

<SUPPLEMENT-III>

HEATER & AIR CONDITIONER

SECTION HA

MODIFICATION NOTICE:

- Wiring diagram has been changed.
- Relief valve to compressor has been added.
- Rear thermo amp. and rear solenoid valve relay have been eliminated. (Except for the Middle East)
- Trouble diagnosis procedure for magnet clutch (auto) has been added. (Model with TB48 engine for Europe)

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Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER" used along with a seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. The SRS system composition which is available to NISSAN MODEL Y61 is as follows (The composition varies according to the destination and optional equipment.):

- For a frontal collision

The Supplemental Restraint System consists of driver air bag module (located in the center of the steering wheel), front passenger air bag module (located on the instrument panel on passenger side), seat belt pre-tensioners, a diagnosis sensor unit, warning lamp, wiring harness and spiral cable.

- For a side collision

The Supplemental Restraint System consists of front side air bag module (located in the outer side of front seat), satellite sensor, diagnosis sensor unit (one of components of air bags for a frontal collision), wiring harness, warning lamp (one of components of air bags for a frontal collision).

Information necessary to service the system safely is included in the **RS section** of this Service Manual.

WARNING:

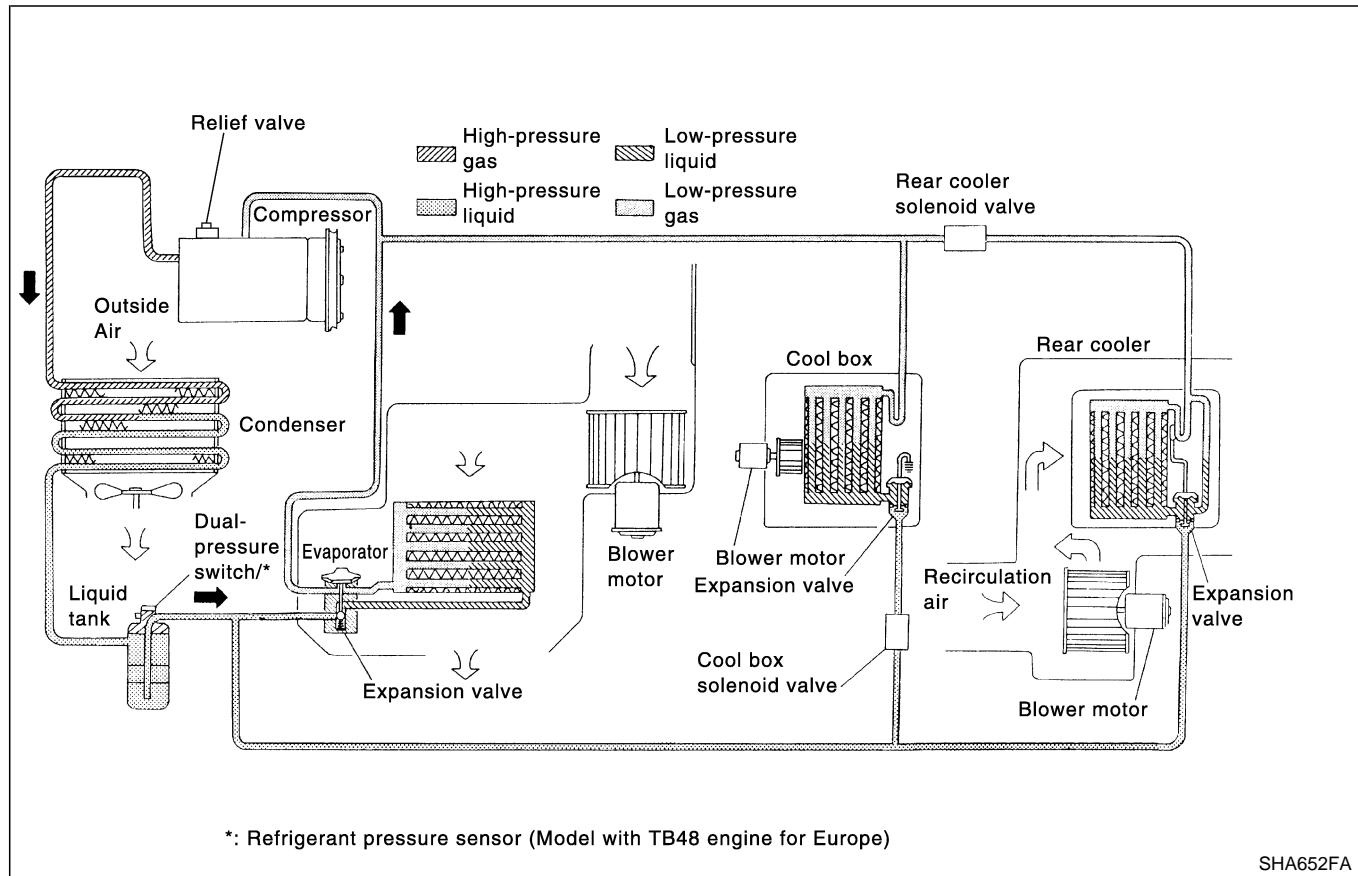
- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance should be performed by an authorized NISSAN dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the RS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. Spiral cable and wiring harnesses covered with yellow insulation tape either just before the harness connectors or for the complete harness are related to the SRS.

Refrigeration Cycle

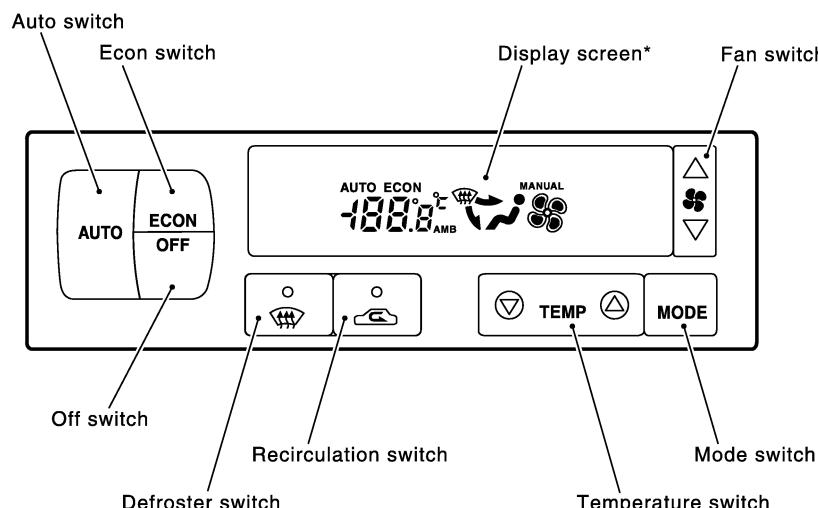
REFRIGERANT SYSTEM PROTECTION

Pressure Relief Valve

The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. When the pressure of refrigerant in the system increases to an unusual level [more than 3,727 kPa (38 kg/cm², 540 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.



Control Operation



*Display the operation of the system.

RHA2101

AUTO SWITCH

The compressor, air intake doors, air mix door, mode doors, and blower speed are automatically controlled so that the in-vehicle temperature will reach, and be maintained at the set temperature selected by the operator.

The air conditioning cooling function operates only when the engine is running.

ECON SWITCH

Fully automatic control with the compressor off. With the compressor off, the system will not remove heat (cool) or de-humidify. The system will maintain the in-vehicle temperature at the set temperature when the set temperature is above the ambient (outside) temperature.

TEMPERATURE SWITCH (Potentio Temperature Control)

Increases or decreases the set temperature.

OFF SWITCH

The compressor and blower are off, the air intake doors are set to the outside air position. Then, the mode doors are set to the foot (80% foot and 20% defrost) position. In the off position, the A/C system uses the vehicle's "flow through" ventilation. It tries to maintain the interior temperature based on the last set temperature of the system.

FAN SWITCH

Manual control of the blower speed. Four speeds are available for manual control (as shown on the display screen):

low  , medium low  , medium high  , high 

MODE SWITCH

Manual control of the air discharge outlets. Four selections are available (as shown on the display screen): face  , bi-level  , foot  , defrost/foot 

DESCRIPTION**AUTO****Control Operation (Cont'd)****RECIRCULATION (REC) SWITCH**

ON position: Interior air is recirculated inside the vehicle.

