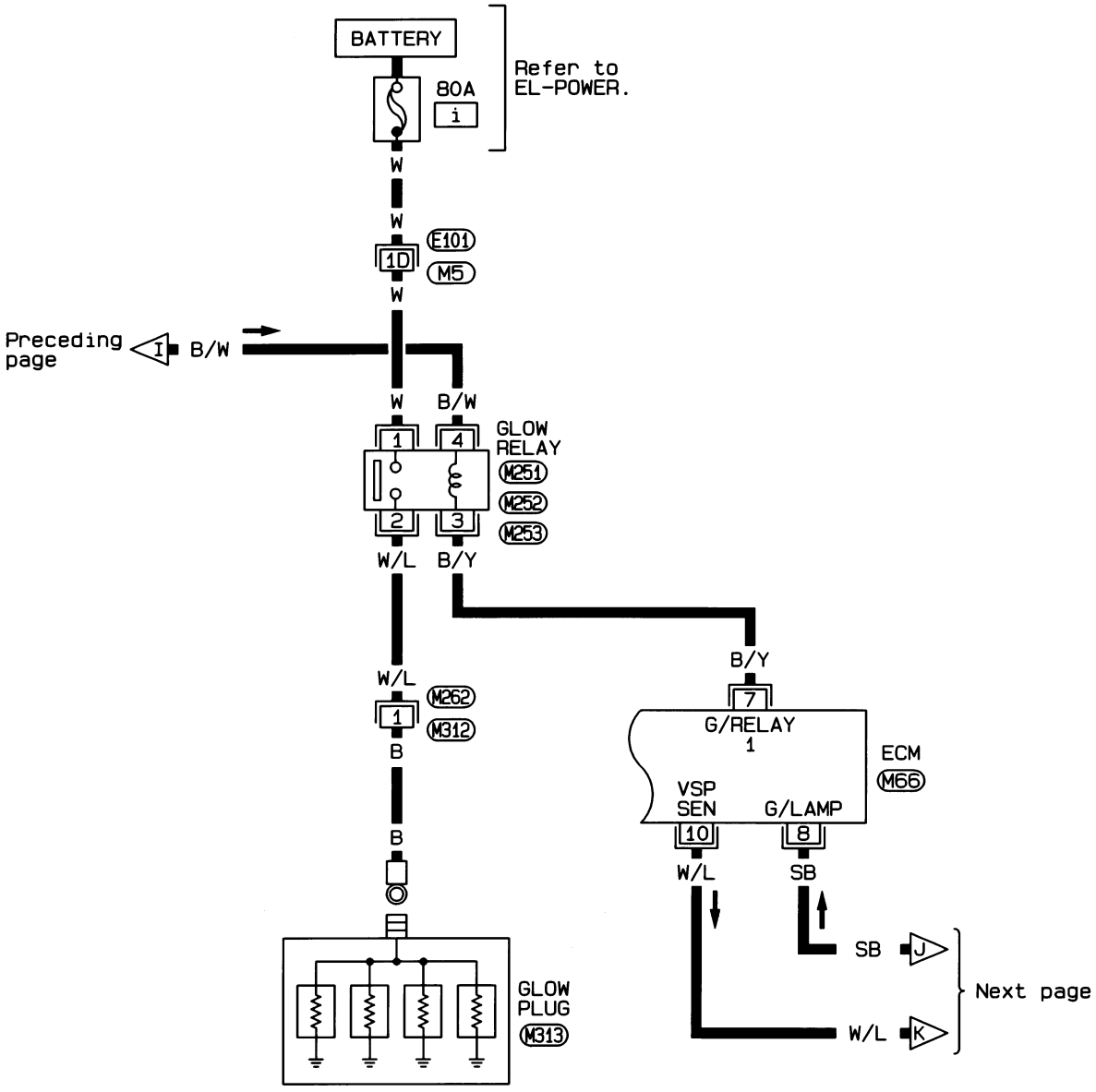
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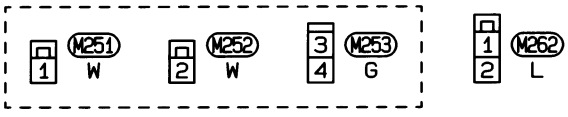
M5, E101

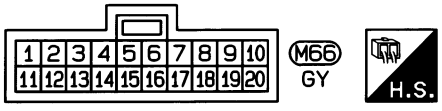
HEC706

Wiring Diagram (Cont'd)

EC-GLOW-14







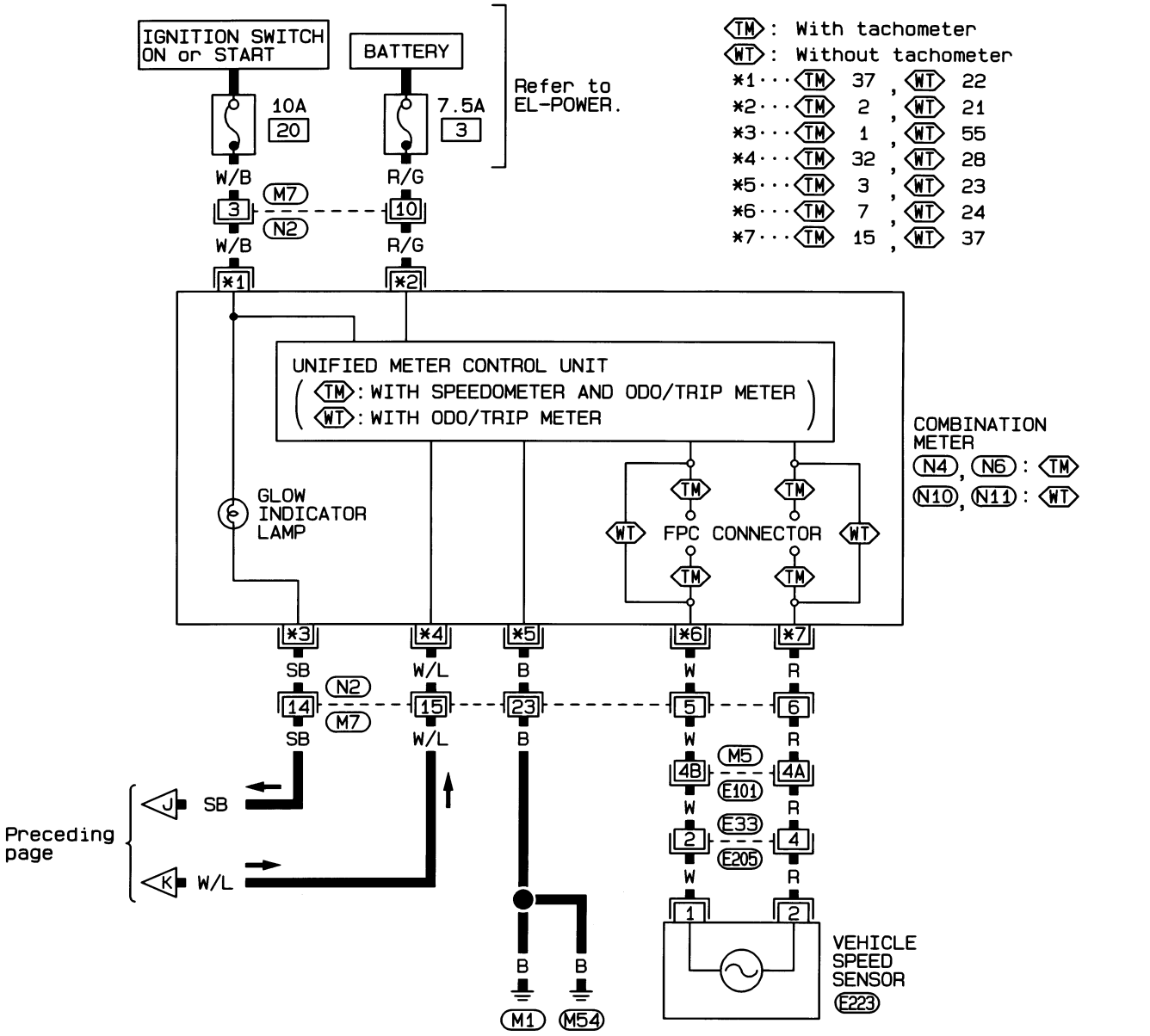
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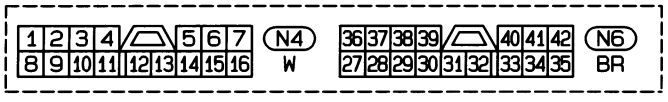
M5, E101

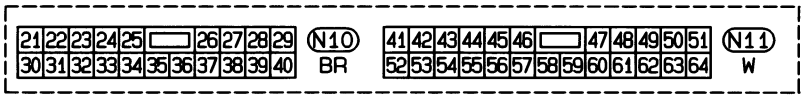
HEC707

Wiring Diagram (Cont'd)

EC-GLOW-15









Refer to last page (Foldout page).