OFF position: Automatic control resumes.

Recirculation is canceled when AUTO, DEF or ECON is selected. Recirculation resumes when another mode is chosen.

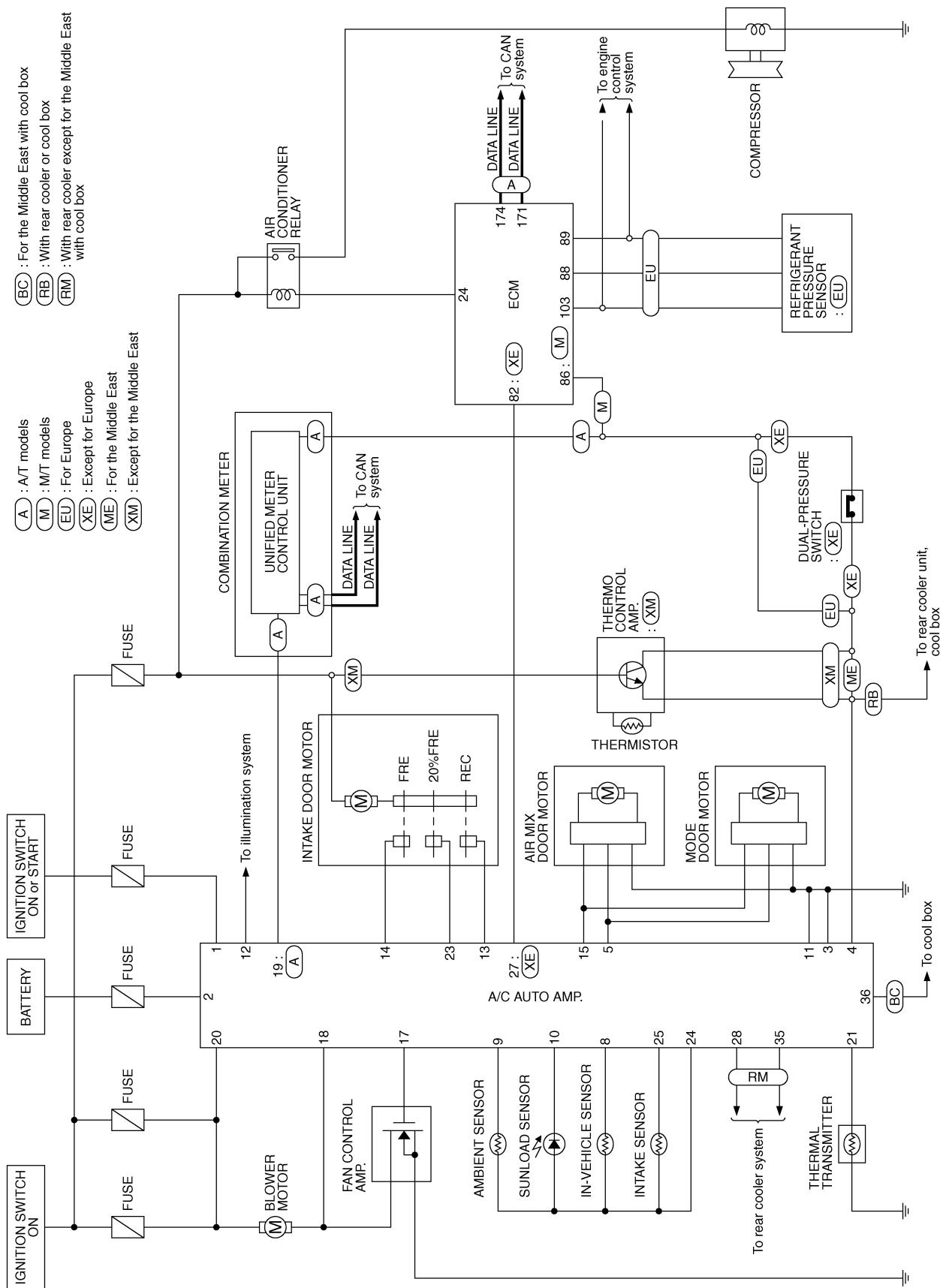
DEFROSTER (DEF) SWITCH

Positions the mode doors to the defrost position. Also positions the air intake doors to the outside air position.