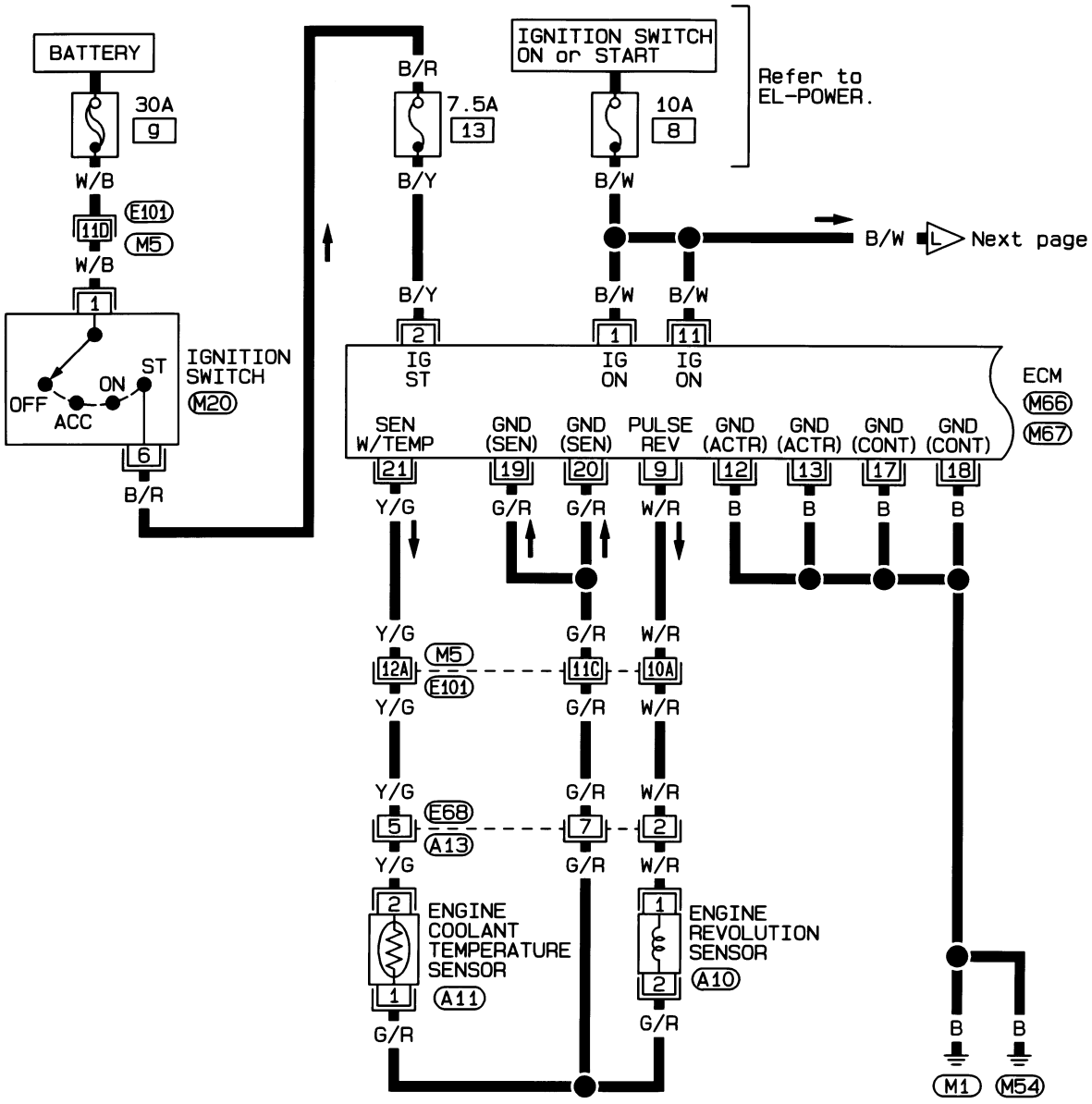
M5, E101

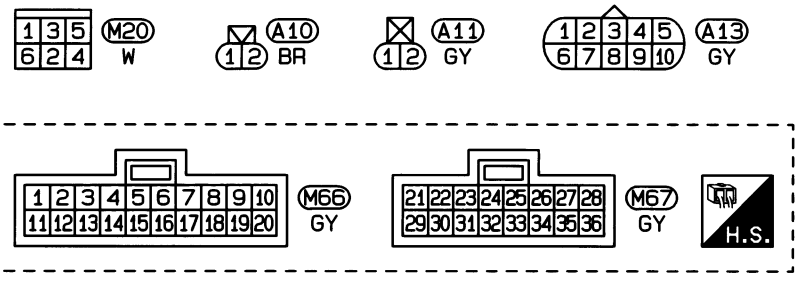
HEC708

Wiring Diagram (Cont'd)

RHD MODELS WITH TD25 AND TD25Ti ENGINES

EC-GLOW-16





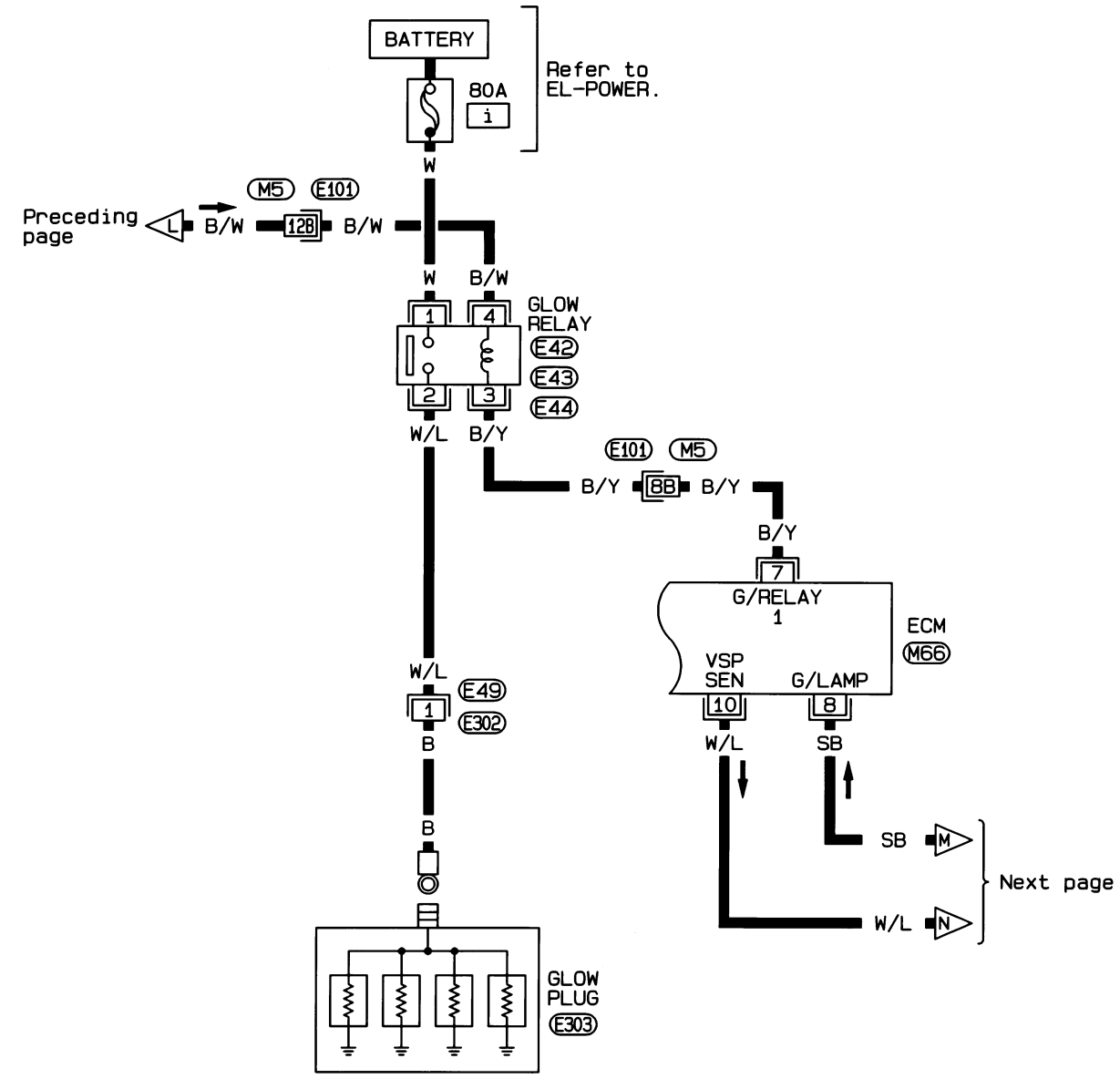
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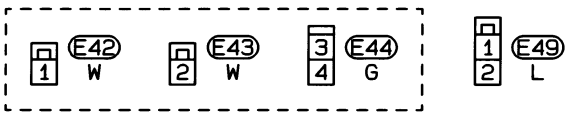
M5, E101

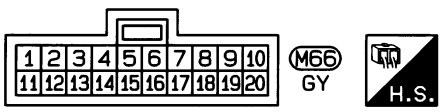
HEC709

Wiring Diagram (Cont'd)

EC-GLOW-17







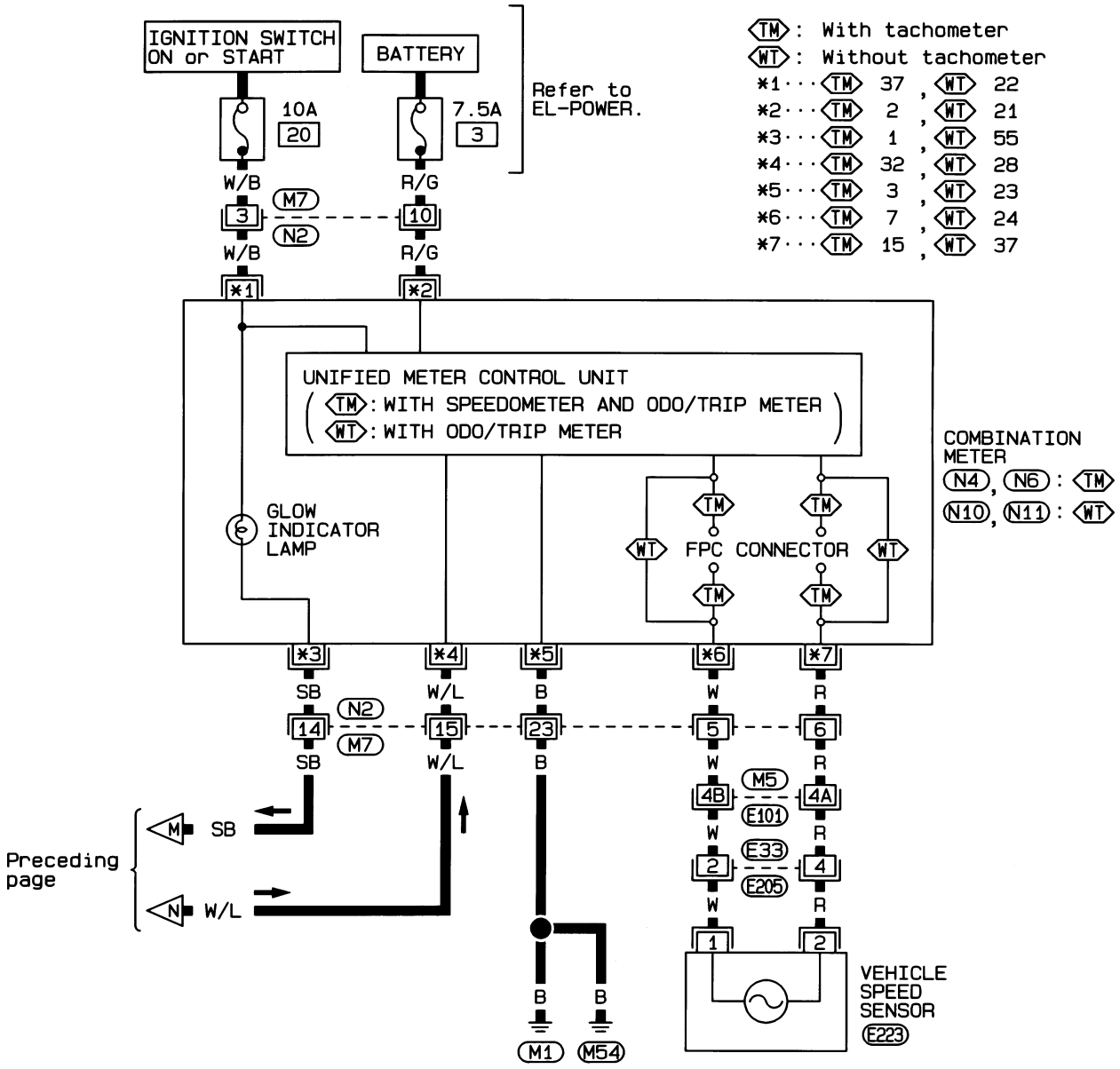
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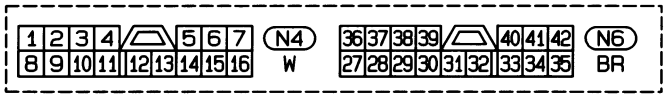
M5, E101

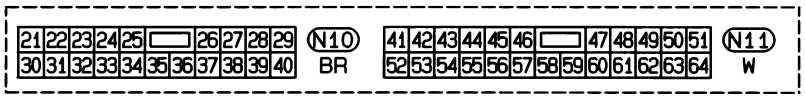
HEC710

Wiring Diagram (Cont'd)

EC-GLOW-18



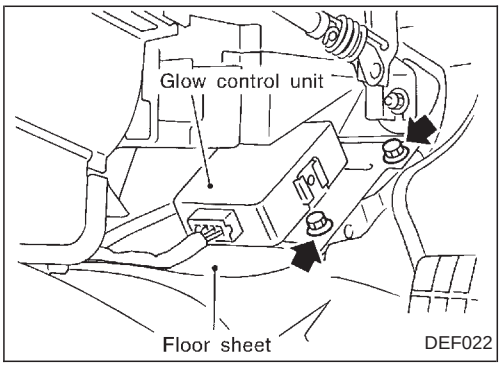






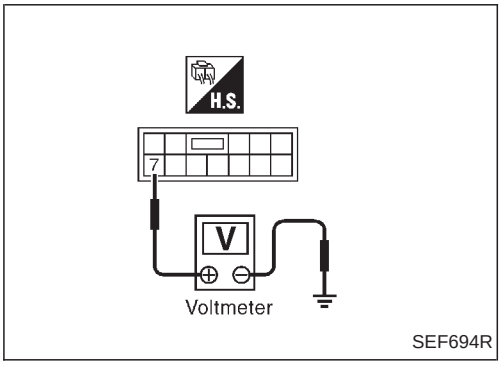
Refer to last page (Foldout page).
M5, E101

HEC711



Glow Control Unit Circuit Inspection (For Cold Areas and Australia)

Roll up the floor sheet. Check the glow control unit.

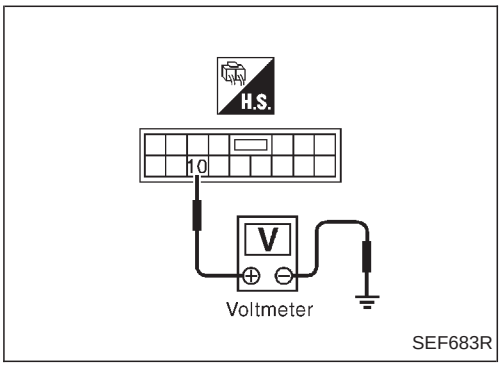


POWER SUPPLY CIRCUIT

QD engine

Turn ignition switch ON and check voltage between terminal ⑦ and body ground.

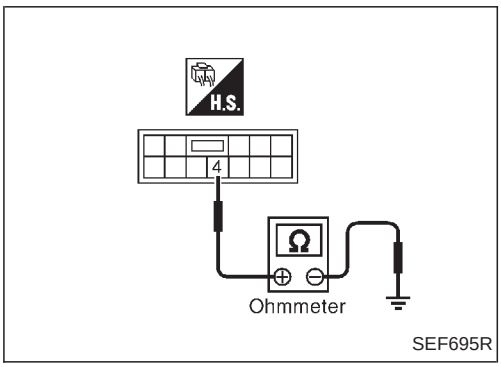
Voltage: approx. 12V



TD engine

Turn ignition switch ON and check voltage between terminal ⑩ and body ground.

Voltage: approx. 12V

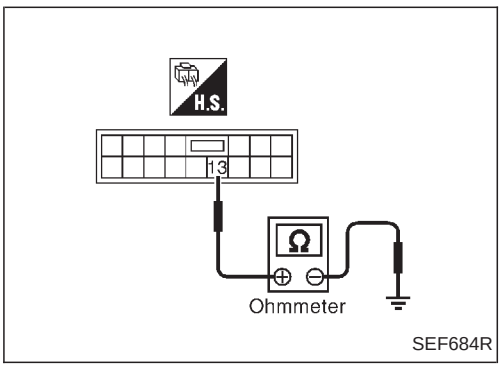


GROUND CIRCUIT

QD engine

Check continuity between terminal ④ and body ground.

Continuity should exist.

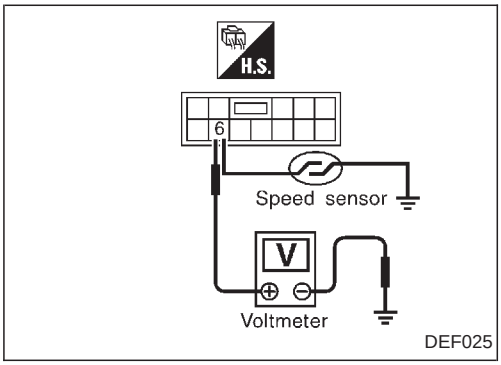


TD engine

Check continuity between terminal ⑬ and body ground.

Continuity should exist.

Glow Control Unit Circuit Inspection (For Cold Areas and Australia) (Cont'd)



SPEED SENSOR SIGNAL CIRCUIT

QD engine

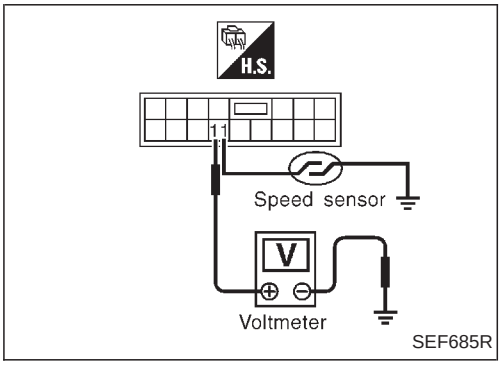
While running vehicle or lifting rear wheels in 2WD position, check that voltage between terminal ⑥ and body ground fluctuates.

Voltage: approx. 5V

TD engine

While running vehicle or lifting rear wheels in 2WD position, check that voltage between terminal ⑪ and body ground fluctuates.

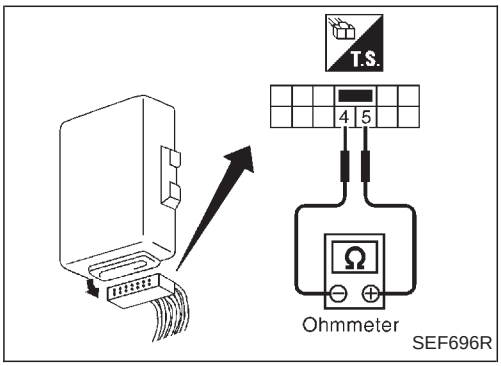
Voltage: approx. 5V



COOLANT TEMPERATURE SENSOR CIRCUIT

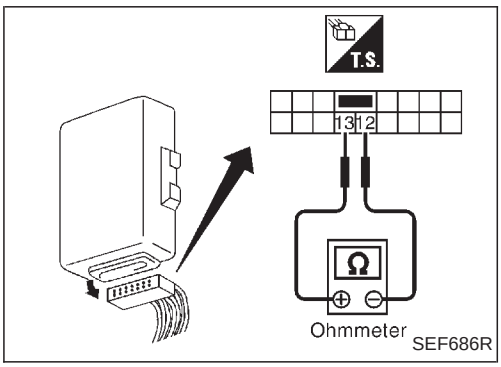
QD engine

Check continuity between terminals ⑤ and ④.
Measure resistance to temperature approximately as shown in "COOLANT TEMPERATURE SENSOR", "Component Inspection" of original Service Manual.



TD engine

Check continuity between terminals ⑫ and ⑬.
Measure resistance to temperature approximately as shown in "COOLANT TEMPERATURE SENSOR", "Component Inspection" of original Service Manual.

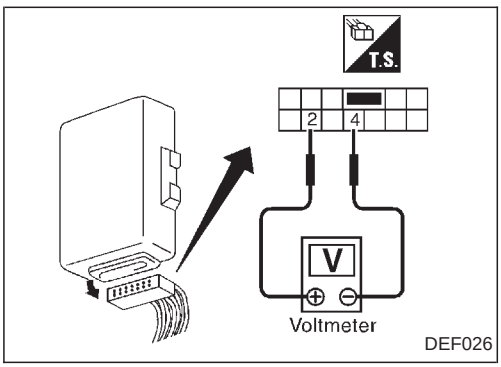


ALTERNATOR'S "L" TERMINAL CIRCUIT

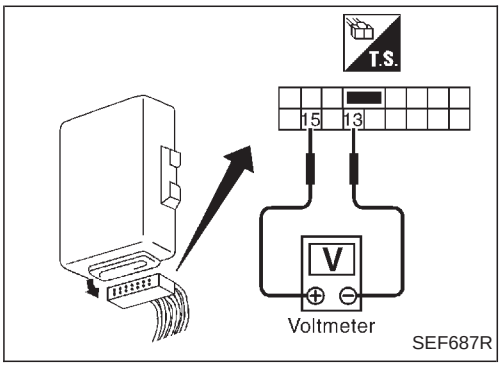
QD engine

1. Turn ignition switch OFF.
2. Disconnect harness connector from glow control unit.
3. Disconnect harness connector from the alternator's "L" terminal.
4. Check terminal voltage between terminals ② and ④ when the ignition switch is turned to ON.

Voltage: approx. 12V

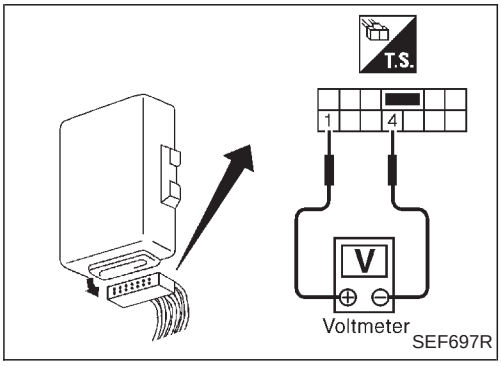


Glow Control Unit Circuit Inspection (For Cold Areas and Australia) (Cont'd)



TD engine

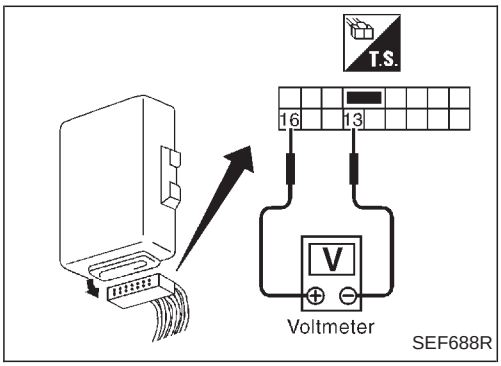
1. Turn ignition switch OFF.
2. Disconnect harness connector from glow control unit.
3. Disconnect harness connector from the alternator's "L" terminal.
4. Check terminal voltage between terminals ⑮ and ⑬ when the ignition switch is turned to ON.
   Voltage: approx. 12V



START SIGNAL INPUT CIRCUIT

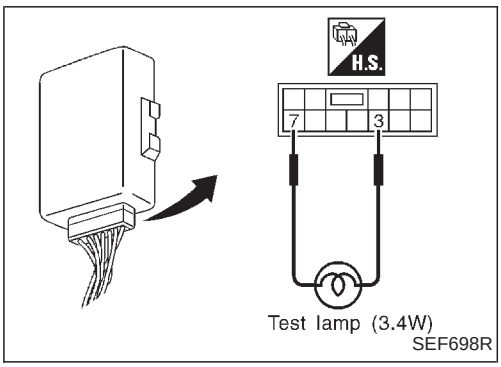
QD engine

1. Turn ignition switch OFF.
2. Disconnect harness connector from the starter motor's "S" terminal.
3. Check terminal voltage between terminals ① and ④ when the ignition switch is at "START".
   Voltage: approx. 12V



TD engine

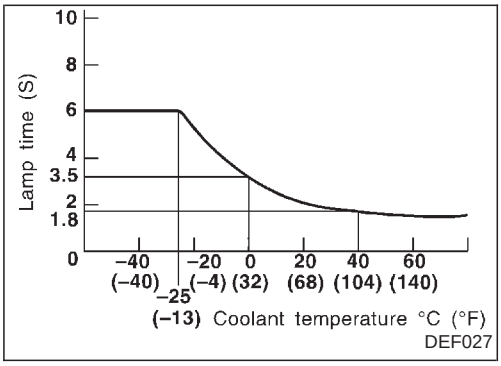
1. Turn ignition switch OFF.
2. Disconnect harness connector from the starter motor's "S" terminal.
3. Check terminal voltage between terminals ⑯ and ⑬ when the ignition switch is at "START".
   Voltage: approx. 12V



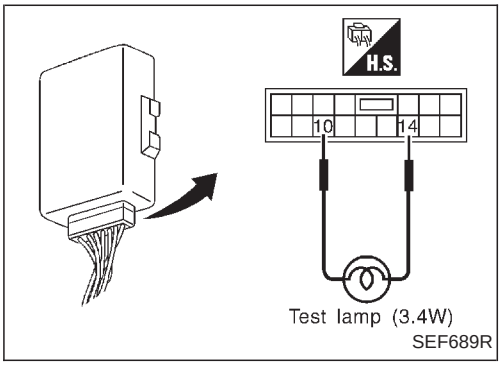
GLOW INDICATOR CONTROL CIRCUIT

QD engine

1. Turn ignition switch OFF.
2. Leave harness connector joined to glow control unit.
3. Connect test lamp to glow control unit as shown.
4. Turn ignition switch to ON and measure the time the test lamp stays lit.
   Time the test lamp should stay lit:
   Approx. 2 - 6 seconds
   (The time will vary according to coolant temperature.)