TROUBLE DIAGNOSES

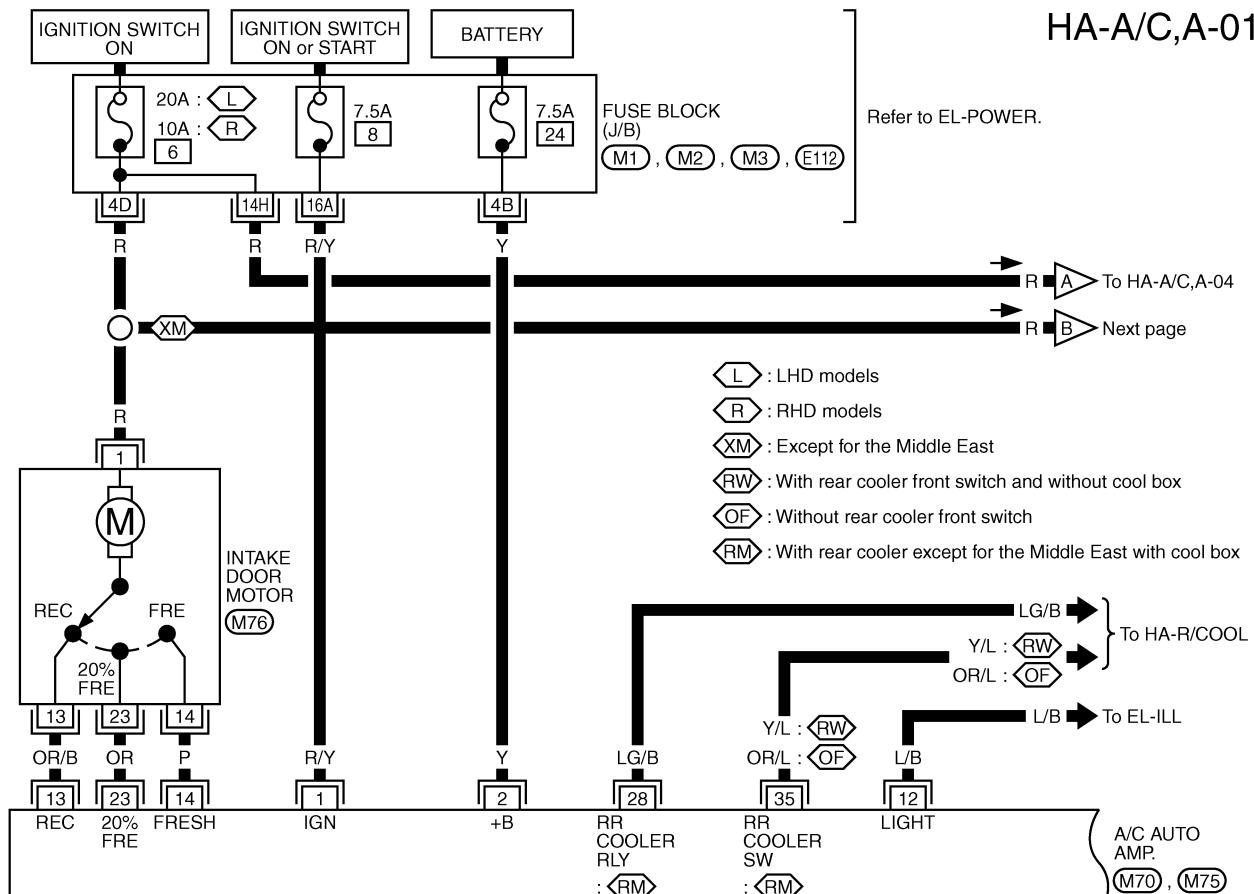
AUTO

Circuit Diagram — A/C, A —/TB48 Engine

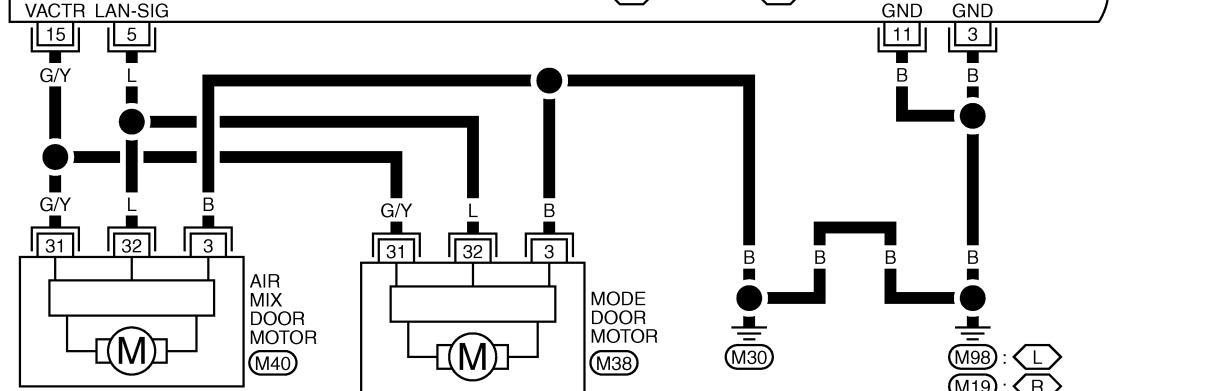


Wiring Diagram — A/C, A —/TB48 Engine

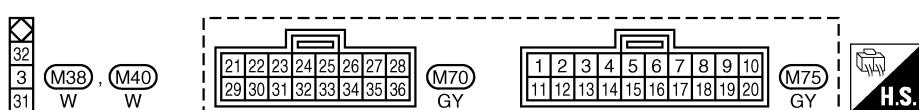
HA-A/C,A-01



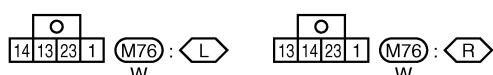
- ◀ L : LHD models
- ◀ R : RHD models
- ◀ XM : Except for the Middle East
- ◀ RW : With rear cooler front switch and without cool box
- ◀ OF : Without rear cooler front switch
- ◀ RM : With rear cooler except for the Middle East with cool box



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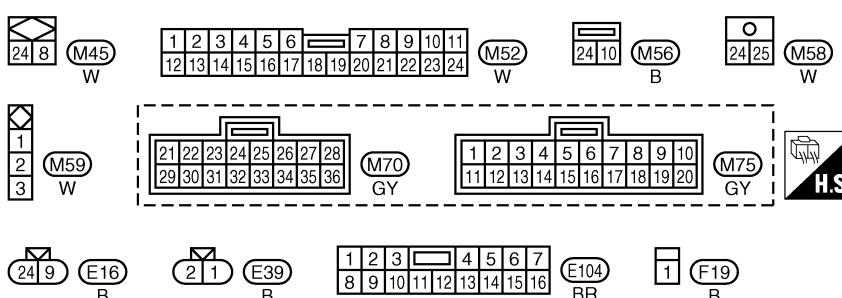
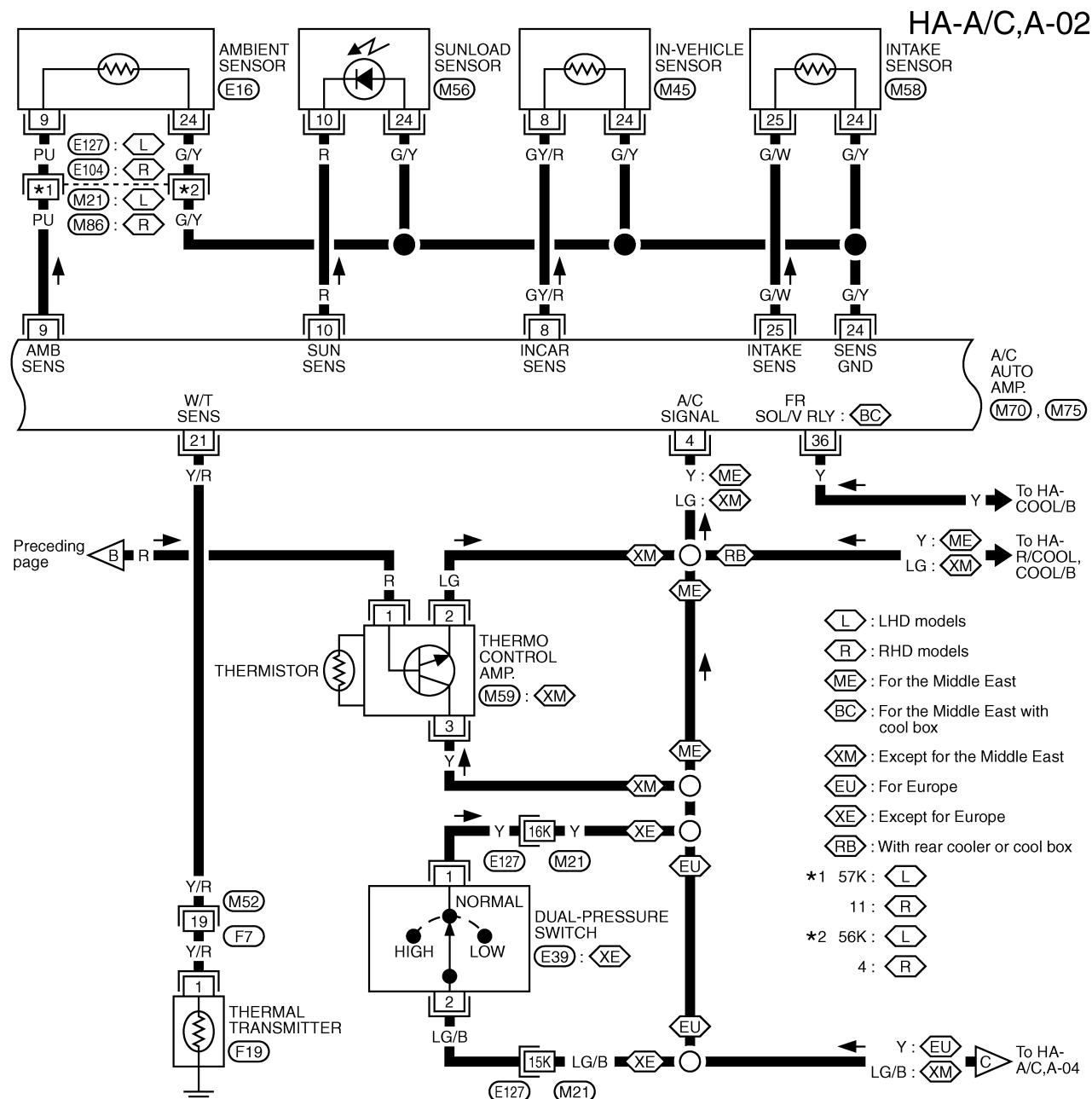
M1
M2
M3
E112



TROUBLE DIAGNOSES

AUTO

Wiring Diagram — A/C, A —/TB48 Engine (Cont'd)