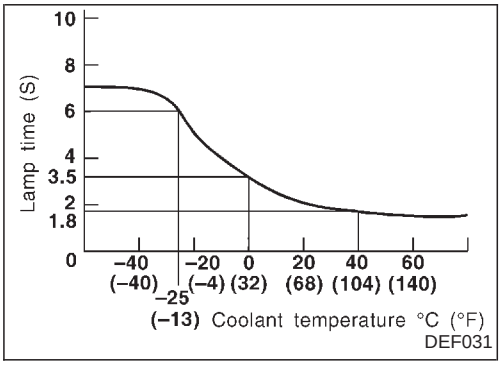
Glow Control Unit Circuit Inspection (For Cold Areas and Australia) (Cont'd)



TD engine

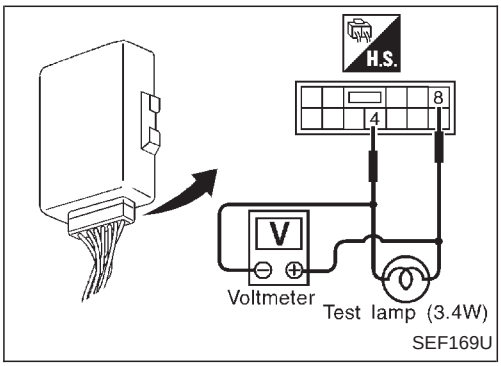
1. Turn ignition switch OFF.
2. Leave harness connector joined to glow control unit.
3. Connect test lamp to glow control unit as shown.
4. Turn ignition switch to ON and measure the time the test lamp stays lit.

Time the test lamp should stay lit:
Approx. 2 - 6 seconds
(The time will vary according to coolant temperature.)



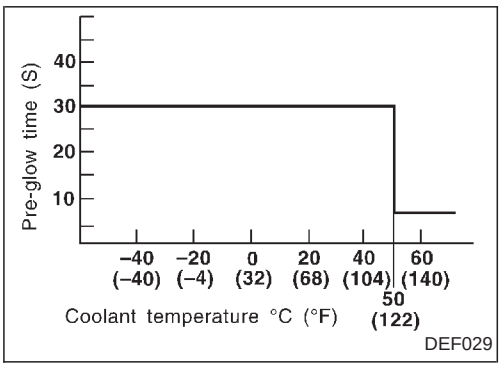
PRE-GLOW CONTROL CIRCUIT

QD engine

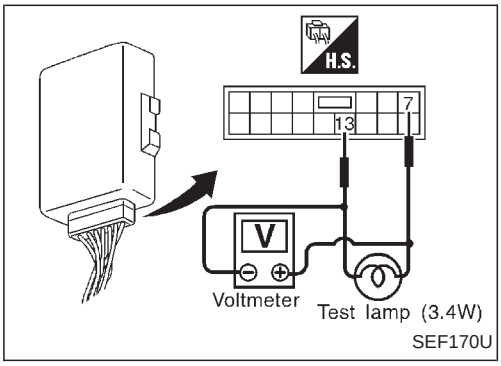


1. Turn ignition switch OFF.
2. Leave harness connector joined to glow control unit.
3. Connect test lamp to glow control unit as shown below.
4. Turn ignition switch ON and measure terminal voltage and the time the test lamp stays lit.

Battery voltage should appear for 30 seconds at coolant temperature below 50°C (122°F).
Battery voltage should appear for 5 seconds at coolant temperature over 50°C (122°F).



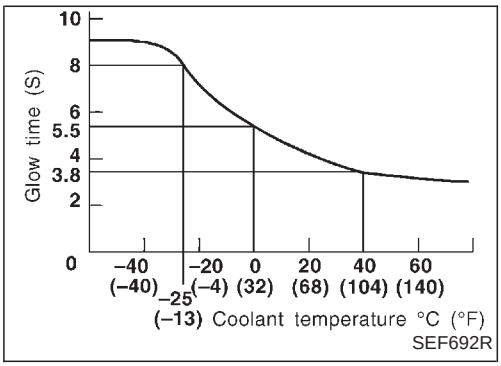
TD engine



1. Turn ignition switch OFF.
2. Leave harness connector joined to glow control unit.
3. Connect test lamp to glow control unit as shown.
4. Turn ignition switch ON and measure terminal voltage and the time the test lamp stays lit.

Battery voltage should appear for 4 to 8 seconds*.
*** (Varies with coolant temperature)**

Glow Control Unit Circuit Inspection (For Cold Areas and Australia) (Cont'd)

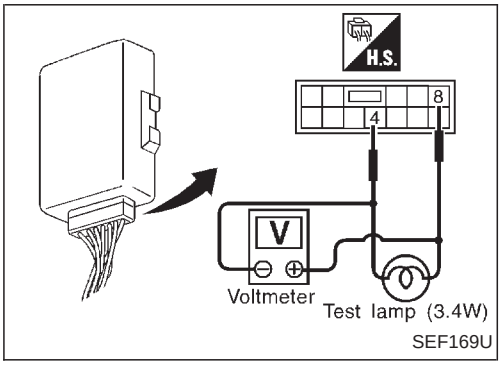


- **The time will be shortened if ignition switch is OFF for only a brief period.**
  Therefore, when measuring the time, leave ignition switch OFF for more than 1 minute, and then turn ignition switch ON.
- **When the coolant temperature is below 10°C (50°F), the battery voltage should appear for 30 seconds.**

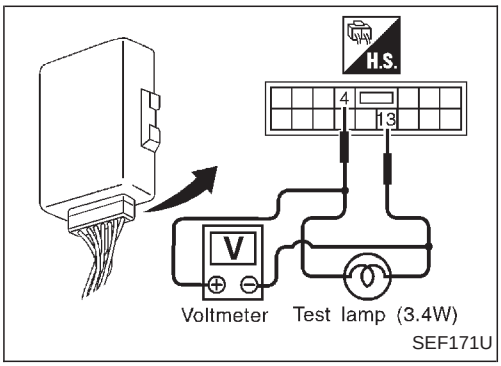
AFTER-GLOW CONTROL CIRCUIT

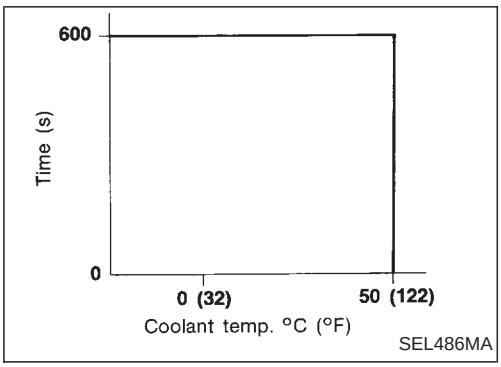
1. Connect test lamp to glow control unit as shown.
2. Turn ignition switch to START and run engine, then measure glow plug terminal voltage and the time the test lamp stays lit.

QD engine



TD engine



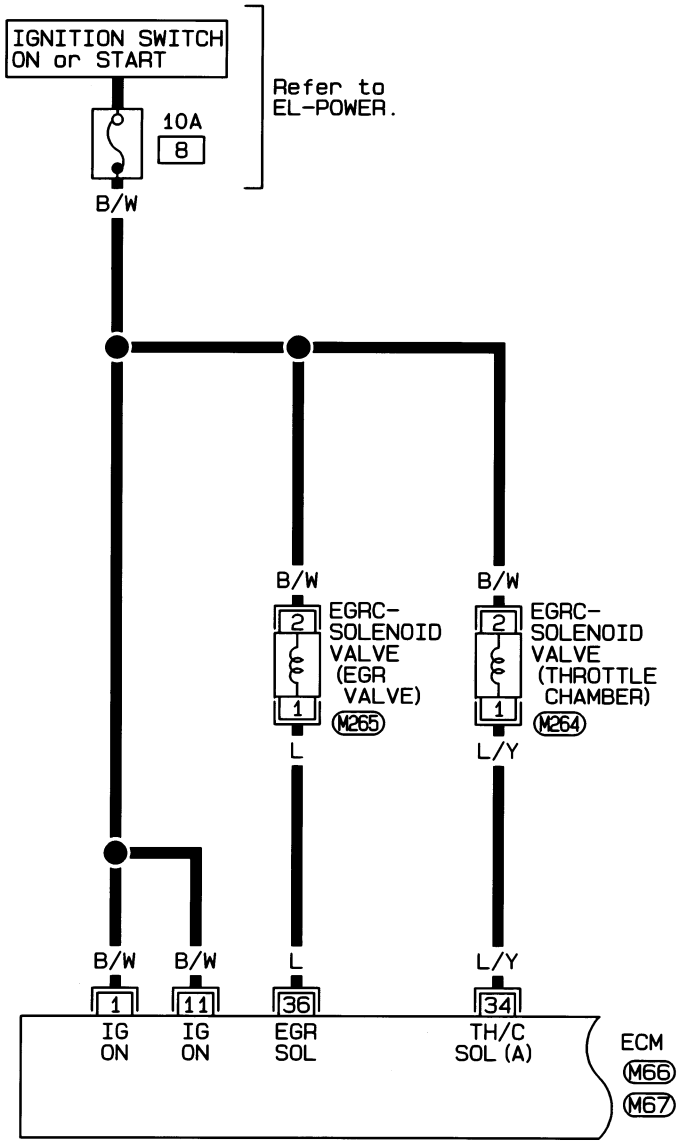


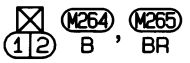
Battery voltage should continue for 10 minutes at coolant temperature below 50°C (122°F).
[If vehicle speed is above 20 km/h (12 MPH), glow plug terminal voltage should drop to 0V. If the speed drops below 10 km/h (6 MPH), the battery voltage should appear.]
The voltage should not appear at coolant temperature over 50°C (122°F).