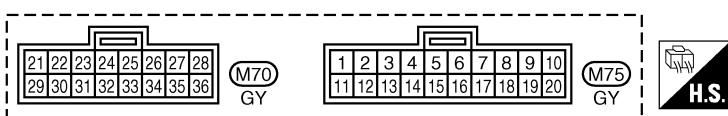
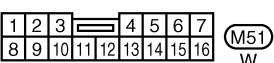
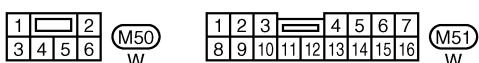
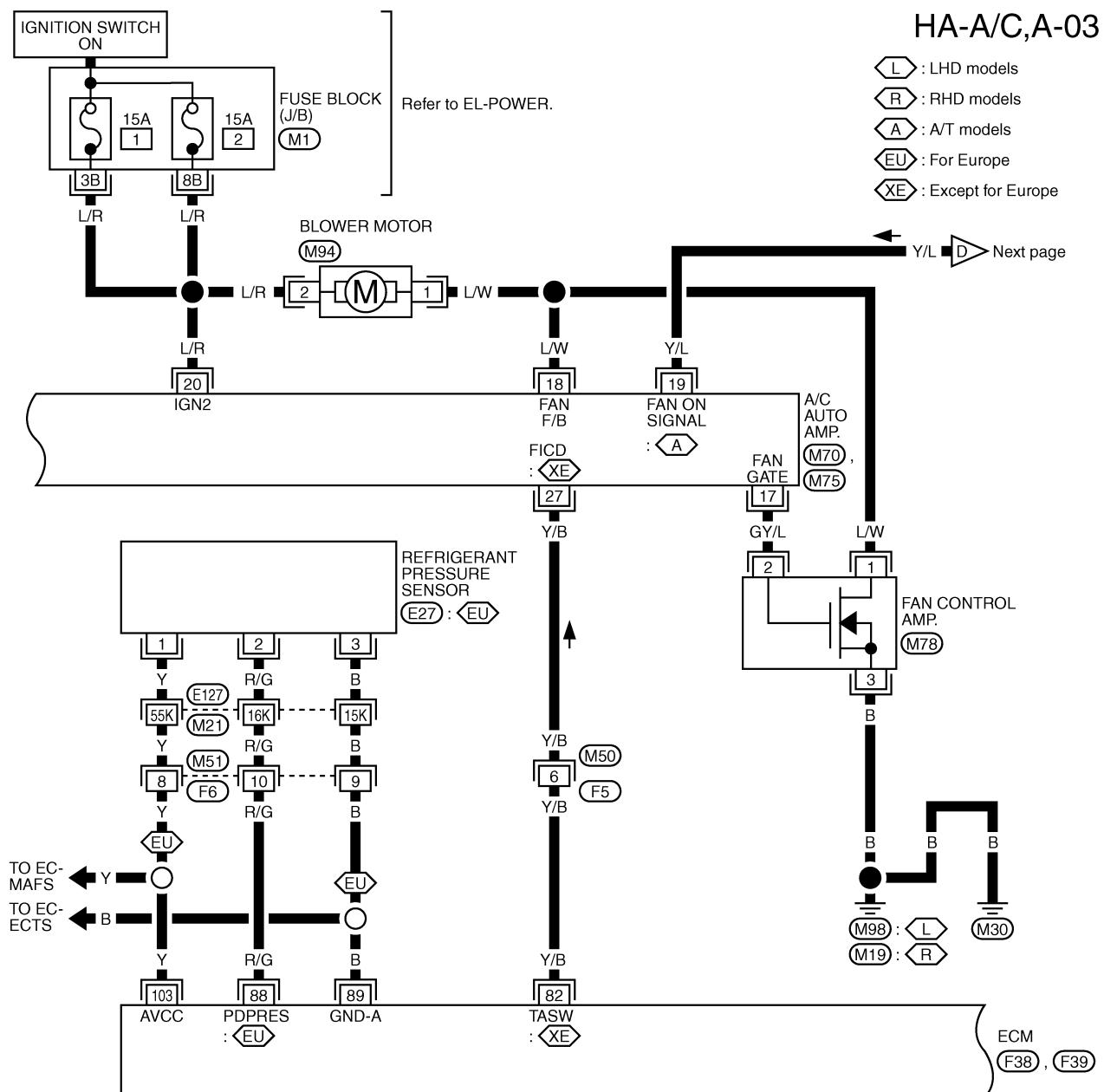
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(M21), (E127)

TROUBLE DIAGNOSES

AUTO

Wiring Diagram — A/C, A —/TB48 Engine (Cont'd)



| Refer to last page (Foldout page).

M21 F127

M1

508

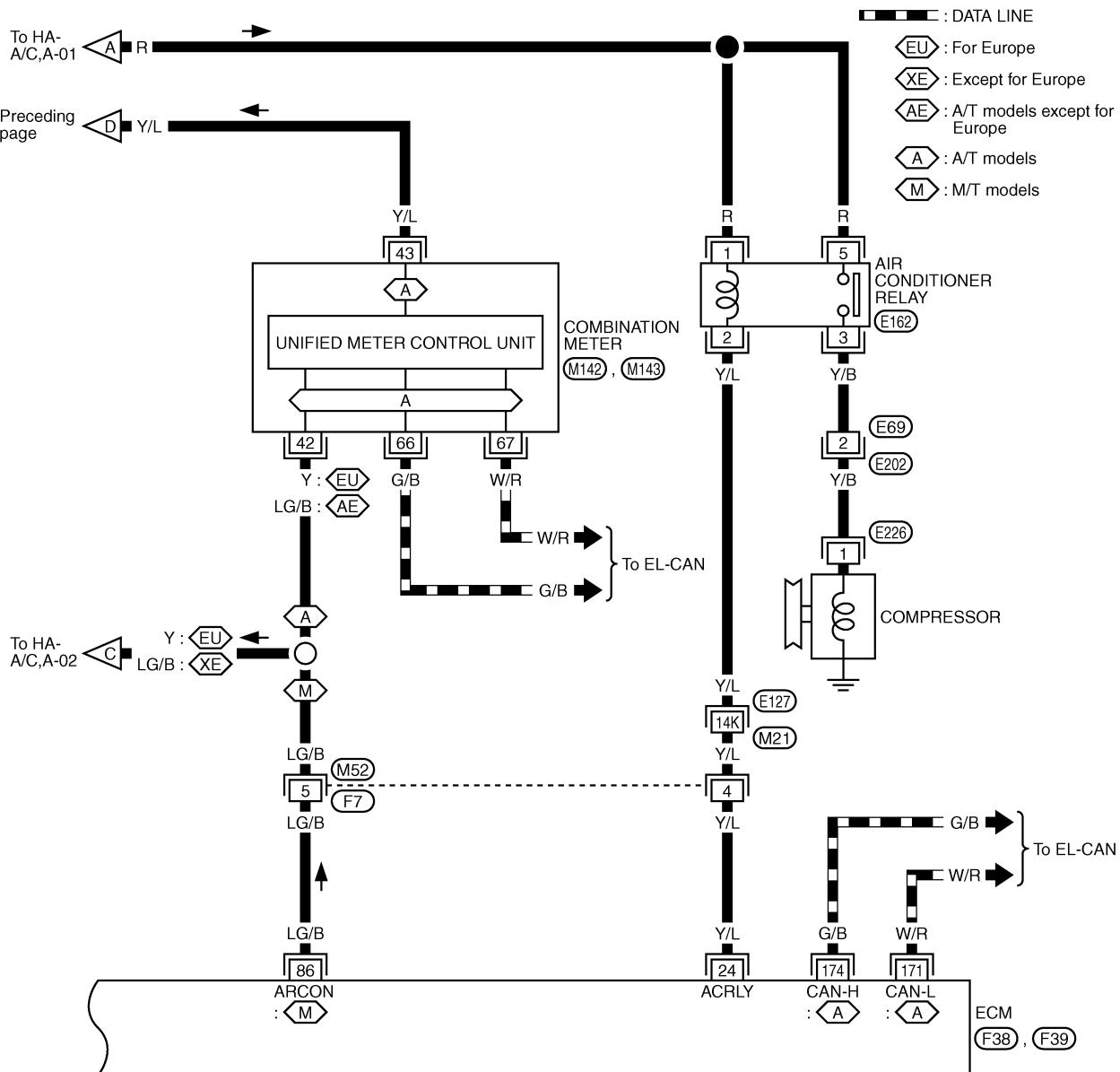
138

TROUBLE DIAGNOSES

AUTO

Wiring Diagram — A/C, A —/TB48 Engine (Cont'd)

HA-A/C,A-04



1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	23

(M52) W

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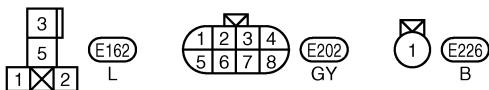
- (M21), (E127)
- (F38)
- (F39)

25	26	27	28	29	30	31	32	33
34	35	36	37	38	39	40	41	42

(M142) BR

45	46	47	48	49	50	51	52	53	54	55
56	57	58	59	60	61	62	63	64	65	66

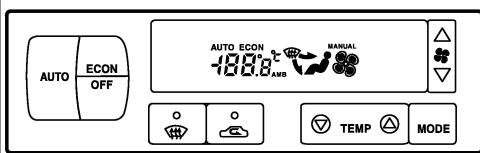
(M143) BR



THA137M

HA-10

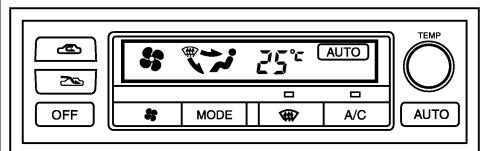
Models for the Middle East



Controller (Auto amp.)

SHA739F

A/T models for Europe



Controller (Auto amp.)

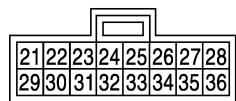
SHA758F

Auto Amp. Terminals and Reference Value

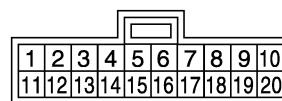
INSPECTION OF AUTO AMP.

- Measure voltage between each terminal and body ground by following "AUTO AMP. INSPECTION TABLE".

- Pin connector terminal layout



(M70)



(M75)

RHA501GF

TROUBLE DIAGNOSES

AUTO

Auto Amp. Terminals and Reference Value (Cont'd)

AUTO AMP. INSPECTION TABLE

TERMINAL No. (Wire color)	ITEM	CONDITION		VOLTAGE V	
1 (RY)	Power supply for IGN		—		Approximately 12
2 (Y)	Power supply for BAT		—		Approximately 12
3 (B)	Ground		—		—
4 (Y)*2 (LG)*4	Compressor ON signal		Compressor ON	Approximately 0	
			OFF	Approximately 12	
5 (L)	LAN signal		—		Approximately 5.5
8 (GY/R)	In-vehicle sensor		—		—
9 (PU)	Ambient sensor		—		—
10 (R)	Sunload sensor		—		—
11 (B)	Ground		—		—
12 (L/B)	Power supply for illumination		Illumination switch ON		Approximately 12
13 (OR/B)	Intake door position switch		RECIRCULATION		Approximately 0
14 (P)	Intake door position switch		FRESH or 20% FRESH		Approximately 12
15 (G/Y)	Power supply for mode and air mix door motor		FRESH		Approximately 0
17 (GY/L)	Fan control amp. control signal		RECIRCULATION or 20% FRESH		Approximately 12
18 (L/W)	Blower motor feed back		—		Approximately 12
19*1 (Y/L)	Fan ON signal		Fan speed	Low, middle low or middle high	Approximately 2.5 - 3.0
20 (L/R)	Power supply for blower motor			High	Approximately 9 - 10
21 (Y/R)	Thermal transmitter		Blower fan	Low	Approximately 7 - 10
23 (OR)	Intake door position switch			ON	Approximately 0
				OFF	Approximately 5
24 (G/Y)	Sensor ground		—		Approximately 12
25 (G/W)	Intake sensor		—		—
27*2 (Y/B)	FICD ON signal		Compressor ON	Ambient temperature 20.5°C or less	Approximately 0
				Ambient temperature 23.5°C or more	Approximately 12
28 (LG/B)	Rear cooler relay		Rear cooler ON		Approximately 0
			Rear cooler OFF		Approximately 12
35 (Y/L)*5 (OR/L)*6	Rear cooler switch		Rear cooler switch ON		Approximately 0
			Rear cooler switch OFF		Approximately 12
36*3 (Y)	Front solenoid valve relay		Cool box switch ON		Approximately 0
			Cool box switch OFF		Approximately 12

*1: A/T models

*2: Except for Europe

*3: For the Middle East with cool box

*4: Except for the Middle East

*5: With rear cooler front switch and without cool box

*6: Without rear cooler front switch

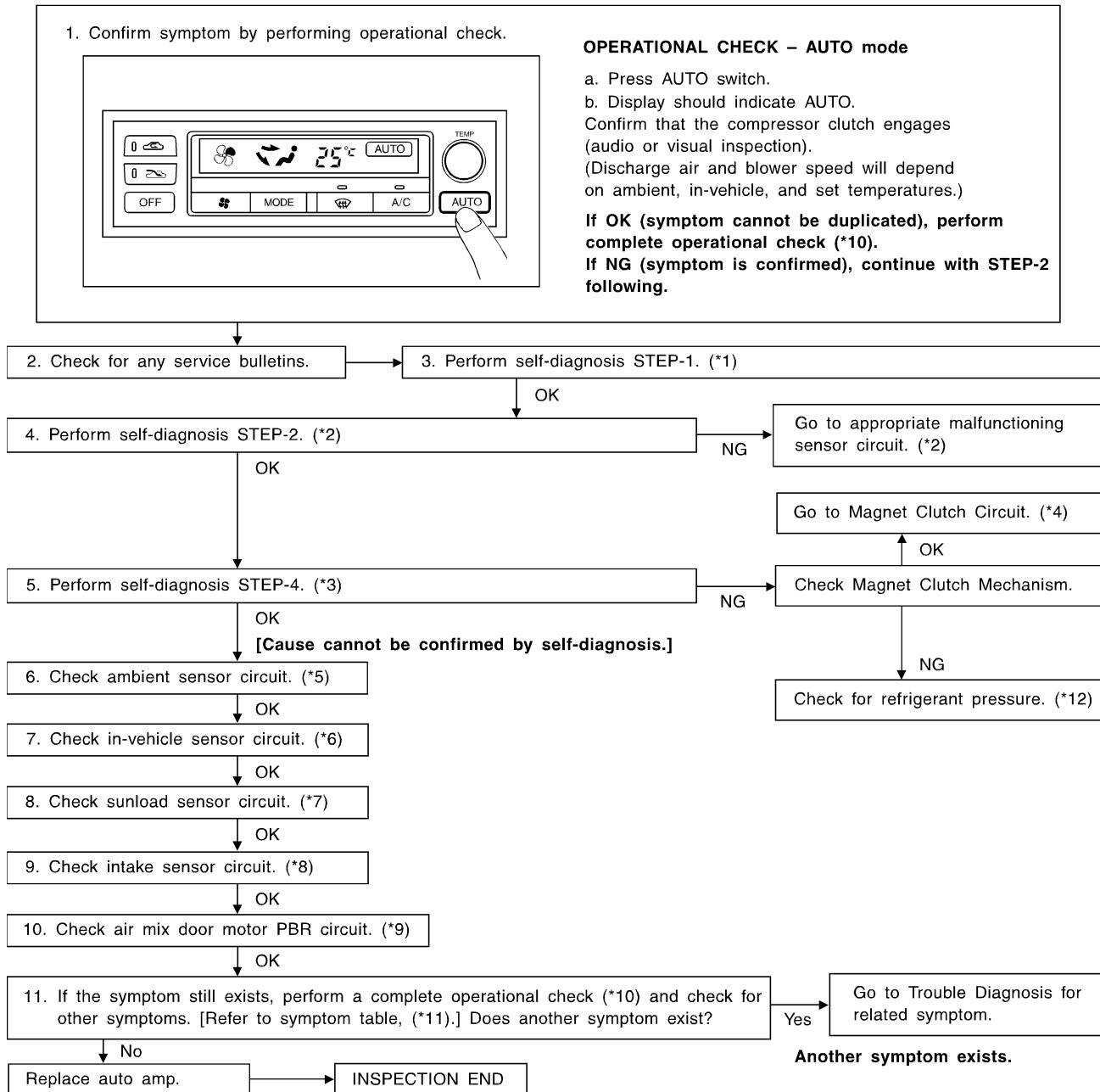
Magnet Clutch (For Europe)

TROUBLE DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH (FOR TB48 ENGINE)

SYMPTOM:

- Magnet clutch does not engage.