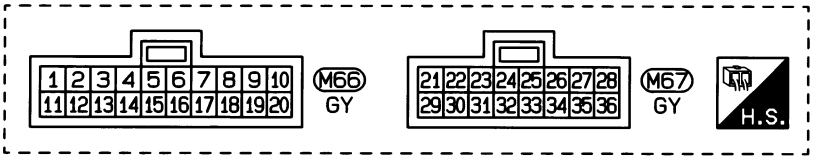
Wiring Diagram

TD25 & TD25Ti ENGINES (LHD)

EC-EGRC/V-01





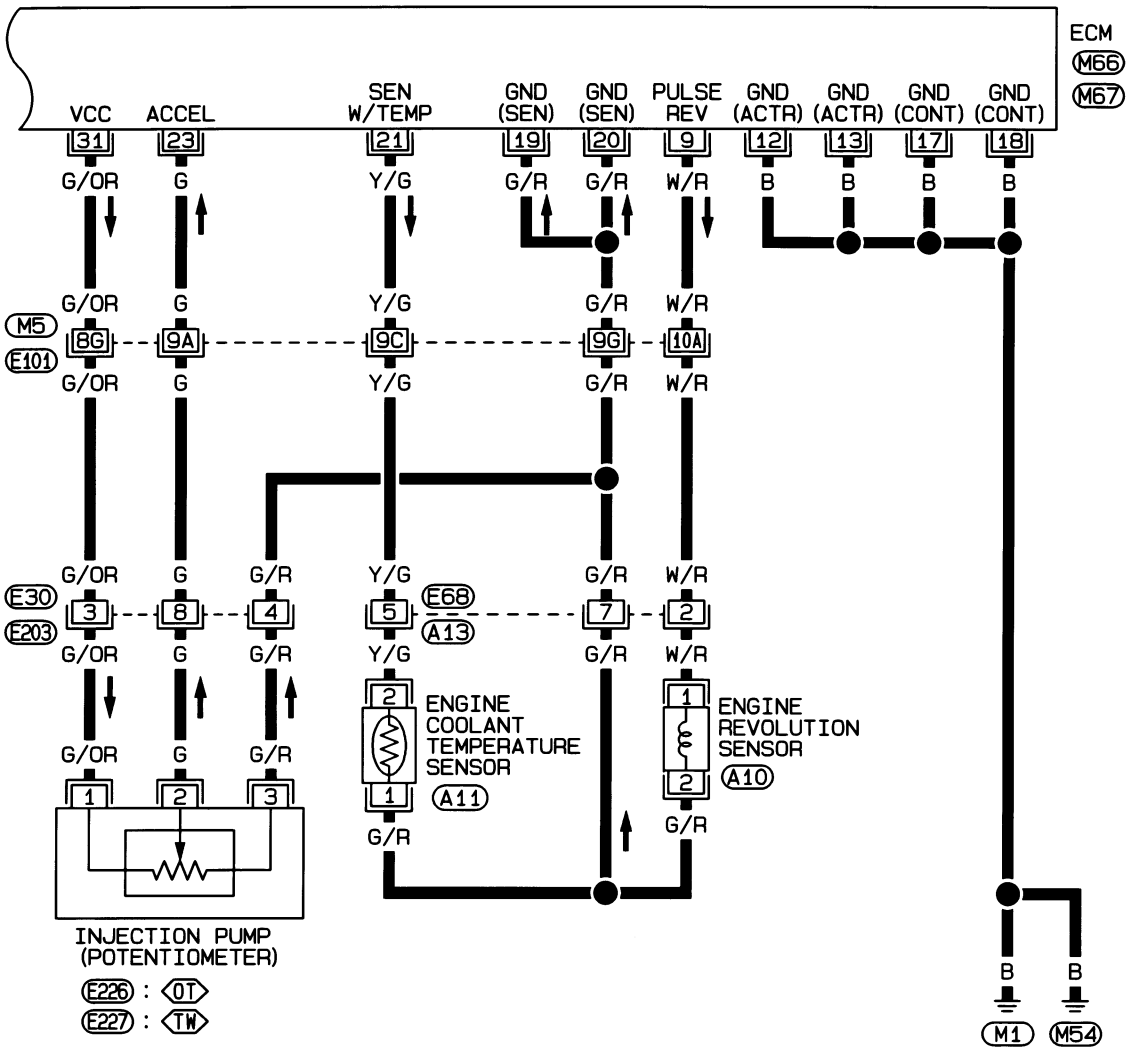


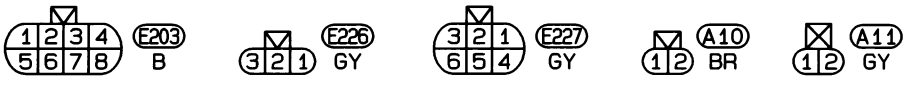
HEC712

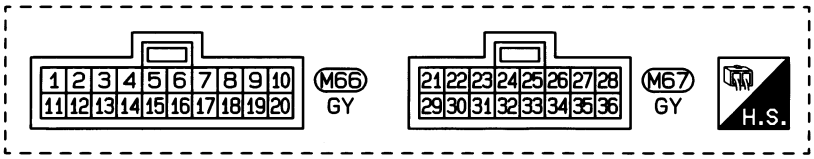
Wiring Diagram (Cont'd)

EC-EGRC/V-02

TW : With NATS
OT : Without NATS







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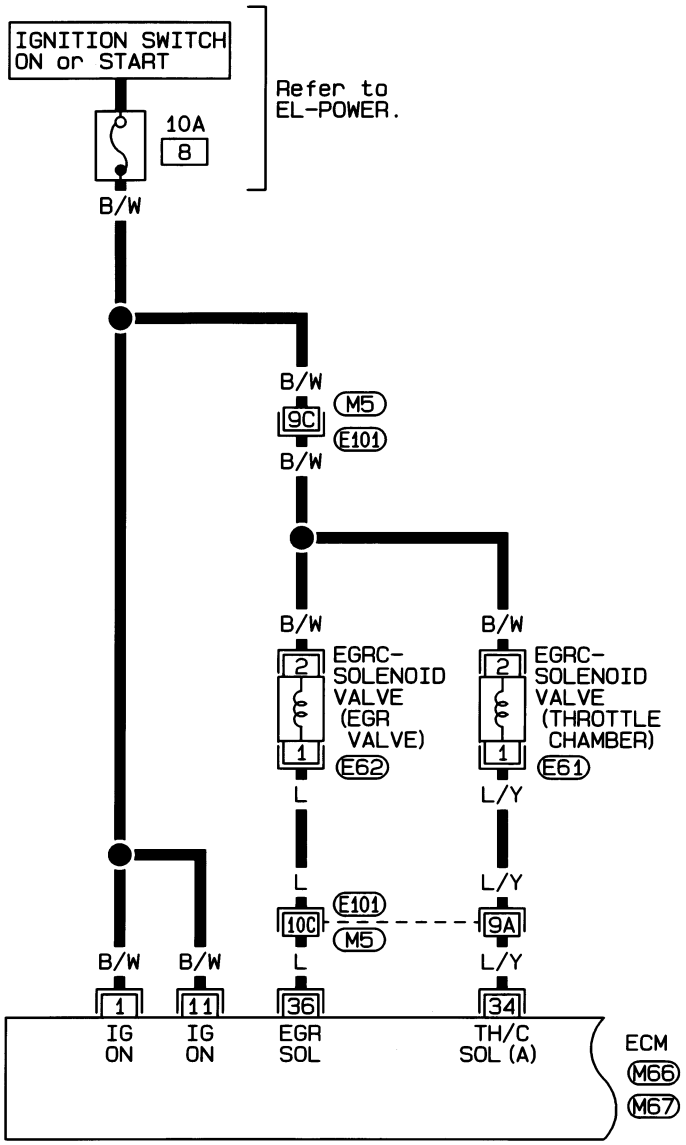
M5, E101

HEC713

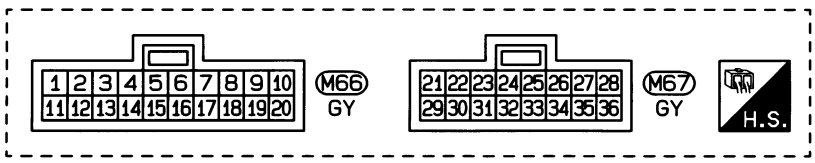
Wiring Diagram (Cont'd)

TD25 & TD25Ti ENGINES (RHD)

EC-EGRC/V-03



E61, E62
B, BR



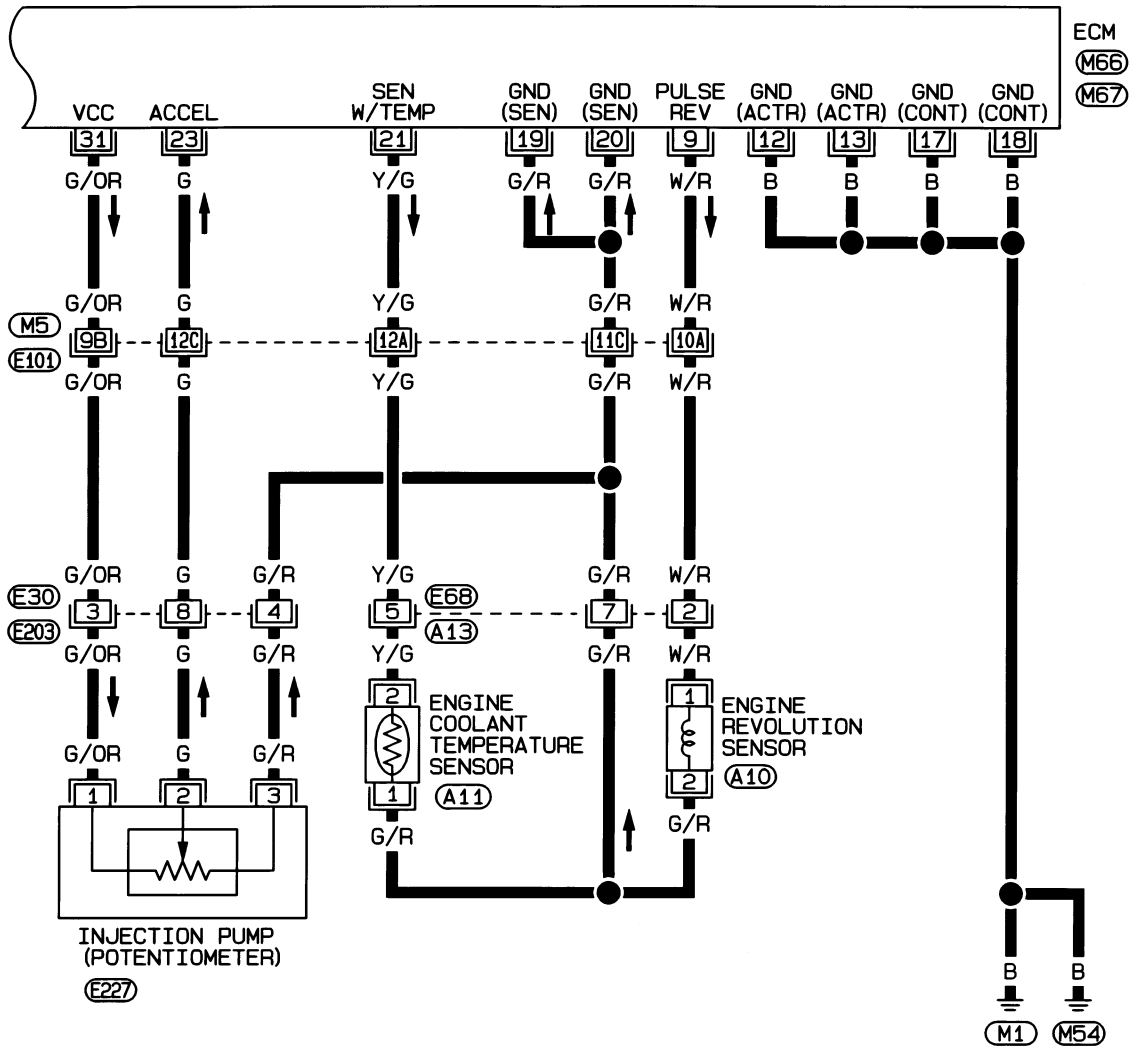
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M5, E101