Inspection flow



*1: HA-64 in Y61 SERVICE MANUAL, publication No. SM8E-0Y61E0E

*2: HA-65 in Y61 SERVICE MANUAL, publication No. SM8E-0Y61E0E

*3: HA-67 in Y61 SERVICE MANUAL, publication No. SM8E-0Y61E0E

*4: HA-14

*5: HA-104 in Y61 SERVICE MANUAL, publication No. SM8E-0Y61E0E

*6: HA-106 in Y61 SERVICE MANUAL, publication No. SM8E-0Y61E0E

*7: HA-108 in Y61 SERVICE MANUAL, publication No. SM8E-0Y61E0E

*8: HA-110 in Y61 SERVICE MANUAL, publication No. SM8E-0Y61E0E

*9: HA-79 in Y61 SERVICE MANUAL, publication No. SM8E-0Y61E0E

*10: HA-70 in Y61 SERVICE MANUAL, publication No. SM8E-0Y61E0E

*11: HA-69 in Y61 SERVICE MANUAL, publication No. SM8E-0Y61E0E

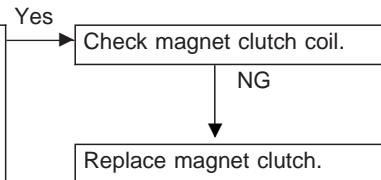
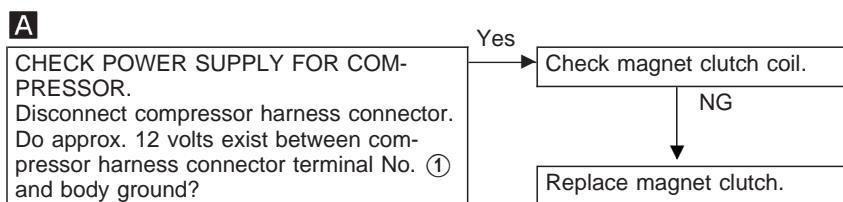
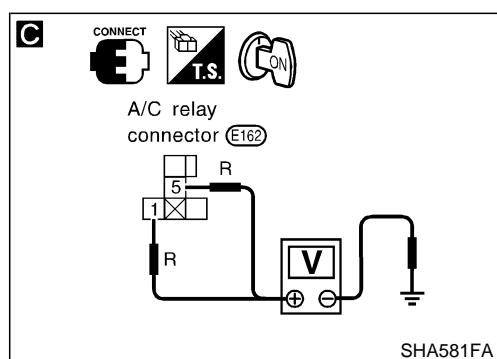
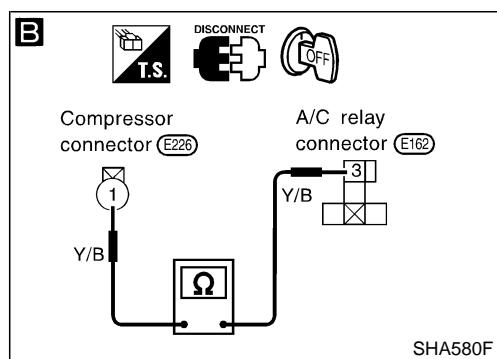
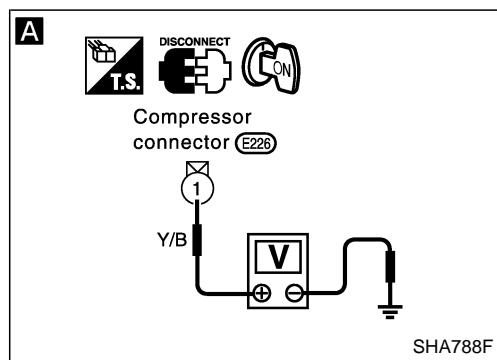
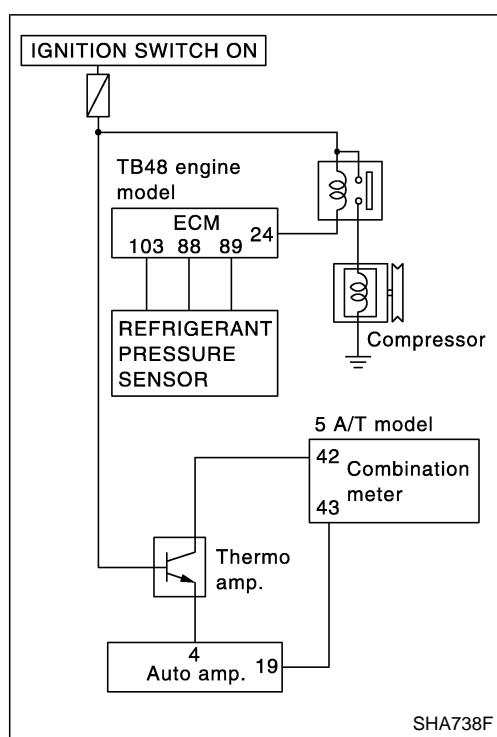
*12: HA-119 in Y61 SERVICE MANUAL, publication No. SM8E-0Y61E0E

TROUBLE DIAGNOSES

AUTO

Magnet Clutch (For Europe) (Cont'd) DIAGNOSTIC PROCEDURE (TB48 ENGINE FOR EUROPE)

SYMPTOM: Magnet clutch does not engage when A/C switch and fan switch are ON.



Disconnect A/C relay harness connector.

Note

CHECK CIRCUIT CONTINUITY BETWEEN A/C RELAY HARNESS CONNECTOR TERMINAL NO. ③ AND COMPRESSOR HARNESS CONNECTOR TERMINAL NO. ①.

Continuity should exist.

If OK, check harness for short.

OK

C

CHECK POWER SUPPLY FOR A/C RELAY.
Reconnect A/C relay harness connector.
Do approx. 12 volts exist between A/C relay harness connector terminal Nos. ①, ⑤ and body ground?

No → CHECK POWER SUPPLY CIRCUIT AND 20A (No. 6) FUSE AT FUSE BLOCK.
Refer to EL section ("Wiring Diagram", "POWER SUPPLY ROUTING").

Yes

CHECK A/C RELAY AFTER DISCONNECTING IT.
Refer to HA-18.

NG → Replace A/C relay.

OK

(A)
(Go to next page.)

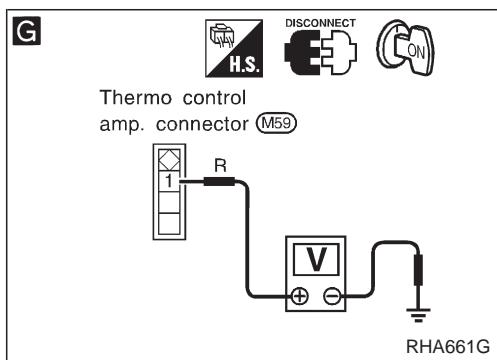
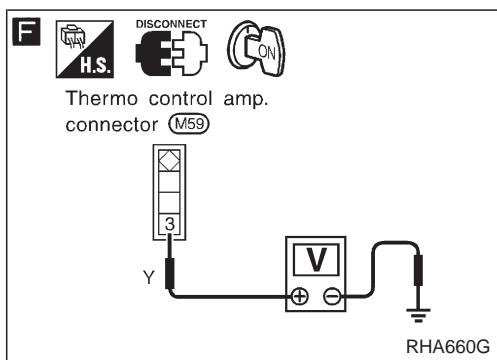
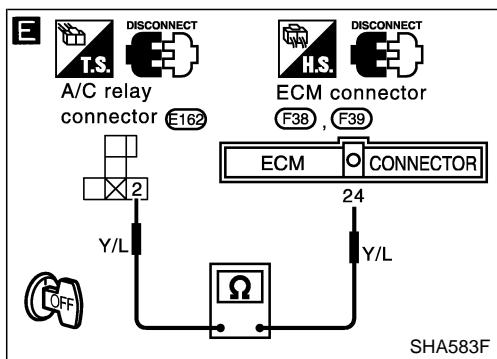
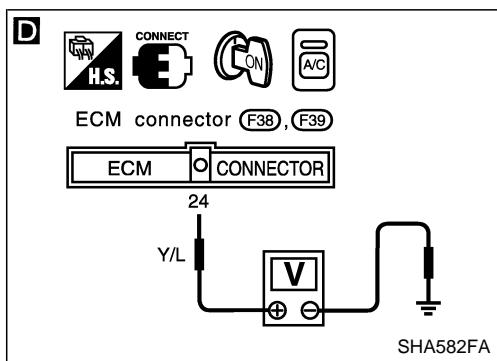
Note:

If the result is NG or No after checking circuit continuity, repair harness or connector.

TROUBLE DIAGNOSES

AUTO

Magnet Clutch (For Europe) (Cont'd)



 Reconnect A/C relay harness connector.

Do approx. 12 volts exist between ECM harness connector terminal No. 24 and body ground?

No → Disconnect A/C relay harness connector.
Disconnect ECM harness connector.

Yes

Disconnect thermo control amp. harness connector.

E Note
CHECK CIRCUIT CONTINUITY BETWEEN A/C RELAY HARNESS CONNECTOR TERMINAL NO. ② AND ECM HARNESS CONNECTOR TERMINAL NO. ②4. **Continuity should exist.** If OK, check harness for short.

CHECK THERMO CONTROL AMP. CIRCUIT.
Do approx. 12 volts exist between thermo control amp. harness connector terminal No. ③ and body ground?

No C

G 
CHECK POWER SUPPLY FOR THERMO
CONTROL AMP.
Do approx. 12 volts exist between thermo
control amp. harness connector terminal
No. ① and body ground?

No → Check power supply circuit and 20A fuse (No. 6, located in the fuse block).

Yes

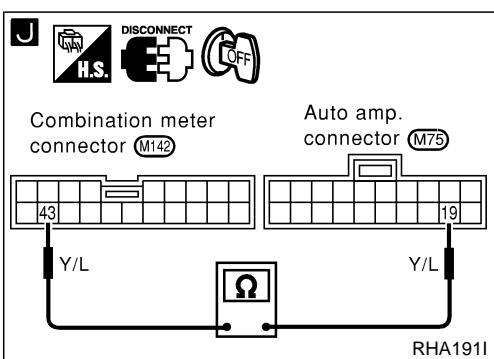
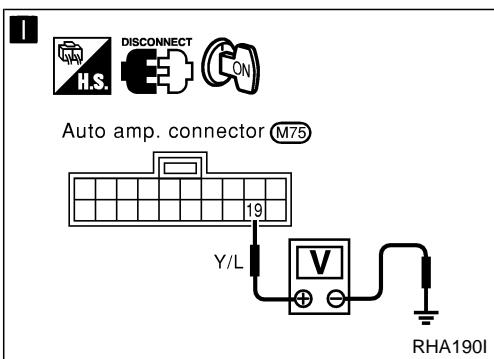
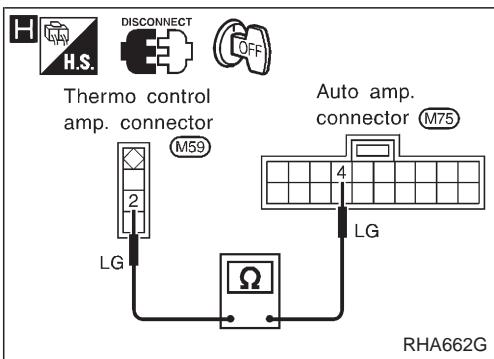
(Go to next page.)

Note:
If the result is NG or No after checking circuit continuity, repair harness or connector.

TROUBLE DIAGNOSES

AUTO

Magnet Clutch (For Europe) (Cont'd)



B

Disconnect auto amp. harness connector.

Note

Check circuit continuity between thermo control amp. harness connector terminal No. ② and auto amp. harness connector terminal No. ④.

Continuity should exist.

If OK, check harness for short.

OK

CHECK THERMO CONTROL AMP.
Refer to HA-59 in Y61 SERVICE MANUAL, (publication No. SM7E-2Y61G1).

NG → Replace thermo control amp.

OK

CHECK REFRIGERANT PRESSURE SENSOR. Refer to HA-18.

NG → Replace refrigerant pressure sensor.

OK

CHECK FAN SIGNAL.

Measure voltage between auto amp. harness connector terminal No. ⑯ and body ground.

Terminal No.		Condition	Voltage
⊕	⊖		
19	Body ground	A/C: ON	0V
		A/C: OFF	5V

NG

If the voltage is approx. 0V when A/C switch OFF, go to A.

If the voltage is approx. 5V when A/C switch ON, go to B.

B → Replace auto amp.

A

Disconnect combination meter harness connector.

Note

Check circuit continuity between auto amp. harness connector terminal No. ⑯ and combination meter harness connector terminal No. ⑯.

OK

Check combination meter.

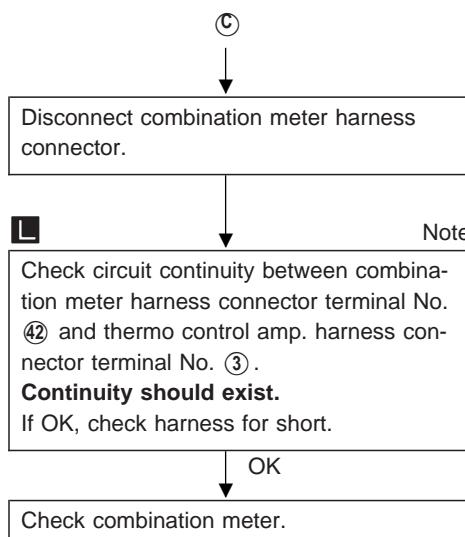
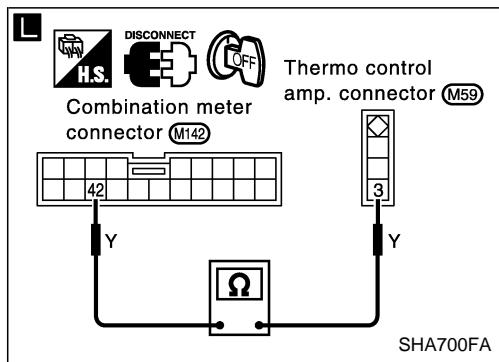
Note:

If the result is NG or No after checking circuit continuity, repair harness or connector.

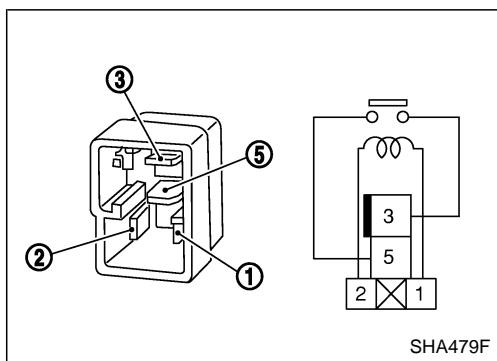
TROUBLE DIAGNOSES

AUTO

Magnet Clutch (For Europe) (Cont'd)



Note:
If the result is NG or No after checking circuit continuity, repair harness or connector.



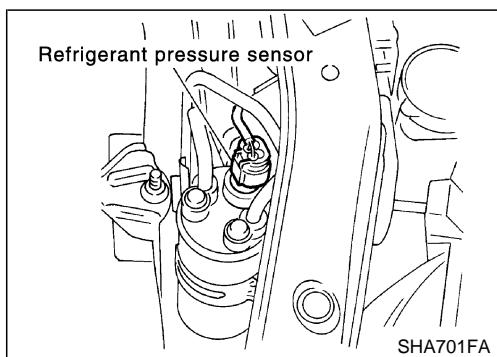
Magnet Clutch COMPONENT INSPECTION

A/C Relay

Check continuity between terminal Nos. 3 and 5.

Conditions	Continuity
12V direct current supply between terminal Nos. 1 and 2	Yes
No current supply	No

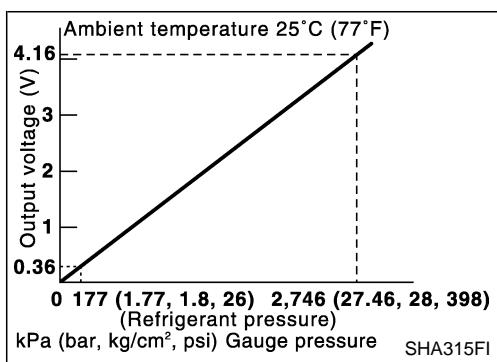
If NG, replace relay.