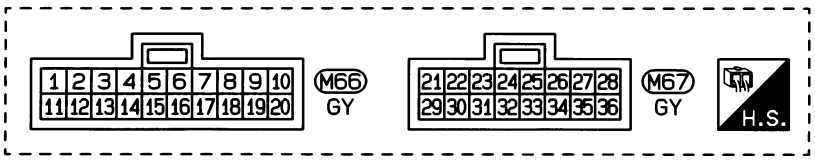
HEC714

Wiring Diagram (Cont'd)

EC-EGRC/V-04







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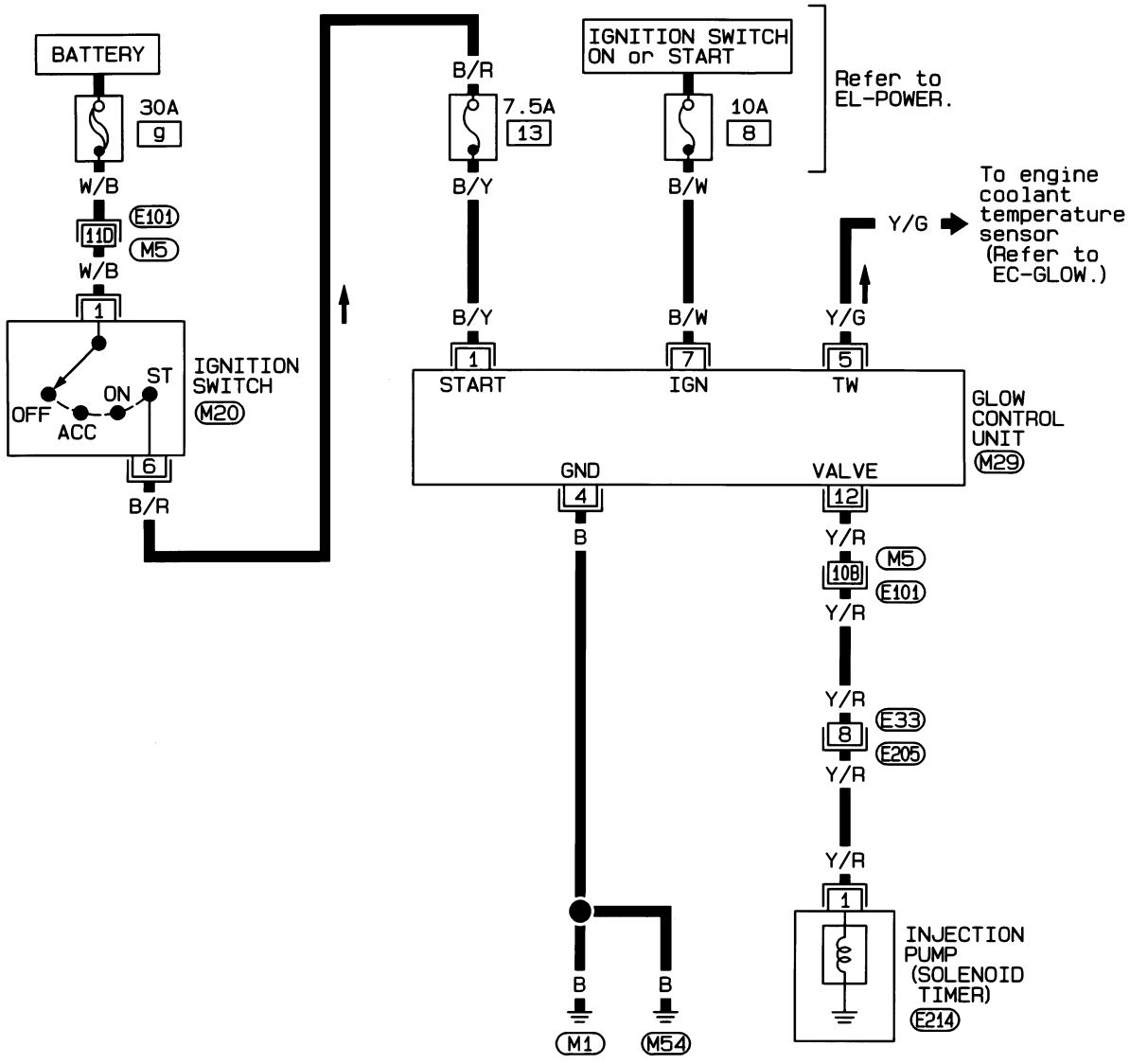
M5, E101

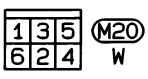
HEC715

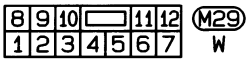
Wiring Diagram

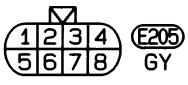
QD32 ENGINE

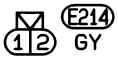
EC-PLA-01











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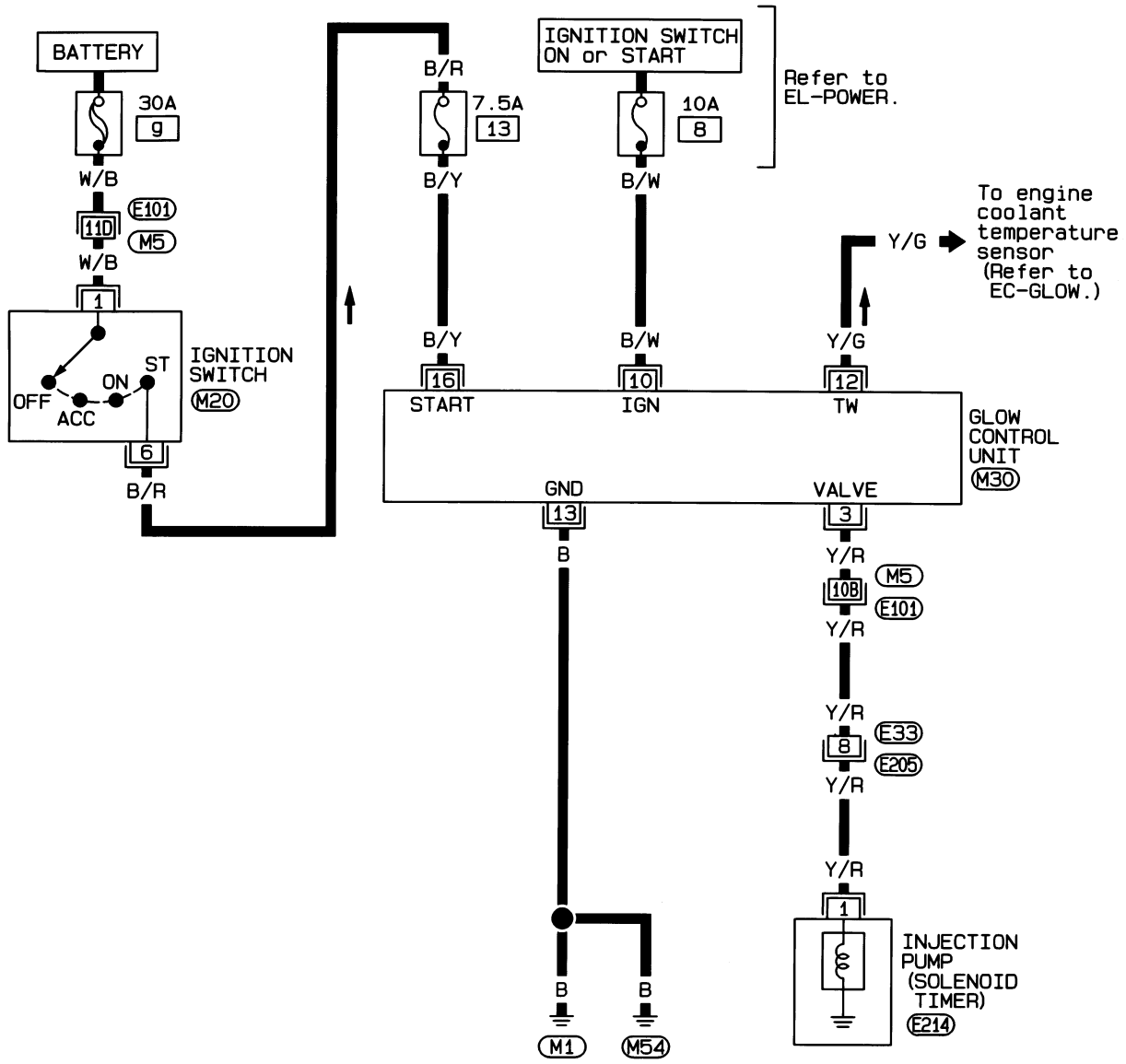
M5, E101

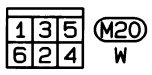
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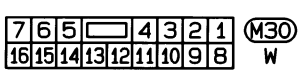
Wiring Diagram (Cont'd)

TD27 ENGINE

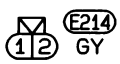
EC-PLA-02











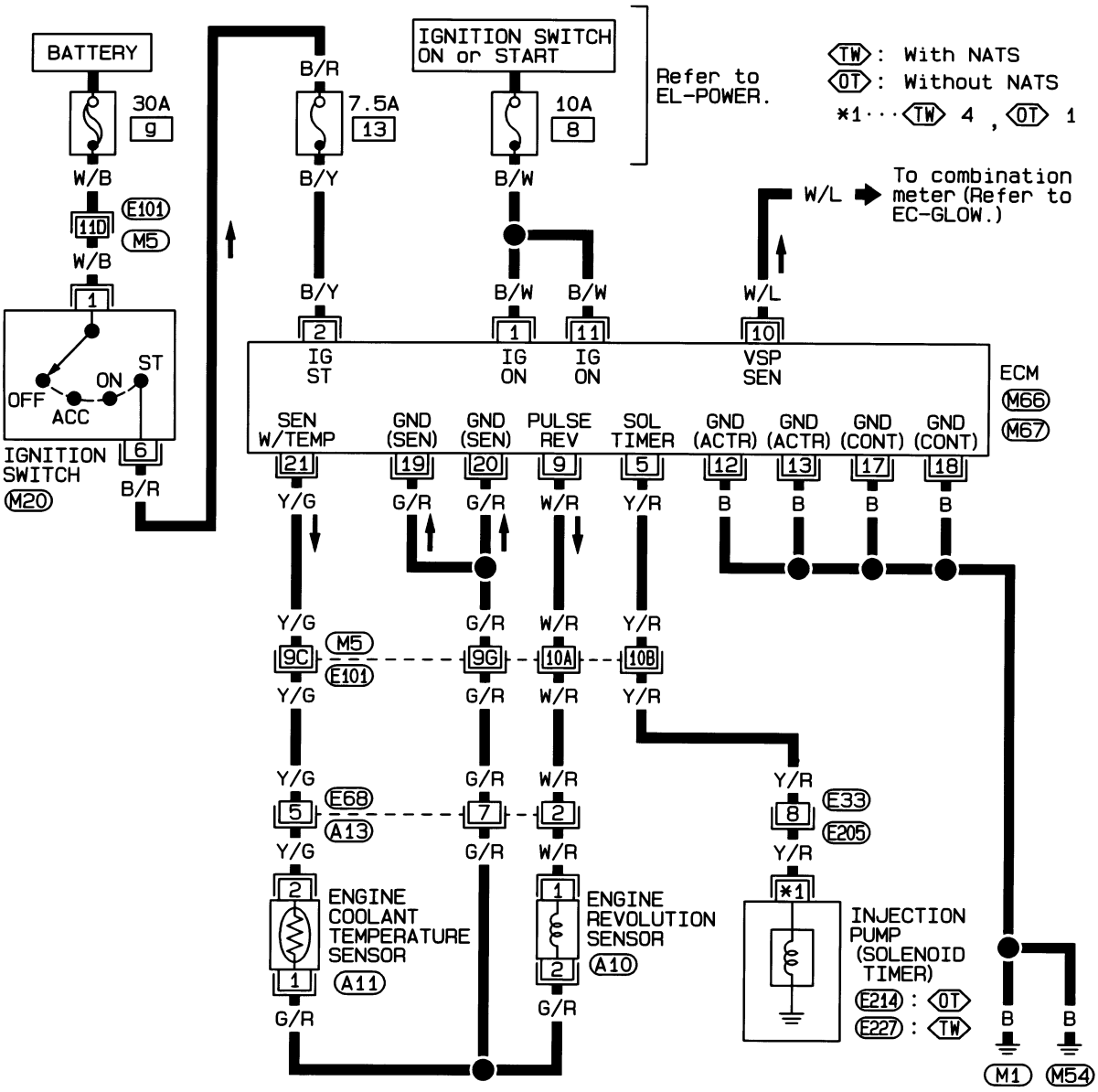
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M5, E101