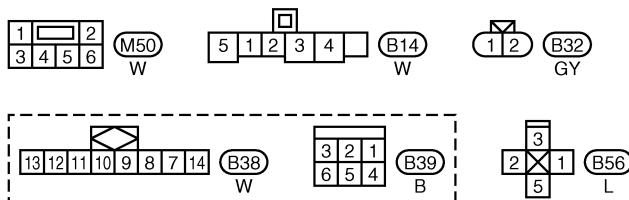
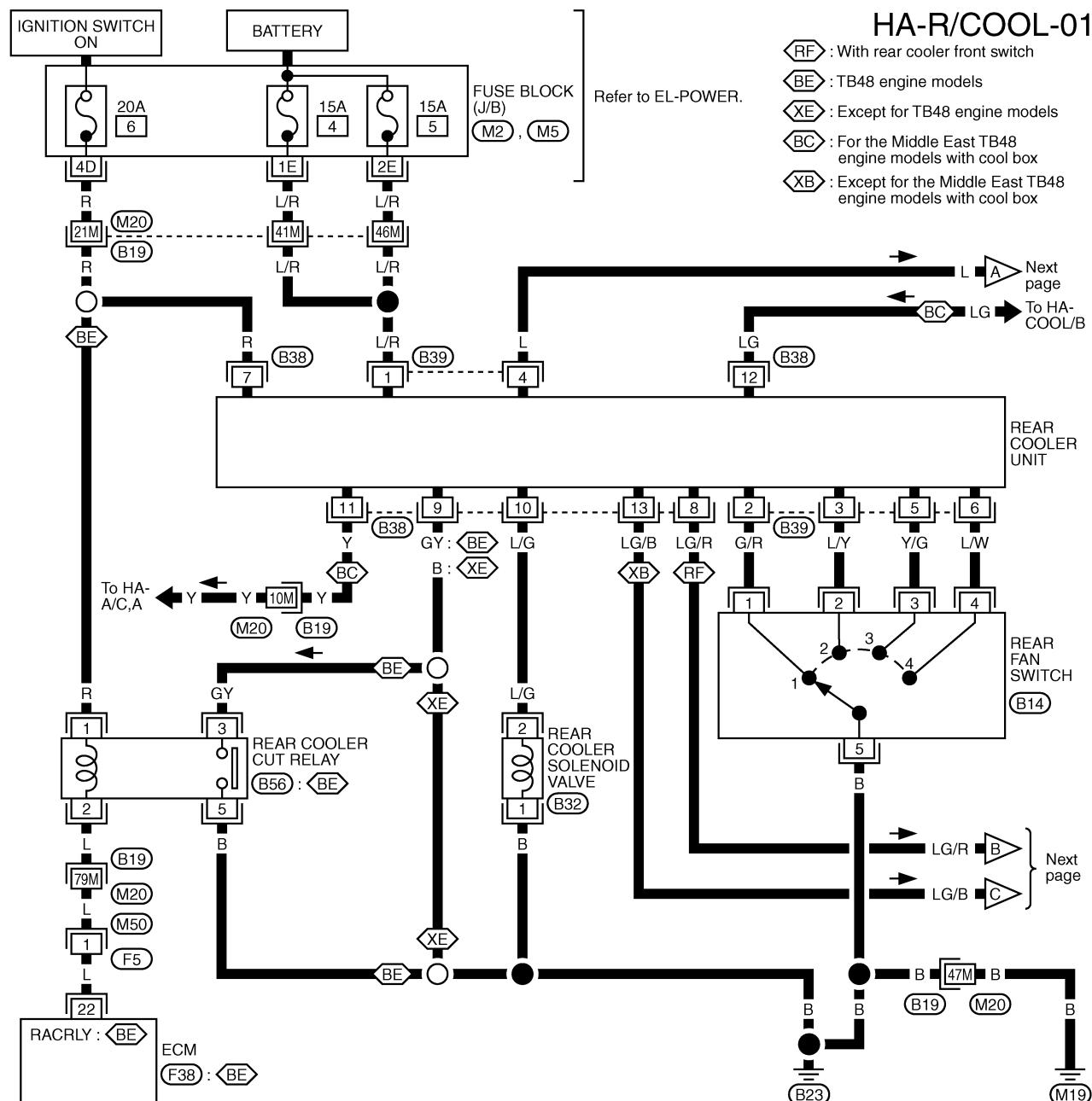
Refrigerant Pressure Sensor

Make sure that higher A/C refrigerant-pressure results in higher refrigerant-pressure sensor output voltage.

Check voltage between ECM harness connector terminal No. 88 (R/G) and body ground. Refer to refrigerant pressure sensor in ECM.



Wiring Diagram — R/COOL —/With Front Auto A/C



Refer to last page (Foldout page).

M20, **(B19)**
M2
M5
F38

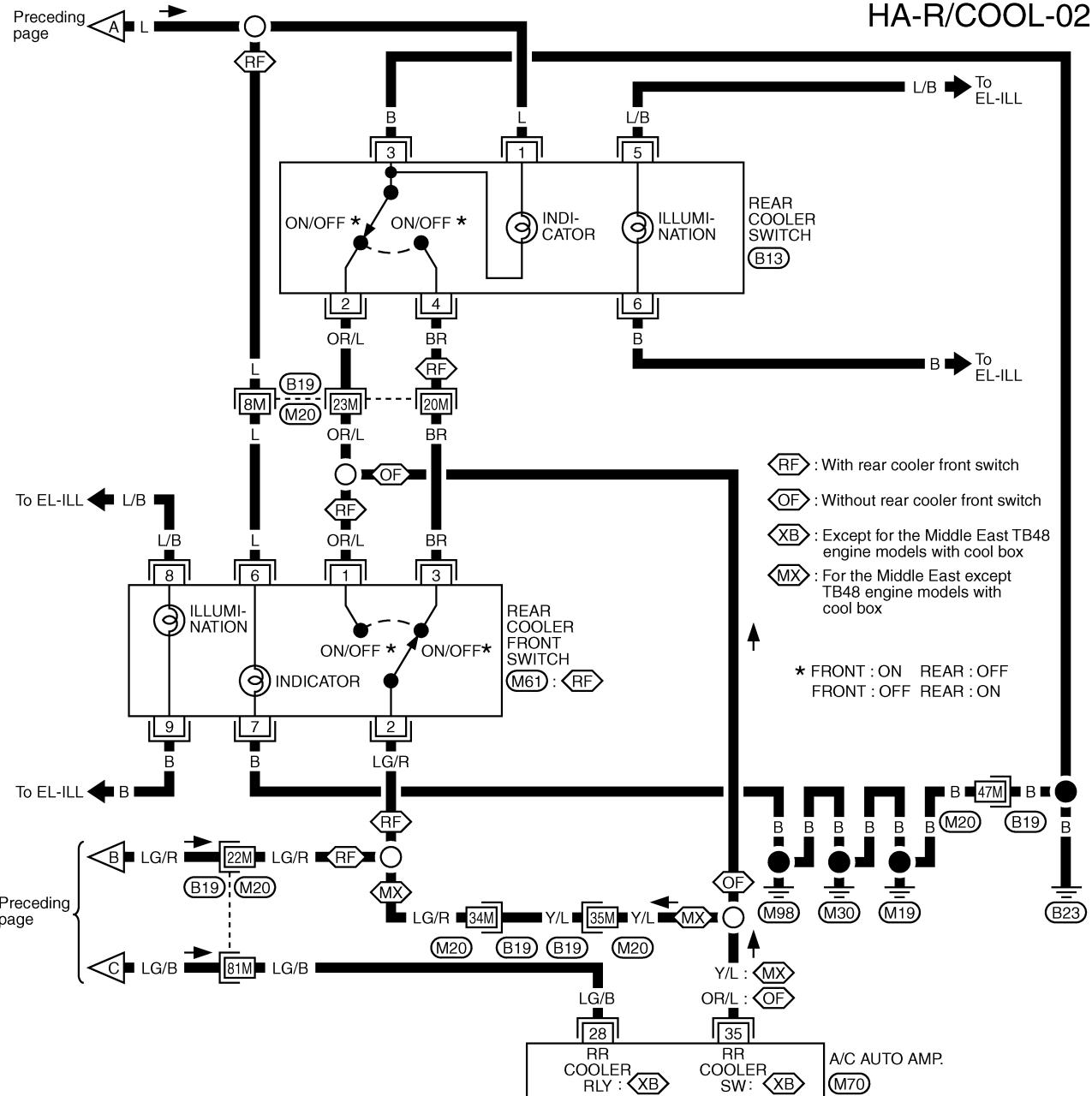
TROUBLE DIAGNOSES

REAR COOLER

Wiring Diagram — R/COOL —/With Front Auto A/C (Cont'd)

Preceding page

HA-R/COOL-02



◀RF▶ : With rear cooler front switch

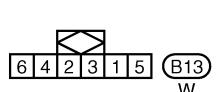
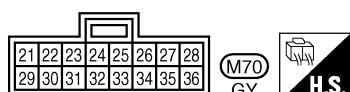
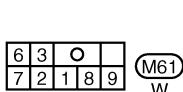
OF : Without rear cooler front switch

XB : Except for the Middle East TB48

 : For the Middle East except TB48 engine models with cool box

* FRONT : ON REAR : OFF
FRONT : OFF REAR : ON

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| Refer to last page (Foldout page).

M20, B19