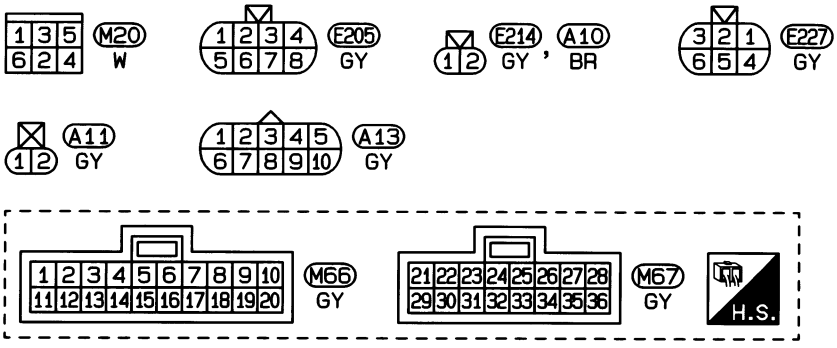
HEC717

Wiring Diagram (Cont'd)

TD25 & TD25Ti ENGINE (LHD)

EC-PLA-03





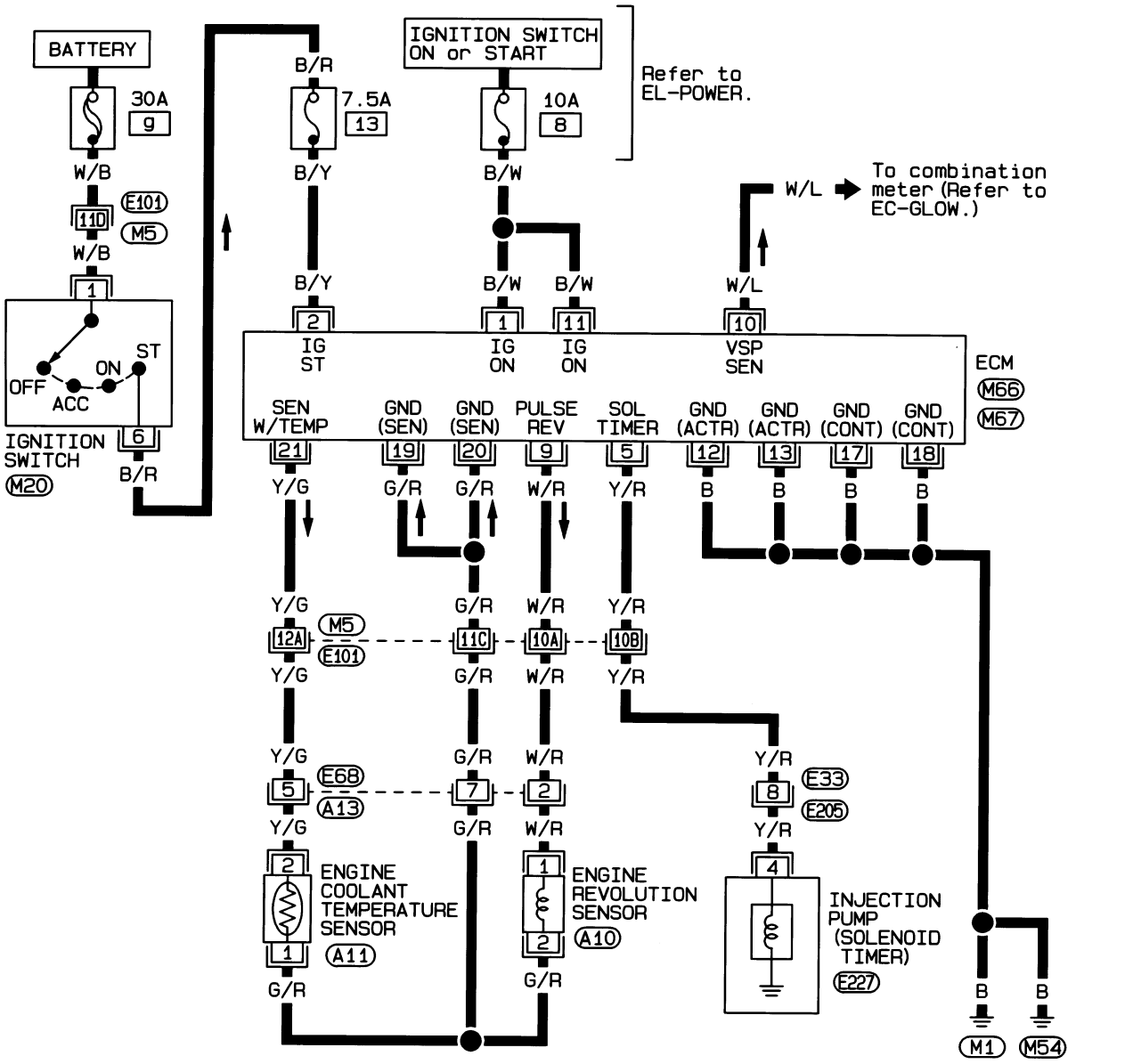
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M5 , E101

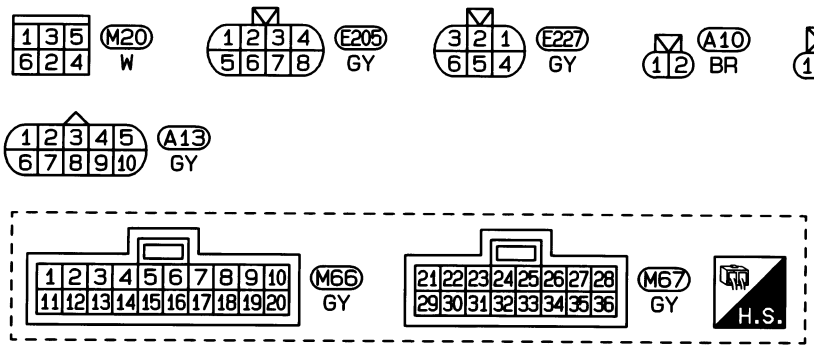
HEC718

Wiring Diagram (Cont'd)

TD25 & TD25Ti ENGINE (RHD)

EC-PLA-04





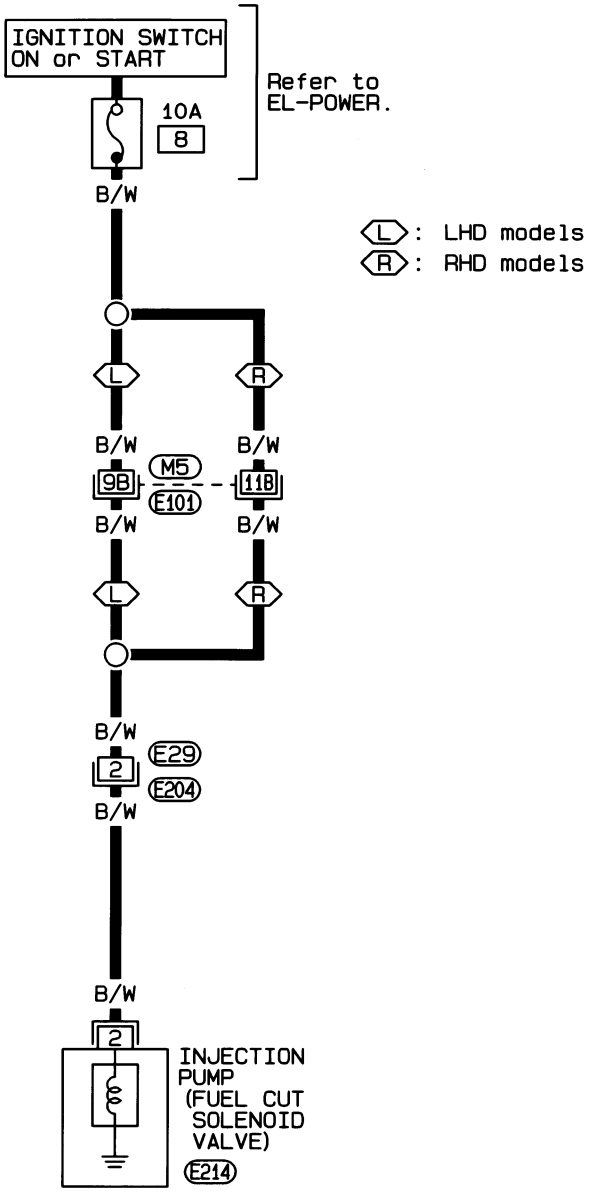
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M5, E101

HEC719

Wiring Diagram

WITHOUT NATS

EC-FCUT-01



E204 GY

E214 GY

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(Foldout page).

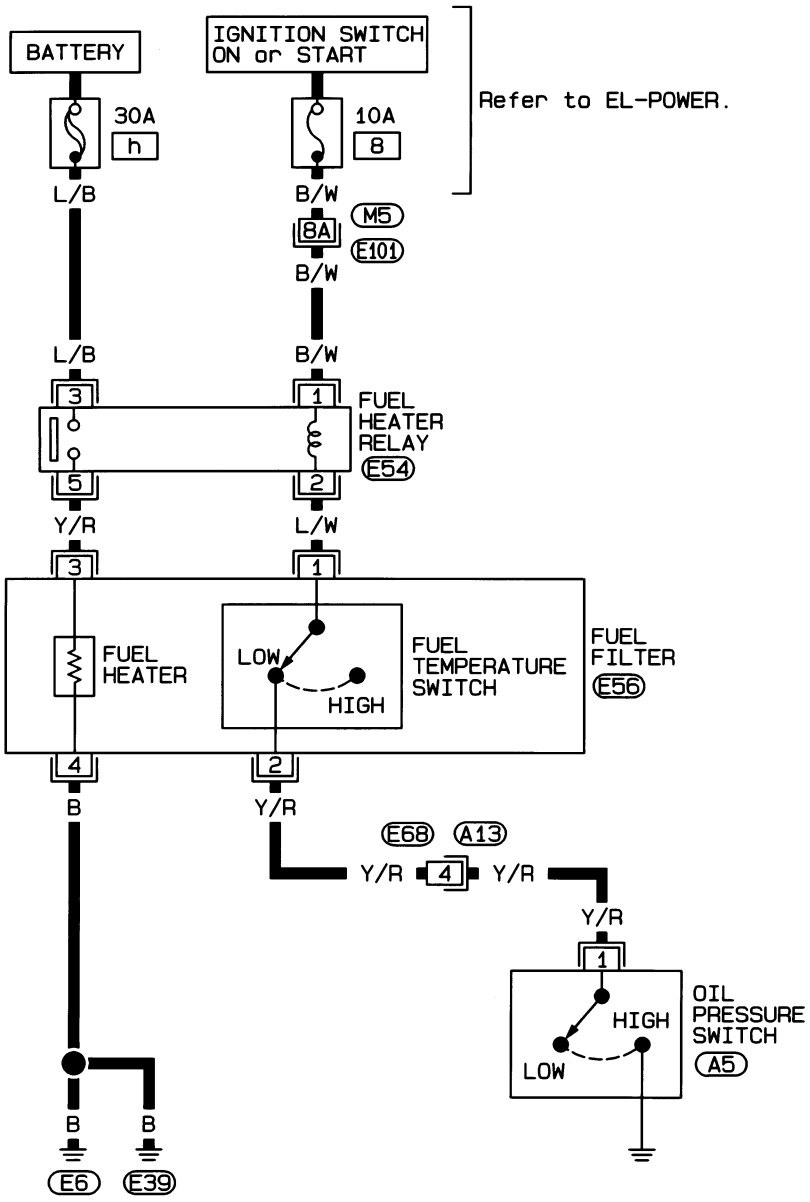
M5, E101

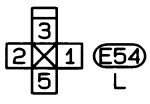
HEC720

Wiring Diagram

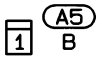
TD25 & TD25Ti ENGINES (RHD)

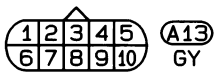
EC-F/HEAT-01











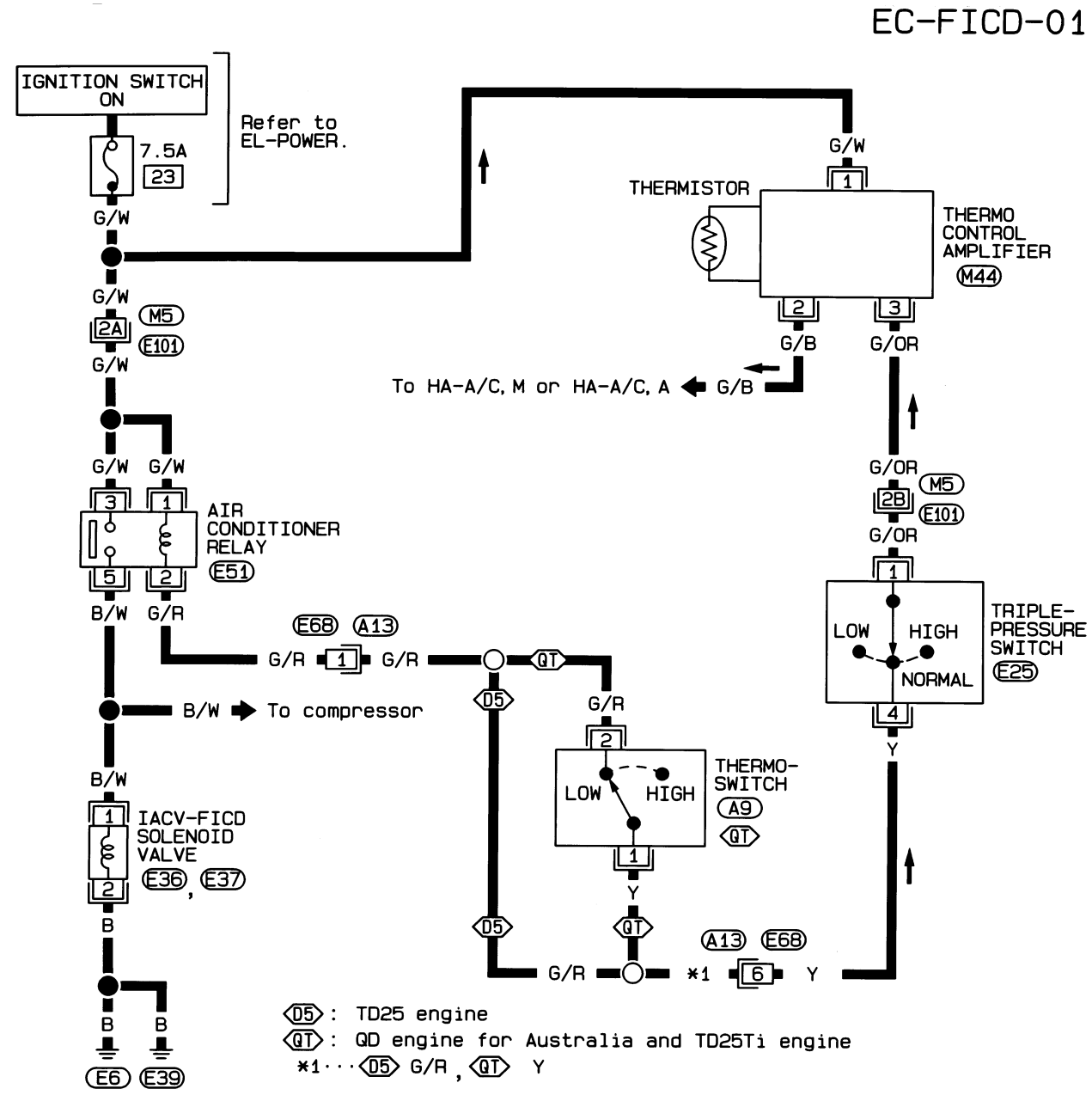
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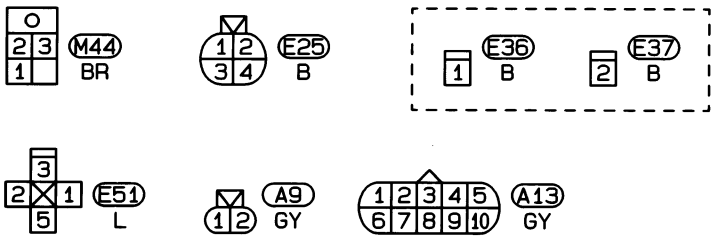
M5, E101

HEC721

Wiring Diagram

QD32 FOR AUSTRALIA, TD25 AND TD25Ti ENGINES





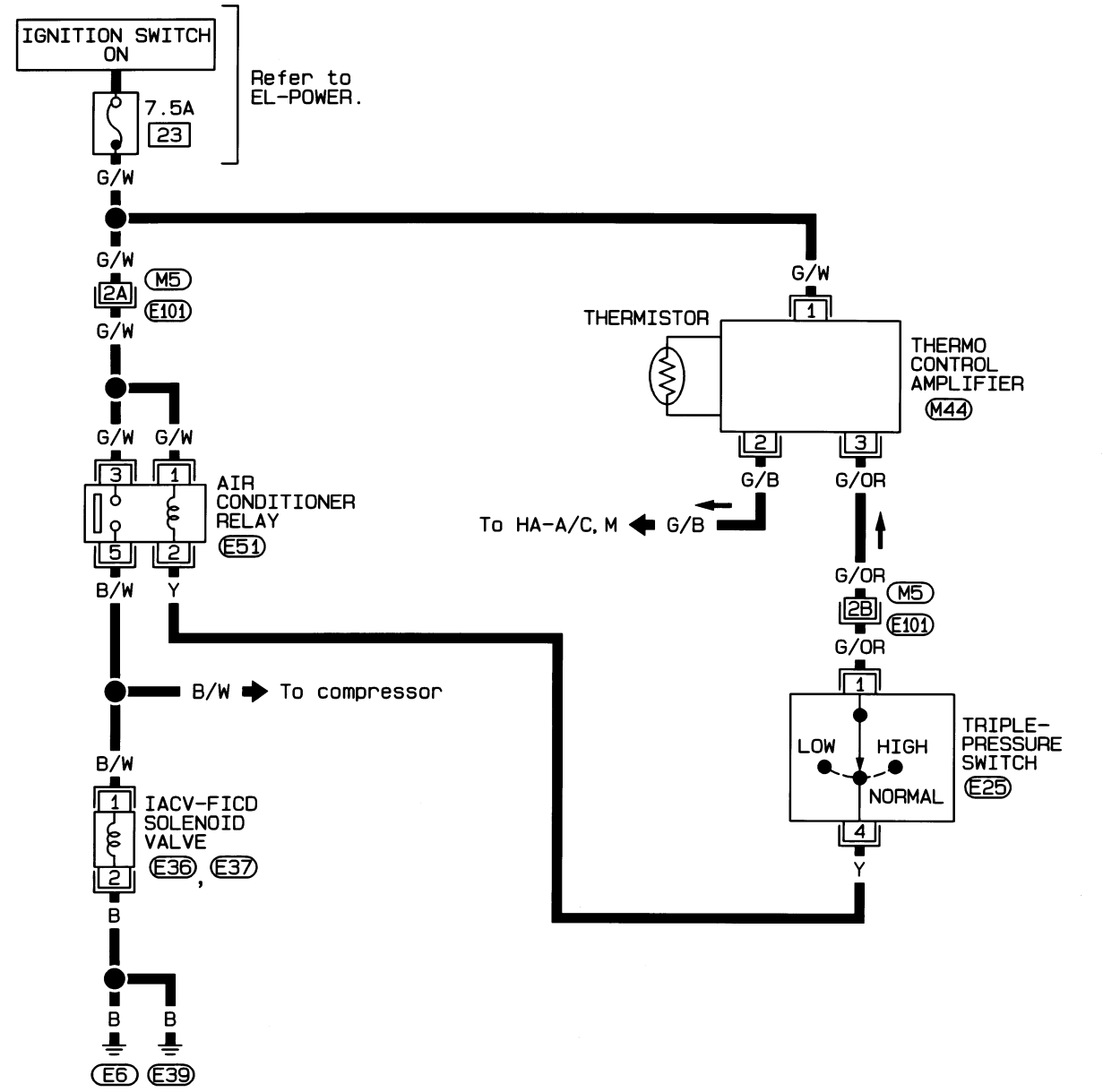
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M5, E101

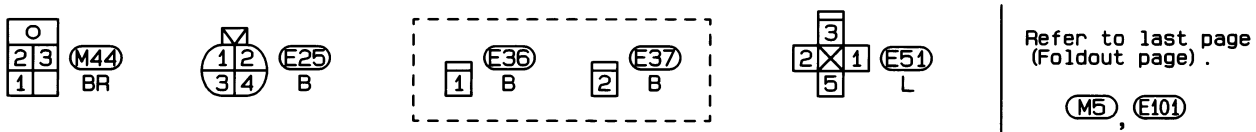
HEC722

Wiring Diagram (Cont'd)

QD32 EXCEPT AUSTRALIA AND TD27 ENGINES

EC-FICD-02





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M5, E101

HEC723